

OPERATIVE TECHNIQUE



MEDGAL[®]

ORTHOPAEDIC IMPLANTS & INSTRUMENTS

Instruments Set 4-50-18-00

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UNIVERSAL FEMORAL NAIL



End cap

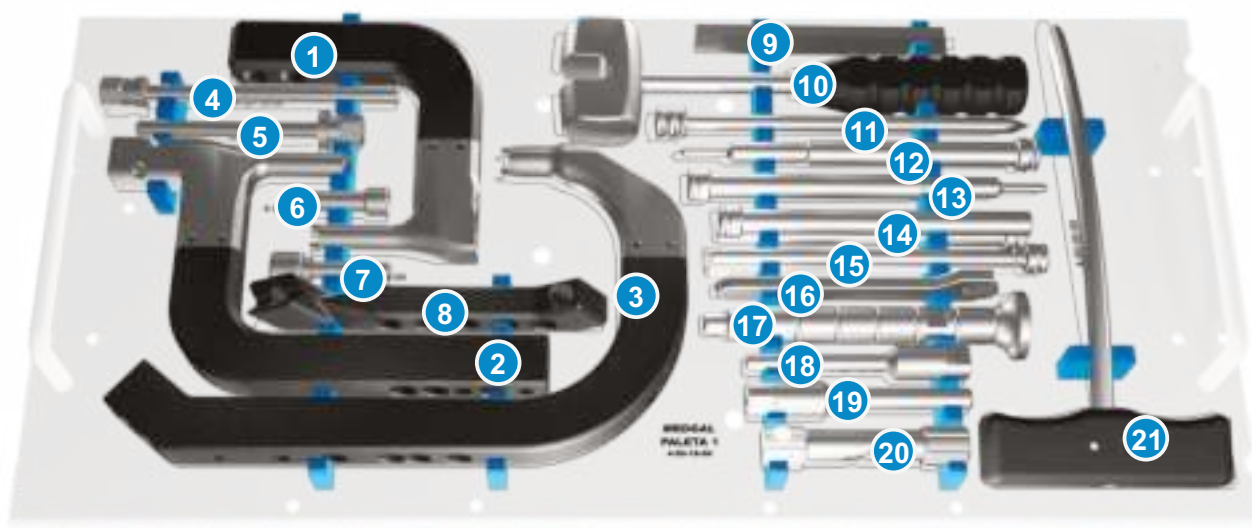


SIZE	REF
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+5	X-07-95-41
+10	X-07-95-42
+15	X-07-95-43
+20	X-07-95-44
+25	X-07-95-45
+30	X-07-95-46



L (mm)	D=9mm	D=10mm	D=11mm	D=12mm
LEFT NAIL				
200	X-07-305-200	X-07-306-200	X-07-307-200	X-07-308-200
220	X-07-305-220	X-07-306-220	X-07-307-220	X-07-308-220
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500	X-07-305-500	X-07-306-500	X-07-307-500	X-07-308-500
RIGHT NAIL				
200	X-07-317-200	X-07-318-200	X-07-319-200	X-07-320-200
220	X-07-317-220	X-07-318-220	X-07-319-220	X-07-320-220
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460	X-07-317-460	X-07-318-460	X-07-319-460	X-07-320-460
480	X-07-317-480	X-07-318-480	X-07-319-480	X-07-320-480
500	X-07-317-500	X-07-318-500	X-07-319-500	X-07-320-500

TRAY 1



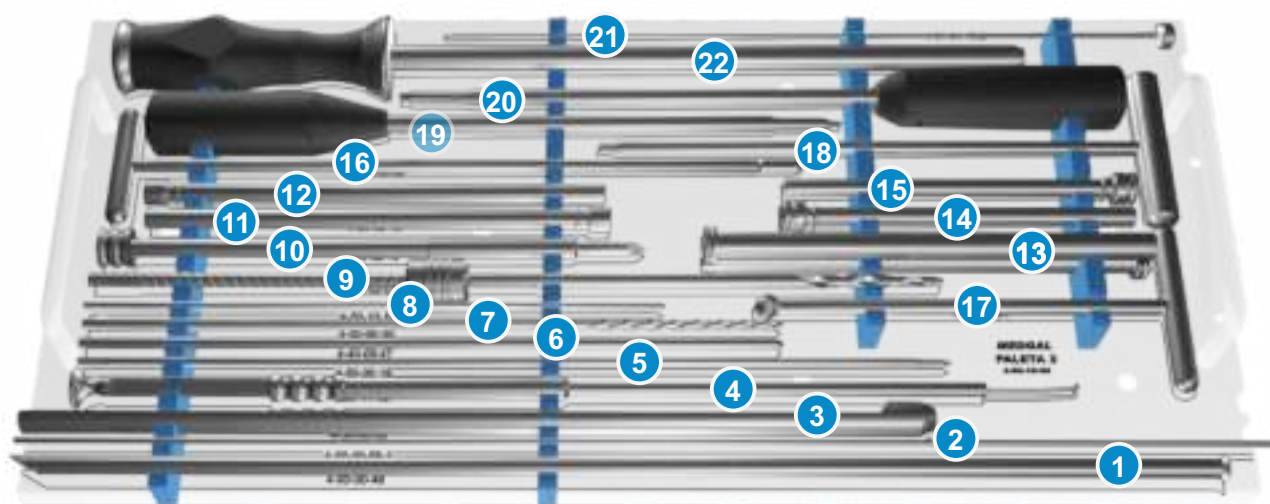
1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protection sleeve 2pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail ■
Not used elements ■

TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 -2 psc	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocar	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail 

Not used elements 

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



* Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)

4-50-16-01.M.

Elements used
for the selected nail ■
Not used elements ■

H = 200 mm
CONTAINER
4-99-100-200





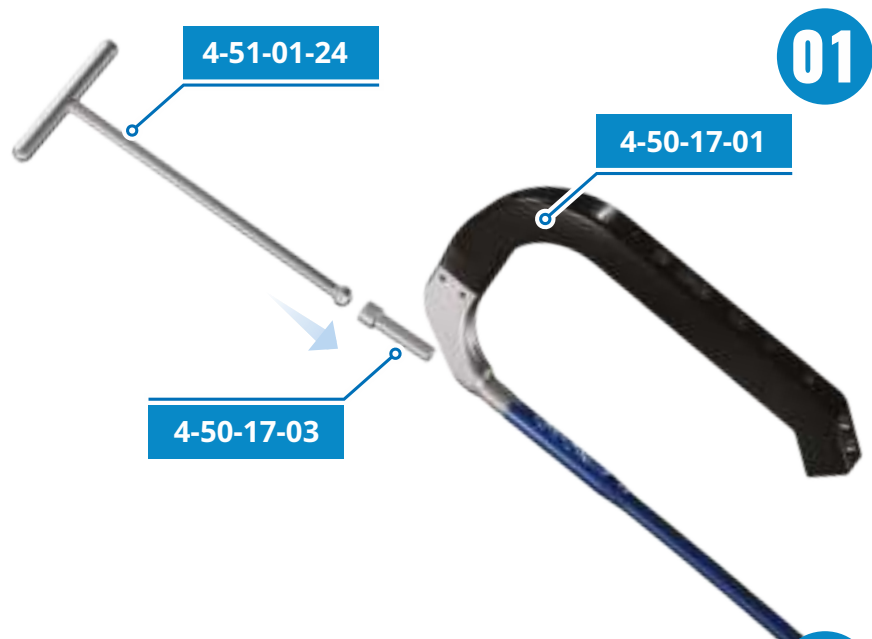
CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.



