



» MONOPOLAR HF-ELECTRODES «





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In order to keep risks to patients, users or third parties as low as possible, the instructions for use must be carefully followed. The use, reprocessing and testing of the instruments may only be carried out by trained specialists. Before using the instrument, the entire instructions for use must be read. This also applies to the instructions for use of the accessories used including the neutral electrode and the hf-generator. The specifications, safety instructions and warnings in the respective instructions for use must be strictly adhered to and followed. The electrodes from Tekno-Medical Optik-Chirurgie GmbH (Tekno) and their accessories are supplied non-sterile and must undergo the complete reprocessing cycle (cleaning, disinfection and sterilisation) before the first and each subsequent use.



1 SCOPE

MD

These instructions for use are valid for the re-usable **monopolar HF-electrodes, adapters and extensions** (hereinafter referred to as "**electrodes**") from Tekno-Medical Optik-Chirurgie GmbH. (See article list in the last paragraph of these instructions for use).

2 INSPECTIONS

Before each use of the electrodes, they must be checked for breaks, cracks, deformation, damage and functionality. Areas such as insulation, connections and working ends must be checked particularly carefully. Worn, corroded, deformed, porous or otherwise damaged instruments must be discarded.

3 HANDLING

All surgical instruments should always be handled with the utmost care when transporting, cleaning, maintaining, sterilizing and storing. This applies in particular to fine suction cannulas with small diameters. New instruments should undergo three machine cleaning cycles before initial sterilization. This leads to the formation of a passive layer on the surface that protects the instrument from discoloration and corrosion. New instruments should be stored without protective packaging, in a closed cupboard / drawer, in ambient air. It is important to ensure that the applicable hygiene regulations are adhered to. For new instruments that are to be stored for a longer period of time, we recommend removing them from the sealed plastic bag and treating them with a medical oil approved for sterilization.

4 PURPOSES

The monopolar HF electrodes are intended for coagulating or cutting tissue. They are connected to an HF generator using an electrode handle.

The maximum output voltage of the generator must not exceed **2 kVp** !

5 INDICATION

Monopolar HF electrodes are used in open surgery to cut, vaporize and coagulate biological tissue.

6 CONTRAINDICATIONS

The use of HF instruments is generally contraindicated when the use of other surgical techniques is indicated and in health conditions that inhibit the healing process, e.g.:

- impairment of blood supply,
- acute and chronic, local or systemic infections,
- deep and superficial infections,
- severe muscle, nerve or vascular diseases,
- systemic diseases and metabolic dysfunctions,
- Mental conditions that make participation in the rehabilitation program impossible (Parkinson's disease, alcoholism, drug addiction, etc.).

There are also contraindications,

- with general inoperability;
- if the patient is not prepared;
- if the technical requirements are not met.

The instruments are not intended for use on the central nervous and circulatory system.



7 PATIENT POPULATION

Apart from the contraindicated uses listed in these instructions for use, there are no restrictions on the patient population.

8 DISPOSAL

If the instruments can no longer be repaired and reconditioned, the instruments must be disposed of in accordance with the applicable country-specific regulations and laws.

9 WARNINGS



Failure to observe these application and safety instructions can lead to injuries, malfunctions or other unexpected incidents!

9.1 General safety-notes

- Before each use, the instrument must be inspected for correct function and visible damage and wear, e.g., cracks or breaks.
- The transport packaging is unsuitable for the high temperatures during autoclaving and must be discarded before the first sterilisation.
- Do not overload the instruments. Overloading due to excessive force can lead to breakage, bending and malfunction of the medical device and to injury to the patient or user. Do not bend bent instruments back into their original position, risk of breakage.
- Do not use a damaged or defective product. Sort out and label damaged product immediately and exclude further use.

9.2 HF-specific safety-notes

- Risk of burns due to HF current
- For patients with pacemakers, check their compatibility with HF radiation.
- Ensure that the HF handle is correctly connected to the generator. In addition, check that the electrode is firmly inserted into the HF handle. Care must be taken to avoid damaging the HF handle and / or injuring the patient or surgical staff.
- Instruments that are temporarily not in use must always be stored away from the patient to prevent patient injury in the event of accidental activation of the HF current.
- Only activate the HF current if the contact surfaces are within the visual range and have good contact with the tissue to be treated. Do not touch any other metallic instruments, trocar sleeves, optics, cables or similar.
- Remove any disinfectant residue from the patient's body.
- Only use the instrument if the insulation is undamaged.
- Do not use explosive / flammable substances during the operation.
- Do not place the instrument on the patient.
- Avoid carbonisation of the tissue!
- The power of the HF generator must always be set as low as possible in order to achieve only the desired effect.
- Always lay the patient leads so that there is no contact with the patient or other leads.
- Check the possible use of bipolar applications if there is a risk that the HF current could flow through relatively small cross-sectional areas of the patient's body.
- Use a suitable neutral electrode.
- Position the neutral electrode so that the patient is in contact with the entire surface of the neutral electrode.
- Risk of burns due to excessive heating of the neutral electrode!

