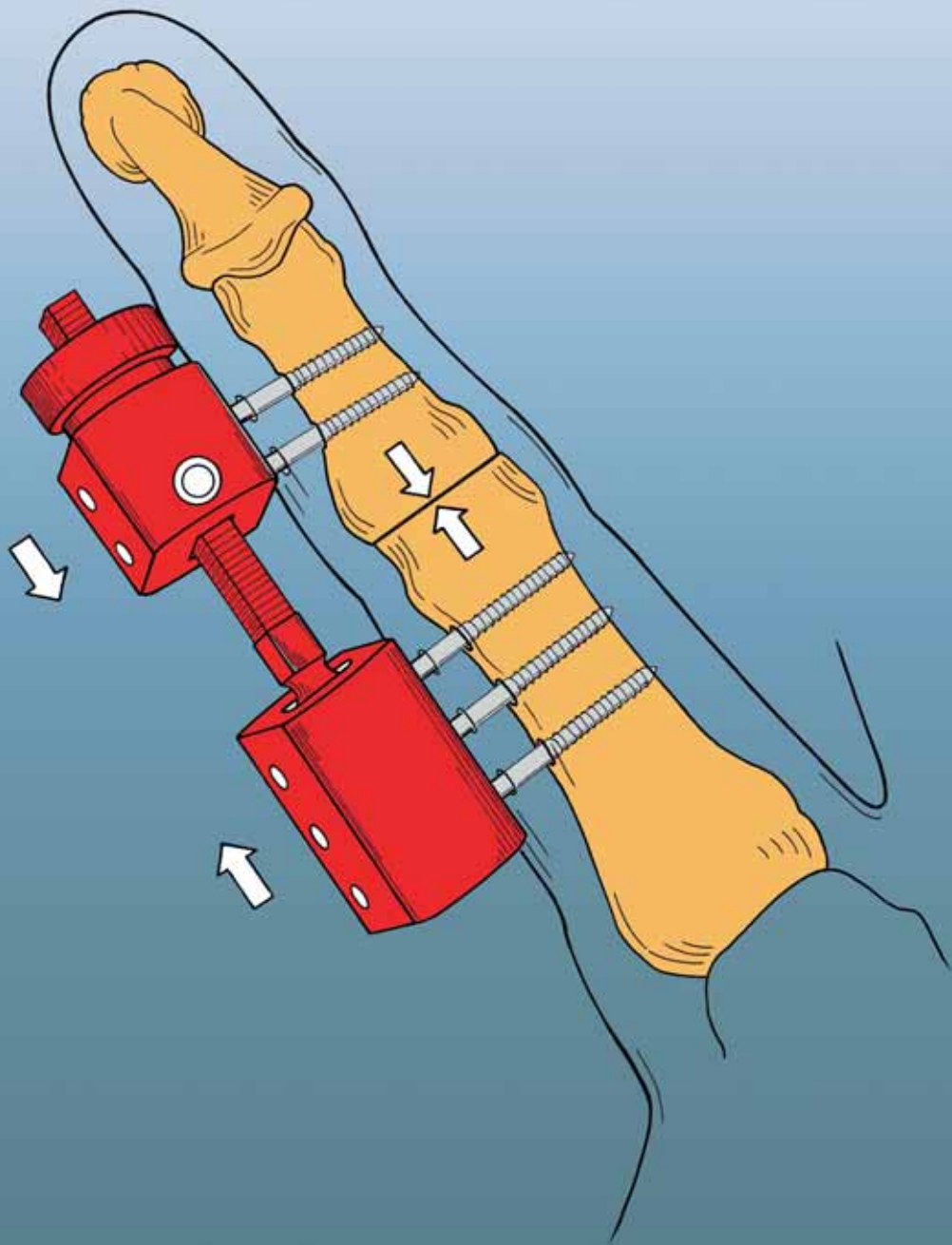


ORIHO MEDICAL

G m b H · I M P L A N T S



HAND / FINGER AND MANDIBULA FIXATEUR
HAND / FINGER UND MANDIBULA FIXATEUR

SURGICAL TECHNIQUE AND PRODUCT DESCRIPTION

Introduction

Severe hand injuries are demanding for both the surgeon and the patient. Here the primary goal of treatment is to restore as much function as possible in the shortest possible time. The Hand Fixator offers an unusually versatile and economic system for the treatment of complex as well as compound fractures.

