FEHLING Treede Maxposition blade
MMZ-7.....Treede Maxposition blade 44 x 40 mm, Ø 60 MMZ-8.....Treede Maxposition blade 44 x 30 mm, Ø 40
Accessories LMT-4.....Cardan screwdriver (optional) LMT-4L.....Cardan screwdriver SW 4 mm, 290 mm (optional) LMT-4T.....Cardan screwdriver Torx T15, 290 mm (optional) MRN-3.....Transthoracic atrial retractor - blade guide, 220 mm MRU-9.....Guiding clamp for atrial blade and retainer (optional)

⚠	This instrument or medical device is supplied non-sterile. It must be reprocessed before use. Before reprocessing, the instrument must be risk-assessed in accordance with the RKI guidelines (non-critical/semi-critical/critical A/B/C). The Treede Maxposition blade may only be used, reprocessed and disposed of by qualified medical personnel! The Treede Maxposition blade is intended for reuse.

1) Intended purpose

Retractors and retractor components, which are used in a surgically invasive and short-term manner, serve to spread or spread various tissue structures, such as skin, bones, muscles and organs.

Supplementary information on the intended purpose

Duration of application: Spreaders (retractors) and retractor components are intended for short-term use.

Field of application: Spreaders (retractors) and retractor components are used in all patients where tissue must be temporarily (max. 24 hours) held away to provide the surgeon with a better view of the underlying tissue.

User profile: Spreaders (retractors) and retractor components may only be used by medically trained specialists (e.g. medical specialists).

Application environment: Spreaders (retractors) and retractor components are only used under controlled environmental conditions (e.g. operating theater).

Anticipated patient population: No restrictions

2) Indications

Surgical procedures that require the temporary retracting and holding of various tissue structures, such as skin, bones, muscles and organs, to reach the body structure to be treated. The choice of retractor and accessory components depends on the anatomical and physiological conditions as well as the area of application. Make sure that the retractors or retractor blades used are the right size and have sufficient stability.

3) Contraindication

All applications that run counter to the physical and/or mechanical properties of the individual retractor model are considered contraindicated. There are no generally valid contraindications for the use of retractors.

Nevertheless, attention must be paid to increased risks that could arise from the anatomical and physiological conditions as well as the clinical picture of the patient. These include, for example, an increased risk of bone fractures in osteoporosis.

4) Possible side effects

The following side effects are described in the medical literature, which may also occur during the intended purpose of retractors:

- Infections
- Wound healing disorders
- Lesions of structures (tissue, nerves, vessels)
- Necrosis
- Ischemia

⚠	Medical devices may contain PEEK, chromium and nickel, for example. The materials used are biocompatible, but they can trigger allergic reactions or intolerances.

5) Before use

The Treede Maxposition blade is supplied non-sterile and must be cleaned and sterilized by the user before first use and before each subsequent use (see chap. *6) Reprocessing*).

⚠	A safety inspection must be carried out before each use. Check for sharp edges, cracks, fractures, mechanical malfunctions and missing components (see chap. *6) Reprocessing* under *"Maintenance, inspection and testing"*).
⚠	Handle the Treede Maxposition blade with care during storage, transportation and cleaning! Avoid impacts and point loads on the Treede Maxposition blade to prevent possible consequential damage! Do not overload functional parts!
⚠	Only use flawless and sterilized products!

6) Reprocessing

⚠	The medical device must be prepared before use. Before reprocessing, it must be risk-assessed according to the RKI guidelines (non-critical/semicritical/critical A/B/C).
⚠	The national legal regulations, national and international standards and guidelines as well as the company's own hygiene regulations for preparation must be complied with.
⚠	The respective national regulations for the treatment of instruments used on patients with Creutzfeldt-Jakob disease (CJD), suspected CJD or possible variants must be observed.
⚠	The instruments may only be used, prepared and disposed of by qualified medical personnel.

⚠	Handle the instruments with care during storage, transportation and cleaning! Avoid impacts and localized pressure on the instruments in order not to cause any possible consequential damage! Do not overload functional parts!
⚠	Do not clean containers with plastic components using oxidative processes (process with hydrogen peroxide H_2O_2, e.g. Orthovario or Oxivario from Miele). These processes lead to oxidative aging of the material, which may not be recognizable by visible discoloration or embrittlement.

