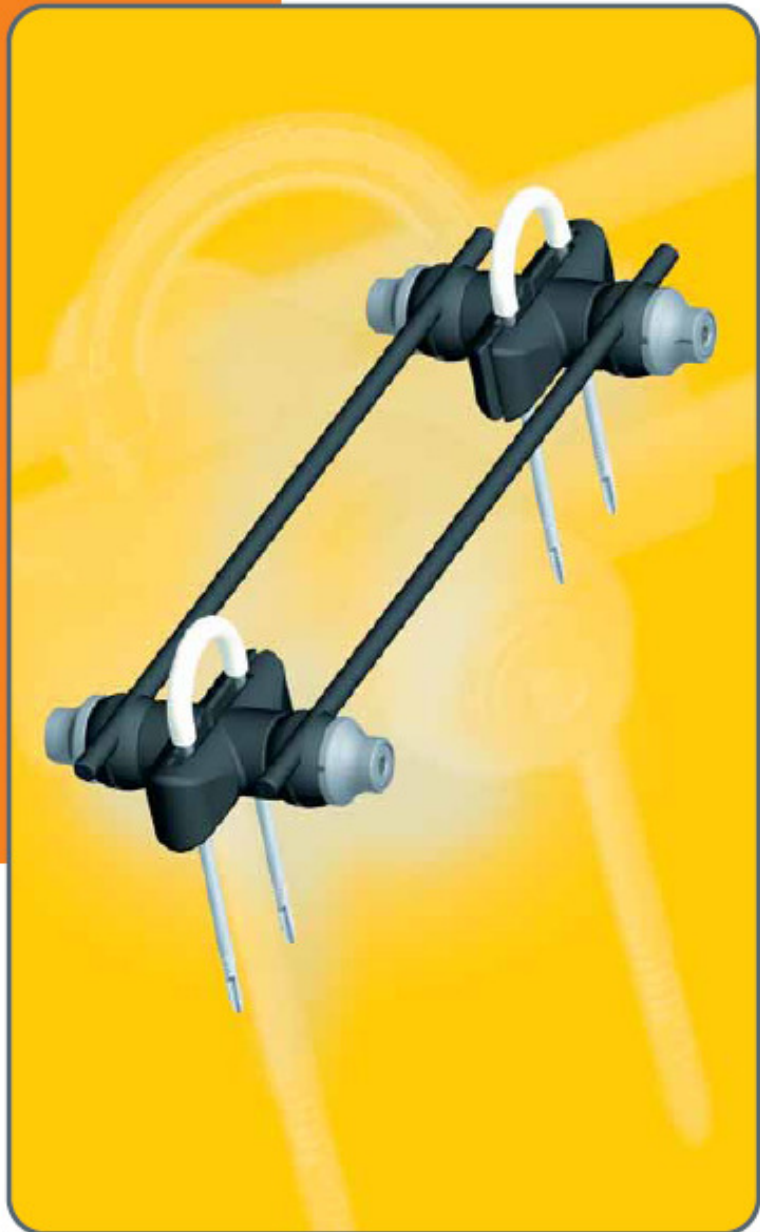


Operative Technique

EXTRON



(tantum)))
the medical people

))) Extron – External Fixator – The disposable set for a Distal Radius Fracture

The EXTRON-External Fixator made by tantum provides you with a new generation of supply engineering for distal radius fractures. The EXTRON-Fixator combines all assets expected from this technology by surgeons: It is user-friendly, enables prompt first-aid during short operating periods and is primarily used on outpatients. By using fiber-reinforced synthetics, an ideal wearing comfort is attained for the patient whilst providing rigid fixation and support as well as load bearing. In addition, the EXTRON-Fixator represents a cost-effective alternative to previous Fixators.