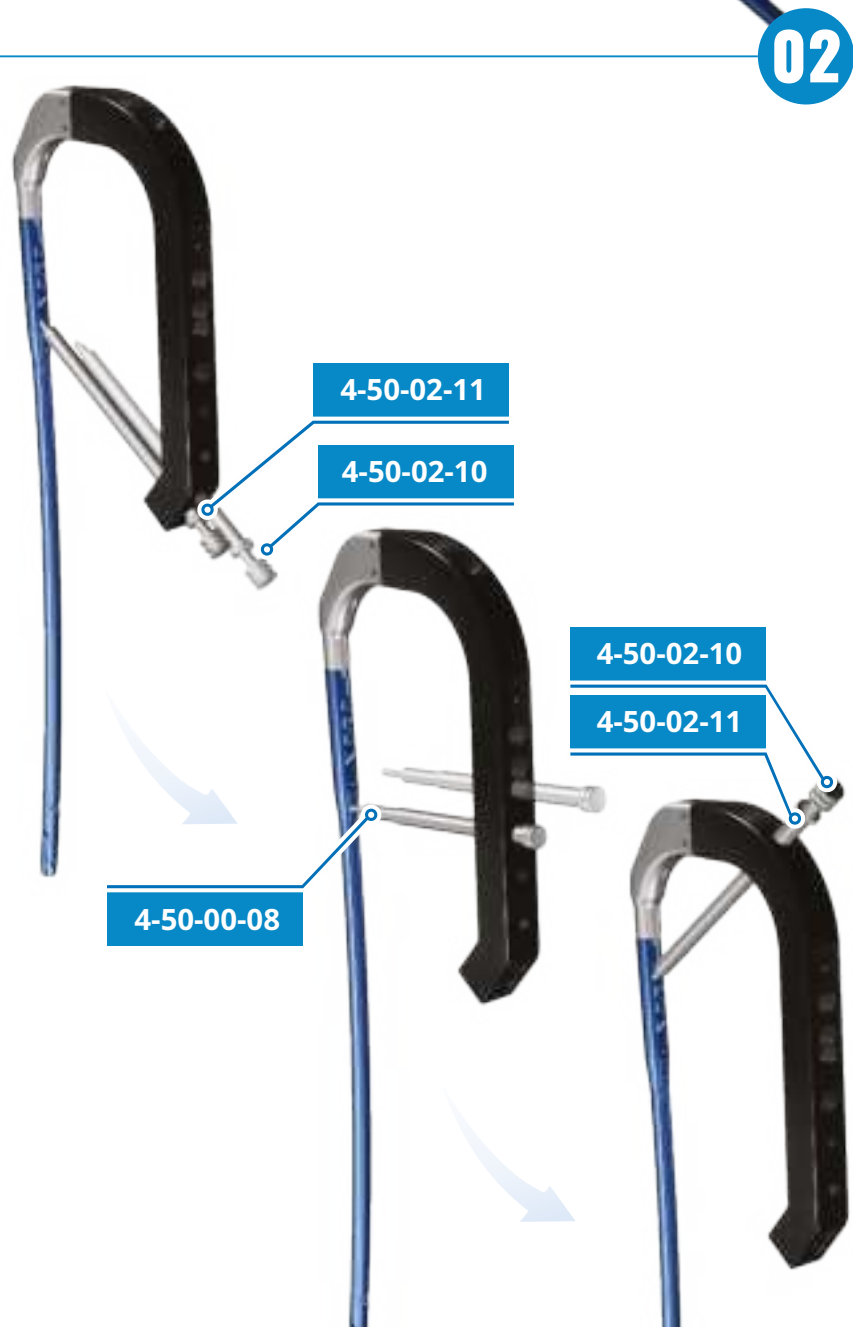
SUGGESTED POSITION OF PATIENT FOR SURGERY





NAIL ASSEMBLY

Assembly large handle **4-50-17-01** and nail, using nail holding screw **4-50-17-03** and T- handle screwdriver **4-51-01-24**.



Check reconstruction holes (marked as RECON and RETROG) using sleeve **4-50-02-11** and trocar **4-50-02-10**.

Check holes (marked as STATIC and DYNAMIC) using control pin **4-50-00-08**.

Unscrew the nail and rotate it 180 degrees.

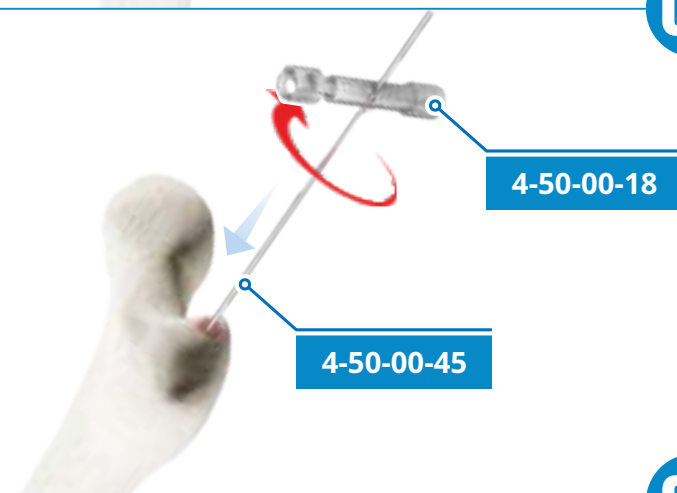
Check oblique hole using sleeve **4-50-02-11** and trocar **4-50-02-10**.

01**BONE PREPARATION**

Insert K-wire **4-50-00-19**.
Open the intramedullary canal using
cannulated awl **4-50-00-58**.

**02**

Insert guide wire with a limiter
4-50-00-45 into the intramedullary
canal using handle **4-50-00-18**.

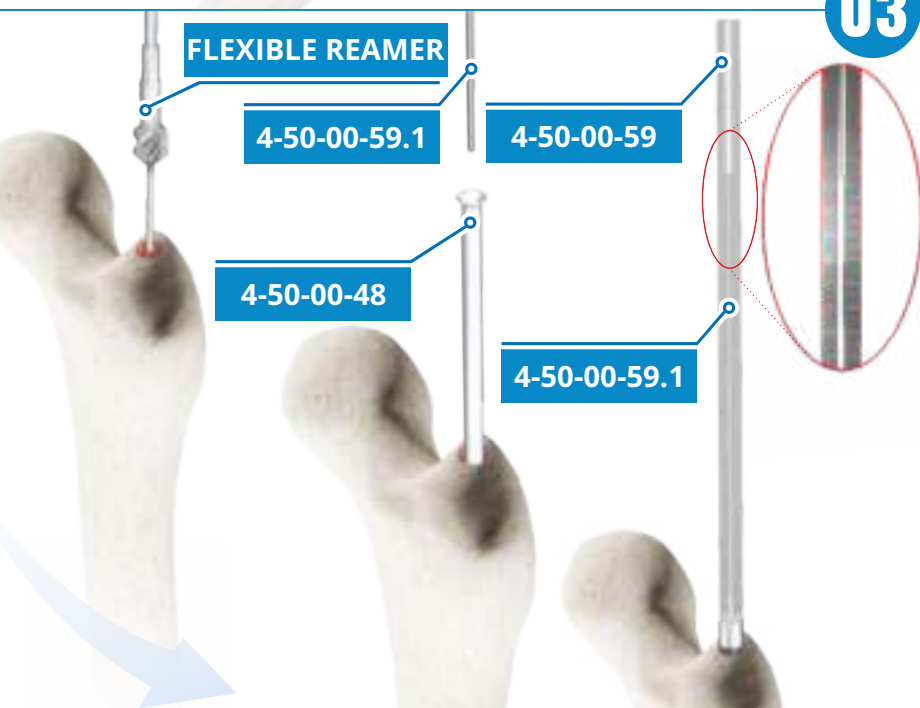
**03**

Prepare the intramedullary canal
using flexible reamer (starting with the
Ø 8,0 mm reaming head, ream to a
diameter of 1-2 mm greater than the
nail diameter. Ream with 0,5 mm
increments. Do not force the reamer).

Change guide wire with a limiter
4-50-00-45 to guide **4-50-00-59.1** using
tabular slide **4-50-00-48**.