Limitations during reprocessing	Frequent reprocessing has little effect on the label of the instruments and does not impair the function of the instruments. The end of the product's life is normally determined by wear and damage caused by use (e.g. damage, illegible labeling, functional failure - see also *"Maintenance, inspection and testing"*). When used and reprocessed properly, the instruments have been shown to withstand at least 500 processing cycles.
General information on reprocessing	Reprocessing is based on a validated procedure. All cleaning steps mentioned (manual pre-cleaning, automated/manual cleaning, manual disinfection and sterilization) were validated with the parameters specified in each case and listed under "Validated procedure". For validation, the recommended reprocessing agents (cleaning agents: Neodisher® MediClean forte (Dr. Weigert); disinfectant: Korsolex® med AF (Bode Chemie GmbH)) is used. Both water of drinking water quality and demineralized water (demineralized, microbiologically at least drinking water quality) are used for cleaning. Automated preparation is preferable to manual cleaning because it provides a better and safer cleaning result. It is also possible to clean our instruments with other tested and approved chemicals that have been recommended by the chemical manufacturer with regard to their material compatibility. Please always observe the manufacturer's instructions regarding concentration, exposure time, temperature and renewal of cleaning agents and disinfectants. All application instructions of the chemical manufacturer must be strictly adhered to. Otherwise, this can lead to optical material changes or material damage, such as corrosion, fractures or premature aging.
Pre-treatment at the point of use	Pre-cleaning: Care must be taken to ensure that blood, tissue and medication residues are removed from the instruments with a disposable cloth/paper towel immediately after completion of the procedure and that they are immediately sent for machine cleaning. Once the instruments have been pre-treated, visual inspections must be carried out to ensure that they are complete. The instruments must be transported from the place of use to the place of preparation in such a way that neither users, third parties, the environment nor the medical devices are endangered or damaged (placement in closed, puncture-proof containers and - if necessary - use of protective caps).

Preparation before cleaning	It is recommended that the instruments be cleaned immediately after use, as dried residues are difficult to remove from hard-to-reach places. Do not place in NaCl solutions (otherwise risk of pitting or stress corrosion cracking). Instruments that have been joined together during use must be disassembled back to their original state before cleaning.
Disassembly	See chap. *10) Disassembly*
Manual pre-cleaning	<u>Validated procedure:</u> Equipment: Basin Soft brush Water pressure gun (or similar) Cleaning agents: Neodisher® MediClean forte (Dr. Weigert) <u>Procedure/parameters:</u> • If possible, rinse the instrument in disassembled condition under cold running water (drinking water quality, < 40 °C) until all visible soiling has been removed. Use a soft brush (not a wire brush!) to remove stubborn dirt. • Cavities, gaps, slits and lumen must be rinsed intensively (> 10 seconds) with cold water (drinking water quality, < 40 °C) using a water pressure gun (or similar). • Soak the products for 10 – 30 minutes in a solution containing 0.5 – 2 % Neodisher® MediClean forte with water (drinking water quality, < 40 °C). • Only use an approved solution of a cleaning agent that does not have a protein-fixing effect. The instructions of the cleaning agent and disinfectant manufacturer must be observed. • Make sure that all areas of the instrument come into contact with the solution. • If necessary, moving parts on the instrument are moved back and forth in the cleaning bath. • During the exposure time, remove coarse soiling with a suitable brush (not a wire brush!). • Rinse the instrument for 1 minute under cold demineralized water (see *"General information on reprocessing"*) and move any moving parts on the instrument back and forth.
Cleaning/ disinfection	If possible, a washer-disinfector that uses thermal disinfection and complies with DIN EN ISO 15883 is preferable.
Cleaning: Machine	Avoid overfilling instrument trays and wash trays - only use suitable instrument holders. Take particular care to ensure that the tips do not get stuck in the grid when inserting and removing the instruments in/from the sieve baskets. <u>Validated procedure:</u> Equipment: Cleaning and disinfection machine G 7835 CD (Miele) / PG 8535 (Miele) Cleaning program: Des-Var-TD (G 7835 CD) Cleaning agents: Neodisher® MediClean forte (Dr. Weigert)

	<u>Preparation:</u> • Articulated instruments must be inserted into the appliance in such a way that the joints are open or disassembled, if possible, and the water can drain out of cavities and blind holes. • If applicable, relax springs • Make sure that all cavities are completely flushed out, including the inside. • Make sure that no areas are left unwashed. • Connect the Luer connections of the instruments, if available, to the Luer lock irrigation attachment of the washer-disinfector. <u>Procedure/parameters:</u> • 3 minutes pre-rinse with cold water (drinking water quality, < 40 °C) • Emptying • 10 minutes cleaning with a solution of 0.5 – 2 % Neodisher® MediClean forte in water (drinking water quality) at 55 °C • Emptying • 2 minutes rinsing with water (drinking water quality, < 40 °C) • Emptying • 1 minute rinse with cold demineralized water (< 30 °C) • Emptying • 5 minutes thermal disinfection with demineralized water (> 90 °C) • 30 minutes drying (90 °C) After machine cleaning, cavities, blind holes, etc. in particular have to be inspected for visible dirt. If necessary, repeat the cycle or clean manually.
Cleaning: Manual	<u>Validated procedure:</u> Equipment: Basin Soft brush Water pressure gun (or similar) Bandelin Sonorex Digitec Cleaning agents: Neodisher® MediClean forte (Dr. Weigert) <u>Procedure/parameters:</u> • If possible, place the disassembled instruments in cold water (drinking water quality, < 40 °C) for 10 minutes. • Operate moving parts, if any, through their full range of movement. • Clean the instruments with a soft brush (not a wire brush!) until no visible contamination remains. • Rinse the instruments for at least 20 seconds using a water pressure gun (or similar). <u>Ultrasonic cleaning:</u> • 10 minutes sonication at < 40 °C with 0.5 – 2 % detergent solution at 35 kHz • After sonication, rinse the instruments for at least 20 seconds using a water pressure gun (or similar).