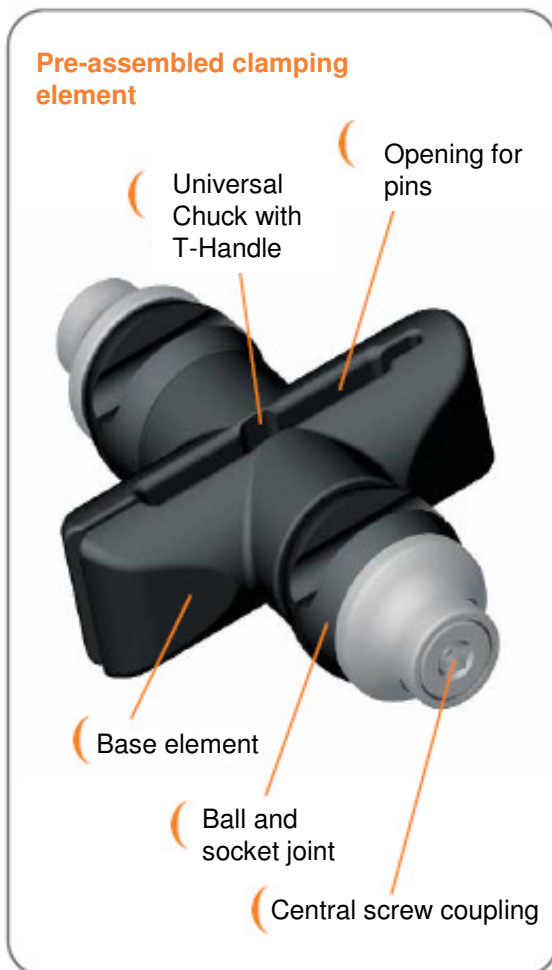
The EXTRON-Fixator has been developed especially for the treatment of unstable radius fractures. It only requires a limited number of elements with an easy assembly using an innovative snap mechanism. The EXTRON-ball and socket joints are constructed in such a way, that they feature excellent mechanical attributes interacting with bridge rods and pin, with a 30 degrees rotation which enables the repositioning of the wrist to a neutral, abduct or bent position. The synthetics used ensure an unrestricted X-RAY analysis and visual check of the traumatised area due to its high radiolucency – from every visual angle, whether from above, diagonal or sideways.

The EXTRON-Fixator is not only inexpensive to purchase but also minimizes the logistic expenses in the surgical practice and in the clinic:

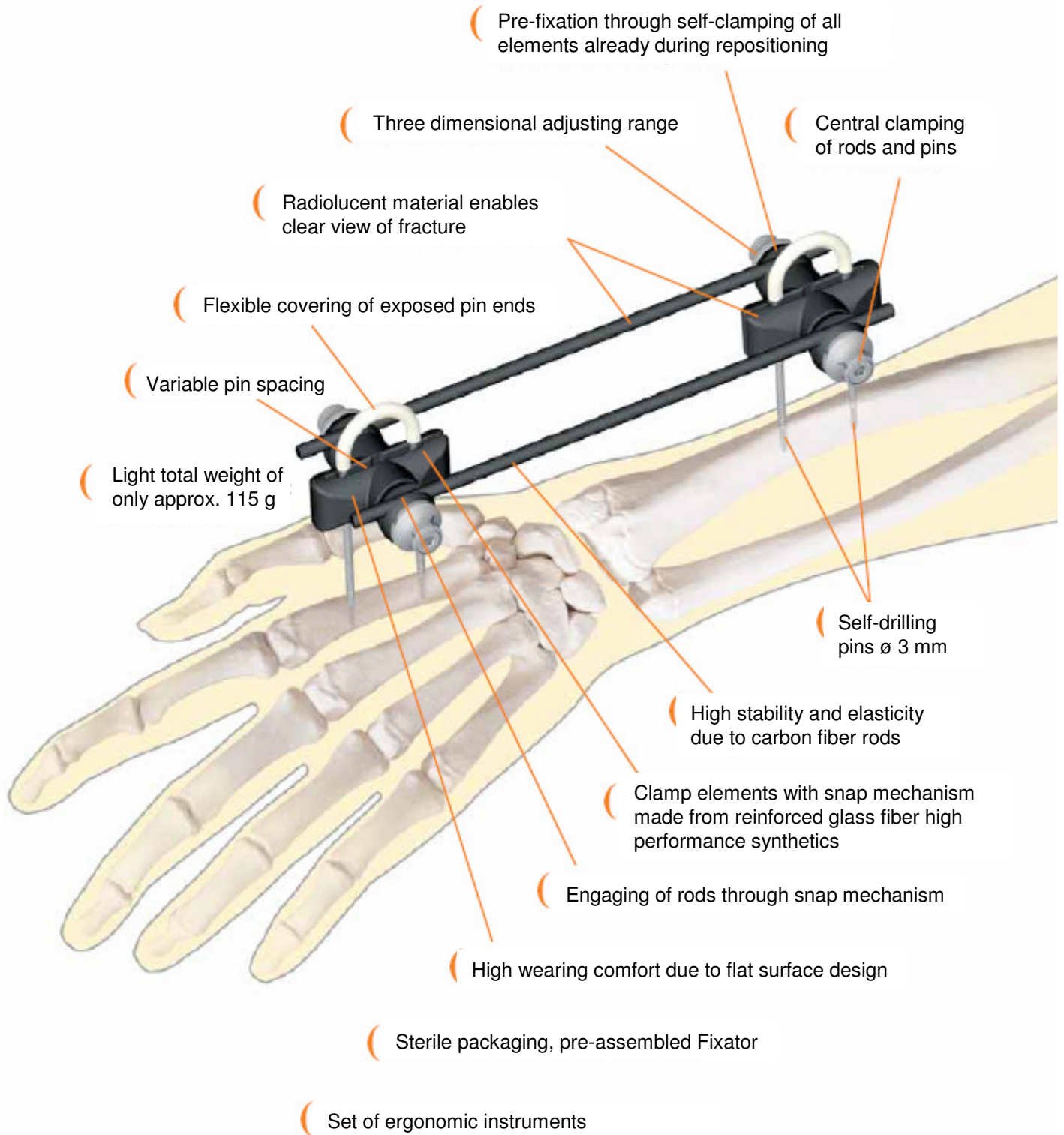
- no preparation of components
- no storing of individual parts
- no repeat orders of individual parts
- no feedback system for worn components
- no damage in case of system change