Measure the length of nail, using
gauge **4-50-00-59** and drill
4-50-00-59.1.

Change guide wire **4-50-00-59.1** to
guide **4-50-00-44** in the same way like
before.



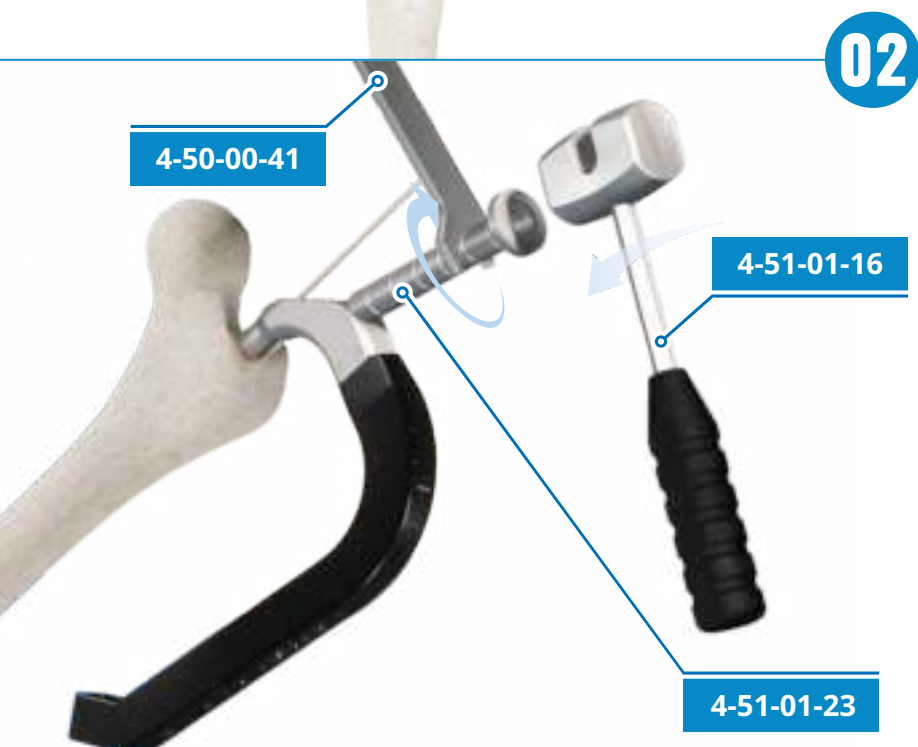
**01**

NAIL POSITIONING

Insert the nail into the bone through the wire **4-50-00-44** using the assembled targeting device.

NOTE:

SET DISTAL TARGETING DEVICE BEFORE THE INTRODUCTION OF NAIL

**02**

Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.

NOTE:

IMPACTOR SHOULD BE BLOCKED USING WRENCH **4-50-00-41** (to prevent damage).

**03**

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

NOTE:

Check the connection between nail and handle, especially after hammering.

01**RECONSTRUCTION METHOD**

Prepare the cortical bone using trocar **4-50-02-10** through sleeve **4-50-02-11**.

02

Insert the K-wires into the bone through the both reconstruction nail holes using sleeve **4-50-02-11** and sleeve **4-50-02-13**.

Measure the insertion depth of K-wires into the bone with the use of gauge **4-50-01-12** in order to determine the depth of the drilling hole for the Ø 6,5 mm molar locking screw.

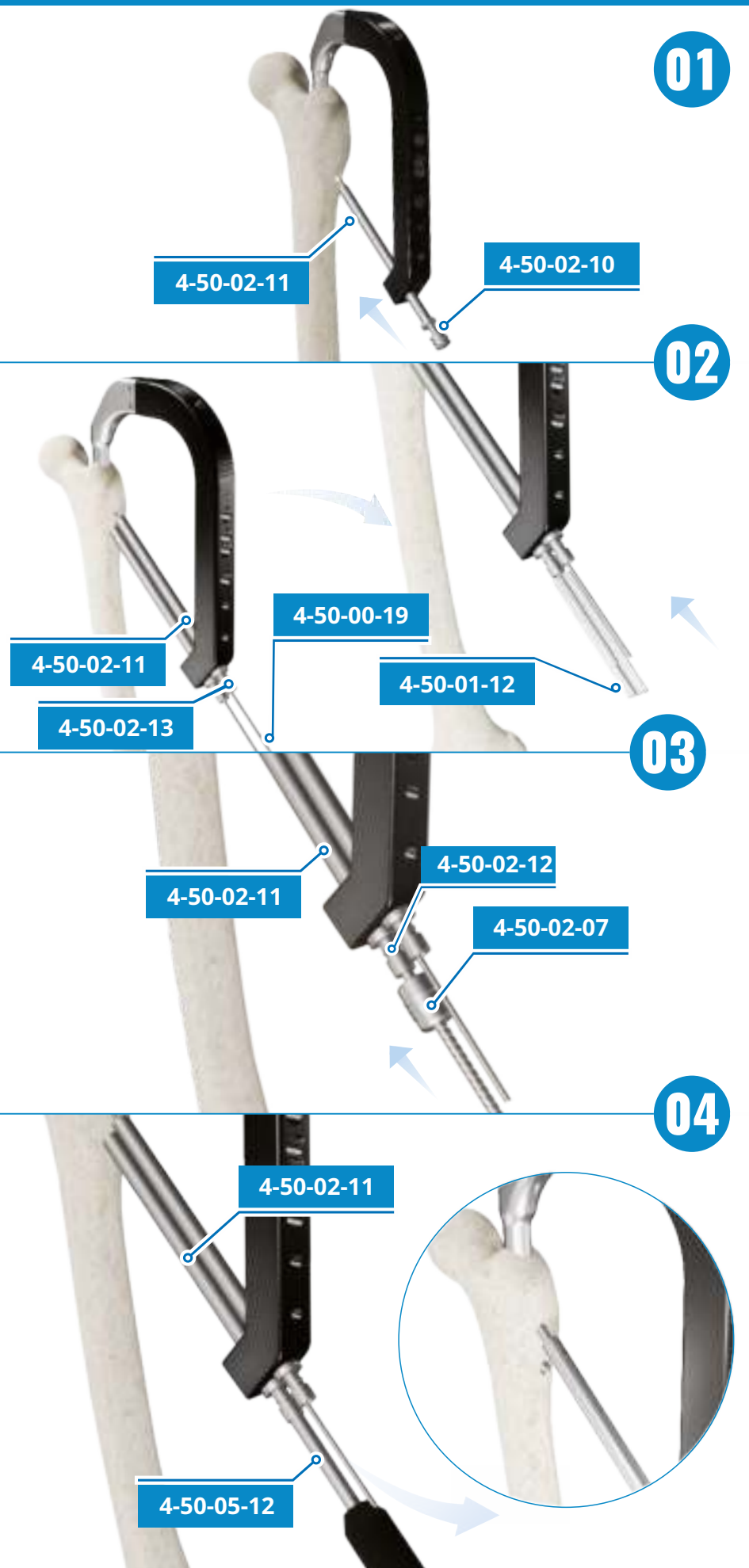
03

Drill through the reconstruction nail hole using sleeve **4-50-02-11**, sleeve **4-50-02-12** and drill **4-50-02-07**.

04

Insert the Ø 6,5 mm molar locking screw **x-01-84-xx** through reconstruction nail hole using sleeve **4-50-02-11** and screwdriver **4-50-05-12**.

Repeat step **1-3** to insert second Ø 6,5 mm molar locking screw **x-01-84-xx**. Lock distal holes.



