



## VET INTERLOCKING NAILING SYSTEM

FOR SMALL ANIMAL (DOGS AND CATS)

**mahe medical** – a committed specialist  
that cares for clinical resources

Specialized in the fields of orthopedics, traumatology and spinal column, mahe medical develops innovative products and solutions, from which you as a dealer benefit just like the respectively responsible doctor or the OP personnel and - beyond the economic and administrative aspect - clinic management as well.

The excellent quality and precision of our products, as well as the willingness to adapt our developments exclusively to your requirements, are the most important elements of our offered products and services.

Our product ideas help you to preserve the most precious resources of daily clinic operations: Nerves, time and money.

## INSTRUMENTS FOR VET-INTERLOCKING NAIL SYSTEM 3.5 MM / 4.0 MM

| <u>Ref. No.</u> | <u>Description</u>                                                                                |                                                                                       |
|-----------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ■ 110-0010-005  | Vet.-Nail targeting device, proximal and distal                                                   |    |
| ■ 110-0150-020  | Vet.-screw driver width hexagonal flats 1.5 mm, used for Ø 2.0 mm screw                           |    |
| ■ 110-0130-015  | Drill bit with AO-shaft, Ø 1.5 mm x length 105/75 mm                                              |    |
| ■ 110-0140-020  | Vet.-drill sleeve Ø 1.5 mm                                                                        |  |
| ■ 110-0140-040  | Vet.-drill sleeve Ø 4.0 mm                                                                        |  |
| ■ 110-0151-020  | Vet.-T-handle width hexagonal inner flats 14 mm used for coupling nut Vet.- Nail targeting device |  |
| ■ 110-0155-030  | Vet.-depth gauge 0-30 mm used for Ø 2.0 mm screws                                                 |  |
| ■ 001-0013-010  | Screw forceps                                                                                     |  |

## RECOMMENDED INSTRUMENTS FOR VET-INTERLOCKING NAIL SYSTEM 3.5 MM / 4.0 MM

| <u>Ref. No.</u> | <u>Description</u>                                                         |                                                                                     |
|-----------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| ■ 004-1000-014  | TC-Wire cutter 220 mm used for soft wires Ø 3.0 mm and hard wires Ø 2.5 mm |  |

| <u>Ref. No.</u> | <u>Description</u>  |                                                                                     |
|-----------------|---------------------|-------------------------------------------------------------------------------------|
| ■ 010-0020-816  | Perthes awl 21.0 cm |  |

| <u>Ref. No.</u>  | <u>Description</u>                       |                                                                                      |
|------------------|------------------------------------------|--------------------------------------------------------------------------------------|
| ■ 001-0002-008ST | Ti-cortical-screw Ø 2.0 mm, length 8 mm  |  |
| ■ 001-0002-010ST | Ti-cortical-screw Ø 2.0 mm, length 10 mm |                                                                                      |
| ■ 001-0002-012ST | Ti-cortical-screw Ø 2.0 mm, length 12 mm |                                                                                      |
| ■ 001-0002-014ST | Ti-cortical-screw Ø 2.0 mm, length 14 mm |                                                                                      |
| ■ 001-0002-016ST | Ti-cortical-screw Ø 2.0 mm, length 16 mm |                                                                                      |
| ■ 001-0002-018ST | Ti-cortical-screw Ø 2.0 mm, length 18 mm |                                                                                      |
| ■ 001-0002-020ST | Ti-cortical-screw Ø 2.0 mm, length 20 mm |                                                                                      |

| <u>Ref. No.</u> | <u>Description</u>                                                           |                                                                                       |
|-----------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ■ 110-0125-008  | VET-Interlocking bolt Ø 2.0 x 8.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails |  |
| ■ 110-0125-010  | VET-Interlocking bolt Ø 2.0x10.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-012  | VET-Interlocking bolt Ø 2.0x12.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-014  | VET-Interlocking bolt Ø 2.0x14.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-016  | VET-Interlocking bolt Ø 2.0x16.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-018  | VET-Interlocking bolt Ø 2.0x18.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-020  | VET-Interlocking bolt Ø 2.0x20.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |
| ■ 110-0125-022  | VET-Interlocking bolt Ø 2.0x22.0 mm, f. Ø 3.5/4.0 mm VET-Interlocking nails  |                                                                                       |