Whilst the Fixator components and pins for single use are supplied in sterile packaging, the instruments are available separately and for multi-use.

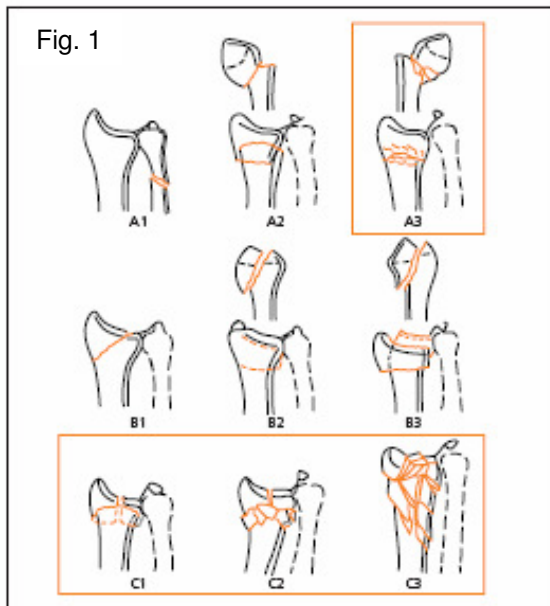
Furthermore, the EXTRON-Fixator provides noticeable benefits even for the patient: They continuously receive a new set which through materials utilised, is 50 percent lighter than previous sets made from metal components. With a total weight of only 115 grams, the flat surfaced designed tantum EXTRON-External Fixator provides you with a high-quality wearing comfort and the best requisites for a positive recovery.



))) Features and Benefits at a glance



))) Surgical Technique EXTRON



1. Indication

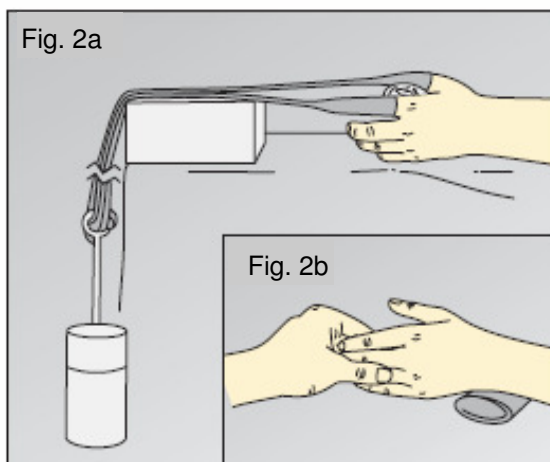
Unstable distal radius fractures corresponding to the AO-classification 23 A3 and C1 up to C3 including:

- fractures in multi-trauma and poly-trauma patients
- open fractures
- fractures with severe soft-tissue damage
- temporary immobilisation before internal fixation

2. Positioning

Positioning of the wrist on the radiolucent arm table and sterile coverage of operating area.