Always check the electrodes and handles for:

- Visibly exposed metal of the electrode shaft at the connection point to the handle,
- poor electrical connection between the handle and the shaft of the electrode,
- poor fit between the handle and the shaft of the electrode.

To connect and disconnect the cable, always hold the plug only, never pull on the cable. The use of damaged cables can lead to considerable danger. Check the cable for visible damage before each use.



9.3 Length of accessories

Note (in accordance with DIN EN IEC 60601-2-2, subsection 202.7.9.2.14 k):

The length of the handles with connection cable is between 3 – 5 meters.

The length of the electrodes (=working length) is between 30 – 170 mm.

10 COMBINATIONS

The electrodes are designed for use with the following products:

Article No.	Designation
90020-00	Electrode handle with 3m cable
90021-00	Electrode handle with 5m cable
90031-00	Electrode handle with 5m cable
90038-01	Electrode extension 150 mm
90038-02	Electrode extension 150 mm
90030-20*	Electrode handle, 4mm shaft with 3m cable
90030-01	Electrode handle with 3m cable
90021-20	HF HANDLE WITH 3M CABLE, WITHOUT BUTTONS
90030-03*	HF HANDLE WITH 3M CABLE, WITH BUTTONS
90030-04*	Electrode handle with 5m cable
90030-21*	Electrode handle 4mm shaft with 5m cable
90020-02*	HF HANDLE WITH 3M CABLE, PUSH BUTTONS
90030-30*	HF HANDLE 4MM, REUSABLE
90030-05*	HF HANDLE WITH 5M CABLE, WITH BUTTONS,
90020-03*	HF HANDLE WITH 3M CABLE, PUSH BUTTONS
90030-23*	HF HANDLE WITH 5M CABLE, PUSH BUTTONS
90020-04	Electrode handle with 3m cable

11 REPROCESSING

11.1 Generally

In general, surgical instruments may only be reprocessed by persons who have the necessary expertise for the intended activities. Detailed information on the reprocessing of surgical instruments can be found in the "**Red Brochure**" of the AKI. Under www.a-k-i.org you will also find links to laws, standards and publications of processing expert committees. Due to the product design and the materials used, no defined limit of maximum feasible applications can be set. The service life of medical devices is determined by their function and gentle handling. Frequent reprocessing has little effect on the product. The end of product life is usually determined by wear and damage caused by use.

The cleanability and sterilizability of the instruments have been proven through 200 reprocessing cycles and are valid. Accumulation of cleaning agents or other harmful substances can be ruled out with the reprocessing procedures described in these instructions.

11.2 On-site preparation

Immediately after use, remove coarse dirt from the instruments. Do not use any fixing agents or hot water (>40°C), as this will cause residues to freeze and may affect the success of cleaning.

11.3 Transport

Safe storage in a closed container and transport of the instruments to the reprocessing site to avoid damage to the instruments and contamination to the environment.



11.4 Preparation for decontamination

If possible, the instruments must be disassembled or opened for reprocessing. The instruments must be stored on machine-compatible instrument carriers in a dishwasher-safe manner. The condition of the instrument panels must not impair the subsequent cleaning and disinfection by means of sound or rinsing shadows.

11.5 Manual pre-cleaning

For manual cleaning / pre-cleaning, never use metal brushes, metal sponges or abrasive cleaning agents. Place the instruments in cold water for at least 5 minutes. If possible, disassemble the instruments and clean them under cold water with a soft brush until no residue is visible. Place instruments in an ultrasonic bath at 40°C for 15 minutes with 0.5% alkaline or enzymatic cleaner and sonicate. Remove instruments and rinse with cold water. The cleaning solution should be changed at least once a day, more often if necessary. Too much contamination impairs the cleaning effect and increases the risk of corrosion. National laws and guidelines must be observed.

