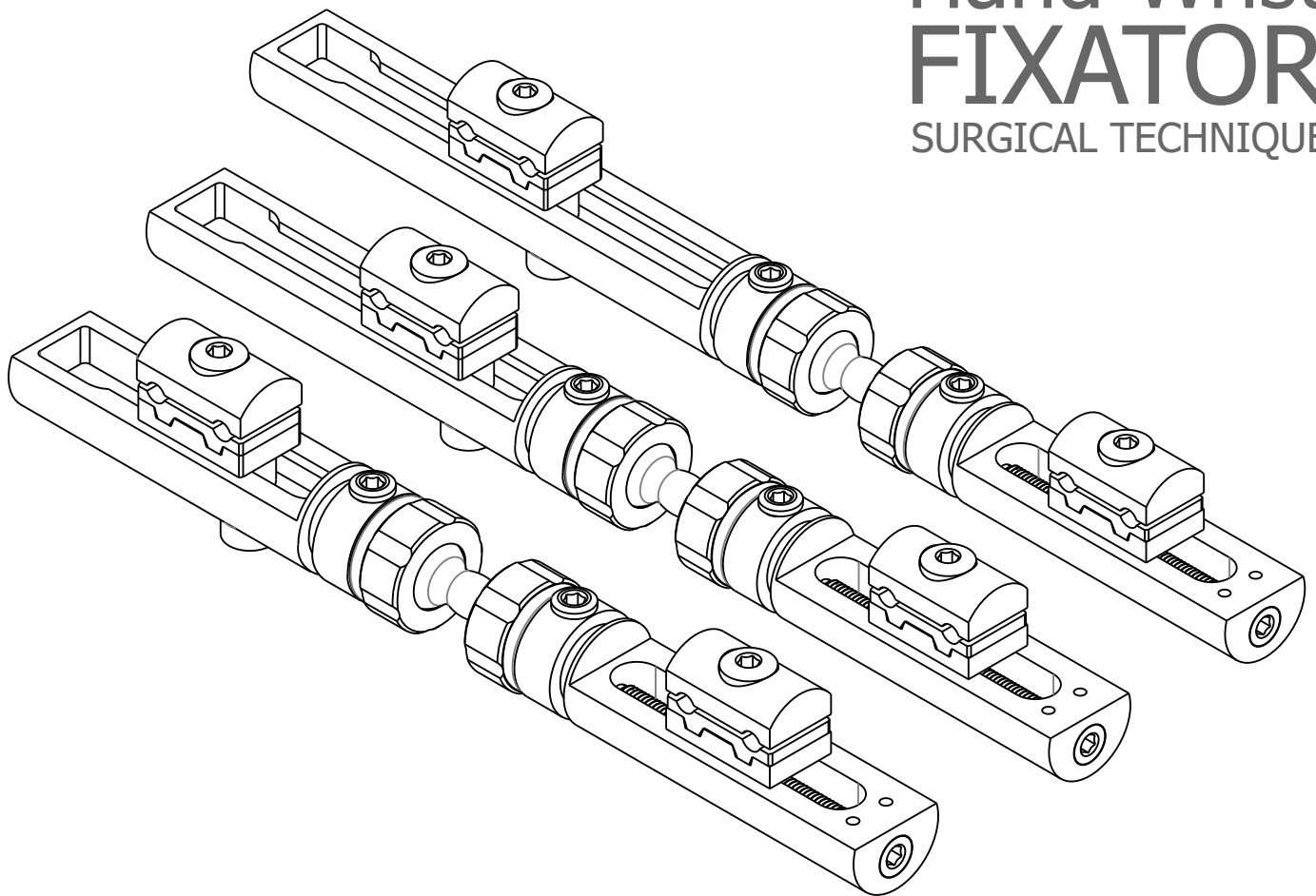




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# Penning Type Hand-Wrist FIXATOR

SURGICAL TECHNIQUE



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## Penning Type Hand-Wrist Fixator