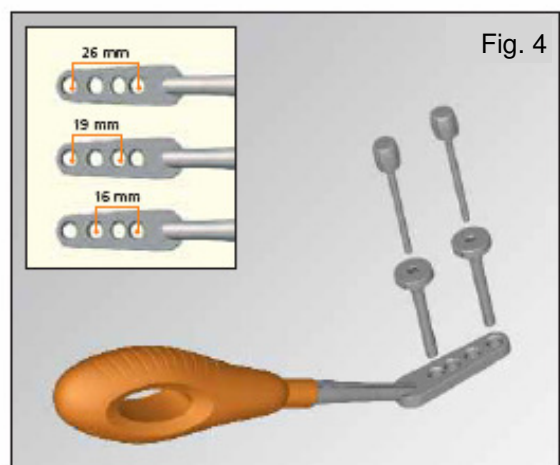
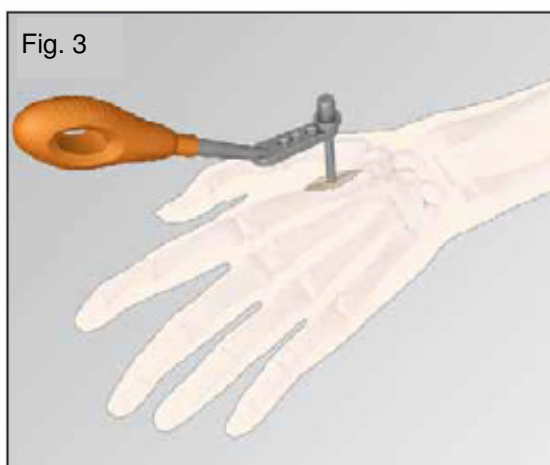
Extension by either pulling thumb and index finger (approx. 3-4 kgs over so called "Girls Fingers") (Fig. 2a) or from the hand over a rolled-up cloth which is placed under the wrist (Fig. 2b). The extension secures an extensive fracture-repositioning.



3. Access for metacarpal pin-pairs

Stab incision at the proximal end of the metacarpal II. Spanning soft tissue and introducing drilling gauge (Art. No. 208-105) with inserted tissue protection sleeve (Art. No. 202-107) and Obtrurator (Art. No. 203.136) into the bone, at 45° side incline under protection of the stretch tendon. The point of the Obtrurator must be positioned proximal central on the bone, so that the pin drills through the bone in maximum thickness (Fig. 3).

The drilling gauge enables the positioning of pins in various defined spacing (Fig. 4).