01

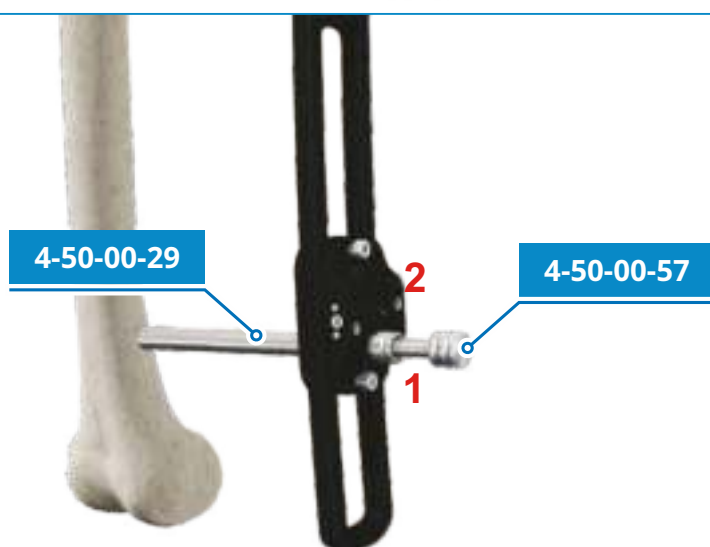
DISTAL TARGETING DEVICE

Install distal targeting device **4-50-08-00**. Do not change position of the targeting device.



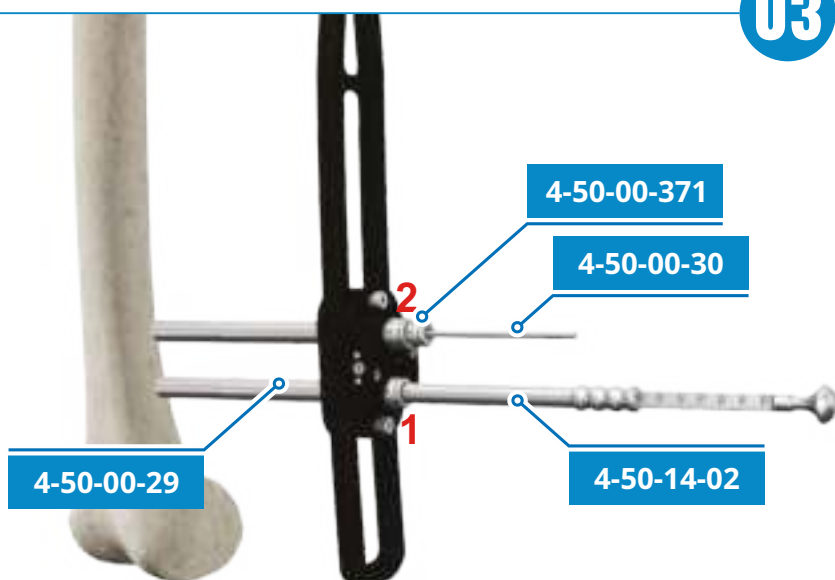
02

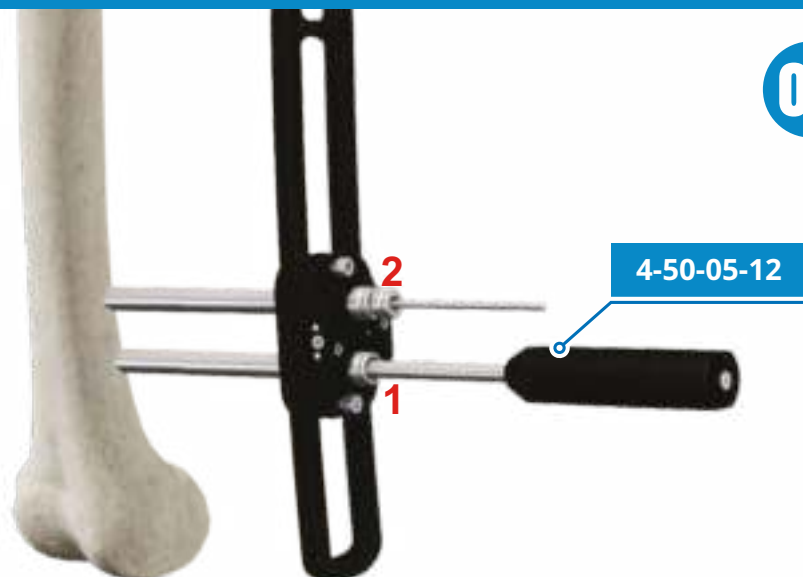
Prepare both distal hole using trocar **4-50-00-57** through sleeve **4-50-00-29**.



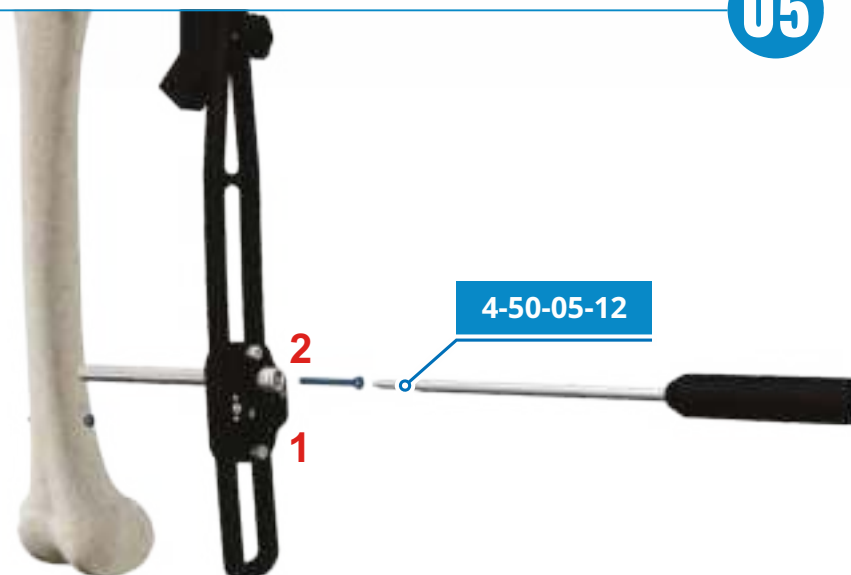
03

Drill through the second distal nail hole using sleeve **4-50-00-29**, sleeve **4-50-00-371** and drill **4-50-00-30**.
Leave the drill.
Drill through the first distal nail hole in the same way like second hole. Measure the depth of drilling through the first drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

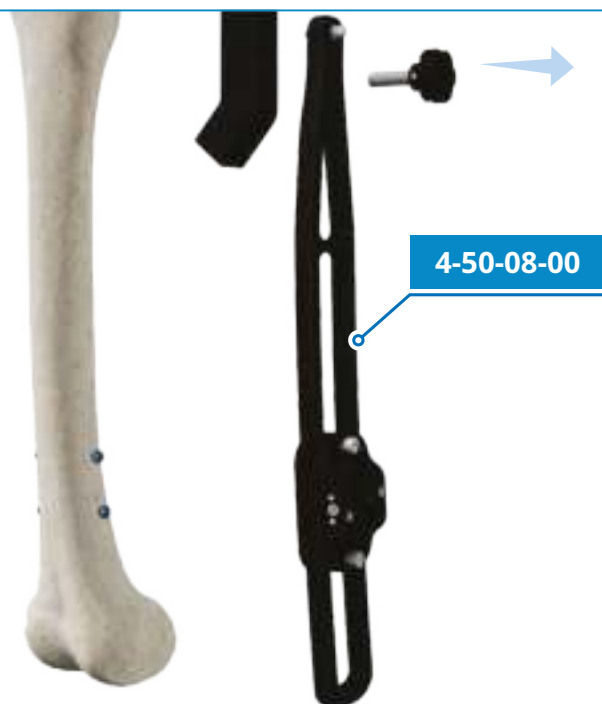


04

Insert Ø 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.

05

Measure the depth of drilling through the second drilled hole in the same way like first hole.
Insert Ø 4,5 mm locking screw into second drilled hole using screwdriver **4-50-05-12**.

06

Disassemble targeting device.