Description

The handfixator consists of two or more titanium blocks for the fixation of the threaded pins. The gliding blocks are adjusted to the desired length on a threaded rod. **FIXATEUR I** and **II** also permit secondary distraction or compression. Joint motion can be excluded permitted. **FIXATEUR III** is slim enough to interdigital application, whereby tissue protection is guaranteed by its smooth design.

Preoperative Planning

For optimal fixation careful preoperative planning is essential. Injuries to the nerves and the vessels of the fingers are to be avoided. Where joints are to be mobilized lateral positioning of the fixator is necessary. If bone grafting is anticipated, all necessary measures should be implemented in advance. Patient must be informed of treatment demands and potential complications.

An image intensifier is usually necessary to assure correct application. Certain fracture patterns require additional fixation with screws, a tension band or a K wire.

Indications (Examples)

- Fractures of the shaft, simple or comminuted
- intraarticular fractures
- compound fractures
- trauma or tumor - related bone defects of the carpus, metacarpus or phalanges
- arthrodesis
- distraction osteogenesis (i. e. lengthening of the thumb)
- metacarpal segment transport
- callotaxis lengthening of the capitate after resection of the lunate bone (for treatment of Kienböck's disease, stage III)
- fractures of the mandibula

Fig. 1: Description of the fixator

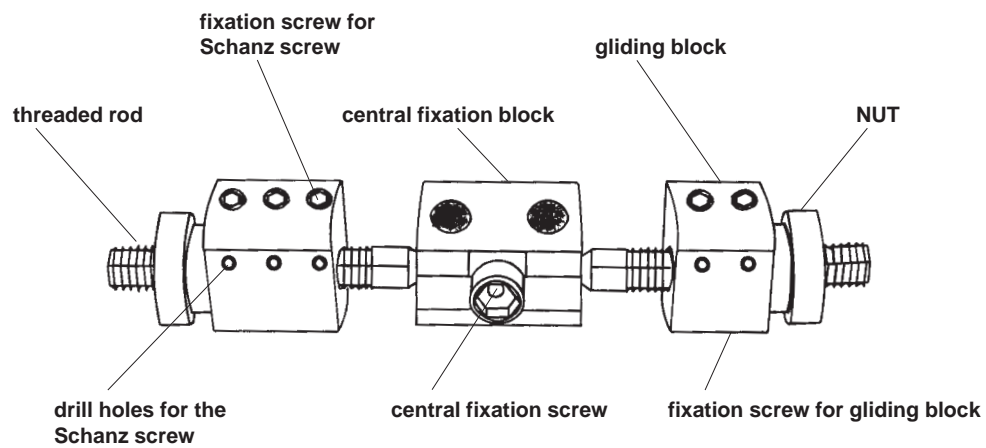


Fig. 2: Diagram of fixator assembly

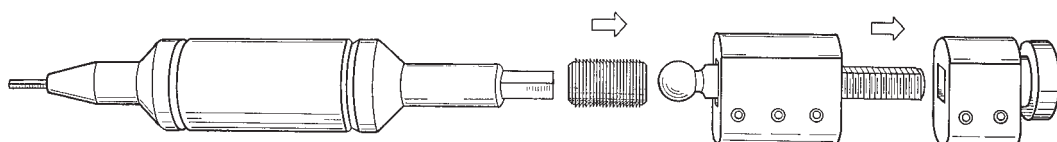


Fig. 3: Holding lever

The fixation screws are secured by means of holding lever

- wide opening lever for **FIXATEUR I** and **II**.
- small opening lever for **FIXATEUR III**.