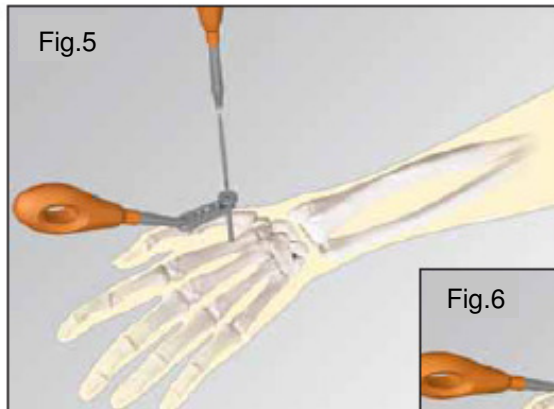


Fig.5

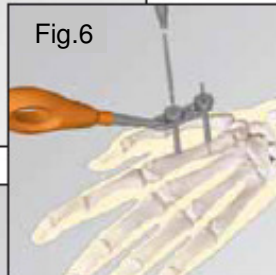


Fig.6

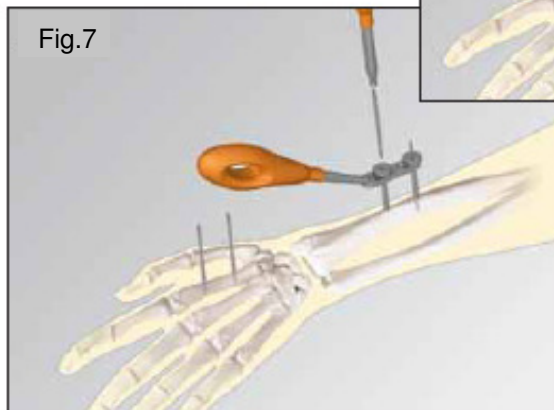


Fig.7

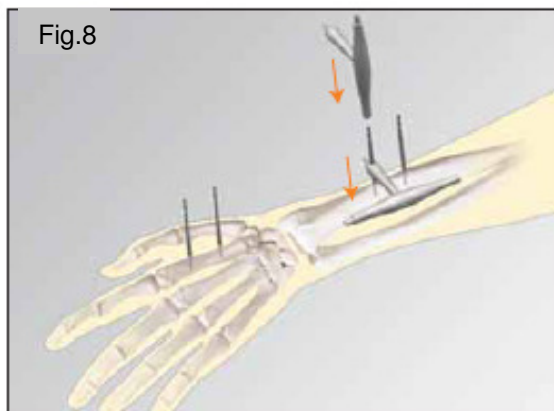


Fig.8

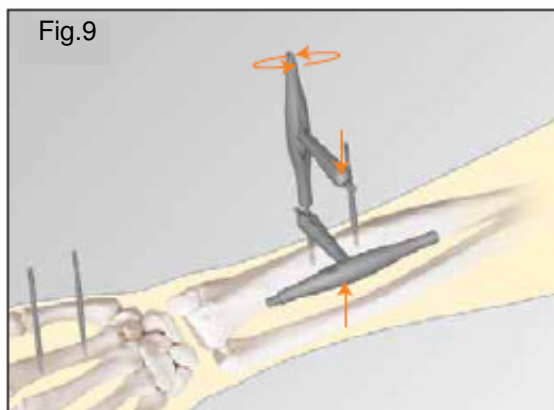


Fig.9

4. Positioning of metacarpal pin-pairs

Removal of Obtrurator (Art. No. 203.136) and screwing in of self-drilling pins with the pin adjuster (Art. No. 201-144) (Fig. 5).

Remark: Alternatively pre-drilling can be performed in case of rigid bones (Art. No. 203.137).

The pin should be fixed into both cortices but must not significantly reach over both corticalis, in order to avoid soft-tissue irritation. The second pin is inserted by using the drilling gauge parallel with defined spacing following a prior additional stab incision (Fig. 6).

5. Access for radial pin-pairs

Introduce drilling gauge onto the distal radius outside the fracture after the stab incision has been performed (Art. No. 208-105), with screwed in tissue protection sleeve (Art. No. 202-127) and Obtrurator (Art. No. 203.136).

6. Positioning of radial pin-pairs

Introducing pins into radius as per process with metacarpal pins (Fig. 7)

7. Parallel alignment of pins

Check parallel alignment of pin-pairs. If the pins face each other in an angle, which will complicate or hinder the positioning of the base elements, the pins can be adjusted using both Universal Chucks with T-Handles (Art. No. 201-145).

Thus the chucks are positioned on the correct pin as illustrated in Fig. 8. By pushing the Universal Chucks with T-Handles together, the pin can be bent in any required direction without straining the bone anchorage (Fig. 9).