| <u>Ref. No.</u> | <u>Description</u>                           |
|-----------------|----------------------------------------------|
| ■ 110-0035-080  | Ti-Vet.-nail Ø 3.5 mm length 80 mm / 60 mm   |
| ■ 110-0035-090  | Ti-Vet.-nail Ø 3.5 mm length 90 mm / 70 mm   |
| ■ 110-0035-100  | Ti-Vet.-nail Ø 3.5 mm length 100 mm / 80 mm  |
| ■ 110-0035-110  | Ti-Vet.-nail Ø 3.5 mm length 110 mm / 90 mm  |
| ■ 110-0035-120  | Ti-Vet.-nail Ø 3.5 mm length 120 mm / 100 mm |
| ■ 110-0035-130  | Ti-Vet.-nail Ø 3.5 mm length 130 mm / 110 mm |

| <u>Ref. No.</u> | <u>Description</u>                             |
|-----------------|------------------------------------------------|
| ■ 110-0040-080  | Ti-Vet.-nail Ø 4.0 mm x length 80 mm / 60 mm   |
| ■ 110-0040-090  | Ti-Vet.-nail Ø 4.0 mm x length 90 mm / 70 mm   |
| ■ 110-0040-100  | Ti-Vet.-nail Ø 4.0 mm x length 100 mm / 80 mm  |
| ■ 110-0040-110  | Ti-Vet.-nail Ø 4.0 mm x length 110 mm / 90 mm  |
| ■ 110-0040-120  | Ti-Vet.-nail Ø 4.0 mm x length 120 mm / 100 mm |
| ■ 110-0040-130  | Ti-Vet.-nail Ø 4.0 mm x length 130 mm / 110 mm |

## USERS MANUAL GUIDE

The titanium interlocking nails dia. 3.5 mm/4.0 mm used for small animals dogs and cats, nail-implants for fracture treatments in the femoral, tibial, humeral and forearm bones.

### INDICATIONS

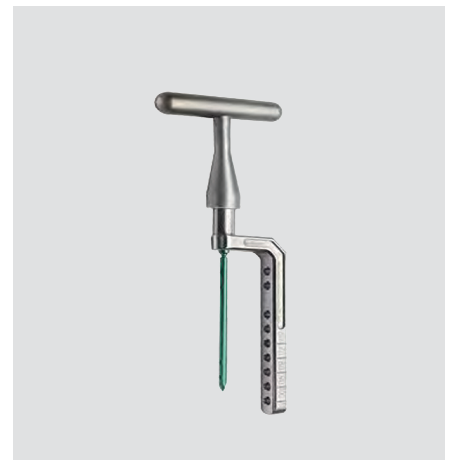
1. Open - and close shaft fractures
2. Segmental and comminuted shaft fractures

### APPLICATION SURGICAL TECHNIQUE

1. Positioning on the operating table
2. Preparation of the instruments
3. Open repositioning-reduction of the fracture or closed reduction technique under fluoroscopic control on a distruction surgical table
4. Determination-selection of the nail diameter and length
5. Assembling of the selected nail with the nail targeting device
6. Using the T-handle to tighten the assembled nail with targeting device
7. Incision and determination of the nail approach with the Perthes awl in open technique or closed technigue under fluoroscopic control
8. Opening of the nail approach with the Perthes awl, after approach determination
9. Insertion of the nail, the nail is to insert, assembled with the nail targeting device according to Fig. 1

**WARNING:** Don't use a insertion mallet/hammer for nail insertion and don't hammer on the device!

10. Small incision for the proximal locking cortical screws.
11. Insert the drill sleeve dia. 4.0 mm assembled with the drill sleeve 1.5 mm in the determinated labeled hole of the targeting device and after proceed the insertion of the assembled sleeves in the insition as far as you feel the contact with the cortical, keep the sleeve components in position and use a drill with a small AO-quick coupling, coupled with the dia. 1.5 mm drill bit
12. Drilling of the hole for dia. 2.0 mm locking cortical screws, drilling over the positioned drill sleeves, the drill bit have to pass both corticals of the tubular bone.