# zimed®

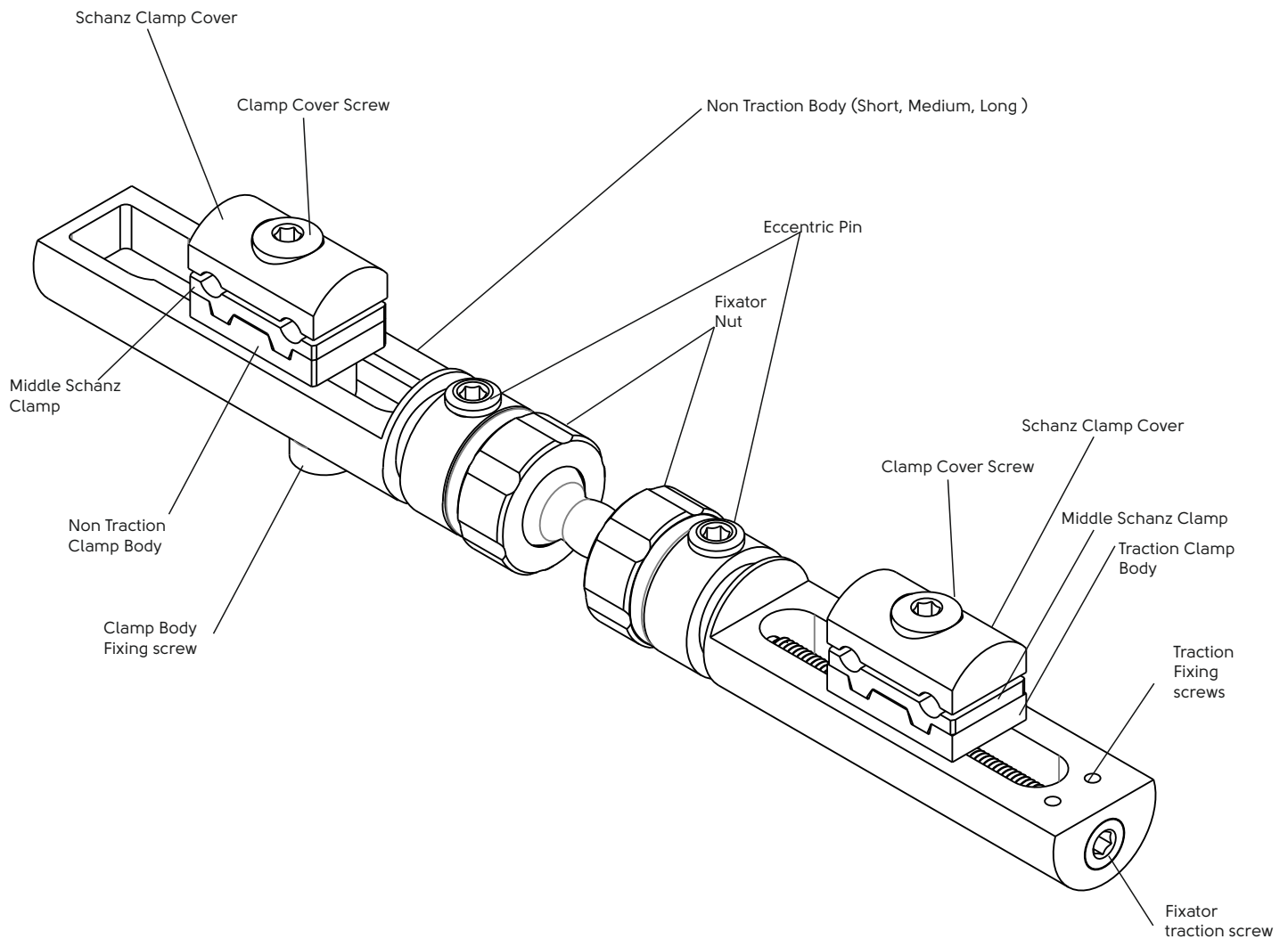
Hand-Wrist  
HYBRID EXTERNAL  
**FIXATOR**  
SURGICAL TECHNIQUE

REF. NO	SIZE
5034-0001	S
5034-0002	M
5034-0003	L

### 1.1.1 Specification

Hand-wrist Fixator with dynamic angle clamp in partial osteotomy of distal radius deformity; It is used in the acute correction of the gap by filling with a graft or in the gradual correction of the gap with callus by performing a hemicallosis osteotomy. It can be used in distal radius and/or ulna fractures and in unstable intra-articular distal radius fractures (by fixing the fracture fragments with other implants). Thanks to the ball-joint structure, it can be opened and locked. Thanks to the expandable clamps, Schanz screws can be sent in different angled plans. It is used for the application of other internal fixation implants and joint fixation in distal radius fractures. It can be used in wrist extra-articular distal radius and shaft fractures, ulna fractures.

