



Nail Removal System

System zur Nagelentfernung

Sistema para la extracción de los  
clavos

**Ortho Select GmbH**

Eisenbahnstrasse 100  
D – 78573 Wurmlingen  
Germany

Tel: +49-(0)7461-9336-660  
Fax: +49-(0)7461-9336-665

[info@ortho-select.de](mailto:info@ortho-select.de)  
[www.ortho-select.de](http://www.ortho-select.de)

### 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. 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.

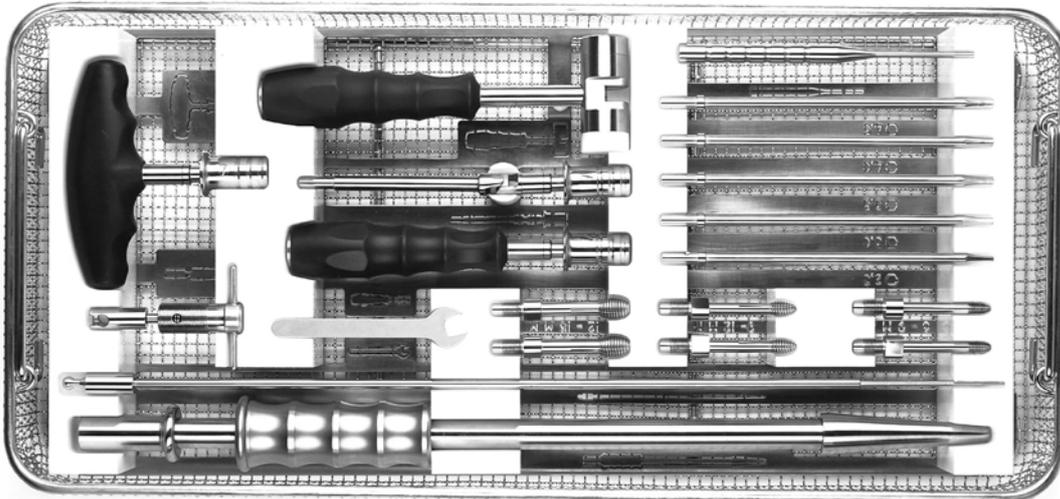
The tensioning range of the tip projections means that just three sizes are enough to grip all types of pins that are used. Note that the size of the tip should be selected such that it fits into the hole in the pin with as little play as possible. This produces the most stable possible combination of 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.

## Instrument Set for Universal Nail Removal System

7799-0-9999



## 3 pirkimo dalis:

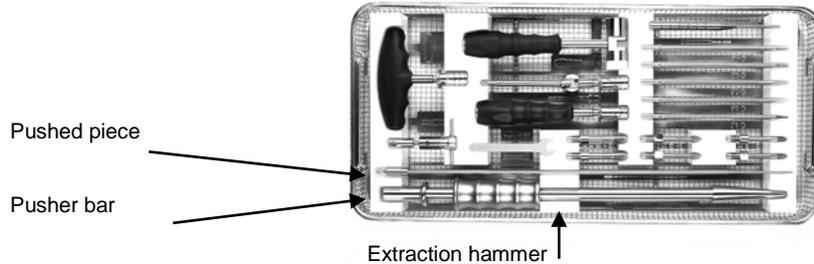
Art.No.	Description	Qty
7799-0-9000	Extractor 11 punktas	1
7799-0-9001	Diverter Insert GR1 from 6-9 mm 12 punktas	2
7799-0-9002	Diverter Insert GR2 from 9-12 mm 13 punktas	2
7799-0-9003	Diverter Insert GR3 from 12-15 mm 14 punktas	2
7799-0-9004	Wrench SW9 15 punktas	1
7799-0-9005	Blade SW 2,5 5 punktas	1
7799-0-9006	Blade SW 3,0 6 punktas	1
7799-0-9007	Blade SW 3,5 7 punktas	1
7799-0-9008	Blade SW 4,0 8 punktas	1
7799-0-9009	Blade SW 4,5 9 punktas	1
7799-0-9010	Impactor 3,5 mm	1
7799-0-9011	T-Handle with adaptor 1 punktas	1
7799-0-9012	Handle with adaptor 2 punktas	1
7799-0-9013	Kardan Prolongation 3 punktas	1
7799-0-9014	Hammer 4 punktas	1
7799-0-9015	Blade SW 5,0 10 punktas	1
7799-0-9016	Blade SW 6,0	1
7799-0-9017	Screwdriver with guide 17 punktas	1
7799-0-9020	Basket with Fixation 19 punktas	1
7799-0-9901	Extraction Screw conical 16 punktas	1
OS140.135	1/1 Container - bottom non perf. 18 punktas	1

## 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 first 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:

Then:

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:

Then :

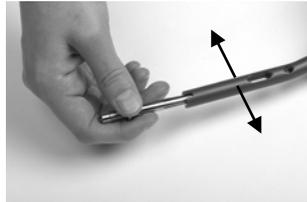
Hold the GR 3 insert in your hand. Introduce it into the thread of the screw. If you can screw it in, you have the right size. However, if it cannot be screwed in, take insert GR 2 and carry out as above. If you can screw it in, it fits tightly or has slight play, you have the right size. If you cannot screw it in, take insert GR 1. 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  
Screwing the correct insert



Insert is too small. It wobbles.



