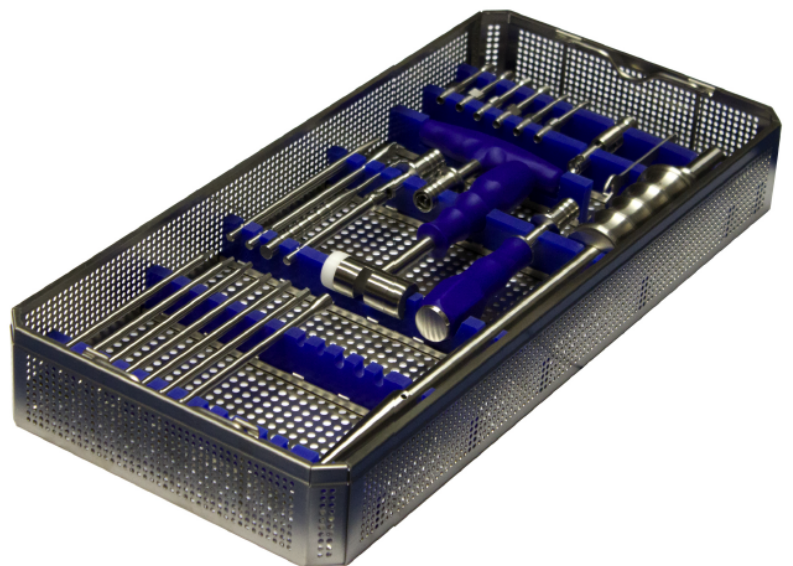


## EMERGENCY REMOVAL



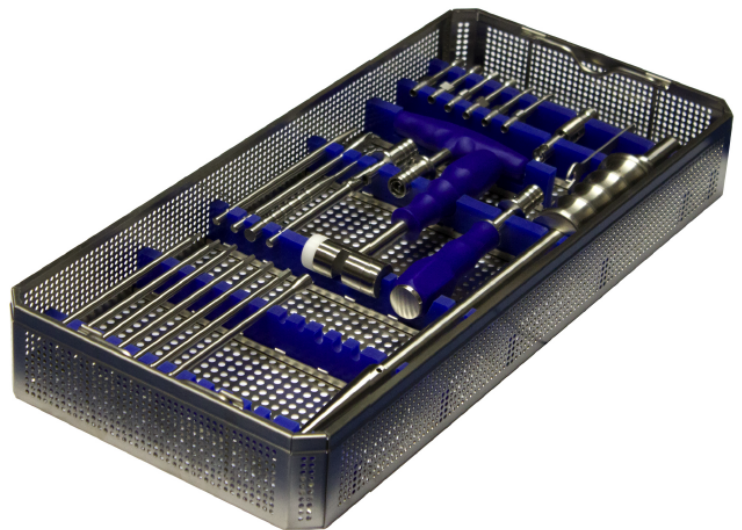
**UNIVERSAL NAIL EXTRACTION SET**  
for Intramedullary Nail System

## Extraction Set for Intramedullary Nail Systems



### Features.

- 1** Expeditious and safe extraction of all types of conventional intramedullary nails
- 2** No pre-operative identification of the implanted type of intramedullary nail
- 3** Easy positioning and tightening
- 4** Significant reduction of intraoperative extraction time
- 5** Including several handles, allen wrench, cardan joint and mallet
- 6** Functional and convenient storage in a specially designed and fully autoclavable container system



## FOR A NUMBER OF REASONS IT IS OFTEN NOT POSSIBLE TO REMOVE IMPLANTED PINS WITHOUT PROBLEMS:

The corresponding removal device with the original threaded rod must be available to match the relevant pin, since each type of pin differs in diameter and thread pitch in the projection used.

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This means that it is first necessary to determine the type of pin had that been implanted in the case of patients who had been treated in other clinics, and the corresponding instrument must be obtained. This often requires a great deal of time and expense. When removing the pin using the original



instrument, it is necessary to show precisely where the pin entered, in other words, all the bony and soft tissue that blocks the path to the projection on the pin or is over the

threaded part must be removed. When the threaded rod is screwed into the projection in the pin, the instrument must be applied precisely in the axis of the pin so that the thread can "start".

This is regularly made more difficult by soft parts, such as at the proximal femur, or as a result of the position of the patella at the tibia.

If the threaded rod is skewed when it is screwed into the pin, it is possible in extreme cases for the removal of the pin to fail completely. Last but not least, there are a number of different sizes of Allen keys that are used for the locking bolt.