01**FREEHAND LOCKING TECHNIQUE**

Drill first distal nail hole using hand targeting device **4-50-00-03**, sleeve **4-50-00-38** and drill **4-50-00-30**.

02

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

03

Insert Ø 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.

Prepare and lock second distal hole in the same way like the first distal hole.

4-50-00-03**4-50-00-30****4-50-00-38****4-50-14-02****4-50-05-12**

01**ANTEGRADE METHOD**

Prepare the cortical bone using trocar **4-50-00-07** through sleeve **4-50-00-06**.

02

Drill through the STATIC nail hole using sleeve **4-50-00-06**, sleeve **4-50-00-31** and drill **4-50-00-30**.

03

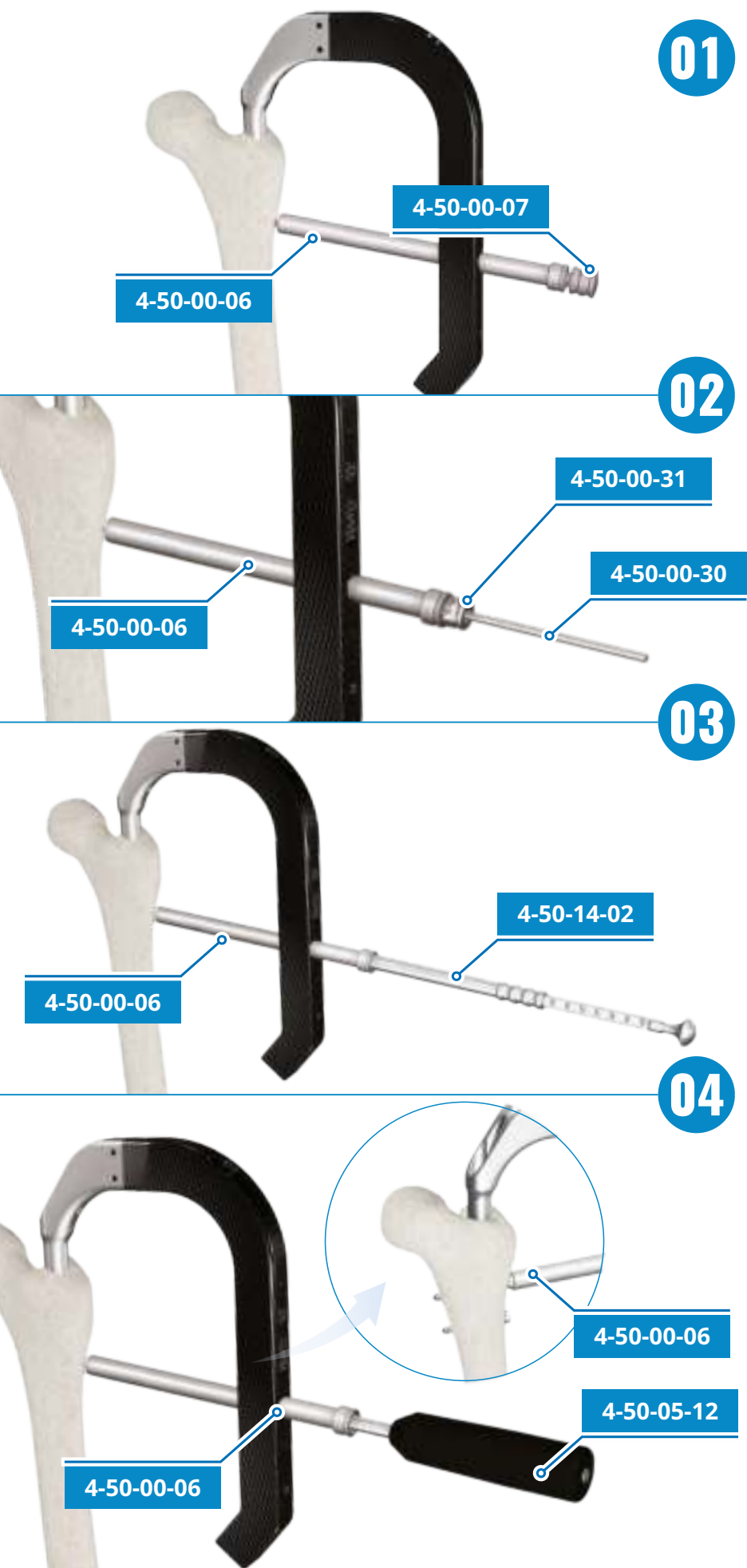
Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

04

Insert Ø 4,5 mm locking screw **x-01-86-xx** using screwdriver **4-50-05-12**.

Lock compression nail hole (marked as DYNAMIC) in the same way like the STATIC nail hole.
Lock the distal holes.

Remove targeting adapter.



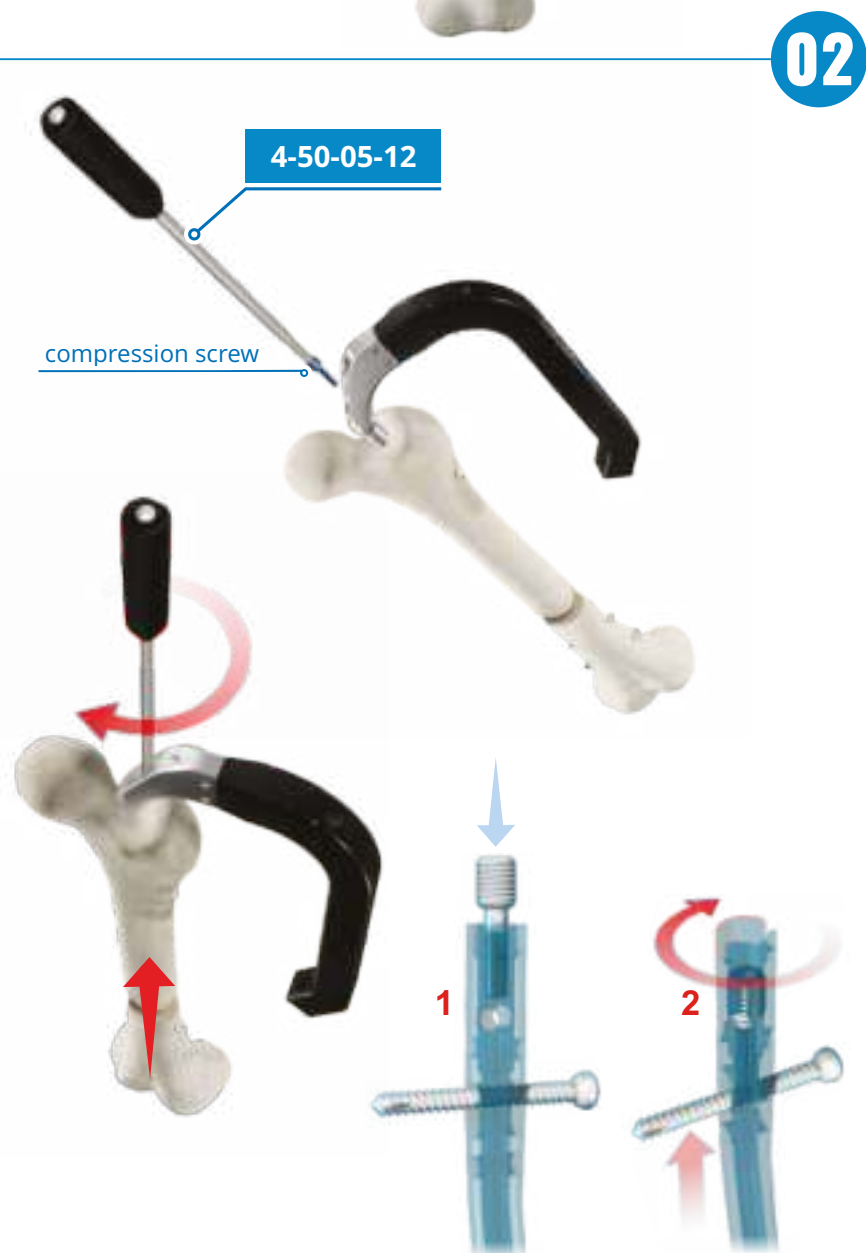


COMPRESSION METHOD: COMPRESSION SCREW

1. Insert the locking screw into the distal nail holes.

2. Insert Ø 4,5 mm molar locking screw **x-01-86-xx** into the compression nail hole (marked as DYNAMIC) using screwdriver **4-50-05-12**, in the same way like antegrade method.