## USERS MANUAL GUIDE

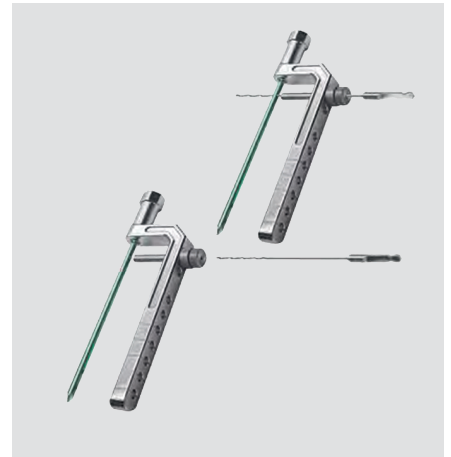
**WARNING:** All interlocking nail have to be locked with 4 locking cortical screws, that is necessary for a high stabilization and also to save the rotation by mobile bearing after the surgery! Usually you insert firstly the two proximal locking cortical screws, but if you need a fracture compression by extension fracture, you have to insert firstly the two distal ones, after you proceed the tension (reduction) with the targeting device, keep the targeting device in reduction position and insert the two proximal locking screws.

13. Determination-measurement with the screw length gauge over the dia. 4.0 mm drill sleeve, remove the dia. 1.5 mm drill sleeve and after you insert the length gauge in the 4.0 mm drill sleeve you hook in the opposite cortical, after you can read up on the scale 0-30 mm the screw length.

**Note:** You have to calculate 2.0 mm to 3.0 mm additional to the measured screw length!

14. Insert the selected determinated screw with the ring-mark screw driver hex. 1.5 mm over the dia. 4.0 mm drill sleeve turn the screws as far as the ring-mark is the same position as the sleeve head, that makes sure the screw is inside in the complete length, now you can remove the dia. 4.0 mm sleeve and the screw driver.

**WARNING:** Don't tighten the screw with the screw head on the cortical by insertion, interlocking nailing is different to plating fixation systems we don't need a screw compression, just a locked fixation!



## USERS MANUAL GUIDE

15. All for incisions and insertions for insertion of the 4 locking cortical screws, have to be done in the same procedure as required in step 11. and 14.
16. Disassembling of the targeting device after insertion of the locking cortical screws.

**WARNING:** Before you proceed the disassembling of the targeting device, control if all screws are placed in right position!

17. Cutting of the threaded nail section with our recommended TC-Wire cutter, you cut the nail end on the proximal nail ringmark (cutting section of the nail), keep the nail end with a standard forceps during the cutting process.
18. Wound closing of the incision can be proceeded now!
19. X-ray control (AP and LM control) after wound treatment
20. REQUIRED: after 6 up to 7 weeks, you can remove the two distal screws for dynamization
21. REQUIRED: after 12 month, you can remove the two proximal screws, DO NOT REMOVE THE NAIL!



