

ECLA**EUROPEAN CLASSIFICATION****H04R**

LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; DEAF-AID SETS; PUBLIC ADDRESS SYSTEMS (generating mechanical vibrations in general B06B; transducers for measuring particular variables G01; transducers in clocks G04; producing sounds with frequency not determined by supply frequency G10K; transducers in recording or reproducing heads G11B; transducers in motors H02) [C9508]

Note

This subclass covers:

- o loudspeakers, microphones, [N: acoustic] transducers [N: therefor] producing acoustic waves or variations of electric current or voltage, or gramophone pick-ups;
- o arrangements actuated by variations of electric current or voltage for cutting grooves in records;
- o circuits for the above-mentioned [N: loudspeakers, microphones, acoustic transducers, gramophone pick-ups or] arrangements;
- o monitoring or testing [N: of the above-mentioned loudspeakers, microphones, acoustic transducers, gramophone pick-ups or arrangements]

H04R1/00

Details of transducers, [N: loudspeakers or microphones] [M1111]

H04R1/00D

- . [N: using digitally weighted transducing elements]

H04R1/02

- . Casings; Cabinets; [N: Supports therefor;] Mountings therein ([H04R1/28](#) takes precedence; [N: (attachments for microphones [H04R1/08](#); mounting of transducers in earpieces [H04R1/10M4](#))] [M1207]

H04R1/02A

- . . [N: incorporating only one transducer] [N9508]

H04R1/02B

- . . [N: Screens for loudspeakers]

H04R1/02C

- . . [N: Arrangements for fixing loudspeaker transducers, e.g. in a box, furniture] [M1111]

H04R1/02D

- . . [N: Supports for loudspeaker casings][M1111]

H04R1/02E

- . . [N: associated with devices performing functions other than acoustics, e.g. electric candles] [N9508]

H04R1/04

- . . Structural association of microphone with electric circuitry therefor ([in deaf-aid sets H04R25/00](#))

H04R1/06

- . Arranging circuit leads; Relieving strain on circuit leads

H04R1/08

- . Mouthpieces; [N: Microphones;] Attachments therefor [M1207]

H04R1/08D

- . . [N: Special constructions of mouthpieces]

H04R1/08D2

- . . . [N: Protective screens, e.g. all weather or wind screens]

H04R1/10

- . Earpieces; Attachments therefor; [N: Earphones; Monophonic headphones ([H04R1/28](#)

takes precedence; stereophonic headphones [H04R5/033](#)] [C1009]

[N: **Notes** [N1009]

1) This group covers details of headphones, both of monophonic and stereophonic type.

(2) When classifying in this group or in its subgroups, aspects relating to stereophonic headphones are to be classified in [T04R5/033](#) as well

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- H04R1/10A . . [N: Earpieces of the supra-aural or circum-aural type] [N9604]
- H04R1/10B . . [N: Earpieces of the intra-aural type] [N9604]
- H04R1/10C . . [N: Accumulators or arrangements for charging (secondary cells per se [H01M10/00](#); charging in general [H02J7/00](#))] [N1009]
- H04R1/10E . . [N: Cables or cables storage, e.g. cable reels (cord reels per se [H02G11/02](#); arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables [B65H75/34](#); extensible conductors or cables, e.g. self-coiling cords [H01B7/06](#))] [N1009]
- H04R1/10G . . [N: Mechanical or electronic switches, or control elements (switches in general H01H)] [N1009]
- H04R1/10H . . [N: Earpiece supports, e.g. ear hooks (for stereophonic headphones [H04R5/033H](#))] [N1009]
- H04R1/10M . . [N: Manufacture or assembly] [N1009]
- H04R1/10M2 . . . [N: Constructional aspects of the interconnection between earpiece and earpiece support (earpiece support for monophonic headphones [H04R1/10H](#); earpiece support for stereophonic headphones [H04R5/033H](#))] [N1009]
- H04R1/10M4 . . . [N: Mountings of transducers in earphones or headphones] [N1009]
- H04R1/10N . . [N: Reduction of ambient noise (active noise reduction per se [G10K11/175](#); protective devices for the ear, e.g. providing acoustic protection [A61F11/06](#))] [N1009] [C1108]
- H04R1/10Z . . [N: Details not provided for in groups [H04R1/10A](#) to [H04R1/10N](#)] [N1009]
- H04R1/12 . . Sanitary or hygienic devices for mouthpieces or earpieces, e.g. for protecting against infection
- H04R1/14 . . Throat mountings for microphones
- H04R1/16 . . Mounting or connecting stylus to transducer with or without damping means
- H04R1/18 . . Holders for styli; Mounting holders on transducers
- H04R1/20 . . Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purpose [H04R5/00](#))
- H04R1/22 . . for obtaining desired frequency characteristic only (circuit for combining transducers having different responses [H04R3/00](#) [N: for hearing aids [H04R25/00F](#)])
- H04R1/22B . . . [N: for microphones ([H04R1/24](#), [H04R1/26](#) take precedence)]
- H04R1/22C . . . [N: for telephonic receivers]
- H04R1/22D . . . [N: using transducers reproducing the same frequency band] [M1207]
- H04R1/24 . . . Structural combinations of separate transducers or of two parts of the same transducer and responsive respectively to two or more frequency ranges
- H04R1/24C [N: of microphones]
- H04R1/26 . . . Spatial arrangements of separate transducers responsive to two or more frequency ranges