Wrist Fixator; It has 3 different sizes, short, medium and long.





## 2.1. Distal Radius Fracture

Distal End fractures can be explained under three main headings. It is a simple non-articular fracture, a simple joint-related fracture, and a multi-part fracture involving the joint.

Fractures involving the joint may sometimes not be able to insert a screw or shanz. In such cases, it is necessary to apply a bridge over the joint. In such cases, wrist fixators come to the fore.

For a successful technique, patient-specific conditions should be well evaluated and attention should be paid to this. Preoperative fracture reduction can be done, but is not mandatory. (Fig. 1-3)

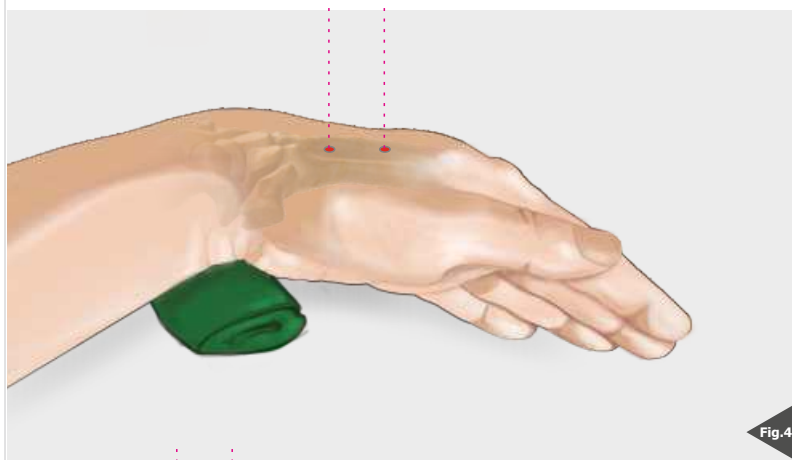
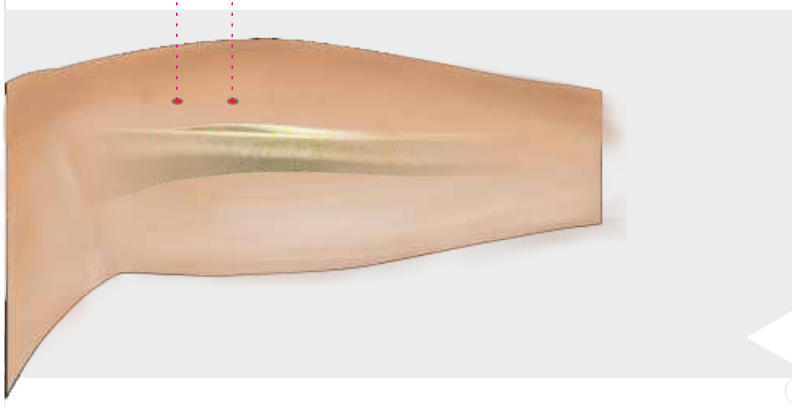


Fig.4



## 2.2. Position

In flexion, the hand is placed on the table in the form of ulnar deviation. An elevating object is placed on the ulnar side.

The fixator will be placed on the second metacarpal and 2/3 of the radius (Fig.4-5)



## 2.3. Application

### 2.3.1 Fixation of the fracture

Kirschner wires can be used to reduce the fracture. (Fig.6)

*In some cases, the appropriate type of screws may also be used.*



### 2.3.2 Schanz

Schanz can be sent after the broken is fixed with Kirschner wires. First, they are located in the distal 2 metacarpals. Drilling is done with the drill bit that comes with the kit by using the guide. (Fig.7)



Drilling is done for the distal second Schanz. Use the guide by turning it the other way. When you use the guide correctly, the distance range of the Schanzler to be sent will be in the appropriate range for the fixator clamp. (Fig.8)