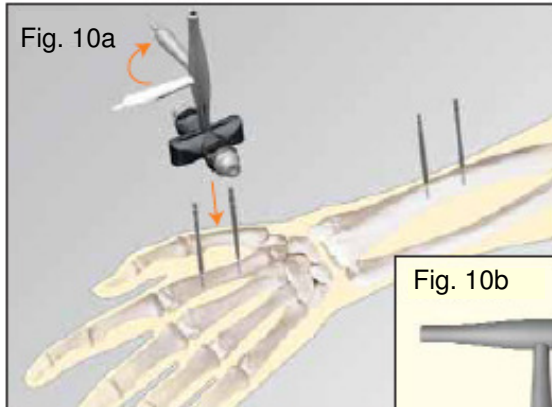


Fig. 10a

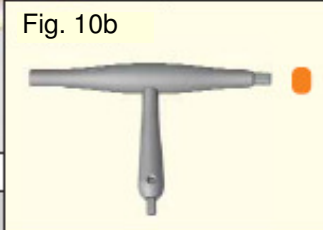


Fig. 10b

8. Attaching clamp elements

The Universal Chuck with T-Handle (Art. No. 201-145) is pressed from the top center into the opening of the base element with its rectangular connection (Fig. 10b). By turning the Universal Chuck with T-Handle by 90°, the base element is forced open. In this way the clamp element is attached to the pin-pair (Fig. 10a).

After turning back the Universal Chuck with T-Handle, the clamp element is secured on the pin-pair, does however allow for repositioning (Fig. 11).

The Universal Chuck with T-Handle can now be removed.

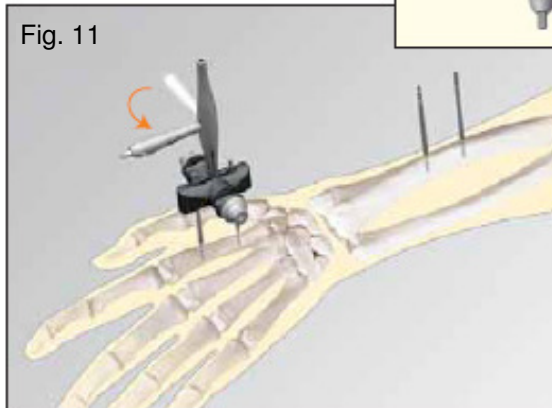


Fig. 11

9. Establishing a connection

Both clamp elements are attached to the pin-pairs. The opening of the balls are pointing upwards (Fig. 12).

The 5 mm rods are pressed into the opening of the balls until they noticeably engage (Fig. 13).