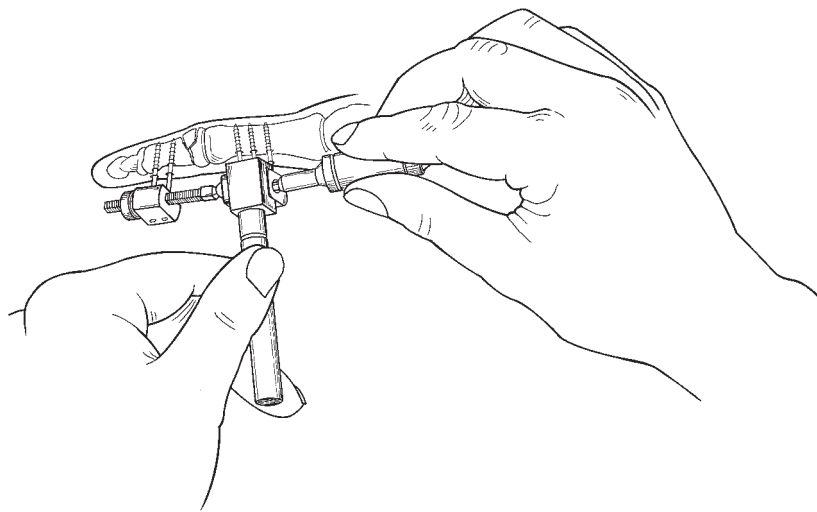


Fig. 4: D 3 : Fracture of the base of the middle phalanx

dorso - lateral application of **FIXATEUR III**.

**D 4: Comminuted fracture of proximal phalanx: dorso - lateral transarticular
FIXATEUR III**

The threaded pins should be placed beside the proximal extensor tendon.

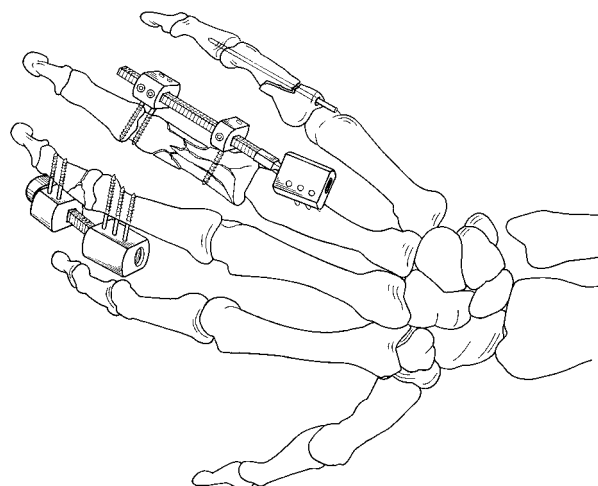


Fig. 5: Comminuted intraarticular fracture of the head of the proximal phalanx

interdigital transarticular application of **FIXATEUR III**.

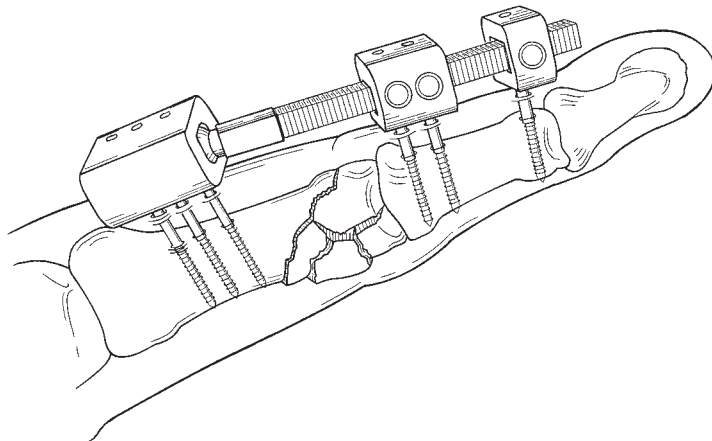


Fig. 6: Defect of the IIIrd metacarpal Bone

Cancellous bone graft, compression osteosynthesis with a dorsally applied **FIXATEUR II**.