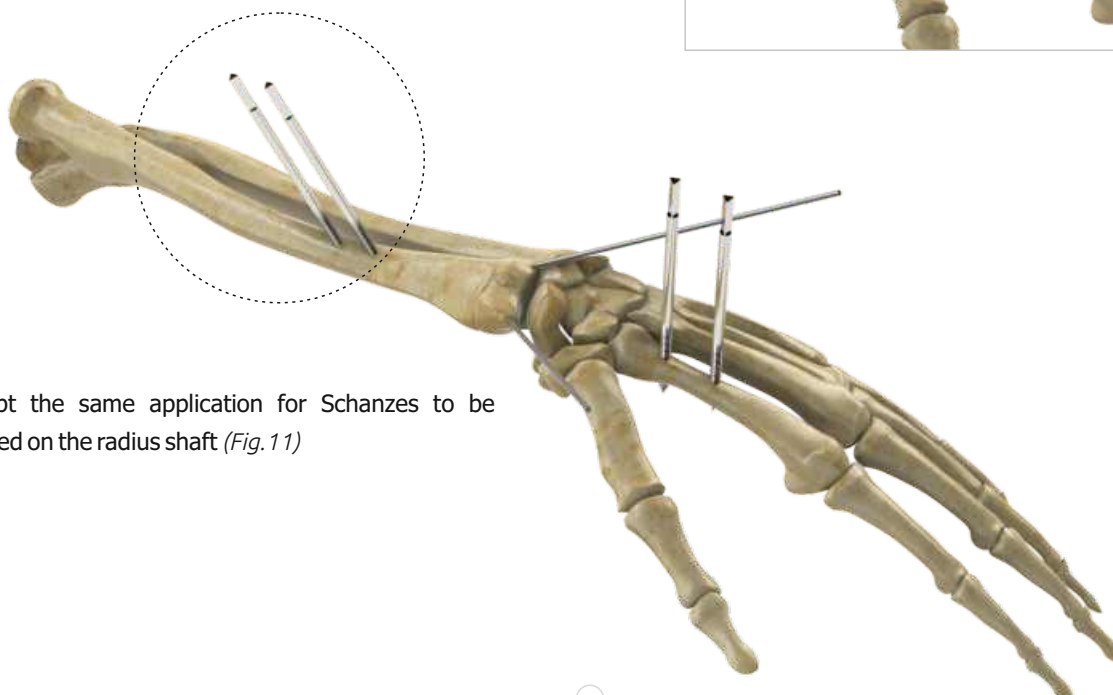
## 2.3.Application

### 2.3.2Shanz

From the area you drilled, send the Schanz with the T holder over the guide. (Fig.9)



Send the other Schanz in the distal (Fig. 10).



Adapt the same application for Schanzes to be placed on the radius shaft (Fig. 11)