3. Remove the nail holding screw **4-50-17-03** using T handle screwdriver **4-51-01-24**.

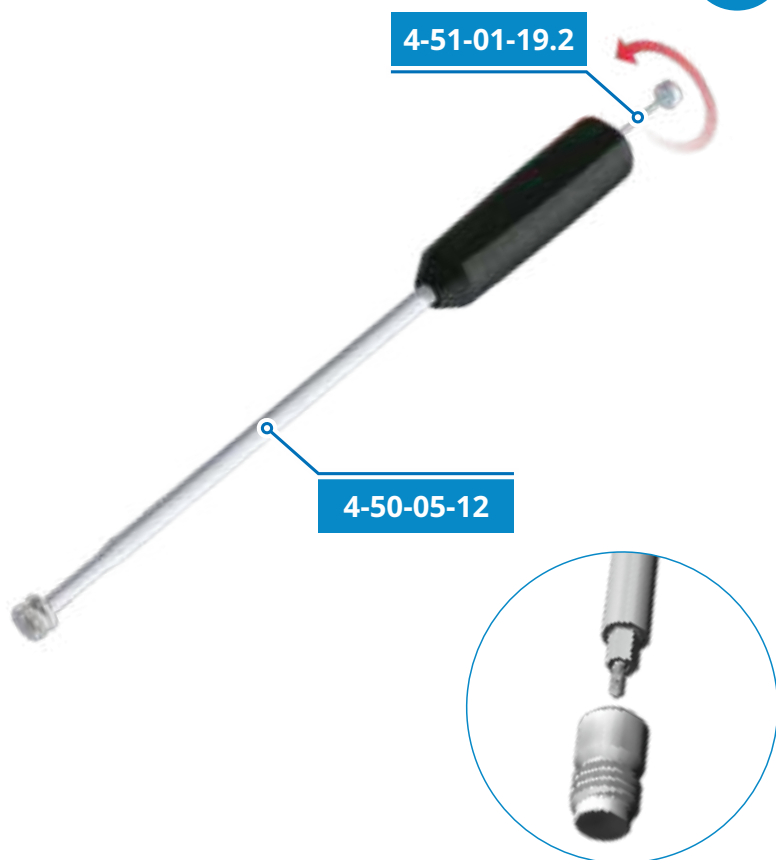


Insert the compression screw into the nail to compress the fracture.

01**END CAP INSERTION**

Insert locking screw
4-51-01-19.2 into screwdriver
4-50-05-12.

Lock end cap on screwdriver
4-50-05-12 using locking screw
4-51-01-19.2

**02**

Insert end cap into the nail.



01**COMPRESSION METHOD:
EXTRACTOR**

1. Insert the locking screw into the distal nail holes.

2. Insert impactor **4-51-01-23** into targeting device.

NOTE 1:
IMPACTOR SHOULD BE
BLOCKED USING WRENCH **4-50-00-41**
(to prevent damage).

NOTE 2:
DURING THE POSITIONING OF THE
NAIL FRACTURE SITE LENGTH MUST
BE CONSIDERED. OTHERWISE THE
NAIL WILL PROTRUDE FROM THE
BONE AFTER THE COMPRESSION.

02

Compress the fracture using the
extractor **4-51-01-47** and hammer
4-51-01-16.

Lock the proximal holes of the nail.

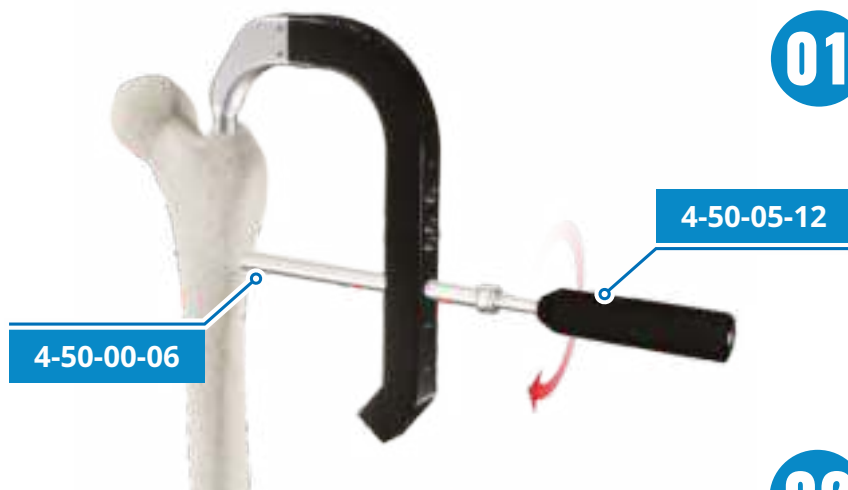
NOTE:
IN THIS METHOD THE LEVEL OF THE
COMPRESSION IS NOT LIMITED BY
COMPRESSION NAIL HOLE.

01**ANTEGRADE METHOD
(OBLIQUE SCREW)**

Insert locking screw Ø4,5 mm in static nail hole using screwdriver **4-50-05-12**, in the same way like in Antegrade method.

NOTE:

IN THIS METHOD USE THE LEFT NAIL FOR THE RIGHT BONE

**02**

Insert trocar **4-50-00-07** through sleeve **4-50-00-06**.

Drill through nail oblique hole using sleeve **4-50-00-06** sleeve **4-50-05-10** and drill **4-40-05-47**.

**03**

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

Insert Ø 6,5 mm locking screw in drilled hole using screwdriver **4-50-05-12**.



4-50-00-07

4-50-00-06

01

RETROGRADE METHOD

Prepare the cortical bone using trocar **4-50-00-07** through sleeve **4-50-00-06** in first hole (marked as RETROG).

4-50-05-11

4-50-02-07

4-50-14-02

4-50-00-06

4-50-00-06

02

Drill the hole using the Ø 4,7/Ø 6,5 mm step drill **4-50-02-07** using sleeve **4-50-00-06** and sleeve **4-50-05-11**.

Make sure that the larger diameter of the drill passed through the other side of the hole.

Measure the depth of drilling using gauge **4-50-14-02**.

4-50-05-06

4-50-05-11

4-50-00-06

03

Insert locking set pilot **4-50-05-06** into the drilled hole, through sleeve **4-50-00-06** and sleeve **4-50-05-11**.

Unscrew the end part of pilot.

04

4-50-05-06



RANGE [mm]	REF
50-65	X-01-66-50
60-75	X-01-66-60
70-85	X-01-66-70
80-95	X-01-66-80
90-105	X-01-66-90

Assembly pivot and the locking set **4-50-05-06**.

Implicate the pivot of the locking set into the drilled hole using pilot. Remove the pilot from the locking set pivot.