The universal removal device introduced here is suitable for removing all types of pins quickly and with certainty, and thus guarantees trouble-free extraction. The instrument consists of a tube with a sliding hammer and a sliding rod that passes into the tube by means of a fine thread. A tip projection that has been selected to match the diameter of the pin locator is spread apart in the same way as a dowel by the conical tip of the sliding rod. The tension of the sliding rod is maintained by a spring set in the rear part. The tensioning range of the tip projections means that just three sizes are enough to grip all types of pins that are used. Note that the size of the tip should be selected such that it fits into the hole in the pin with as little play as possible. This produces the most stable possible combination of extractor and pin. In addition, the instrument has a straight and a jointed handle for a set of long Allen key bits in steps of 0.5 mm from 2.5 to 5.5 mm. The bits are suitable for removing screws with the corresponding Allen nuts. The top of the bits converge slightly at the tip to make it easier to engage the bit into the Allen nut of the locking part and to clamp it, and to allow it to be removed with difficulty.

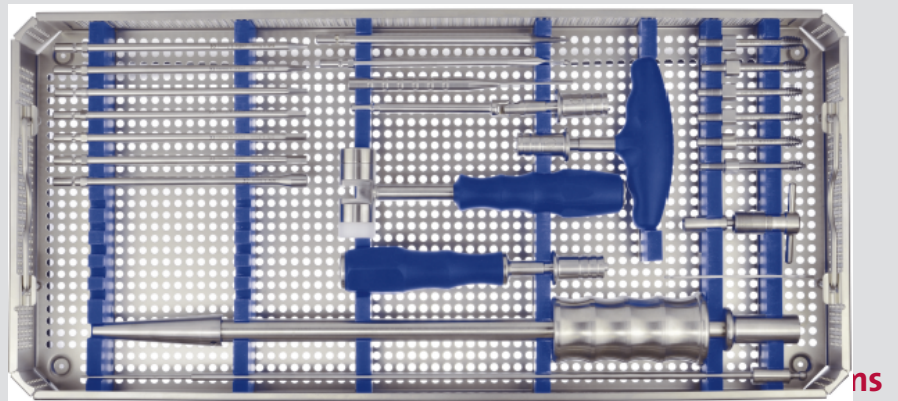
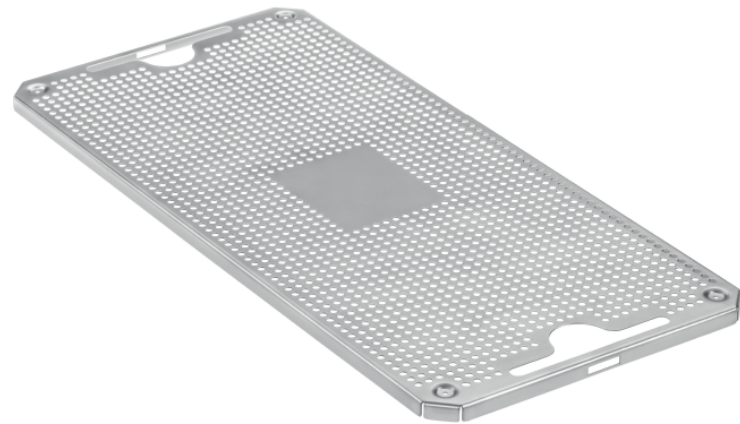
The instrument is suitable for reliably removing all type of pins with short times in the operating room and without any special preparation.



# EXTRACTION SET FOR INTRAMEDULLARY NAIL SYSTEMS

## Table of Content

60-500.10 Sterilization Container Bottom and Lid 580 x 280 x 100 mm



**Listing for SET = REF. 54-09-55-000**

The extraction set includes following items:

REF.:	PRODUCT - DESCRIPTION:	PCS.
60-500.10	Sterilization Container Bottom and Lid 580x280x100mm	1
54-09-55-0000-30	Steel Sterilization Tray with Lid 540x255x75mm include Inlays	1
30-09-55-1800-30	Extractor	1
30-09-55-1800-31	Tension Rod used for Nail Extraction Hammer	1
30-09-55-1800-32	Tension Device used for Nail Extraction Hammer	1
30-09-55-1800-11	Adapter for Nail Extractor GR 1. ( Size 1. ) 6 up to 9mm	2
30-09-55-1800-12	Adapter for Nail Extractor GR 2. ( Size 2. ) 9 up to 12mm	2
30-09-55-1800-13	Adapter for Nail Extractor GR 3. ( Size 3. ) 12 up to 15mm	2
30-06-10-1806	Wrench	1
30-06-25-1803	Driver Hexagonal SW 2.5 ( Hexagonal Flats 2.5mm )	1
30-06-30-1803	Driver Hexagonal SW 3.0 ( Hexagonal Flats 3.0mm )	1
30-06-35-1803	Driver Hexagonal SW 3.5 ( Hexagonal Flats 3.5mm )	1
30-06-40-1803	Driver Hexagonal SW 4.0 ( Hexagonal Flats 4.0mm )	1
30-06-45-1803	Driver Hexagonal SW 4.5 ( Hexagonal Flats 4.5mm )	1
30-06-50-1803	Driver Hexagonal SW 5.0 ( Hexagonal Flats 5.0mm )	1
30-05-15-1800	Hemosat	1
30-06-10-1805	Quick Coupling T-Handle	1
30-06-18-1800	Quick Coupling Handle	1
30-06-17-1808	Universal Quick Coupling Cardan Joint ( Long for T-Handle and Handle )	1
30-01-19-1801	Mallet with Slot	1
30-06-03-1803	Conical Extraction Screw	1
30-06-01-1803	Screw Driver with Guide Pin	1
30-06-02-1803	Socket Wrench	1