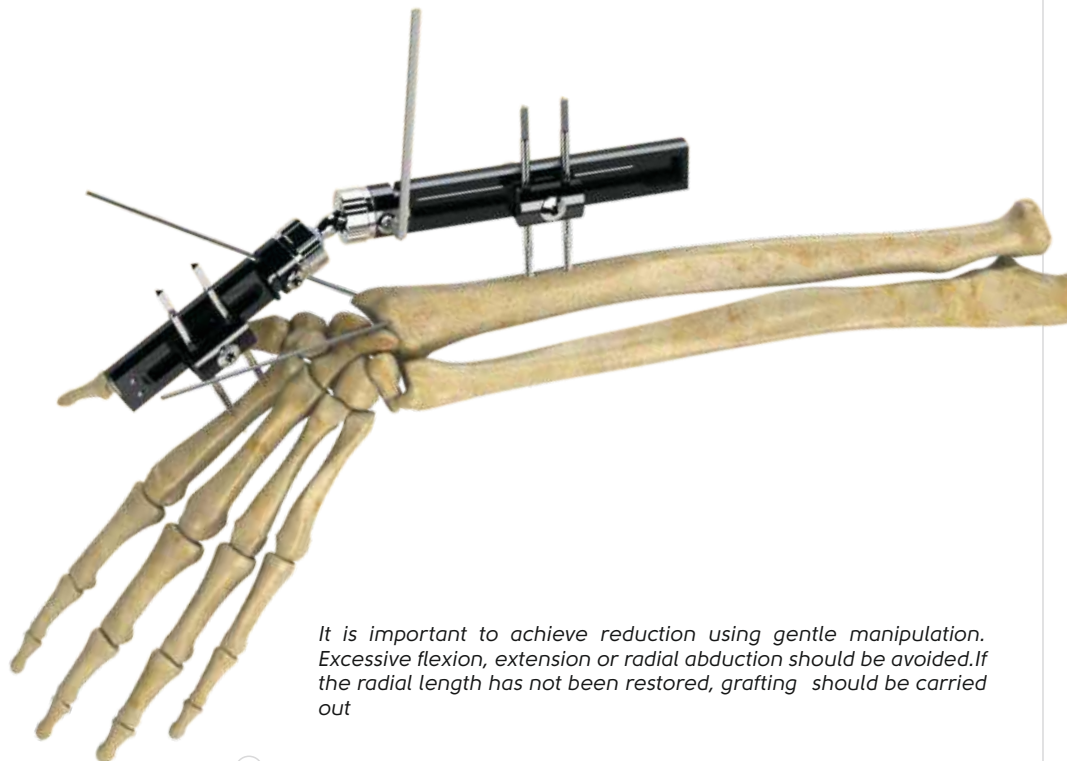
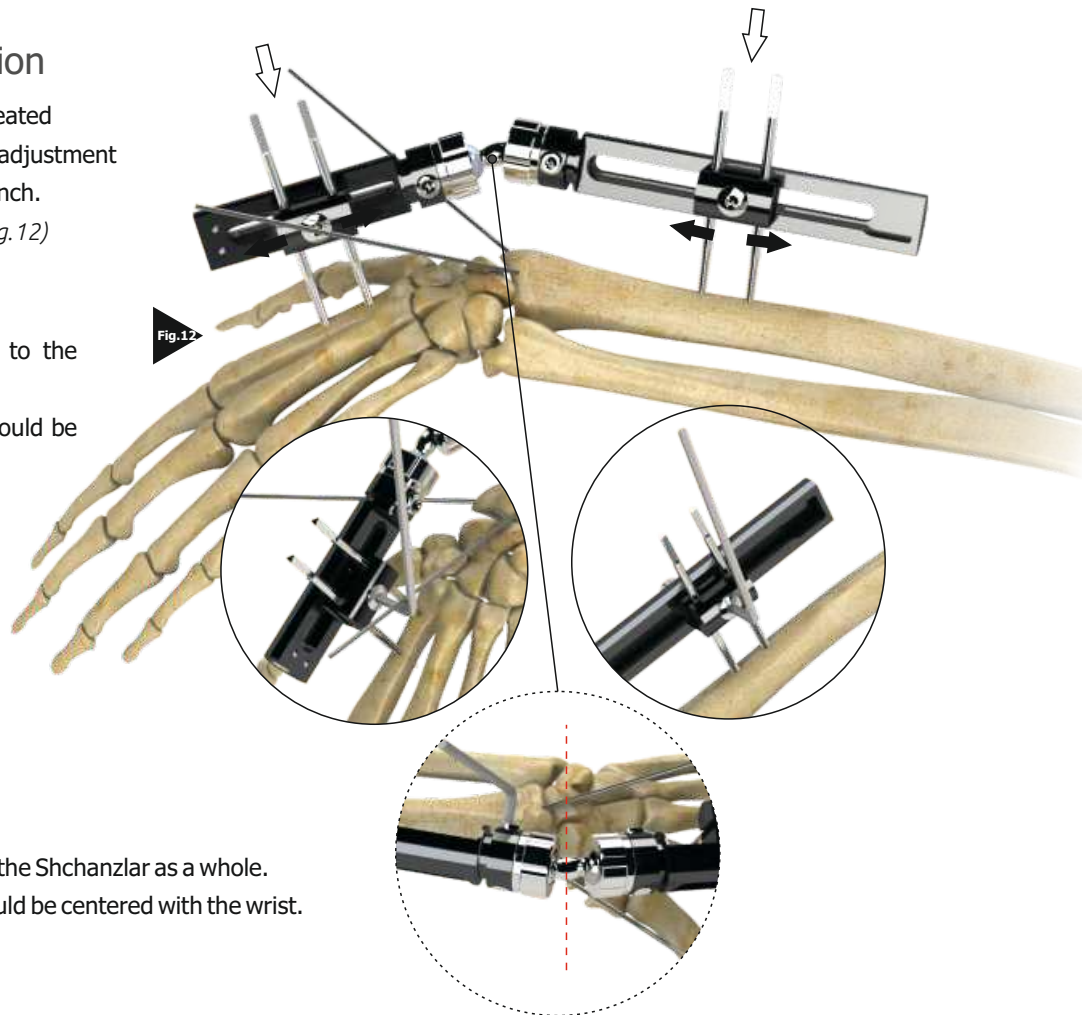
## 2.3.Application

### 2.3.3.Fixator Application

Fixer on the structure you have created  
You can place it. After making the adjustment  
Tighten the clamps with the L wrench.  
Tighten the screws temporarily (*Fig.12*)

The fixator should be attached to the Shchanzlar as a whole.  
The joint center of the fixator should be centered with the wrist.  
After adjusting the screws fully tighten

The fixator should be attached to the Shchanzlar as a whole.  
The joint center of the fixator should be centered with the wrist.