H04R1/26B	. . . .	[N: of microphones]
H04R1/28	. . . .	Transducer mountings or enclosures modified by provision of mechanical or acoustic impedances, e.g. resonator, damping means ([N: combinations of transducers with horns, i.e. front-loaded horns H04R1/30] [C1108])
H04R1/28L	. . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N	. . . .	[N: Enclosures comprising vibrating or resonating arrangements (for the reduction of undesired resonances or vibrations H04R1/28R)] [N1108]
H04R1/28N3	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N5	. . . . .	[N: of the bass reflex type] [N1108]
H04R1/28N5L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N5V	. . . . .	[N: Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports H04R1/28N5 ; vents in bandpass type enclosures H04R1/28N9V)] [N1108]
H04R1/28N5V3	. . . . .	{7 dots} [N: for loudspeaker transducers] [N1108]
H04R1/28N7	. . . . .	[N: using a passive diaphragm] [N1108]
H04R1/28N7L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N9	. . . . .	[N: of the bandpass type] [N1108]
H04R1/28N9L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N9V	. . . . .	[N: Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports H04R1/28N9 ; vents in bass reflex type enclosures H04R1/28N5V)] [N1108]
H04R1/28N9V3	. . . . .	{7 dots} [N: for loudspeaker transducers] [N1108]
H04R1/28N11	. . . . .	[N: using an acoustic labyrinth or a transmission line] [N1108]
H04R1/28N11L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28N13	. . . . .	[N: using a back-loaded horn] [N1108]
H04R1/28N13L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28R	. . . . .	[N: Reduction of undesired resonances, i.e. standing waves within enclosure, or of undesired vibrations, i.e. of the enclosure itself] [N1108]
H04R1/28R3	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28R5	. . . . .	[N: by means of damping material, e.g. as cladding (damping material for tuning desired resonances H04R1/28N , e.g. in vents H04R1/28N5V , H04R1/28N9V)] [N1108]
H04R1/28R5L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28R7	. . . . .	[N: by means of the enclosure structure, i.e. strengthening or shape of the enclosure (by means of Helmholtz resonators H04R1/28R)] [N1108]
H04R1/28R7L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/28R9	. . . . .	[N: Mountings or supports for transducers] [N1108]
H04R1/28R9L	. . . . .	[N: for loudspeaker transducers] [N1108]
H04R1/30	. . . . .	Combinations of transducers with horns, e.g. with mechanical matching means [N: , i.e. front-loaded horns] (horns in general G10K ; [N: transducer enclosures or mountings using a back-loaded horn H04R1/28N13 ; application of horns as guiding means to obtain a predetermined directivity characteristic H04R1/34C]) [C1108]
H04R1/32	. . . . .	for obtaining desired directional characteristic only [N: (specially adapted for hearing aids H04R25/40)] [M1202]
H04R1/32B	. . . . .	[N: for loudspeakers (H04R1/34 and H04R1/40 take precedence)]
H04R1/32C	. . . . .	[N: for microphones (H04R1/34 and H04R1/40 take precedence)]