	• Rinse the instruments with water (drinking water quality, < 40 °C) for at least 10 seconds. • Deionized water (< 40 °C) must be used for the final rinse. The instruments are rinsed with deionized water for at least 30 seconds. It must be ensured that no residues remain on the products.
Disinfection: Manual	Disinfectant solutions can be used in accordance with the instructions on the label (see chemical manufacturer's instructions). <u>Validated procedure:</u> Equipment: Basin Bandelin Sonorex Digitec Disinfectant: Korsolex® med AF (Bode Chemie GmbH) <u>Procedure/parameters:</u> • After cleaning, immerse the products for 5 minutes in an ultrasonic bath (35 kHz, < 40 °C) with a suitable disinfectant (e.g. 0.5 % Korsolex® med AF). Ensure that all surfaces are wetted with the disinfectant. If necessary, move mobile parts in the disinfection bath before switching on the ultrasonic cleaner. • After disinfection, rinse all products thoroughly with deionized water (< 40 °C) for at least 1 minute to remove the disinfectant and, if necessary, move mobile parts back and forth on the instrument. • It must be ensured that no residues remain on the products. • Drying with sterile, oil-free compressed air.
Drying	If drying is achieved as part of the cleaning/disinfection cycle, 120 °C should not be exceeded. Then dry with suitable compressed air in accordance with RKI recommendations. Pay particular attention to drying areas that are difficult to access.
Assembly	See chap. *9) Assembly*
Maintenance, inspection and testing	For instruments with moving components that are exposed to friction (e.g. joints), an instrument oil based on paraffin/white oil (in accordance with the applicable European or United States Pharmacopoeia) that is biocompatible, steam-sterilizable and steam-permeable must be applied before sterilization. Such points may also be indicated by an oil can symbol. Instruments must not be treated with care products containing silicone. These can lead to stiffness and impair the effectiveness of steam sterilization. A safety check of the instruments must be carried out before each use. Check for sharp edges, cracks, fractures, mechanical malfunctions and missing components. Check instruments with moving parts for ease of movement (avoid excessive play). If applicable, check the locking mechanisms. All instruments: Visually inspect for damage and wear using a magnifying lamp. Pay particular attention to critical points on moving parts and in the work area. Defective, damaged instruments whose labeling is no longer legible must be sorted out and cleaned and disinfected before being returned to the man-

	ufacturer. Repairs may only be carried out by the manufacturer or workshops authorized by the manufacturer. A confirmation form for this process is available from the manufacturer. Instruments that can no longer be repaired must be disposed of in the standard hospital scrap metal disposal system. In this case, especially for surgical instruments with pointed or sharp edges, it is important to ensure safe storage in a closed, puncture- and break-proof disposable container. Do not use damaged instruments!
Packaging	Individually: in accordance with standards of the DIN EN 868, DIN EN ISO 11607 and DIN 58953 series. Sets: Sort instruments into trays provided for this purpose or place them on all-purpose sterilization trays. A suitable method must be used to pack the trays.
Sterilization	Steam sterilization in a fractionated vacuum process in an appliance according to DIN EN 285 and DIN EN ISO 17665 (part 1 and 2). To avoid staining and corrosion, the steam must be free of ingredients. The recommended limit values for the ingredients of feed water and steam condensate are defined in DIN EN 285. <u>Validated procedure:</u> Equipment: Tuttnauer autoclave type B 3870 EHS / Lautenschläger ZentraCert <u>Procedure/parameters:</u> Cycle type: 3 pre-vacuum phases Sterilization temperature: 132 – 134 °C Holding time: 4 – 5 minutes Drying time: 20 minutes When sterilizing several instruments in one sterilization cycle, the maximum load of the sterilizer must not be exceeded (see appliance manufacturer's instructions).
Storage	In accordance with Section 4 MPBetreibV and standards of the DIN EN 868, DIN EN ISO 11607 and DIN 58953 series. Instruments should be stored in a dry place at room temperature, clean and protected from damage and mechanical influences (avoidance of condensation, damage). If applicable, always store instruments in a tension-free state. This helps to prevent premature fatigue of the spring tension. Instruments must be transported to the place of use in a closed, puncture-proof sterile container.
Waste disposal	These products are mainly made of steel. These must be cleaned before disposal. Disposal can take place at a scrap metal recycling center. To protect employees, care should be taken to ensure that any pointed or sharp edges are protected.

The instructions listed above have been validated by the medical device manufacturer as suitable for the preparation of a medical device for reuse. The person carrying out the preparation is responsible for ensuring that the preparation actually carried out with the equipment, materials and personnel used in the preparation facility achieves the desired result. This requires verification and/or validation and routine monitoring of the process. Likewise, any deviation from the instructions provided by the preparer should be carefully evaluated for effectiveness and possible adverse consequences.

⚠	Any modification to the product or deviation from these instructions for use will result in exclusion of liability! Subject to change without notice.