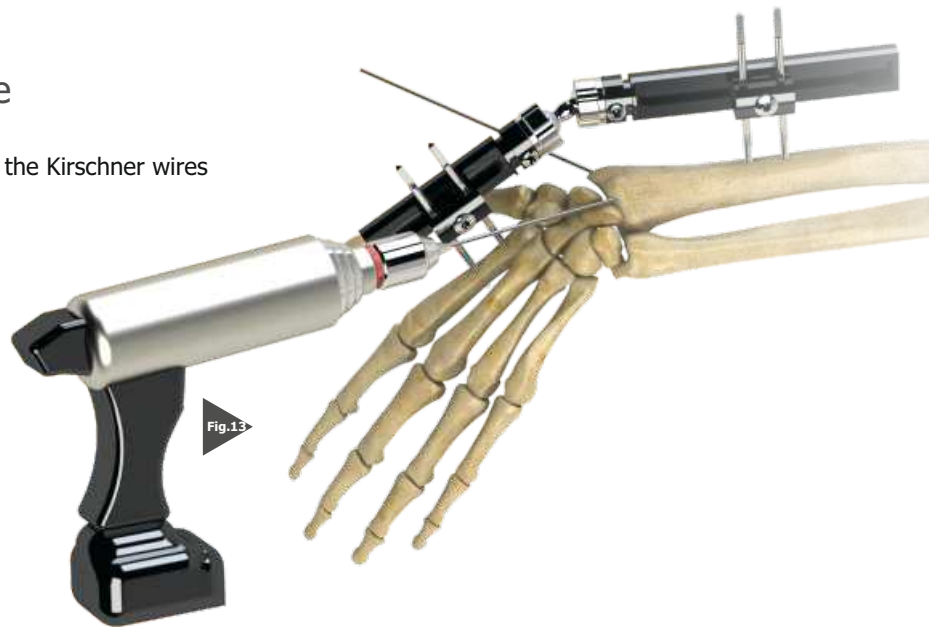
*It is important to achieve reduction using gentle manipulation. Excessive flexion, extension or radial abduction should be avoided. If the radial length has not been restored, grafting should be carried out*



## 2.3.Application

### 2.3.5 Removing Kirschner Wire

Treatment process in suitable time Remove the Kirschner wires with the help of the motor. (Fig. 13)



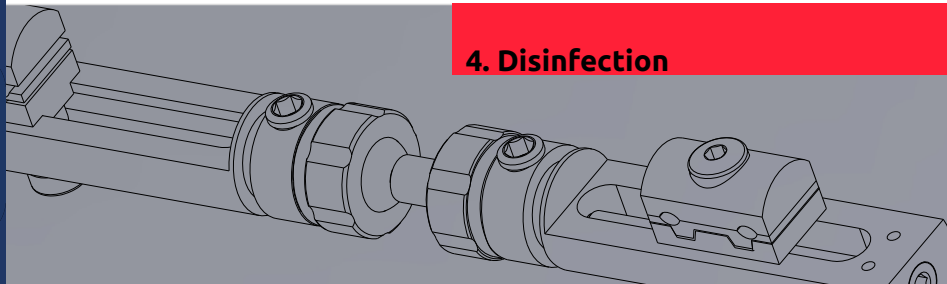
## 2.4.Application 2

### 2.4.1 Radius Shaft



This fixator can be used as an alternative for radius shaft fractures. Shanz's are inserted from the appropriate area according to the fracture (Fig. 14). Fixator is placed over these mounted Shanz. The fixator is fixed. (Fig. 15)





## 4.1 DEVICE CLEANING CONDITIONS

Do not use metal brushes or rubbing pads during Decontamination of the tools should be performed immediately after the surgical procedure is completed. Contaminated tools must not be allowed to dry before reprocessing.