- H04R1/34 . . . by using a single transducer with sound reflecting, diffracting, directing or guiding means [N: (specially adapted for hearing aids [H04R25/40B](#))] [M1202]
- H04R1/34B [N: for microphones]
- H04R1/34C [N: for loudspeakers]
- H04R1/34C1 [N: for obtaining a phase-shift between the front and back acoustic wave]
- H04R1/36 by using a single aperture of dimensions not greater than the shortest operating wavelength
- H04R1/38 in which sound waves act upon both sides of a diaphragm and incorporating acoustic phase-shifting means, e.g. pressure-gradient microphone
- H04R1/40 . . . by combining a number of identical transducers [N: (specially adapted for hearing aids [H04R25/40D](#))] [M1202]
- H04R1/40B [N: loud-speakers]
- H04R1/40C [N: microphones]
- H04R1/42 . Combinations of transducers with fluid-pressure or other non-electrical amplifying means
- H04R1/44 . Special adaptations for subaqueous use, e.g. for hydrophone
- H04R1/46 . Special adaptations for use as contact microphones, e.g. on musical instrument, on stethoscope ([throat mountings H04R1/14](#))

- H04R3/00** **Circuits for transducers [N: , loudspeakers or microphones] [M1207]**
- H04R3/00A . [N: Damping circuit arrangements for transducers, e.g. motional feedback circuits]
- H04R3/00B . [N: for combining the signals of two or more microphones [N: (specially adapted for hearing aids [H04R25/40F](#))] [M1202]
- H04R3/00C . [N: Protection circuits for transducers]
- H04R3/02 . for preventing acoustic reaction [N: , i.e. acoustic oscillatory feedback (specially adapted for hearing aids [H04R25/45B](#))] [M1207]
- H04R3/04 . for correcting frequency response
- H04R3/06 . . of electrostatic transducers
- H04R3/08 . . of electromagnetic transducers
- H04R3/10 . . of variable resistance microphones
- H04R3/12 . for distributing signals to two or more loudspeakers [N: (specially adapted for hearing aids [H04R25/40F](#))] [M1202]
- H04R3/14 . . Cross-over networks

- H04R5/00** **Stereophonic arrangements (stereophonic pick-ups [H04R9/16](#), [H04R11/12](#), [H04R17/08](#), [H04R19/10](#))**

Note

In this group, the expression "stereophonic arrangements" covers quadraphonic or similar arrangements.

- H04R5/02 . Spatial or constructional arrangements of loudspeakers
- H04R5/02B . . [N: in a chair, pillow]
- H04R5/027 . Spatial or constructional arrangements of microphones, e.g. in dummy heads
- H04R5/033 . Headphones for stereophonic communication [N: (details thereof, e.g. relating to batteries, cables or control elements [H04R1/10](#))] [C1009]
- H04R5/033H . . [N: Earpiece support, e.g. headbands or neckrests (for monophonic headphones [H04R1/10H](#))] [N1009]
- H04R5/04 . Circuit arrangements, [N: e.g. for selective connection of amplifier inputs/outputs to loudspeakers, for loudspeaker detection, or for adaptation of settings to personal preferences or hearing impairments (combinations of amplifiers [H03F3/68](#); stereophonic systems [H04S](#))] [M1111]

- H04R7/00** **Diaphragms for electromechanical transducers (in general [F16J3/00](#)); Cones (for musical instruments [G10](#))** [N: (cones, diaphragms or the like, for emitting or receiving sound in general [G10K13/00](#); Mounting thereof)]
- H04R7/02 . characterised by the construction
- H04R7/04 . . Plane diaphragms
- H04R7/04D . . . [N: using the distributed mode principle, i.e. whereby the acoustic radiation is emanated from uniformly distributed free bending wave vibration induced in a stiff panel and not from piston motion] [N0111]
- H04R7/06 . . . comprising a plurality of sections or layers
- H04R7/08 comprising superposed layers separated by air or other fluid
- H04R7/10 comprising superposed layers in contact
- H04R7/12 . . Non-planar diaphragms or cones
- H04R7/12B . . . [N: comprising a plurality of sections or layers]
- H04R7/12B1 [N: comprising a plurality of superposed layers in contact]
- H04R7/12C . . . [N: dome-shaped]
- H04R7/14 . . . corrugated, pleated or ribbed

- H04R7/16 . Mounting or tensioning of diaphragms or cones
- H04R7/18 . . at the periphery
- H04R7/20 . . . Securing diaphragm or cone resiliently to support by flexible material, springs, cords, or strands
- H04R7/22 . . . Clamping rim of diaphragm or cone against seating
- H04R7/24 . . Tensioning by means acting directly on free portions of diaphragm or cone