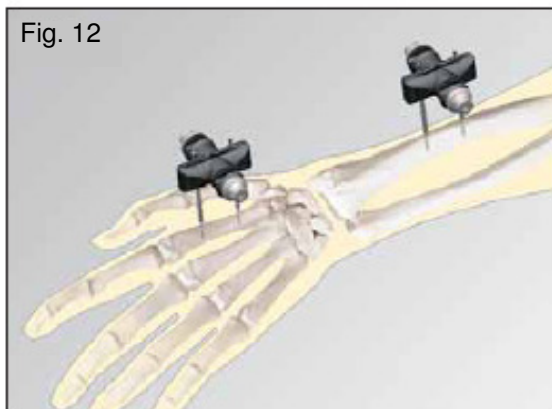


Fig. 12

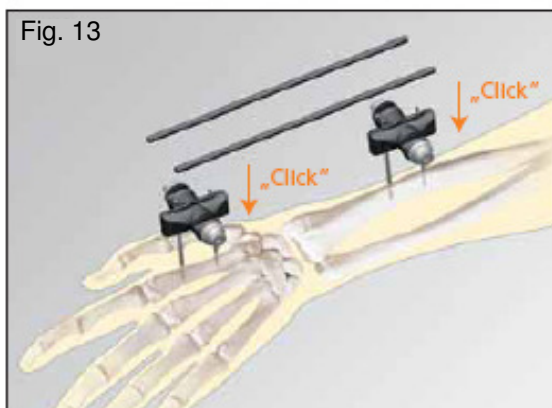


Fig. 13

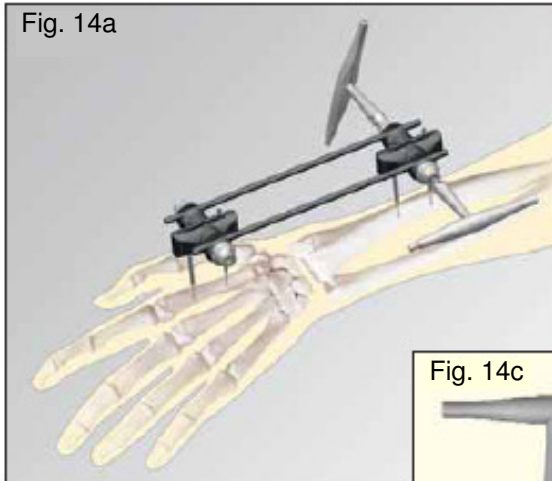


Fig. 14a

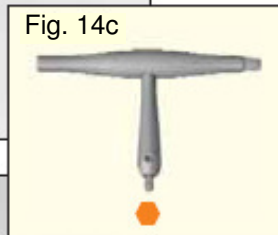


Fig. 14c

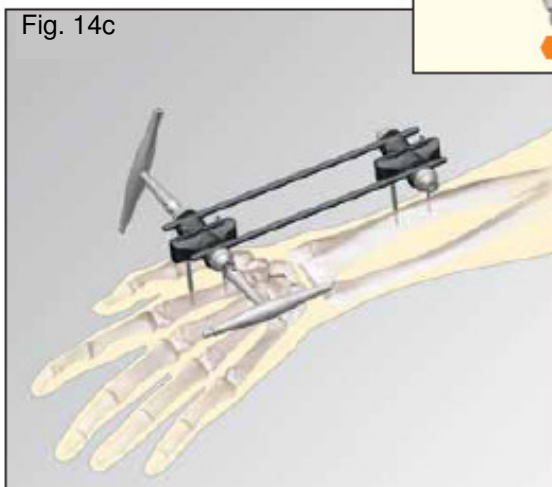


Fig. 14c

10. Repositioning and Anchorage

Following a repositioning of a fracture, an anchorage of clamp elements occurs with both Universal Chucks with T-Handles (Art. No. 201-145). The central screw connection of both clamp elements is tightly fastened (Fig. 14a & b) using the hexagonal side of the Universal Chuck with T-Handle (Fig. 14c). The assembly of the Fixator has now been completed. Subsequently the X-RAY report will be prepared.

11. Positioning cable protective tubes

Following the X-RAY examination, the flexible cable protective tubes can be attached to the exposed pin-ends. Thus, the pins are prevented from hooking onto clothes or similar items (Fig. 15).

Postoperative Treatment

Sterile covering of pin entry points up to the wound secretion.

Daily pin care.

X-RAY examination after one week, two and six weeks post-op. A check-up and if applicable, tightening of the screw connection will be performed during this examination.

The removal of metal can be performed after six week as an outpatient, depending on the bone consolidation.