Excessive blood or debris must be removed in order to prevent the drying on the surface. All users must be qualified staff with documented evidence of training and competence. Training should include the current guidelines, standards and hospital policies. Even if they are made of high-grade stainless steel, the surgical tools must be thoroughly dried in order to prevent rust formation. Prior to sterilization, all the tools should be examined for the cleanliness of the lumens of the joints of the surfaces. manual cleaning process. Use cleaning agents with low-foam surfactant to be able to see the tools in the cleaning solution. Rinse the cleaning materials easily from the tool in order to prevent residue formation.

Mineral oil or silicon lubricants should not be used

materials are recommended for cleaning the reusable instruments. It is very important to neutralize and rinse the alkaline cleaning materials thoroughly from the tools. Anodized aluminum should not contact with certain cleaning or disinfectant solutions. Avoid strong alkaline cleaners and disinfectants and solutions containing iodine, chlorine or certain metal salts.

### Manual Cleaning/Disinfection

Prepare the enzymatic and cleaning materials at the dilution rates and temperatures as recommended by the manufacturer. New solutions should be prepared when the existing solutions are heavily contaminated. Place the tools in the enzymatic solution so that they are completely immersed. Operate all the movable parts so that the detergent contacts with all the surfaces.

Keep in the fluid for minimum 20 min. Use a nylon, soft-bristled brush to gently rub the tools until all visible debris is cleaned. Pay particular attention to the accessible areas and use a suitable bottle brush. In order to remove the dirt in the open springs, coils or flexible parts, wash the recesses with plenty of cleaning solution. Rub the surface with a scrubbing brush to remove all the visible dirt from the surface and the recesses. To ensure that all the recesses are cleaned, turn the component while rubbing. Remove the tools and rinse them for minimum 3 min. under running water. Pay particular attention to the cannulas and use a syringe to pass the fluid through the hard-to-reach areas. Place all the tools that are completely immersed in water, in an ultrasonic unit containing the cleaning solution. Operate all the movable parts so that the detergent contacts with all the surfaces. Expose the tools to sonification process for minimum 10 min..

Remove the tools and rinse with deionized water for at least 3 minutes or unless all the blood or dirt traces are eliminated in the rinsing water. Examine the tools under normal light to verify that visible dirt is removed. If

visible dirt is present, repeat the above mentioned sonification procedure and the rinsing steps. Remove the excessive moisture on the tool with a clean, absorbent, lint-free cloth.

### Combination Manual / Automated Cleaning and Disinfection

Prepare the enzymatic and cleaning materials at the dilution rates and temperatures as recommended by the manufacturer. New solutions should be prepared when the existing solutions are heavily contaminated. Place the tools in the enzymatic solution so that they are completely immersed. Operate all the movable parts so that the detergent contacts with all the surfaces. Keep in the fluid for minimum 10 min. Use a nylon, soft-bristled brush to gently rub the tools until all visible debris is cleaned. Pay particular attention to the accessible areas and use a suitable bottle brush. A sonicator will help to clean the instruments thoroughly. The use of a syringe or a water fountain will facilitate passing of the liquid from the low-spaced areas and difficult-to-access areas. Remove the tools from the enzyme solution and rinse them for minimum 1 min. under deionized water. Place the tools in a suitable washer / disinfectant basket and perform a standard washer / disinfectant cycle. Specific minimum parameters are essential for a complete cleaning and disinfection. These parameters are given in a below mentioned table.

### Automated Cleaning and Disinfection

Automated washing / drying systems are not recommended as the only cleaning method for surgical tools. An automated system can be used as a follow-up operation after manual cleaning. To ensure an effective cleaning, tools must be thoroughly examined before sterilization. For detailed information on Washing and Disinfection see

### Specific minimum parameters used for a complete cleaning and disinfection:

	Definition
1	Pre-washing for 2 minutes with cold tap water
2	enzyme spray for 20 seconds with hot tap water
3	Immersion in enzyme after 1 minute
4	rinsing for 15 seconds with cold tap water (Should be repeated twice)
5	Washing with detergent for 2 minutes with hot tap water
6	rinsing for 15 seconds with hot tap water
7	Rinsing with 10 seconds with optional lubricated purified water
8	Drying for 7 minutes with hot air

Note: Follow the instruction of the washer/disinfectant manufacturer

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