- H04R7/26 . Damping by means acting directly on free portion of diaphragm or cone ([air damping \[H04R1/28\]\(#\)](#))

- H04R9/00** **Transducers of moving-coil, moving-strip, or moving-wire type**
- H04R9/02 . Details
- H04R9/02B . . [N: Cooling arrangements]

- H04R9/02D . . [N: Magnetic circuit] [N0403]
- H04R9/02D1 . . . [N: Air gaps using a magnetic fluid] [N0403]
- H04R9/04 . . Construction, mounting, or centering of coil
- H04R9/04E . . . [N: Centering] [N0403] [C0509]
- H04R9/04E1 [N: by pressurised air] [N0403]
- H04R9/04E2 [N: Inner suspension or damper, e.g. spider (outer suspension or surround [H04R7/16](#))] [N0509]
- H04R9/04M . . . [N: Mounting ([H04R9/04E2](#) takes precedence)] [N0403] [C0509]
- H04R9/04N . . . [N: Construction] [N0403]
- H04R9/04N2 [N: in which the windings of the moving coil lay in the same plane] [N0403] [M1111]
- H04R9/04N2R [N: of the ribbon type] [N0403]

- H04R9/06 . Loudspeakers
- H04R9/06A . . [N: using a plurality of acoustic drivers ([H04R1/24](#) and [H04R1/40B](#) take precedence)] [N9705] [C0403]
- H04R9/06B . . [N: using the principle of inertia]

- H04R9/08 . Microphones

- H04R9/10 . Telephone receivers

- H04R9/12 . Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R9/14 . . comprising two or more styli or transducers ([H04R9/16](#) takes precedence)
- H04R9/16 . . signals recorded or played back by vibration of a stylus in two orthogonal directions simultaneously

- H04R9/18 . Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

- H04R11/00** **Transducers of moving-armature or moving-core type (acoustic diaphragm of magnetisable material directly coacting with electromagnet [H04R13/00](#))**

- H04R11/02 . Loudspeakers
- H04R11/04 . Microphones
- H04R11/06 . Telephone receivers
- H04R11/08 . Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R11/10 . . comprising two or more styli or transducers ([H04R11/12](#) takes precedence)
- H04R11/12 . . signals being recorded or played back by vibration of a stylus in two orthogonal directions simultaneously

- H04R11/14 . Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

- H04R13/00** **Transducers having an acoustic diaphragm of magnetisable material directly co-acting with electromagnet**

- H04R13/02 . Telephone receivers

- H04R15/00** **Magnetostrictive transducers** (magnetostrictive elements in general [H01L41/00](#)) [C9508]

- H04R15/02 . Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

- H04R17/00** **Piezo-electric transducers; Electrostrictive transducers** (piezo-electric or electrostrictive elements in general [H01L41/00](#); details of piezo-electric or electrostrictive motors, generators or positioners [N: [H01L41/00](#)]) [C9508]

- H04R17/00B . [N: using a piezo-electric polymer]

- H04R17/02 . Microphones
- H04R17/02B . . [N: using a piezo-electric polymer]

- H04R17/04 . Gramophone pick-ups using a stylus; Recorders using a stylus
- H04R17/06 . . comprising two or more styli or transducers ([H04R17/08](#) takes precedence)
- H04R17/08 . . signals being recorded or played back by vibration of a stylus in two orthogonal directions simultaneously

- H04R17/10 . Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

- H04R19/00** **Electrostatic transducers**

- H04R19/00S . [N: using semiconductor materials]

- H04R19/01 . characterised by the use of electrets [N9508]
- H04R19/01B . . [N: for loudspeakers] [N9508]
- H04R19/01C . . [N: for microphones] [N9508]

- H04R19/02 . Loudspeakers ([H04R19/01](#) takes precedence) [C9508]

- H04R19/04 . Microphones ([H04R19/01](#) takes precedence) [C9508]

- H04R19/06 . Gramophone pick-ups using a stylus; Recorders using a stylus ([H04R19/01](#) takes precedence) [C9508]
- H04R19/08 . . comprising two or more styli or transducers ([H04R19/10](#) takes precedence)
- H04R19/10 . . signals being recorded or played back by vibration of a stylus in two orthogonal directions simultaneously

- H04R21/00** **Variable-resistance transducers** (gaseous resistance transducers [H04R23/00](#); magneto-resistive transducers [H04R23/00](#))