11.6 Automated cleaning

Place the opened instruments in a sieve tray on the slide-in carriage and start the cleaning process. Disassemble instruments as much as possible.

Step	Parameter	
Pre-rinsing 1	Rinsing-temperature + water quality	Cold tap water
	Exposure time	60 s
Pre-rinsing 2	Rinsing-temperature + water quality	Cold tap water
	Exposure time	180 s
Cleaning	Cleaning-temperature	45°C
	Water quality	Tap water
	Exposure time	300 s (worst case condition) / RKI Recommendation: 600 s
	Detergent	Neodisher Medizym
Neutralization	Concentration	0,50 %
	Rinsing-temperature	40°C
	Water quality	Tap water
	Exposure time	180 s
Post-rinsing	Neutralizing detergent	Neodisher Z
	Concentration	0,10 %
	Rinsing-temperature	40 °C
	Water quality	Deionized water
Post-rinsing	Exposure time	120 s

11.7 Automated (thermal) disinfection

Step	Parameter	
Thermal Disinfection	Disinfection-temperature	90°C (A ₀ 3000)
	Water quality	Deionized water
	Exposure time	300 s
Drying	Drying of the outside of the instruments by the drying cycle of the washer-disinfector. If necessary, manual drying can also be achieved with the help of a lint-free cloth.	

For UK: The washer disinfection cycle should run at a minimum of 90°C for a minimum of 1 minute.

11.8 Functional testing

After each cleaning, the products must be macroscopically clean, i.e., free of visible contamination. Stained products must be sorted out immediately and given special treatment. All moving parts must be checked with particular attention. If errors or damage occur, the products must be sorted out immediately. Functional testing and maintenance of the instruments must be carried out extremely thoroughly. A suitable maintenance procedure increases the service life of the instruments.

11.9 Packaging

Select standard-compliant packaging of the instruments for sterilization according to DIN EN ISO 11607-1, DIN EN 868-2 and DIN EN 868-8.



11.10 Sterilization

Sterilization of the products using a fractionated vacuum process (according to DIN EN ISO 17665), taking into account the respective national requirements.

Pre-vacuum	3 times
Sterilization temperature	134 °C
Sterilization time	5 min
Drying time	20 min.

The use of other sterilization methods is beyond our responsibility.

Sterilization parameters UK:

Sterilization of the instruments by applying a fractionated pre-vacuum process (according to Health Technical Memorandum 01-01 Part C):

- Heat up to a minimum sterilization temperature of 134° - 137°C (maximum temperature 137°C).
- Minimum holding time: at least 3 min.

11.11 Storage



The sterilized instruments must be stored in suitable packaging in a dry, clean and dust-free environment and at a constant level of humidity. The distance between the floor and the shelf should be at least 30cm.



The storage period is to be determined by the user himself.
Protect from sunlight!

11.12 Information on the validation of the reprocessing

The following materials and machines were used in the processing process:

Detergent	Neodisher Medizym 0,5 % (v/h)
Neutralisator	Neodisher Z 0.1% (v/v)
Washer-disinfector (RDG)	Miele PG 8535
Steam-autoclave	Lautenschläger ZentraCert
For details see test reports: 23277 / 23278 / 23279 (CleanControlling Medical GmbH & Co. KG, 08-2021)	

12 ADDITIONAL INSTRUCTIONS



If the chemicals and machines described above are not available, it is up to the user to validate his process accordingly. It is the responsibility of the user to ensure that the remanufacturing process, including resources, materials and personnel, is suitable to achieve the required results.

The state of the art and national laws require the following of validated processes.

During reprocessing, the temperature acting on the instrument must **not** exceed **140°C**.

In principle, mechanical cleaning and disinfection are always preferable to manual cleaning. With mechanical cleaning and disinfection, there is greater safety in the process. Never use metal brushes, metal sponges or abrasive cleaning agents for manual cleaning/pre-cleaning. Strongly alkaline cleaning agents damage plastics and anodized coatings. The instruments must not be sterilized in hot air sterilizers. Do not use caustic cleaning agents. Do not use strong oxidizing cleaning agents. Agents with a neutral pH value (7.0) are best suited.

13 REPORTING PRODUCT ISSUES



In accordance with the requirements of Regulation (EU) 2017/745 on medical devices and our quality management system, all product problems must be reported to the manufacturer.

During business hours you can reach us by phone at +49 (0) 07461 / 1701-0.