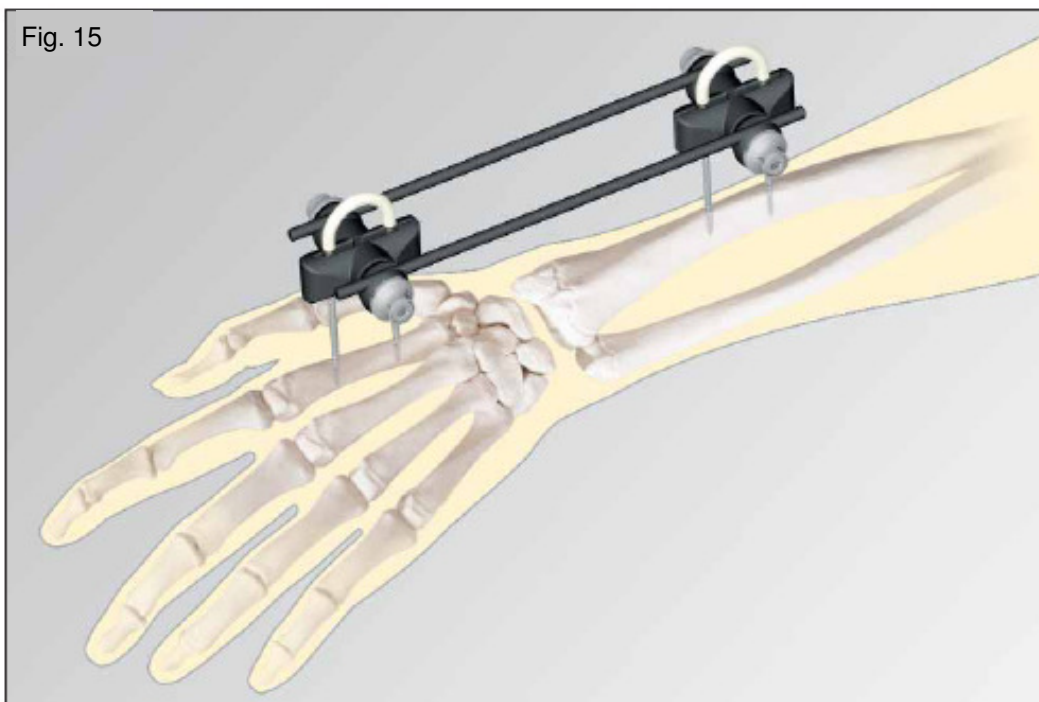
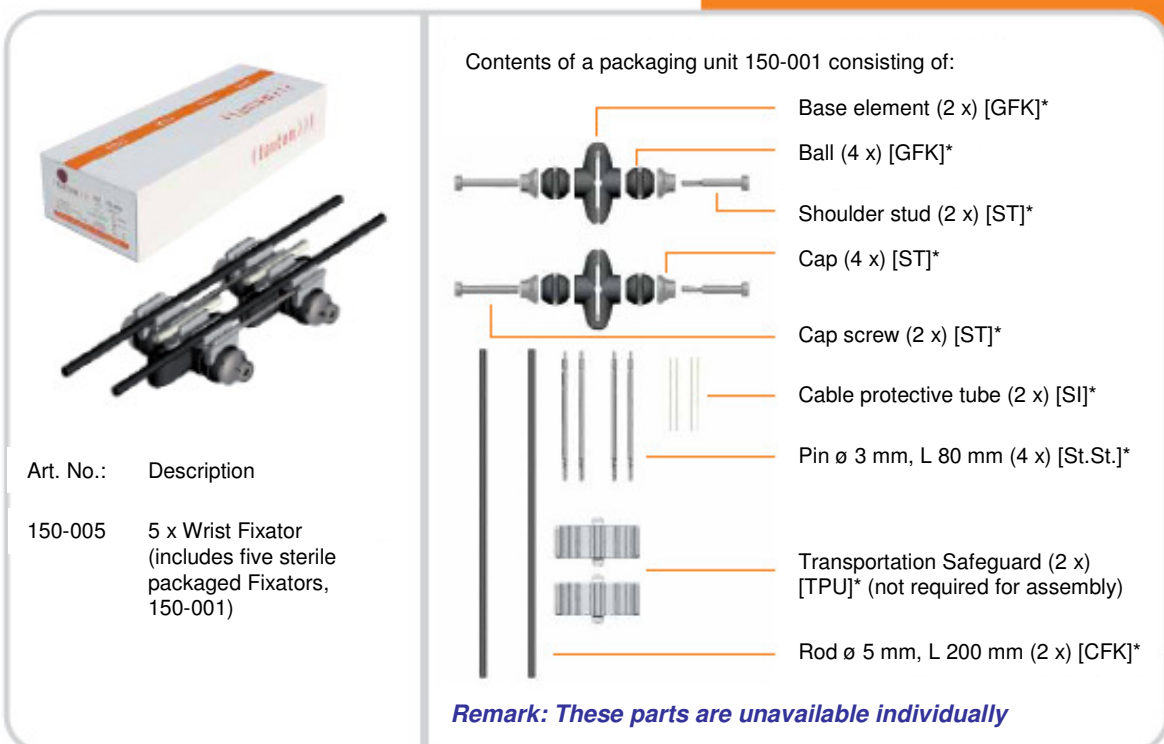


Fig. 15

EXTRON Instruments



EXTRON Fixator



The illustrations are schematic and do not correspond to original measurements. They are subject to technical changes. Date: May 07



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• Materials

GFK: glass fiber reinforced synthetic, CFK: carbon fiber reinforced synthetic, St.St.: Implant steel as per ISO 5832-1, ST: rustproof steel, TPU: thermoplastic urethane