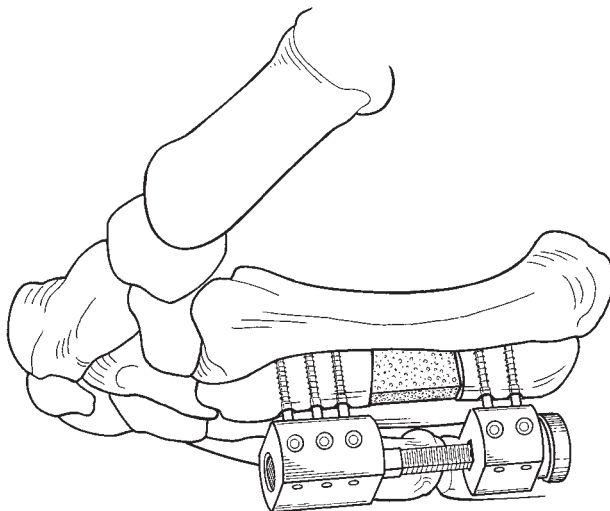


Fig. 7: Arthrodesis

Compression arthrodesis in the PIP - joint using **FIXATEUR II**.

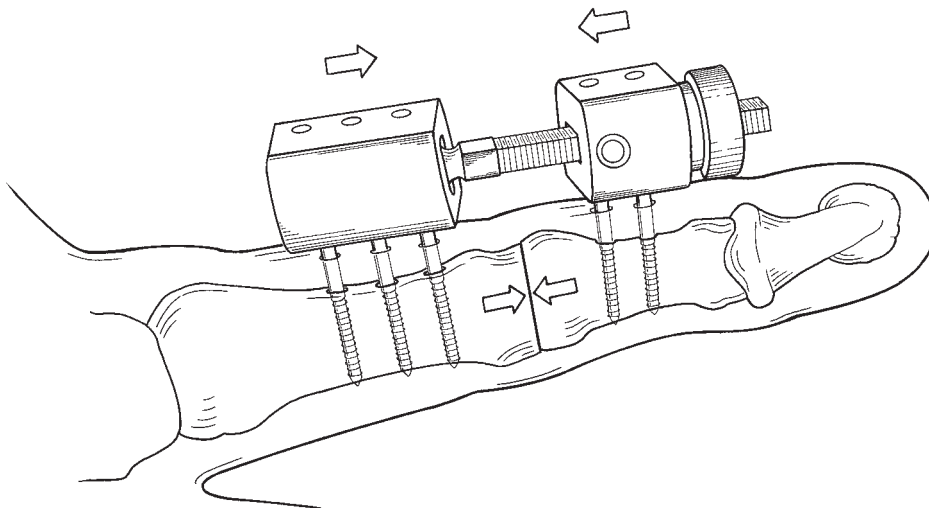


Fig. 8: Distraction osteogenesis following amputation of the thumb

Osteotomy of the first metacarpus.

Bilateral application of **FIXATEUR II**. Distraction should begin on the 10th day (1 mm / day)