- H04R21/02 . Microphones

- H04R21/02A . . [N: with granular resistance material]
- H04R21/02B . . [N: with more than one granular chamber]
- H04R21/02C . . [N: disposition of the granular chamber in microphones]
- H04R21/02D . . [N: in which the sound is perpendicular to the current crossing the transducer material]
- H04R21/02E . . [N: with a fluid as resistance material]
- H04R21/04 . Gramophone pick-ups using a stylus; Records using a stylus

H04R23/00 **Transducers other than those covered by groups [H04R9/00](#) to [H04R21/00](#) [N: (diaphragms for transducers of the distributed-mode type [H04R7/04D](#))] [M1111]**

- H04R23/00A . [N: using electrothermic-effect transducer]
- H04R23/00B . [N: using ionised gas]
- H04R23/00C . [N: using solid state devices (solid state devices per se [H01L](#))]
- H04R23/00D . [N: using optical signals for detecting or generating sound] [M1207]
- H04R23/02 . Transducers using more than one principle simultaneously

H04R25/00 **Deaf-aid sets [N: providing an auditory perception; Electric tinnitus maskers providing an auditory perception] (constructions of transducers per se [H04R9/00](#) to [H04R23/00](#); [N: non-electric hearing aids [A61F11/00H](#); replacing direct auditory perception by another kind of perception [A61F11/04](#); electrical stimulation of auditory nerves to promote the auditory function [A61N1/36F](#)]; structural combination with spectacle frames [G02C11/06](#); processing of speech signals [G10L21/00](#)) [C1207]**

[N: **WARNING**
[N1207]Groups [H04R25/30](#) to [H04R25/75](#) do not correspond to former or current IPC groups.
]

[N: **Notes**[N0810]
Classification should be directed to groups [H04R25/02](#), [H04R25/04](#) or [H04R25/50](#) and its subgroups, if and only if the technical subject in consideration cannot be classified elsewhere under the main group [H04R25/00](#)
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- H04R25/02 . adapted to be supported entirely by ear
- H04R25/04 . comprising pocket amplifiers
- H04R25/30 . [N: Monitoring or testing of hearing aids, e.g. functioning, settings, battery power (testing arrangements for electro-acoustic transducers in general [H04R29/00](#); battery testing in general [G01R31/36](#))] [N1202]
- H04R25/30B . . [N: Self-monitoring or self-testing] [N1202]
- H04R25/35 . [N: using translation techniques] [N1202]
- H04R25/35B . . [N: Frequency, e.g. frequency shift or compression] [N1202]

- H04R25/35D . . [N: Amplitude, e.g. amplitude shift or compression] [N1202]
- H04R25/40 . [N: Arrangements for obtaining a desired directivity characteristic] [N1202]
- H04R25/40B . . [N: using constructional means] [N1202]
- H04R25/40D . . [N: by combining a plurality of transducers] [N1202]
- H04R25/40F . . [N: Circuits for combining signals of a plurality of transducers] [N1202]
- H04R25/43 . [N: Electronic input selection or mixing based on input signal analysis, e.g. mixing or selection between microphone and telecoil or between microphones with different directivity characteristics ([H04R25/40F](#) takes precedence)][N1204]
- [N: **WARNING**
Not complete pending a reorganization, see also [H04R25/00](#)
]
- H04R25/45 . [N: Prevention of acoustic reaction, i.e. acoustic oscillatory feedback] [N1202] [m1207]
- H04R25/45B . . [N: electronically (in general [H04R3/02](#))] [N1202]
- H04R25/45D . . [N: mechanically] [N1202]
- H04R25/48 . [N: using constructional means for obtaining a desired frequency response ([H04R25/65B](#) takes precedence; in general [H04R1/22](#))] [N1202]
- H04R25/50 . [N: Customised settings for obtaining desired overall acoustical characteristics] [N1202]
- H04R25/50B . . [N: using analog signal processing] [N1202]
- H04R25/50D . . [N: using digital signal processing] [N1202]
- H04R25/50D1 . . . [N: implemented by neural network or fuzzy logic] [N1202]
- H04R25/55 . [N: using an external connection, either wireless or wired] [N1202]
- H04R25/55B . . [N: Binaural] [N1202]
- H04R25/55D . . [N: using a wireless connection, e.g. between microphone and amplifier or using T-coils ([near-field transmission in general H04B5/00](#))] [N1202]
- H04R25/55F . . [N: External connectors, e.g. plugs or modules] [N1202]
- H04R25/55H . . [N: Remote control, e.g. of amplification, frequency ([remote control of amplifications, tone, or bandwidth H03G1/02](#); remote control, e.g. for Hi-Fi systems or audio/video combinations [H04B1/20B](#); remote control in general [G05F](#))] [N1202]
- H04R25/60 . [N: Mounting, assembling or interconnection of hearing aid parts, e.g. inside tips, housing or to ossicles; Apparatus or processes therefor] [N1202] [M1207]
- H04R25/60B . . [N: Arrangements for mounting batteries ([batteries in general H01M2/02](#))] [N1202]
- H04R25/60D . . [N: Arrangements for mounting transducers] [N1202]
- H04R25/60D1 . . . [N: acting directly on the eardrum, the ossicles or the skull, e.g. mastoid, tooth, maxillary or mandibular bone, or mechanically stimulating the cochlea, e.g. at the oval window] [N1202]
- H04R25/60M . . [N: Apparatus or processes specially adapted for mounting, assembling or interconnecting hearing aid parts inside tips, moulds or housings] [N1204]
- [N: **WARNING**
Not complete pending a reorganization, see also [H04R25/60](#) or its other subgroups
]