Outside of regular business hours, please send an email to safety@tekno-medical.com.

Serious incidents must also be reported to the competent authority in their locality.

14 WARRANTY

The products are made of high-quality materials and undergo quality control before delivery. If errors still occur, please contact our service. Tekno-Medical cannot guarantee that the products are suitable for the respective procedure. Tekno-Medical assumes no liability for incidental or resulting damages. Tekno-Medical accepts no liability if it is proven that these instructions for use have been violated.



Attention: In the case of the use of the instruments in patients with Creutzfeldt-Jakob disease or its variants (vCJK, BSE, TSE), Tekno-Medical declines any responsibility for reuse



15 SERVICE AND REPAIR












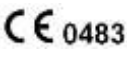
Do not carry out repairs or modifications to the product on your own. Only authorized personnel of the manufacturer are responsible and intended for this.

 All returned products must have gone through the entire remanufacturing process before being returned for repair. For returns, use our RMA request form and decontamination certificate.

Forms at: https://www.tekno-medical.com/de/service/repair_service

16 SYMBOLS

The symbols used in this instruction and on the label have the following meaning according to DIN EN ISO 15223-1:

	Attention!		Manufacturer
	Medical device		Date of manufacturing
	Non-sterile		Read the instructions for use
	Catalogue number		Protect from sunlight
	Lot-number		Store in a dry place
	Unique device identification		
	CE mark with the number of the notified body: mdc – medical device certification GmbH Kriegerstrasse 6, D – 70191 Stuttgart		



REF

17 PRODUCT LISTING

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Article No.	Designation
90022-01	BLADE ELECTRODE 2.5X20MM; 2.4MM D. SHANK 40MM, PACK OF 5 ST.
90022-03	Angled knife electrode, 1.6 x 20 mm, diameter 2.4 mm, rhombus-shaped, 40 mm shaft
90022-05	Knife electrode 25 x 3.2 mm; 2.4 mm diameter, shaft 130 mm
90022-10*	Knife electrode 1.5x17mm, shaft 2.4mm fine
90023-01	NEEDLE ELECTRODE 0.7X20MM; THICK, 2.4MM D. SHANK 40MM
90023-02	Needle electrode 0.5 x 20 mm; thin, 2.4 mm diameter, shaft 40 mm
90023-03	NEEDLE ELECTRODE 0.8X20MM, 2.4MM D. ANGLED, SHAFT 40MM
90023-04	NEEDLE ELECTRODE 0.7X20MM, 2.4MM D. ANGLED, SHAFT 130MM
90023-05	NEEDLE ELECTRODE 0.7X12MM; THICK, 2.4MM D. SHANK 130MM
90023-06	Needle electrode 0.5 x 12 mm; thin, 2.4 mm diameter, shaft 130 mm
90023-07*	Tungsten electrode, insulated, straight 0.5 x 20 mm, 2.4 mm diameter.
90023-10*	Needle electrode for micro-dissection, diameter 2.4 mm
90024-01	BALL ELECTRODE 2MM D., SHAFT 2.4MM 40MM, PACK OF 5 ST.
90024-02	BALL ELECTRODE 4MM D., SHAFT 2.4MM 40MM, PACK OF 5 ST.
90024-03	BALL ELECTRODE 6MM D., SHAFT 2.4MM 40MM
90024-06	BALL ELECTRODE 2MM D., SHAFT 2.4MM 130MM
90024-07	BALL ELECTRODE 4MM D., SHAFT 2.4MM 130MM
90024-08	BALL ELECTRODE 6MM D., SHAFT 2.4MM AL 130MM
90025-01	RING ELECTRODE 5MM, SHAFT 2.4MM, 40MM PACK 5 PCS.
90025-02	RING ELECTRODE 10MM, SHAFT 2.4MM, 40MM PACK 5 PCS.
90025-03	RING ELECTRODE 14MM, SHAFT 2.4MM, 40MM PACK 5 PCS.
90025-06	RING ELECTRODE 5MM, SHAFT 2.4MM, 100MM
90025-07	RING ELECTRODE 10MM, SHAFT 2.4MM, 130MM
90025-08	RING ELECTRODE 15MM, SHAFT 2.4MM, 130MM
90026-01	Loop electrode 10x10mm, shaft 2.4mm, 150mm
90026-02	Loop electrode 15x15mm, shaft 2.4mm 150mm
90026-03	Loop electrode 15x20mm, shaft 2.4mm 150mm
90026-04	Loop electrode 20x20mm, shaft 2.4mm 150mm
90026-05	Loop electrode 20x25mm, shaft 2.4mm aluminum 150mm
90026-20*	Loop electrode 10 x 25 mm, shaft 2.4 mm
90026-21*	Loop electrode 15 x 25 mm, shaft 2.4 mm
90026-22*	Loop electrode 20 x 25 mm, shaft 2.4 mm
90027-01	Loop electrode 10x10mm, shaft 4mm 150mm
90027-02	Loop electrode 15x15mm, shaft 4mm aluminum 150mm
90027-03	Loop electrode 15x20mm, shaft 4mm 150mm
90027-04	Loop electrode 20x20mm, shaft 4m 150mm
90027-05	Loop electrode 20x25mm, shaft 4mm aluminum 150mm
90027-50*	Loop electrode, loop 15x25mm 4mm, working length 115mm
90027-51*	Loop electrode triangle 25x20mm for shaft Ø 4mm