## USERS MANUAL GUIDE

### **BASIC INFORMATION FOR INTERLOCKING NAILS:**

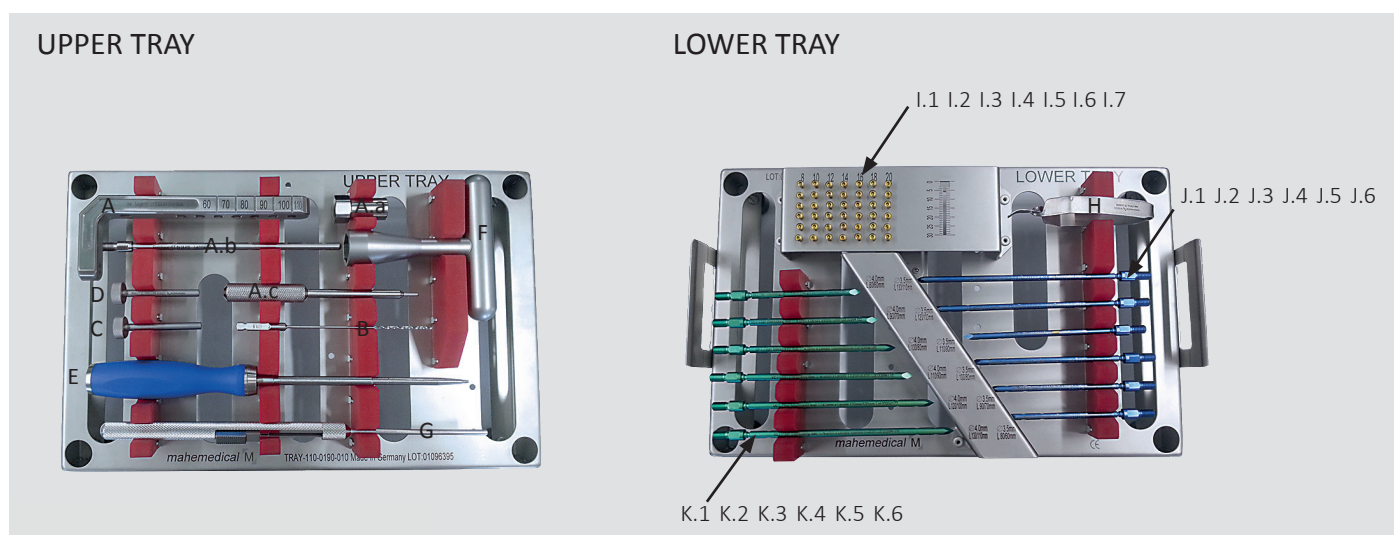
Interlocking nails are a refinement of the original Küntscher nail. An interlocking nail is basically an intramedullary pin secured in position by proximal and distal transfixing screws which engage the bone to the nail to provide axial, bending and torsional stability. This procedure in man generally involves power reaming and insertion by closed technique, also can be used as an open technique, on a standard surgical table, recommended on a distraction table under fluoroscopic control. For the “mahe Interlocking Nail System”, a power reaming of the bone channel is not necessary and recommended, no extra specialized equipment is necessary, also it is not necessary to remove the nail, the nails and screws are manufactured in Titanium Alloy ISO 5832-3, it is more dangerous with a higher risk for infections by removal of nails, we recommend to remove the distal screws for dynamization after 6 to 7 weeks and the proximal ones after one year.

### **NAIL IMPLANTS:**

We are offering our nail implants in two diameters, dia. 3.5 mm and dia. 4.0 mm. The nails are in different colour, dia. 3.5 mm in green and dia. 4.0 mm in blue; length 80 mm, 90 mm, 100 mm, 120 mm and 130 mm. The locking cortical screws are offered in diameter 2.0 mm in blue colour, length 8 mm up to 20 mm in self-cutting version (tapping is not required and necessary!).