- H04R25/65 . [N: Housing parts, e.g. shells, tips or moulds, or their manufacture] [N1202] [M1207]
- H04R25/65B . . [N: Ear tips; Ear moulds] [N1202]
- H04R25/65B1 . . . [N: Ear wax retarders] [N1202]
- H04R25/65B3 . . . [N: Non-customized, universal ear tips, i.e. ear tips which are not specifically adapted to the size or shape of the ear or ear canal] [N1204]
- [N: **WARNING**
Not complete pending a reorganization, see also [H04R25/65B](#)]
- H04R25/65M . . [N: Manufacture of housing parts] [N1204]
- [N: **WARNING**
Not complete pending a reorganization, see also [H04R25/65](#) or its other subgroups]
- H04R25/70 . [N: Adaptation of deaf aid to hearing loss, e.g. initial electronic fitting] [N1202] [M1207]
- H04R25/75 . [N: Electric tinnitus maskers providing an auditory perception ([evaluating tinnitus A61B5/12F](#); [devices or methods to cause a change in the state of consciousness A61M21/00](#); [masking sound in general G10K11/175](#))] [N: **WARNING**Not complete pending a reorganization, see also [H04R25/00](#)] [N1204]
- [N: **WARNING**
Not complete pending a reorganization, see also [H04R25/00](#)]
- H04R27/00** **Public address systems** (circuits for preventing acoustic reaction [H04R3/02](#); circuits for distributing signals to loudspeakers [H04R3/12](#); [N: monitoring or testing arrangements for public address systems [H04R29/00P](#)]; amplifiers [H03F](#)) [C0701]
- H04R27/02 . Amplifying systems for the deaf
- H04R27/04 . Electric megaphones
- H04R29/00** **Monitoring arrangements; Testing arrangements** [N: ([for hearing aids H04R25/30](#); [detection of loudspeaker connection H04R5/04](#); [sound-field adaptation dependent on speaker detection H04S7/30J](#))] [M1202]
- H04R29/00L . [N: for loudspeakers (H04R29/00P takes precedence)] [N0701]
- H04R29/00L2 . . [N: Loudspeaker arrays] [N0701]
- H04R29/00L4 . . [N: of the moving-coil type] [N0701]
- H04R29/00M . [N: for microphones (H04R29/00P takes precedence)] [N0701]
- H04R29/00M2 . . [N: Microphone arrays] [N0701]
- H04R29/00M2A . . . [N: Microphone matching] [N0701]
- H04R29/00P . [N: for public address systems (public address systems per se H04R27/00)] [N0701]
- H04R29/00V . [N: Visual indication of individual signal levels ([visual indication of stereophonic sound image H04S7/40](#))] [N0701] [M1202]

- H04R31/00** **Apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor** [N: (manufacture of microstructural arrangements of deformable or non-deformable structures in general [B81C1/00C4T](#))] [C1009]
- H04R31/00B . [N: for diaphragms or their outer suspension] [M1111]
- H04R31/00F . [N: Interconnection of transducer parts (of diaphragm and outer suspension by moulding [H04R31/00B](#))] [N0403] [M1111]