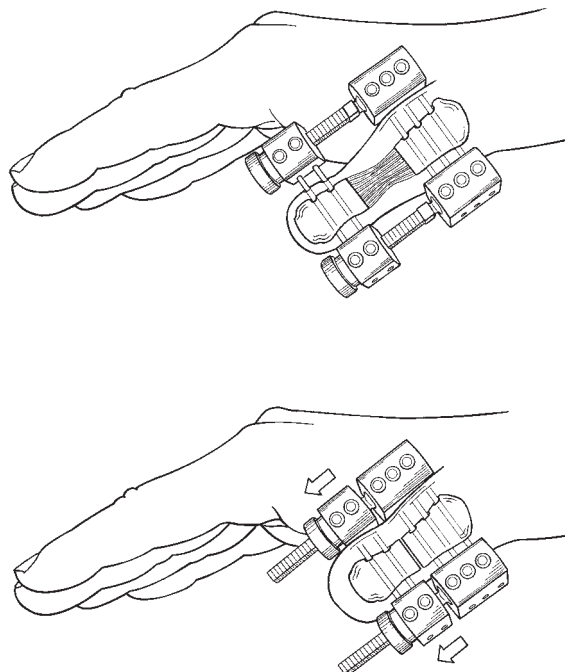
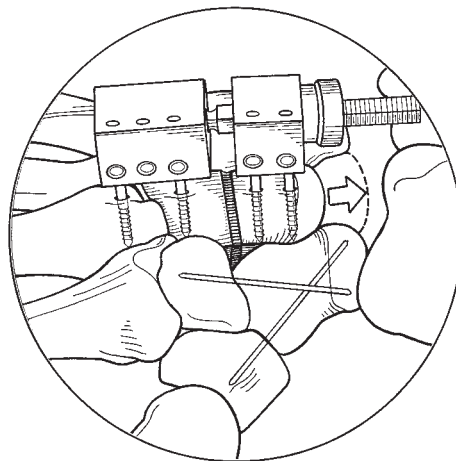
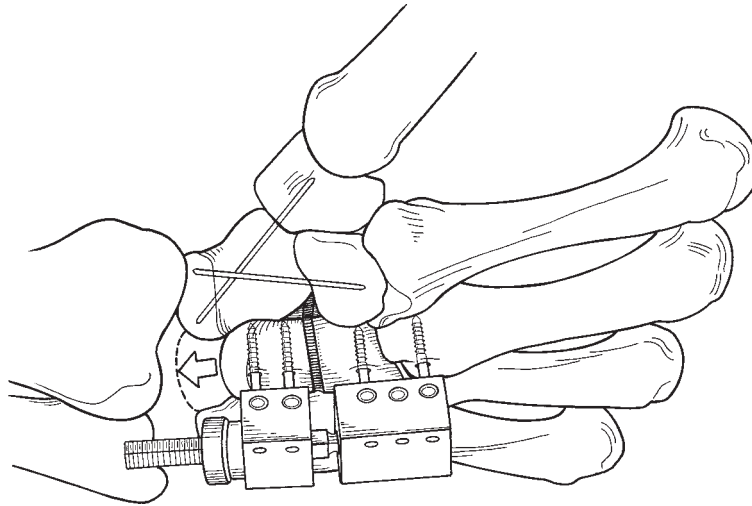


Fig. 9: Distraction of capitate

Following resection of the lunate due malacia stage III, osteotomy of the capitate is performed together with temporary fixation of the scapho - capitate and scaphulo - trapezio - trapezoid joint. Distraction should begin on the 10th day (1 mm / day).



Literature:

WILHELM K., HIERNER R., BREHL B.

Callusdistraction zur progressiven Verlängerung des Os capitatum nach Resektion des Os lunatum bei Lunatummalazie in Stadium III

Handchirurgie, Mikrochirurgie, Plastische Chirurgie 29 (1997) 10 - 19

Fig. 10: Active or passive motion.

Lateral positioning and central loosening of the joint fixation screws permit active or passive motion therapy. The axis of motion of the fixator should be parallel to the joint axis. The degree of healing should be suited for mobilization.

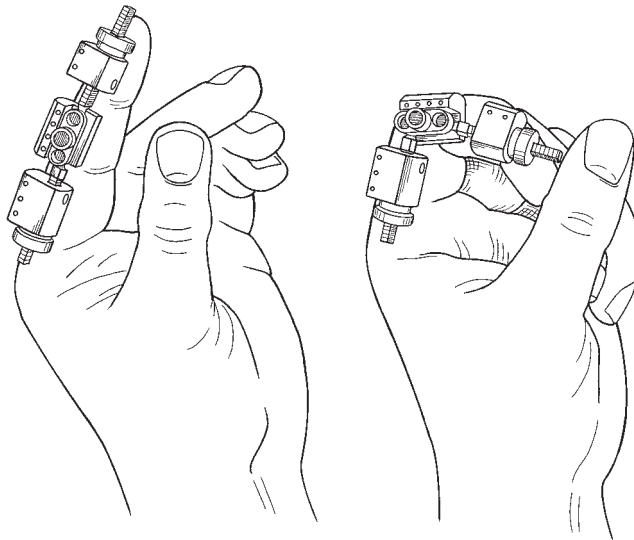
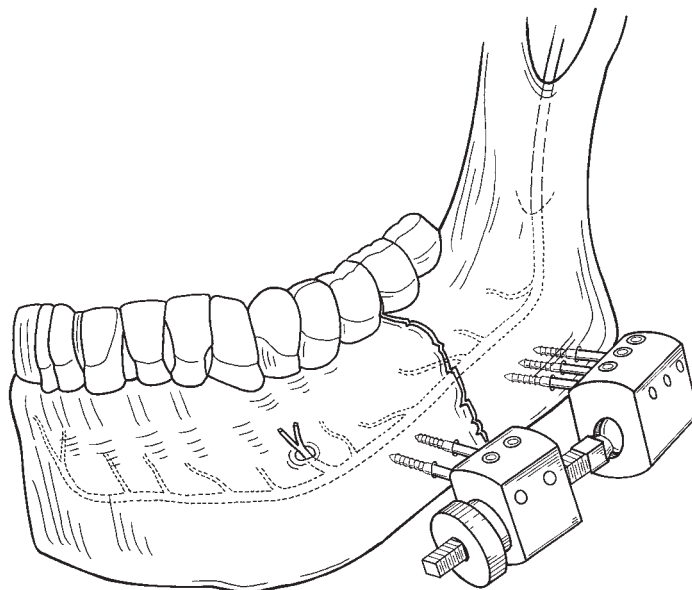