(7) Configuration and application

The size-adjustable Treede Maxposition blade (Fig. 1a) consists of three elements of different sizes: Base element (1), primary element (2) and secondary element (3) (Fig. 1b). An element consists of a box module (4) and fan blades (5) (Fig. 1a).

Using a suitable screwdriver, e.g. the Torx LMT-4T Cardan screwdriver (see chap. *8) Required accessories*), the fan blades are adjusted by the gear axis, which is located inside the box module (4), and the desired retracting width can be set.

The primary and secondary elements are marked in gold color at the ends of the fan blades (see Fig. 1b). This provides better orientation when extending the individual elements of the Treede Maxposition blade.

With the MRN-3 hook guide (see chap. *8) Required accessories*), the Treede Maxposition blade is infinitely adjustable in angle and can be raised or lowered. To do this, screw the hook guide MRN-3 into the threaded joint (6). A guide clamp, e.g. the MRU-9 guide clamp for atrial holders and hold-down devices (see chap. *8) Required accessories*), can be used for blade removal or blade insertion.

The Treede Maxposition blade is used in particular for mitral valve surgery to provide better access and an optimal view of the operating field.

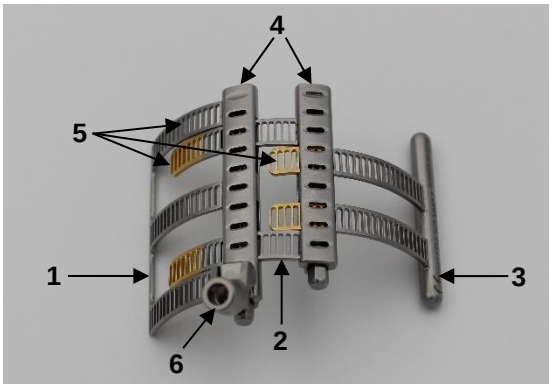


Fig. 1a: Treede Maxposition blade

Base element | Primary element (2) | Secondary element (3)

Fig. 1b: Treede Maxposition blade in its individual elements

⚠	Only use flawless and sterilized products!
⚠	Before inserting the Treede Maxposition blade, ensure that the surgical site has been properly prepared.
⚠	Before using the Treede Maxposition blade, make sure that its functionality is not impaired and that there is no damage!

⚠	Medical devices made of ferromagnetic materials must not be exposed to a magnetic field or external electromagnetic influences.
⚠	Medical devices containing metals are electrically conductive and must not be exposed to a power source or external electrical influences.
⚠	The choice of Treede Maxposition blade depends on anatomical and physiological conditions as well as the area of application. It is important to ensure that the Treede Maxposition blade used is the right size and geometry as well as sufficient stability.
During the application	
Before the Treede Maxposition blade can be used, the surgical field must be prepared accordingly. This will not be discussed in more detail below. The Treede Maxposition blade must be inserted into the atrium when fully retracted.	
⚠	When inserting the Treede Maxposition blade, make sure that no tissue structures are unintentionally injured (especially nerves and blood vessels)!
⚠	If the pressure on the tissue is too high and too long, necrosis and other lesions can occur!
⚠	Overloading can cause plastic deformation or breakage of the Treede Maxposition blade!
⚠	Make sure that the appropriate screwdriver is always fully seated on the transport mechanism of the box module when extending or retracting the Treede Maxposition blade.
⚠	Observe the order in which the primary and secondary elements are extended and retracted!
⚠	When setting the desired retracting width of the Treede Maxposition blade, make sure that the primary and secondary elements are only extended until the first two gold-colored slotted holes in the corresponding box module are fully visible. Once the required retracting width of the Treede Maxposition blade has been set for the operation, this retracting width must not be adjusted during the procedure. Do not extend the primary and secondary elements to the end of the box module, as they could then fall out completely and possibly into the patient.

Extending the elements of the Treede Maxposition blade

To set the desired retracting width of the elements, first extend the secondary element (3) using the appropriate screwdriver (7).

To do this, turn the transport mechanism on the box module of the primary element (4b) clockwise using a suitable screwdriver (7) (Fig. 2a) until the first two gold-colored slotted holes are extended from the box module of the primary element (4b), as shown in Figure 2b.

