For Professionals

Electrode Arrays
Designed for Atraumatic Implantation
Providing Superior Hearing Performance
MED-EL is the leader in providing soft, flexible electrode arrays which ensure maximum protection of the delicate structures in the cochlea. Preserving residual hearing enables users to benefit from future technologies and therapies.

**Wave-Shaped Wires**
The electrode arrays feature ultraflexible wave-shaped platinum-iridium wires. Wave-shaped wires significantly reduce rigidity in comparison to a straight-wire design. This unique design is the key to making a MED-EL electrode array the world's most flexible and atraumatic.

**Optimal Number of Contacts**
MED-EL's electrode design philosophy dictates a careful balance between the maximum number of electrode contacts and minimised channel interaction. Channel interaction negatively impacts performance. Each electrode array contains the optimal number of contacts for stimulation of nerve fibres leading to best performance. Optimal number and spacing of electrode contacts also significantly reduce rigidity; allowing for gentle insertion without damaging the delicate cochlear structures.

**FLEX Series**
The FLEX series feature unique FLEX-Tip Technology with single contacts at the leading end, ultra-flexible wave-shaped wires, and a tapered tip for increased mechanical flexibility.

**FORM Series**
The FORM series are the first electrode arrays designed specifically for malformed cochleae. Each FORM array features the SEAL designed for better control of cerebrospinal fluid (CSF) leakage.

**CLASSIC Series**
CLASSIC Series were the first MED-EL electrode arrays to feature wave-shaped wires. They reflect MED-EL's commitment to creating soft, flexible electrodes for over 20 years. Each CLASSIC array also features double electrode contacts throughout as well as optimal number of contacts.

**ABI Array**
The ABI electrode array features 12 active contacts on a soft pre-shaped silicone paddle, with shaping arms fixed to a polyester mesh.

“... thin and flexible free-fitting electrodes demonstrated to best fulfill all criteria for atraumatic CI surgery.”

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FLEX Series

MED-EL’s softest and most flexible electrode arrays designed for the majority of patients and optimised for Structure Preservation and the preservation of residual hearing.

**FLEXSOFT™**
A 31.5 mm electrode array featuring FLEX-Tip technology for increased mechanical flexibility and enabling CCC.

**FLEX28™**
A 28 mm electrode array suitable for 96% of normal cochlear anatomies, featuring FLEX-Tip technology. Optimised for insertion into the apical region (CCC).

**FLEX24™**
A 24 mm electrode array featuring FLEX-Tip technology and designed for combined Electric Acoustic Stimulation (EAS) with insertion less than 1.5 turns. FLEX24 is formerly known as the FLEXEAS.

**FLEX20**
A 20 mm electrode array featuring FLEX-Tip technology and designed to be used in cases of partial deafness or for other specific needs or surgical preferences.
FORM Series

Designed specifically for malformed cochleae and for instances where leakage of cerebrospinal fluid (CSF) is expected. Each FORM array features an integrated SEAL designed to close off the cochlear opening making it easier for surgeons to apply additional tissue for sealing the area once the electrode array has been inserted.8

**FORM 24™**

A 26 mm electrode array featuring a SEAL designed for open (no obliteration or ossification) or malformed cochleae. Also for cases where CSF leakage is expected.

**FORM 19™**

A 19 mm electrode array featuring a SEAL designed to be used in cochleae with malformation, obliteration, or ossification. Also for cases where CSF leakage is expected.

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**Auditory Brainstem Implant (ABI)**

ABI is a solution for individuals with hearing loss due to a non-functioning auditory nerve (Neurofibromatosis Type II). The MED-EL ABI stimulates the cochlear nucleus (CN) and provides users with a variety of hearing sensations to assist with sound awareness and communication.

**ABI Array**

The ABI electrode array features 12 active contacts on a soft pre-shaped silicone paddle, with shaping arms fixed to a polyester mesh.
CLASSIC Series

For over 20 years, MED-EL has been the leader in providing a variety of soft, flexible electrode arrays. CLASSIC series were the first MED-EL's arrays designed with unique wave-shaped wires. Each CLASSIC array also features double electrode contacts throughout as well as optimal contact spacing.

STANDARD

A 31.5 mm electrode array designed for long cochlear duct lengths.

- 31.5mm Active Stimulation Range (ASR): 26.4mm
- Ø 1.3mm
- Ø 0.5mm
- 24 platinum electrode contacts
- Optimal spacing over a 26.4 mm stimulation range
- Diameter at basal end: 1.3 mm
- Diameter at apical end: 0.5 mm

MEDIUM

A 24 mm electrode array designed for cases where deep insertion is not desired or is not possible due to anatomic restrictions.

- 24mm Active Stimulation Range (ASR): 20.9mm
- Ø 0.8mm
- Ø 0.5mm
- 24 platinum electrode contacts
- Optimal spacing over a 20.9 mm stimulation range
- Diameter at basal end: 0.8 mm
- Diameter at apical end: 0.5 mm

COMPRESSED

A 15 mm electrode array designed for partial ossification or malformation of the cochlea.

- 15mm ASR: 12.1mm
- Ø 0.7mm
- Ø 0.5mm
- 24 platinum electrode contacts
- Optimal spacing over a 12.1 mm stimulation range
- Diameter at basal end: 0.7 mm
- Diameter at apical end: 0.5 mm

References:
2. Partial Deafness Cochlear Implantation at the University of Kansas: Techniques and Outcomes, Prentiss S; Sykes K; Stoecker H; J Am Acad Audiol, 21(1), 2010 Mar, p. 197–203
3. Achievement of Hearing Preservation in the Presence of an Electrode Covering the Residual Hearing Region, Ishii S; Moteki H; Suzuki N; Fukuoka H; Miyagawa M; Nishio H; Takumi Y; Iwasaki S; Jol C; Acta Otolaryngol, 2011 Jan 5
4. Atraumatic Round Window Deep Insertion of Cochlear electrodes, Skarzynski H; Lonner A; Gorda M; Podratzka A; Skarzynski P; Szklewska A, Acta Otolaryngol, 2011 Apr 15
5. Hearing Preservation After Complete Cochlear Coverage in Cochlear Implantation with the Free-Fitting FLEXSOFT Electrode Carrier, Helbig S; Baumann U; Hey C; Helbig M; Otol Neurotol, 2011 Jul 1
World’s Largest Selection of Electrodes for a Variety of Cochlear Duct Lengths (CDLs)

Cochleae may differ significantly in size and shape from one another as can individual cochlear duct lengths.\textsuperscript{6,7} MED-EL offers the largest selection of electrode arrays. Each implant recipient can be sure to receive the best possible electrode array for their unique cochlear anatomy.

Selecting the Right Electrode Array for Each CDL

The graphs at right may assist in selecting the appropriate electrode array.

To choose the appropriate electrode array with the assistance of radiological imaging, the diameter of the basilar turn is used. This value, labeled “A”, is measured from the Round Window to the opposite lateral wall, using the modiolus as the centre point (see Figure 1).

The “A” value may then be used for pre-operative assessment of the appropriate electrode variant by using the graphs at right (See Figure 2). Please use the appropriate graph depending on whether a Round Window or Cochleostomy approach is used.

The “A” value is only applicable for patients with normal cochlear anatomies.

Complete Cochlear Coverage (CCC)\textsuperscript{9}

Complete Cochlear Coverage means stimulating the cochlea from the base to the apical region in order to stimulate a maximum number of nerve fibres. Stimulation of the entire frequency range provides the implant user with the best possible outcomes in speech perception and sound quality.