Abb. 11: Fracture of the mandibula

Application of **FIXATEUR II** at the lower mandibular rim. Preservation of the mandibular nerve is essential.



In order to cut K - wires place pin - block temporarily directly against the skin. After cutting the K - Wires push the pin - block back that the ends of the pins are covered. There should be enough space between skin and fixator to avoid maceration.

Postoperative Care

The majority of injuries can be stabilized in an ambulatory setting. Postoperatively wounds are covered by a light dressing. After three days dressings are changed or removed. The entrance points of the pins should be cleaned with soap water. Pin tract infections may be initiated by frequent manipulation of the entrance points.

The frequency of X - ray controls should be based on the dislocation risk of the stabilized fracture.

Pin tract infections require oral antibiotics and the interruption of active or passive motion. Occasionally widening of the entrance points by incisions is advisable. Apparent loosening requires pin removal. Reinsertion is seldom necessary as dislocation usually occurs at the end of the fixation period. Primary consolidation takes places within 3 - 6 weeks, depending upon the involved bone type and the extent of soft tissue trauma. The **FIXATEUR** can usually be removed without local anaesthetics. Further physiotherapy is needed to optimize functional outcome.



Standard

96-000.00 Hand / Finger und Mandibula Fixator Set

Cat. Nr.	Beschreibung	Stück
96-001.00	FIXATEUR Nr. I	1
96-002.00	FIXATEUR Nr. II	1
96-003.00	FIXATEUR Nr. III	1
96-004.00	Teflon Steri Etui	1
96-005.40	Ersatzspindeln 40 mm	1
96-005.50	Ersatzspindeln 50 mm	1
96-005.60	Ersatzspindeln 60 mm	1
96-006.00	Ersatzfeststellschrauben	20
96-320.40	Inbusschlüssel 1,5 mm	1
96-320.20	Inbusschlüssel 4,0 mm	1
96-007.00	Schraubendreher	1
96-008.01	Haltebolzen schmal	1
96-008.02	Haltebolzen breit	1
95-243.08	Kirschnerdrähte ø 1,8 mm 70 mm lang, 30 mm Gewinde	12
95-243.09	Kirschnerdrähte ø 1,6 mm 70 mm lang, 30 mm Gewinde	12

zusätzlich empfohlene Instrumente:

96-009.00	Haltezange	1
30-100.18	Zwickzange	1
30-103.18	Zwickzange	1
95-253.01	Kirschner Extraktionszange 130 mm	1
95-253.02	Kirschner Extraktionszange 180 mm	1
95-252.01	Ausziehzeuge rostfrei	1
95-252.00	Ausziehzeuge rostfrei	1