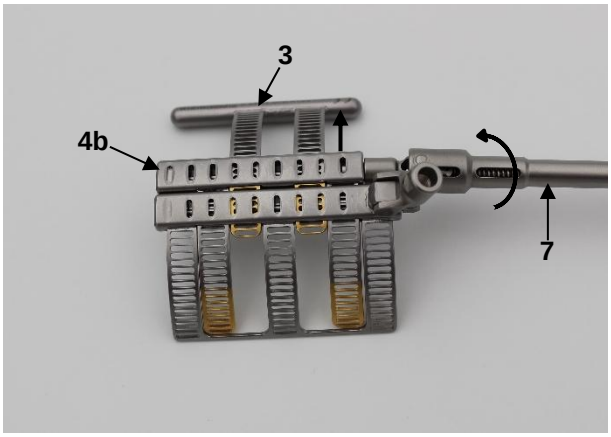


Fig. 2a

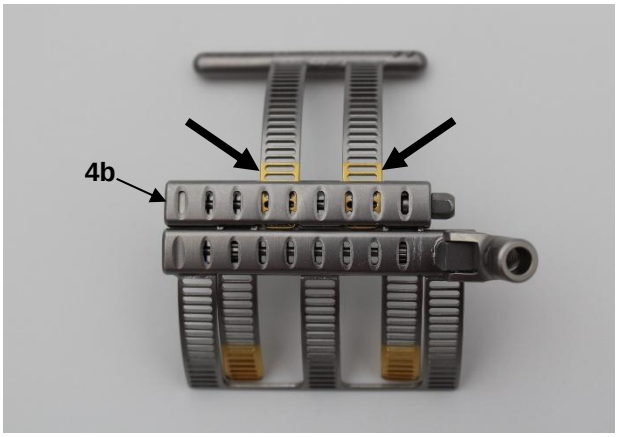


Fig. 2b

Then extend the primary element (2) using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the base element (4a) clockwise using a suitable screwdriver (7) (Fig. 3a). Only extend the primary element (2) until the first two gold-colored slotted holes are visible from the box module (4a) (see Fig. 3b).

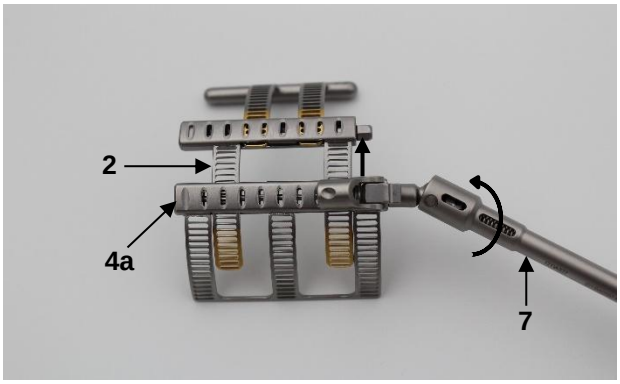


Fig. 3a

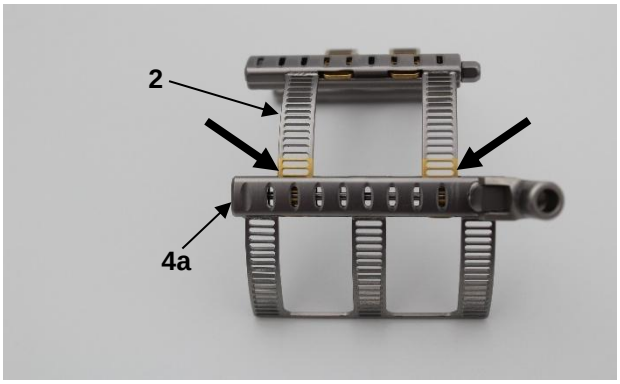


Fig. 3b

Retracting the elements of the Treede Maxposition blade

⚠ Before removing the Treede Maxposition blade from the operating field, the primary element (2) is always slowly retracted completely first, followed by the secondary element (3).

First fully retract the primary element (2) using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the base element (4a) counterclockwise using the screwdriver (7) (Fig. 4).

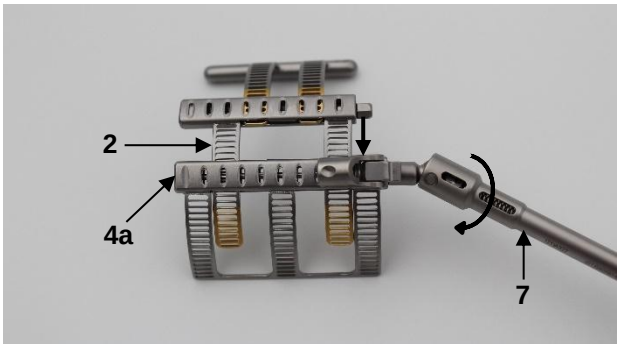


Fig. 4

Then retract the secondary element (3) using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the primary element (4b) counterclockwise using the screwdriver (7) (Fig. 5).

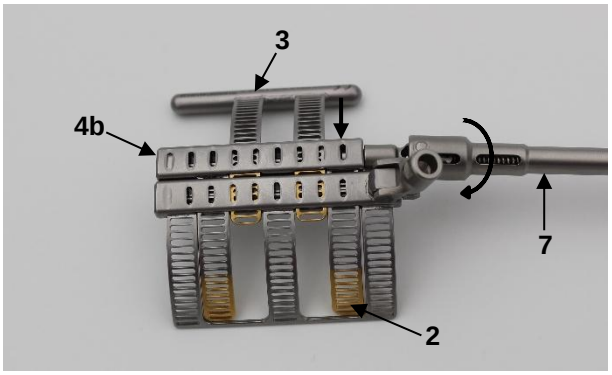
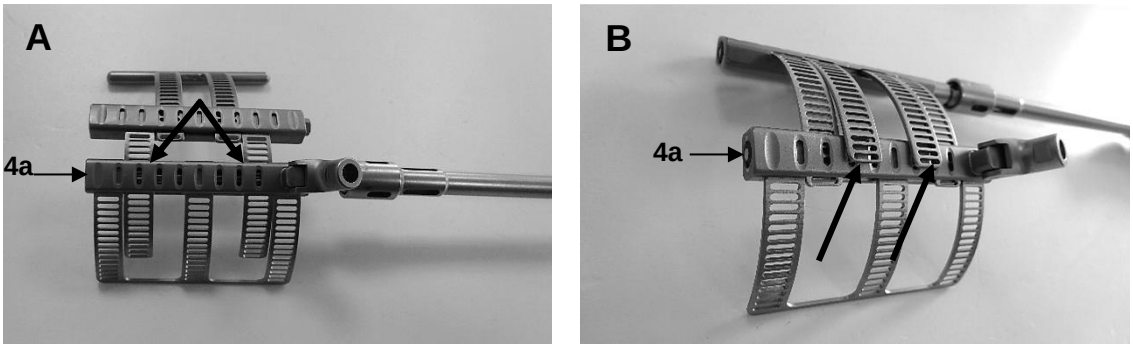