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

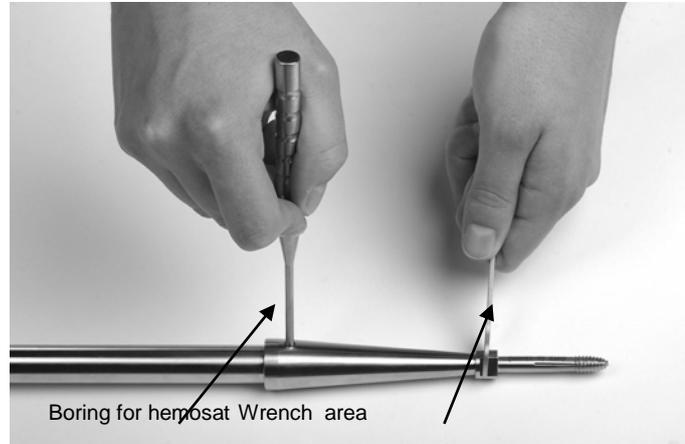


Once the correct insert has been selected, it is screwed into the extraction hammer. To do this, place the insert with the boring side onto the pusher bar and bring it up to the extraction hammer. Unscrew it as far as possible by turning to the right.

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.

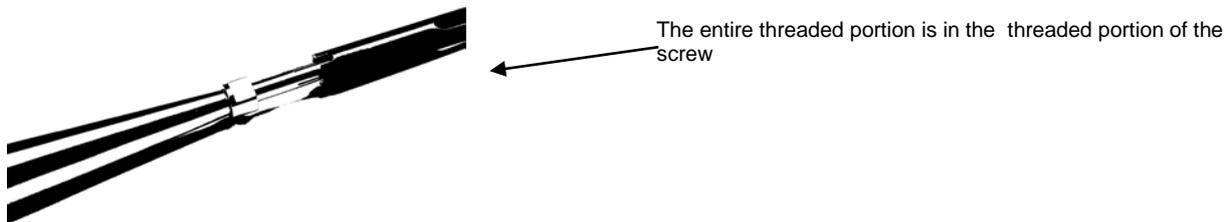
### Tools required:

Hemosat



### Extracting the screw

Now attach the extraction hammer to the screw. Due to the elliptic 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.



Now tighten the insert by turning the pushed piece to the right. The further in you screw it, the stronger the resistance. Please keep on turning it by hand as far as you can. When one part of the thread is visible on the pushed piece, the extraction hammer is ready to use and well tightened. If the thread is no longer visible and the instrument moves in the screw, you have to select the next-biggest insert (see above).

Tighten by turning the right



Once the extraction hammer is fixed tightly and well tightened in the screw, begin with the extraction. First of all, tap lightly about three times against the end of the instrument. A post-tensioning mechanism in the extraction hammer prevents it loosens during any "post-sliding".

As a precaution, however, following the three taps, retighten the insert by turning the pushed piece if possible.

Before you extract the screw entirely, please protect any neighbouring body parts from possible injury which could be caused by the screw sliding out and its edges.

Start with gentle taps and gradually increase the power. As soon as you notice that the screw has loosened, reduce the power so that the entire unit slowly slides out of the body part.

Once the screw has been completely removed, remove it from the extraction hammer as follows:

Unscrew the pushed part in an anti-clockwise direction until it has come out completely, including the pusher bar. Now hold the screw tight and turn the extraction hammer out of the screw by turning it in an anti-clockwise direction.

Then please screw the insert out of the instrument. To do this, carry out the stages for unscrewing but in the reverse order (see chapter above).

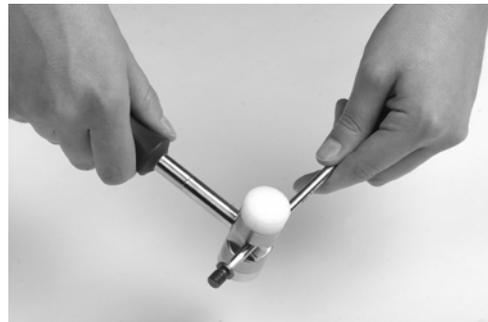
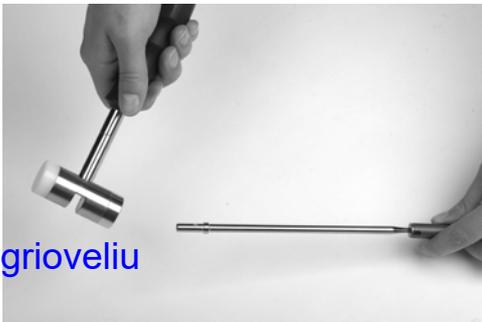
### **Further accessories included in the set:**

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.



✓  
plaktukas su grioveliu

3 pirkimo dalis:  
4 punktas