Standard

96-000.00 Hand / Finger and Mandibula Fixator Set

Cat. No.	Description	Pieces
96-001.00	FIXATEUR No. I	1
96-002.00	FIXATEUR No. II	1
96-003.00	FIXATEUR No. III	1
96-004.00	Teflon Steri Box	1
96-005.40	Threaded Rod 40 mm	1
96-005.50	Threaded Rod 50 mm	1
96-005.60	Threaded Rod 60 mm	1
96-005.00	Fixation Screws	20
96-320.40	Allen Key 1.5 mm	1
96-320.20	Allen Key 4.0 mm	1
96-007.00	Screw Driver	1
96-008.01	Holding Lever small	1
96-008.02	Holding Lever wide	1
95-243.08	Kirschner Wire ø 1.8 mm 70 mm long, thread 30 mm	12
95-243.09	Kirschner Wire ø 1.6 mm 70 mm long, thread 30 mm	12

Recommended Instruments

96-009.00	Holding Forceps	1
30-100.18	Wire Cutter	1
30-103.18	Wire Cutter	1
95-253.01	Kirschner Wire Extracting Pliers 130 mm	1
95-253.02	Kirschner Wire Extracting Pliers 130 mm	1
95-252.01	Flat Nose Parallel Pliers stainless steel	1
95-252.00	Flat Nose Parallel Pliers stainless steel	1



96-001.00 FIXATEUR Nr. I
FIXATEUR No. I



96-002.00 FIXATEUR Nr. II
FIXATEUR No. II



96-003.00 FIXATEUR Nr. III
FIXATEUR No. III

96-005.40 Ersatzspindel 40 mm
Threaded Rod 40 mm



96-005.50 Ersatzspindel 50 mm
Threaded Rod 50 mm



96-005.60 Ersatzspindel 60 mm
Threaded Rod 60 mm



96-007.00 Schraubendreher
Screwdriver



96-008.01 Haltebolzen schmal
Holding Lever small



96-008.02 Haltebolzen breit
Holding Lever wide

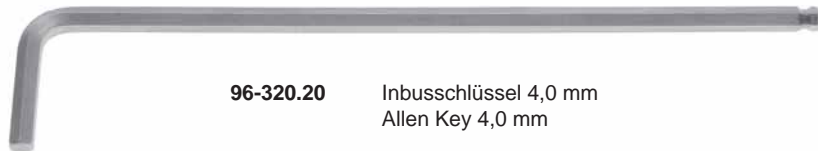


96-009.00 Haltezange
Holding Forceps



95-243.08 Kirschnerdraht mit Gewinde und Trokarspitze ø 1,8 mm, 70 mm lang, 30 mm Gewinde
Kirschner Wire with thread and trocar point ø 1.8 mm, 70 mm long, 30 mm thread

95-243.09 Kirschnerdraht mit Gewinde und Trokarspitze ø 1,6 mm, 70 mm lang, 30 mm Gewinde
Kirschner Wire with thread and trocar point ø 1.6 mm, 70 mm long, 30 mm thread



96-320.20 Inbusschlüssel 4,0 mm
Allen Key 4,0 mm

96-320.40 Inbusschlüssel 1,5 mm
Allen Key 1,5 mm



30-100.18
TC 180 mm

weicher Draht	2,0 mm
soft Wire	2.0 mm
harter Draht	1,5 mm
hard Wire	1.5 mm



30-103.18
TC 180 mm

Front und Seitenschneider
front and lateral cutting action

weicher Draht	2,0 mm
soft Wire	2.0 mm
harter Draht	1,5 mm
hard Wire	1.5 mm

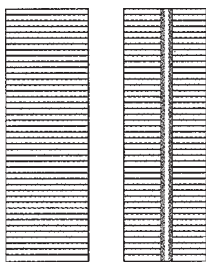


95-253.01

Extraktionszange für Bohrdraht, 130 mm
Extraction Pliers for Boring Wire, 130 mm

95-253.02

Extraktionszange für Bohrdraht, 180 mm
Extraction Pliers for Boring Wire, 180 mm



95-252.01

Parallel - Flachzange mit Seitenschneider
180 mm rostfrei
Flat - Nose Pliers parallel, with lateral Wire
cutter 180 mm stainless steel

95-252.00

Parallel - Flachzange ohne Seitenschneider
180 mm rostfrei
Flat - Nose Pliers parallel, without lateral
wire cutter 180 mm stainless steel

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