Fig. 5

⚠

If the sequence is not observed, the ends of the fan blades of the secondary element can be pushed over the box module of the base element (4a) (Fig. 6, **B**) instead of into the box module (Fig. 6, **A**).



RIGHT! **WRONG!**

Fig. 6: Exemplary representation of compliance with the sequence (**A**) and non-compliance with the sequence (**B**)

Application of the transthoracic atrial retractor - hook guide MRN-3

To raise or lower the Treede Maxposition blade, the hook guide MRN-3 (8) must first be screwed clockwise into the thread of the joint (6) (Fig. 7).

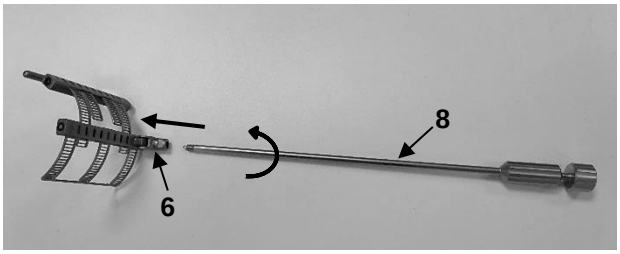


Fig. 7

The Treede Maxposition blade can be raised or lowered using the hook guide (8) by turning the fixing nut (9) clockwise or anticlockwise (Fig. 8).

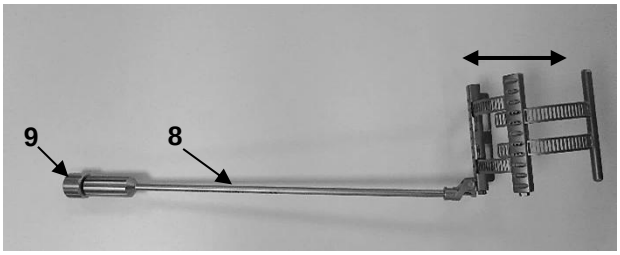


Fig. 8

To remove the hook guide MRN-3 (8), it must be unscrewed completely counterclockwise from the thread of the joint (6) (Fig. 9).

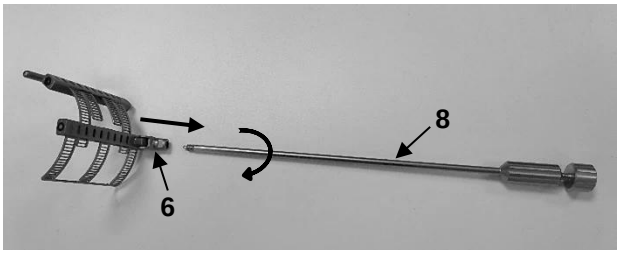


Fig. 9

Application of the guide clamp for atrial holders and hold-down devices MRU-9

The guide clamp for atrial holders and hold-down devices MRU-9 (10) can be used to insert or remove the Treede Maxposition blade in the operating field. The Treede Maxposition blade is held in the closed position on the threaded joint (6) using the guide clamp (10) and can be inserted into or removed from the atrium.