## VET.-INTERLOCKING NAIL BASIC INSTRUMENT AND IMPLANT SET

### SET-110-0190-010 Tray f. 3.5/4.0 mm VET-locking nail system



| Ref. No.          | Description                                                                                     | Quantity |
|-------------------|-------------------------------------------------------------------------------------------------|----------|
| 110-0010-005      | Vet.-Nail targeting device, proximal and distal                                                 | (A) 1    |
| 110-0130-015      | Drill bit with AO-shaft Ø 1.5 mm length 105/75 mm                                               | (B) 2    |
| 110-0140-020      | Vet.-Drill sleeve Ø 1.5 mm                                                                      | (C) 1    |
| 110-0140-040      | Vet.-Drill sleeve Ø 4.0 mm                                                                      | (D) 1    |
| 110-0150-020      | Vet.-screw driver width hexagonal flats 1.5 mm used for Ø 2.0 screws                            | (E) 1    |
| 110-0151-020      | Vet. T-handle width hexagonal inner flats 14 mm used for coupling nut VET-nail targeting device | (F) 1    |
| 110-0155-030      | Vet.-depth gauge 0-30mm used for Ø 2.0 mm screws                                                | (G) 1    |
| 001-0013-010      | Screw forceps                                                                                   | (H) 1    |
| 001-0002-008ST    | Ti-cortical-screw Ø 2.0 mm, length 8 mm                                                         | (I.1) 4  |
| 001-0002-010ST    | Ti-cortical-screw Ø 2.0 mm, length 10 mm                                                        | (I.2) 4  |
| 001-0002-012ST    | Ti-cortical-screw Ø 2.0 mm, length 12 mm                                                        | (I.3) 4  |
| 001-0002-014ST    | Ti-cortical-screw Ø 2.0 mm, length 14 mm                                                        | (I.4) 4  |
| 001-0002-016ST    | Ti-cortical-screw Ø 2.0 mm, length 16 mm                                                        | (I.5) 4  |
| 001-0002-018ST    | Ti-cortical-screw Ø 2.0 mm, length 18 mm                                                        | (I.6) 4  |
| 001-0002-020ST    | Ti-cortical-screw Ø 2.0 mm, length 20 mm                                                        | (I.7) 4  |
| 110-0035-080      | Ti-Vet.-nail Ø 3.5 mm x length 80 mm / 60 mm                                                    | (J.1) 1  |
| 110-0035-090      | Ti-Vet.-nail Ø 3.5 mm x length 90 mm / 70 mm                                                    | (J.2) 1  |
| 110-0035-100      | Ti-Vet.-nail Ø 3.5 mm x length 100 mm / 80 mm                                                   | (J.3) 1  |
| 110-0035-110      | Ti-Vet.-nail Ø 3.5 mm x length 110 mm / 90 mm                                                   | (J.4) 1  |
| 110-0035-120      | Ti-Vet.-nail Ø 3.5 mm x length 120 mm / 100 mm                                                  | (J.5) 1  |
| 110-0035-130      | Ti-Vet.-nail Ø 3.5 mm x length 130 mm / 110 mm                                                  | (J.6) 1  |
| 110-0040-080      | Ti-Vet.-nail Ø 4.0 mm x length 80 mm / 60 mm                                                    | (K.1) 1  |
| 110-0040-090      | Ti-Vet.-nail Ø 4.0 mm x length 90 mm / 70 mm                                                    | (K.2) 1  |
| 110-0040-100      | Ti-Vet.-nail Ø 4.0 mm x length 100 mm / 80 mm                                                   | (K.3) 1  |
| 110-0040-110      | Ti-Vet.-nail Ø 4.0 mm x length 110 mm / 90 mm                                                   | (K.4) 1  |
| 110-0040-120      | Ti-Vet.-nail Ø 4.0 mm x length 120 mm / 100 mm                                                  | (K.5) 1  |
| 110-0040-130      | Ti-Vet.-nail Ø 4.0 mm x length 130 mm / 110 mm                                                  | (K.6) 1  |
| TRAY-110-0190-010 | Tray for basic Vet.-interlocking nail-set                                                       | 1        |

#### Recommended sterile container for SET-110-0190-010

|              |                                                                                                 |
|--------------|-------------------------------------------------------------------------------------------------|
| TRAY-510-130 | Sterile container, bottom non perforated, silver, outside 310x190x130 mm, inside 280x182x124 mm |
|--------------|-------------------------------------------------------------------------------------------------|



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