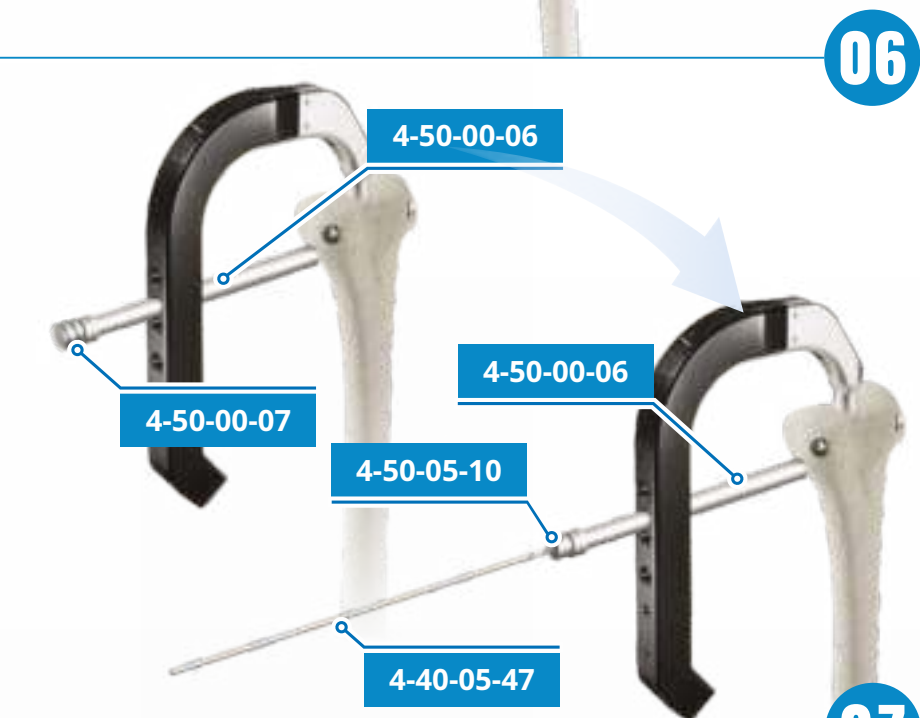
**05**

To fix rotation movement of the pivot, use the screwdriver with T-handle **4-50-00-94**.

Insert locking screw into the pivot using screwdriver **4-50-05-12**.

NOTE:

INSTALL THE WASHER AFTER PASSING THROUGH THE SLEEVE.

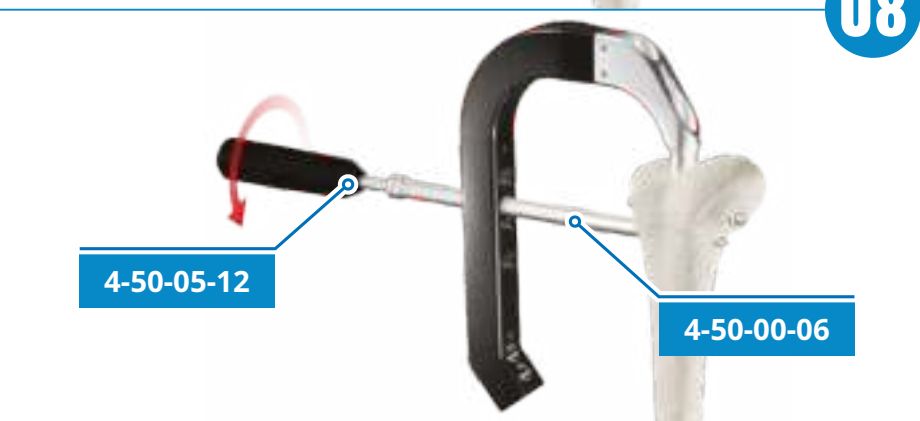
**06**

Prepare the cortical bone using trocar **4-50-00-07**.

Drill through the second proximal nail hole (marked as RETROG) using the Ø 4,7 drill **4-40-05-47** using sleeve **4-50-00-29** and sleeve **4-50-05-10**.

**07**

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

**08**

Insert Ø 6,5 mm locking screw in drilled hole using screwdriver **4-50-05-12**.

Insert the locking screw into the proximal nail holes.

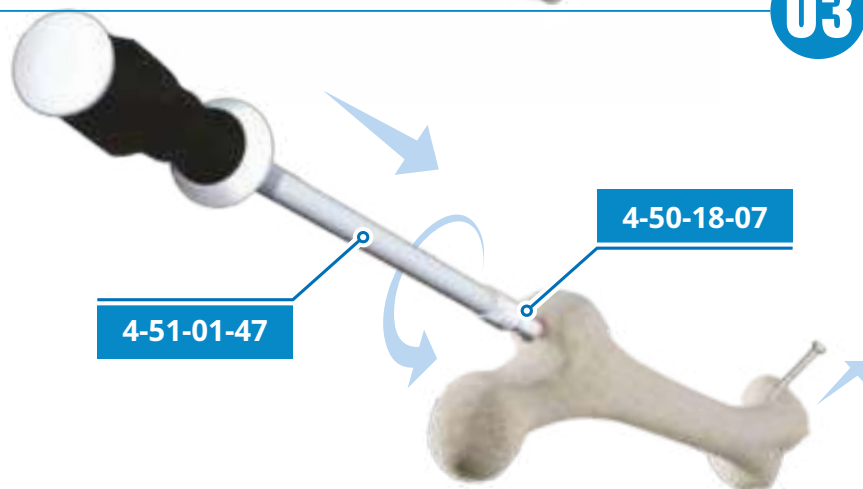
01**EXTRACTION OF THE NAIL**

Clear sockets of end cap and locking screws from any tissue ingrowth. Remove all locking screws except one of the distal locking screws.

02

Remove end cap.

NOTE:
END CAP SHOULD BE
BLOCKED ON THE SCREWDRIVER
(to prevent falling out).

03

Insert extractor reducer **4-50-18-07**
into extractor **4-51-01-47**.

Install the set in the nail and remove
distal locking screw.

04

Remove the nail using hammer
4-51-01-16.