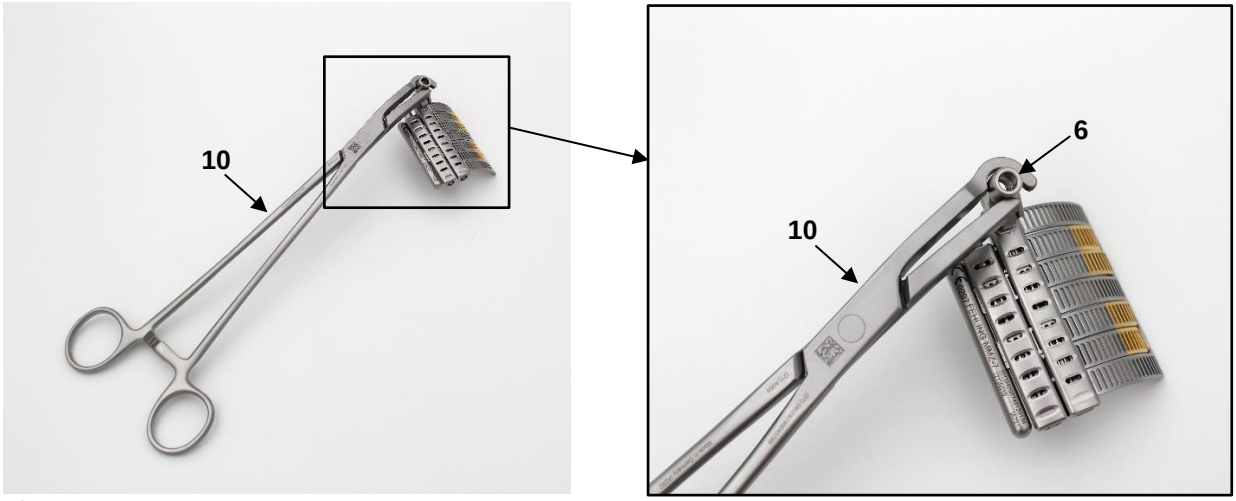


Fig. 10

8) Required accessories

To use the Treede Maxposition blade, a screwdriver, e.g. the LMT-4 Cardan screwdriver (Fig. 11), LMT-4L (Fig. 12) or LMT-4T (Fig. 13), is required. To raise or lower the Treede Maxposition blade, the MRN-3 transthoracic atrial retractor hook guide (Fig. 14) required. A guide clamp, e.g. the MRU-9 guide clamp for atrial holders and hold-down devices (Fig. 15), can be used.


Fig. 11: Cardan screwdriver LMT-4


Fig. 12: Cardan screwdriver LMT-4L

Fig. 13: Cardan screwdriver LMT-4T

Fig. 14: Transthoracic atrial retractor - MRN-3 hook guide

Fig. 15: Guiding clamp for atrial holders and hold-down devices MRU-9

9) Assembly

For assembly and disassembly of the transthoracic atrial retractor hook guide, please follow the assembly instructions M 36.

To install the Treede Maxposition blade, please observe the following installation instructions.

Figure 16a shows the Treede Maxposition blade, which is made up of three elements of different sizes. It consists of a base element (1), a primary element (2) and a secondary element (3) (Fig. 16b).

A suitable screwdriver, e.g. the LMT-4L Cardan screwdriver (see chap. *8) Required accessories*), is required for assembly/disassembly. Use the appropriate screwdriver to adjust the fan blades (5) by the gear axis located inside the box module (4).

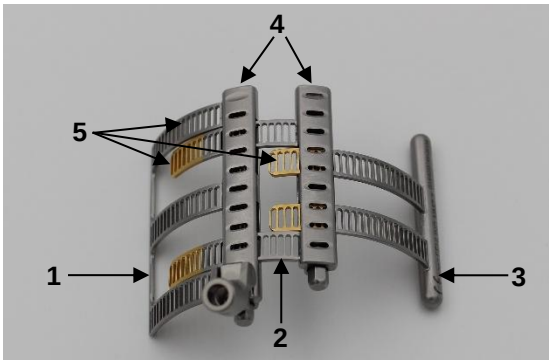
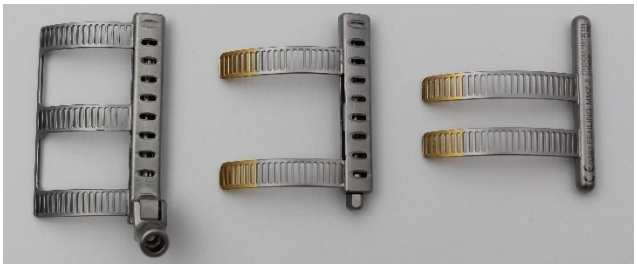


Fig. 16a: Treede Maxposition blade



Base element (1) | Primary element (2) | Secondary element (3)

Fig. 16b: Treede Maxposition blade in its individual elements

1. Insert the primary element (2) into the base element (1) and drive it in using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the base element (4a) counter-clockwise using the screwdriver (7) (Fig. 17).