## UNIVERSAL NAIL EXTRACTION SET FOR INTRAMEDULLARY NAIL SYSTEMS



QUICK COUPLING T-HANDLE  
30-06-10-1805



QUICK COUPLING HANDLE · 30-06-18-1800



UNIVERSAL QUICK COUPLING CARDAN JOINT  
(LONG FOR T-HANDLE AND HANDLE) · 30-06-17-1808



MALLET WITH SLOT WIDTH 8MM, WEIGHT 340G 30-01-19-1801



DRIVER HEXAGONAL SW 2.5 ( HEXAGONAL FLATS 2.5mm ) · 30-06-25-1803  
DRIVER HEXAGONAL SW 3.0 ( HEXAGONAL FLATS 3.0mm ) · 30-06-30-1803  
DRIVER HEXAGONAL SW 3.5 ( HEXAGONAL FLATS 3.5mm ) · 30-06-35-1803  
DRIVER HEXAGONAL SW 4.0 ( HEXAGONAL FLATS 4.0mm ) · 30-06-40-1803  
DRIVER HEXAGONAL SW 4.5 ( HEXAGONAL FLATS 4.5mm ) · 30-06-45-1803  
DRIVER HEXAGONAL SW 5.0 ( HEXAGONAL FLATS 5.0mm ) · 30-06-50-1803



HEMOSAT · 30-05-15-1800



EXTRACTOR  
30-09-55-1800-30



TENSION ROD USED FOR NAIL  
EXTRACTION HAMMER  
30-09-55-1800-31



EXTRACTION HAMMER COMPLETE  
WITH TENSION DEVICE AND  
TENSION ROD · 30-09-55-1800



ADAPTER FOR NAIL EXTRACTOR GR1. (S ZE1.)  
6 UP TO 9mm · 30-09-55-1800-11



ADAPTER FOR NAIL EXTRACTOR GR2 .(SIZE2.)  
9 UP TO 12mm · 30-09-55-1800-12



ADAPTER FOR NAIL EXTRACTOR GR3 .(SIZE3.)  
12 UP TO 15mm · 30-09-55-1800-13



WRENCH  
30-06-10-1806



SPARE NYLON DISCS  
30-01-19-1801-04



SPARE STEEL DISCS  
30-01-19-1801-03



CONICAL EXTRACTION SCREW · 30-06-03-1803



SCREW DRIVER WITH GUIDE PIN · 30-06-01-1803



SOCKET WRENCH · 30-06-02-1803

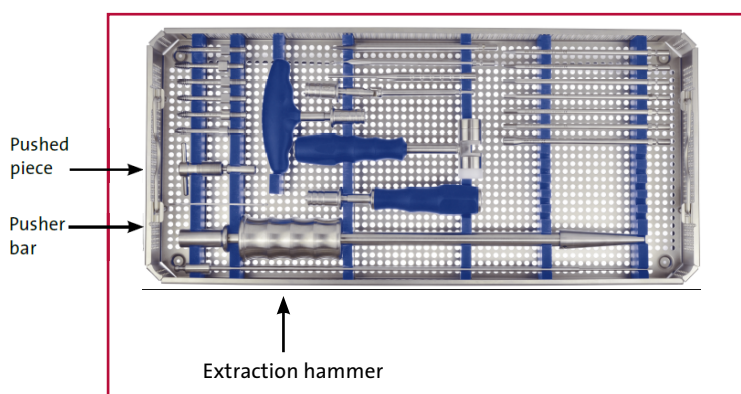


TENSION DEVICE USED FOR NAIL  
EXTRACTION HAMMER  
30-09-55-1800-32

## Operating Instructions

These operating instructions are important for using the instrument in the most ideal, simple manner. A step-by-step description of how to assemble the instrument, how the type of insert is selected and how it is fixed in the screw and how it is extracted, will follow. Please read the entire description through and, once you have read it, carry out the steps on the instrument as far as possible. Please ensure, before you use the instrument on the patient, that you have clearly understood the assembly, selection of the correct insert and fixing.