90032-01	Knife electrode 2.5 x 20 mm; 4 mm diameter, 30 mm shaft
90032-02	MONOPOLAR LANCET ELECTRODE SHAFT DIAMOND-SHAPED 25X2.5MM, 4MM
90032-03	Angled lancet electrode, 1.6 x 20 mm, 4 mm diameter, rhombus-shaped, 30 mm shaft
90032-05	Knife electrode 2.4 x 20 mm; diameter 4 mm, shaft 30 mm
90033-01	NEEDLE ELECTRODE 23X0.8MM; THICK, 4MM D. SHANK 40MM
90033-03	Needle electrode 23x0.5mm, thin, 4mm diameter, 30mm shaft
90033-05	Needle electrode 12 x 0.8 mm; thick, 4 mm diameter; shaft 130 mm
90033-06	NEEDLE ELECTRODE 0.8X20MM, 4MM D. ANGLED, SHAFT 30MM
90033-07	NEEDLE ELECTRODE 0.8 X 20MM, D. 4MM ANGLED, SHAFT 130MM
90034-00	BALL ELECTRODE 2MM D., SHAFT 4MM 30MM
90034-01	BALL ELECTRODE 4MM D., SHAFT 4MM 30MM
90034-02	BALL ELECTRODE 6MM D., SHAFT 4MM 30MM
90034-04	BALL ELECTRODE 2MM D., SHAFT 4MM AL 130MM
90034-05	BALL ELECTRODE 4MM D., SHAFT 4MM 130MM
90034-06	BALL ELECTRODE 6MM D., SHAFT 4MM 130MM
90034-07	Ball electrode 2mm diameter, shaft 2.4mm, 40mm, angled
90034-08	SPATULA ELECTRODE 2.5X20MM, SHAFT 2.4MM 40MM
90034-09	Spatula electrode 2.5x20mm, shaft 2.4mm 40mm, angled, pack of 5.
90034-11	Ball electrode 4mm diameter, shaft 2.4mm aluminum 40mm, angled
90034-13	Ball electrode 4mm diameter, shaft 4mm aluminum 30mm, angled
90034-14	Ball electrode 4mm diameter, shaft 4mm aluminum 130mm, angled
90034-15	Ball electrode 2mm diameter, shaft 4mm aluminum 30mm, angled
90034-20	SPATULA ELECTRODE 2.5X20MM, SHAFT 2.4MM AL 130MM
90034-21	Spatula electrode 2.5x20mm, shaft 2.4mm aluminum 130mm, angled
90034-22	Spatula electrode 2.5x20mm, shaft 4.0mm 30mm
90034-24	Spatula electrode 2.5x20mm, shaft 4.0mm 130mm
90035-01	RING ELECTRODE 10MM, SHAFT 4MM, 30MM U MAX: 4.3 KVP
90035-02	RING ELECTRODE 5MM, SHAFT 4MM, 30MM PACK 5 PCS.
90035-03	RING ELECTRODE 14MM, SHAFT 4MM, 30MM PACK 5 PCS.
90035-05	RING ELECTRODE 10MM, SHAFT 4MM, 130MM
90035-06	RING ELECTRODE 5MM, SHAFT 4MM, 130MM
90036-01*	Band loop electrode shaft, 10mm diameter, band 1.0x0.2mm, shaft 4mm, insulated
90036-02*	Band loop electrode shaft, 17mm diameter, band 1.0x0.2mm, shaft 4mm, insulated