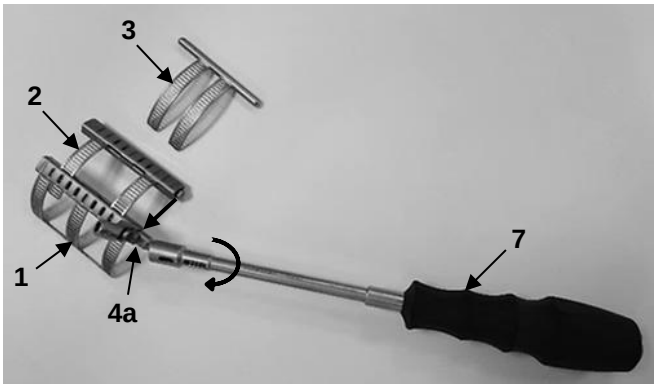
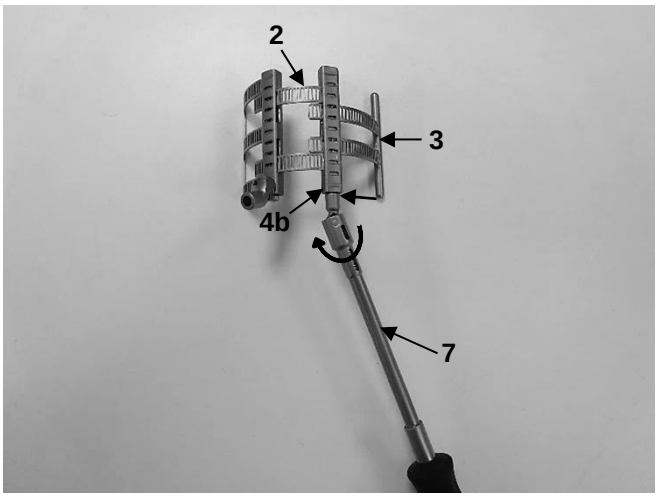
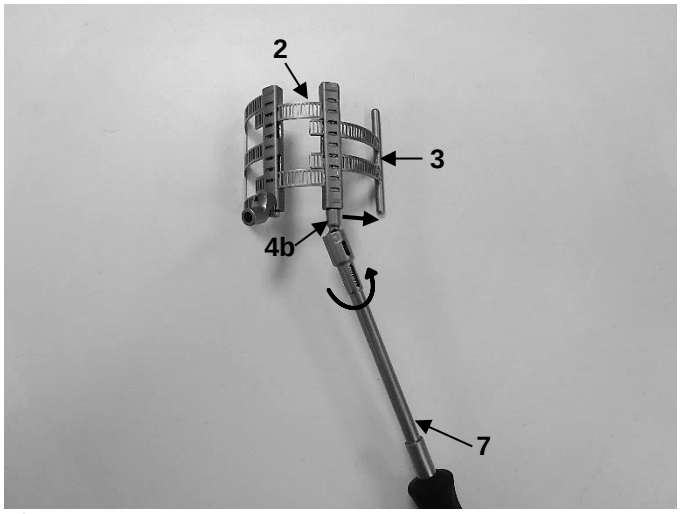


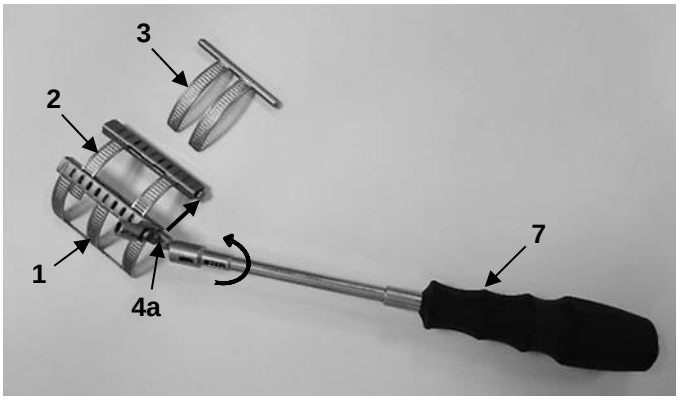
Fig. 17

⚠	Always fit the primary element (2) first.
2. Then insert the secondary element (3) into the primary element (2) and drive it in using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the primary element (4b) counterclockwise using the screwdriver (7) (Fig. 18).	 Fig. 18
3. The assembled instrument (Fig. 19) is now ready for use again after a functional test.	 Fig. 19

10) Disassembly

For reprocessing, the Treede Maxposition blade must be disassembled as follows.

1. First remove the secondary element (3) from the primary element (2) using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the primary element (4b) clockwise using the appropriate screwdriver (7) until it can be removed (Fig. 20).	 Fig. 20
⚠	Always extend the secondary element (3) first.

2. Then remove the primary element (2) from the base element (1) using the appropriate screwdriver (7). To do this, turn the transport mechanism on the box module of the base element (4a) clockwise using the appropriate screwdriver (7) until it can be removed (Fig. 21).	 Fig. 21
3. The instrument disassembled into its individual parts (Fig. 22) can now be processed.	 Fig. 22
⚠	Place small parts in suitable containers (e.g. needle box) for storage and reprocessing!

11) Obligation to report serious incidents

The user is obliged to report serious incidents that have occurred in connection with the medical device to the manufacturer, either by email to vigilance@fehling-instruments.de or via the complaints form at https://www.fehling-instruments.de/en/complaint/ and to the competent authority of the member state in which the user is established.

Symbols		
If displayed on the medical device, the label of the medical device or the instructions for use, the symbols according to DIN EN ISO 15223-1 have the following meaning:		
Manufacturer	Consult instructions for use or consult electronic instructions for use	Caution
REF Catalog number	LOT Batch code	SN Serial number
MD Medical device	UDI Unique device identifier	CE 0297 CE marking
Oil can for points that require lubrication	CE CE marking	

Contact the manufacturer		
	FEHLING INSTRUMENTS GmbH Hanauer Landstr. 7A D-63791 Karlstein/Germany Tel.: +49 (6188) 9574-40 Fax: +49 (6188) 9574-45 E-Mail: info@fehling-instruments.de www.fehling-instruments.de	CE 0297