### Assembly: The main instrument comprises the following parts:



Hold the extraction hammer in your hand. Now insert the pusher bar with the pointed end through the large opening of the extraction hammer.



Leave the upper end of the pusher bar protruding a bit. Now hold the pushed piece in your hand and place it on the pusher bar.

Now bring the two parts together on the extraction hammer and screw the pushed piece in somewhat, in a clockwise direction. Please ensure that the pusher bar does not hang out during the linking-up stage.



With the instrument in a vertical position – the small opening facing downwards – see whether the pusher bar is correctly attached. If the pusher bar almost falls out of the instrument, it hasn't been correctly attached and you have to repeat the aforementioned steps.



## Selection of the correct Insert:

It is of utmost importance to select the correct size of insert in order to attain the best function of the instrument. An incorrectly-selected size can result in the instrument slipping out of the screw during extraction or that the instrument cannot be attached to the screw. There are the following ways of selecting the correct size:

### You know the size of the thread on the screw:

■ **Information is written on the inserts.**

They mean: GR1 = > for use on M6 to M9 threads

GR2 = > for use on M9 to M12 threads

GR3 = > for use on M12 to M15 threads

Example: You know that the screw has a thread of M10. The correct insert is thus GR2 (M9 to M12)

### You don't know the size of the thread on the screw:

■ Hold the GR3 insert in your hand. Introduce it into the thread of the screw. If you can screw it in, you have the right size.

However, if it cannot be screwed in, take insert GR2 and carry out as above. If you can screw it in, it fits tightly or has slight play, you have the right size. If you cannot screw it in, take insert GR1. This should now be the correct size.

Always ensure: it must always be possible to screw in the insert and it may not have too much play in the thread:

**Here is an example:**



Insert is too big.  
It cannot be attached



Insert is too small. It wobbles.

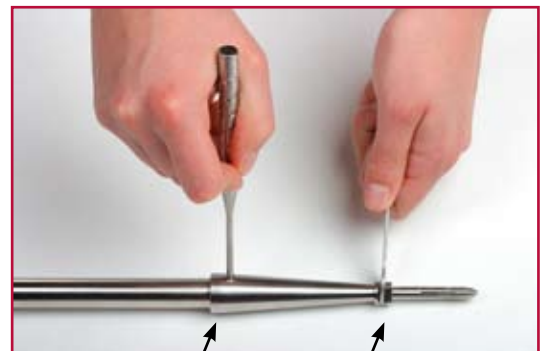


Insert is correct. It can be screwed in and only wobbles slightly

## Screwing the correct Insert:

Once the correct insert has been selected, it is screwed into the extraction hammer. To do this, place the insert with the boring side onto the pusher bar and bring it up to the extraction hammer. Unscrew it as far as possible by turning to the right. Using the spanner and hemosat included in the set, tighten it slightly. To do this, put the hemosat into the boring supplied for this purpose, and put the spanner on the spanner surfaces of the insert. Now, by turning to the right, you prevent this from it inadvertently coming off.

### Tools required:



Boring for hemosat

Wrench area

### Extracting the screw

Now attach the extraction hammer to the screw. Due to the elliptical shape of the insert, it is not necessary to align the extraction hammer precisely. By turning to the right of the entire instrument, screw it into the screw. This should be carried out until the entire threaded portion disappears into the threaded portion of the screw.



The entire threaded portion is in the threaded portion of the screw



## Further Accessories included in the Set:

### Removing the closing cap of the screw:

In order for the closing cap frequently found on screws to be easily removed, the set includes special Allen keys and a slit hammer.

### Proceed as follows:



- select the correct Allen key for the closing cap
- attach it to the closing cap



- gently tap with the slit hammer on the end of the Allen key. Due to the conical structure, it now sticks in the hexagon socket



- attach the standard or the T-handle to the Allen key
- screw the closing cap out by turning in an anti-clockwise direction



- using the slit of the slit hammer, you can then loosen the closing cap from the Allen key.

### T– handle, standard handle, hexagonal bits and cardan extension



With the aid of the various hexagonal bits included in the set, you can also remove the attachment screws. The bits can be simply attached to the handles. Insert the desired bit and release the cover. Now turn the bit in the handle until you can hear it locking into place. By means of the cardan extension, you can extend the screwdriver: it also enables you to use the screwdriver at a slight angle.

#### Please note:

Only use the instruments as described here. Please do not misuse any of the various parts for other tasks which could damage the instruments. Please, when using the instrument, take care not to damage the surrounding body parts such as ligaments, tendons, veins or, for example, the patella.

# ORIHOMEDICAL

G m b H · I M P L A N T S



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