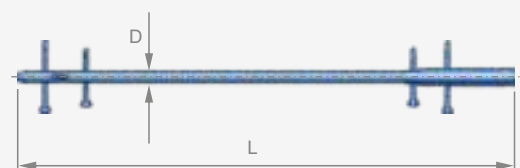


STRAIGHT FEMORAL NAIL

End cap

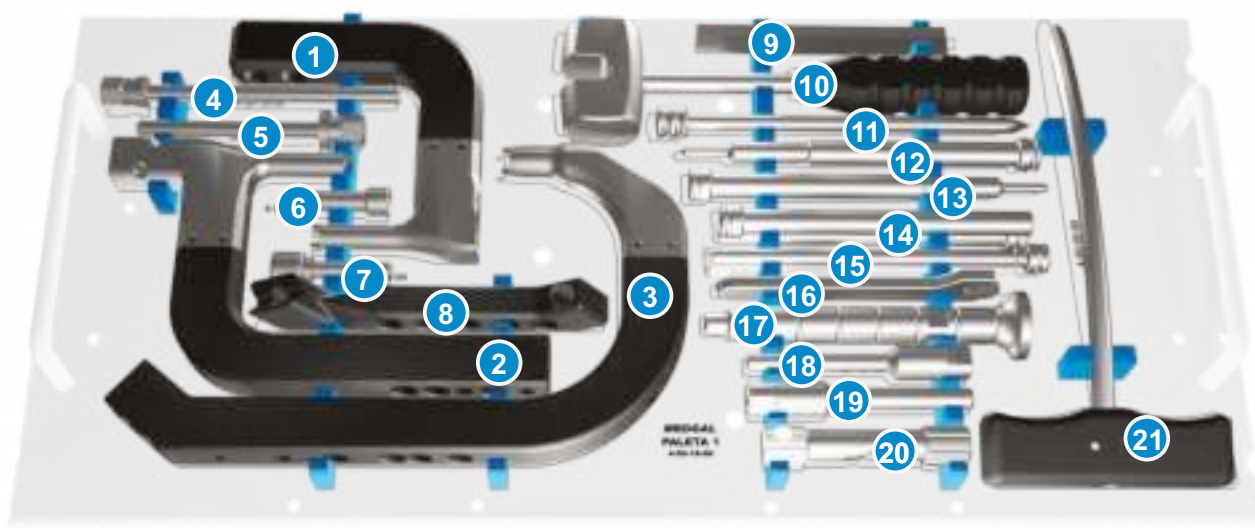


Size	REF
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300	X-07-01-300	X-07-02-300	X-07-03-300	X-07-04-300	X-07-05-300
310	X-07-01-310	X-07-02-310	X-07-03-310	X-07-04-310	X-07-05-310
320	X-07-01-320	X-07-02-320	X-07-03-320	X-07-04-320	X-07-05-320
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410	X-07-01-410	X-07-02-410	X-07-03-410	X-07-04-410	X-07-05-410
420	X-07-01-420	X-07-02-420	X-07-03-420	X-07-04-420	X-07-05-420
430	X-07-01-430	X-07-02-430	X-07-03-430	X-07-04-430	X-07-05-430
440	X-07-01-440	X-07-02-440	X-07-03-440	X-07-04-440	X-07-05-440
450	X-07-01-450	X-07-02-450	X-07-03-450	X-07-04-450	X-07-05-450
460	X-07-01-460	X-07-02-460	X-07-03-460	X-07-04-460	X-07-05-460
470	X-07-01-470	X-07-02-470	X-07-03-470	X-07-04-470	X-07-05-470
480	X-07-01-480	X-07-02-480	X-07-03-480	X-07-04-480	X-07-05-480
490	X-07-01-490	X-07-02-490	X-07-03-490	X-07-04-490	X-07-05-490
500	X-07-01-500	X-07-02-500	X-07-03-500	X-07-04-500	X-07-05-500

TRAY 1



1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protection sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

H = 200 mm
CONTAINER
4-99-100-200



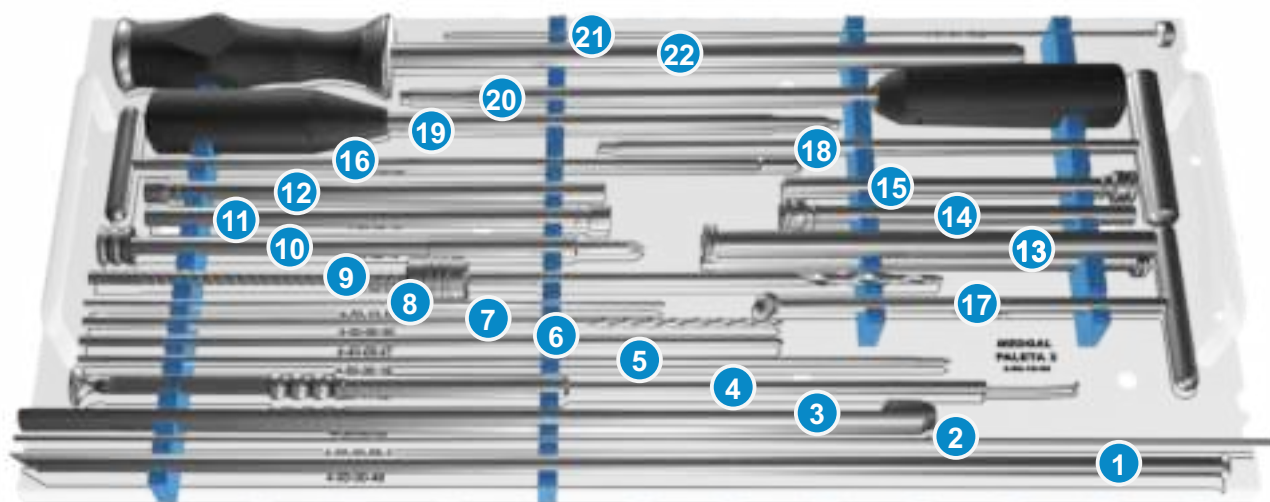
Elements used
for the selected nail



Not used elements



TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 - 2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocars	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail 
Not used elements 

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2 pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2 pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



* Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)

4-50-16-01.M.

Elements used
for the selected nail ■
Not used elements ■

H = 200 mm
CONTAINER
4-99-100-200





CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

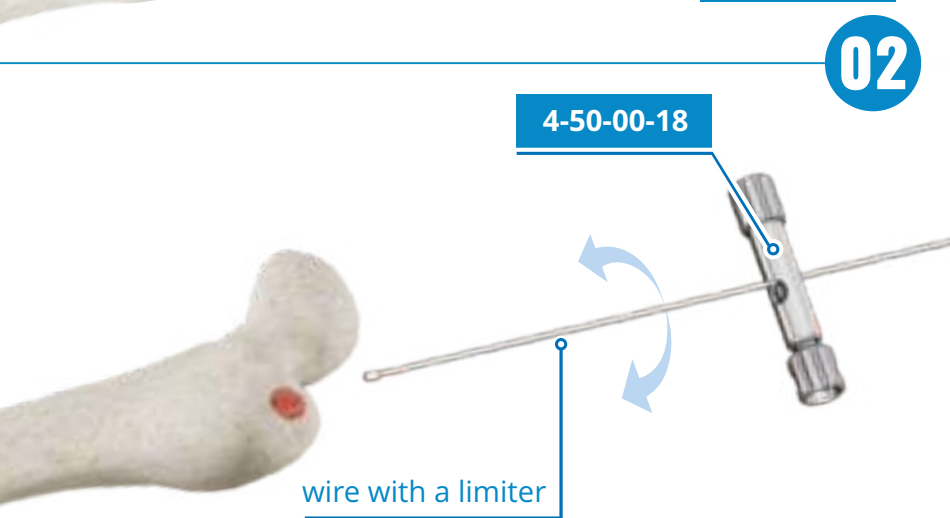
CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.



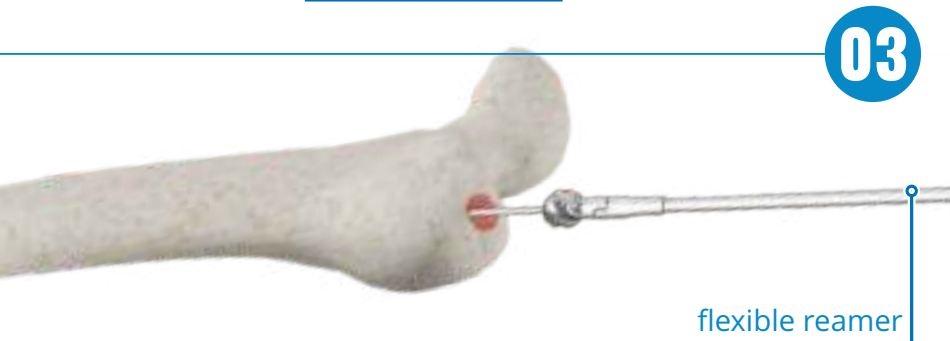
BONE PREPARATION

Insert guide wire **4-50-00-19**.

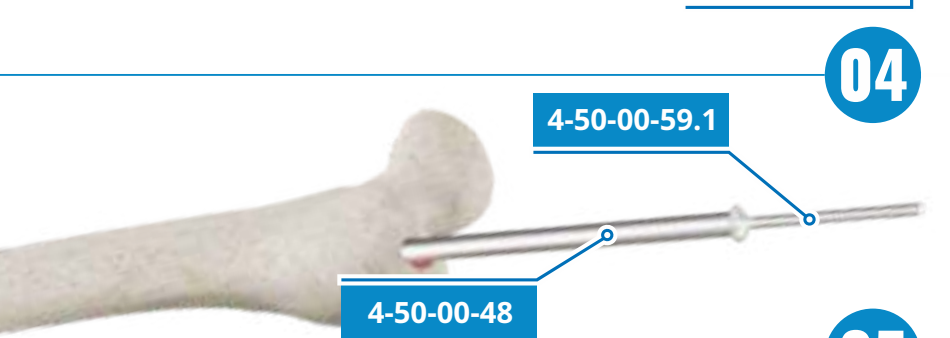
Open the intramedullary canal using cannulated awl **4-50-00-58**.



Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.



Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

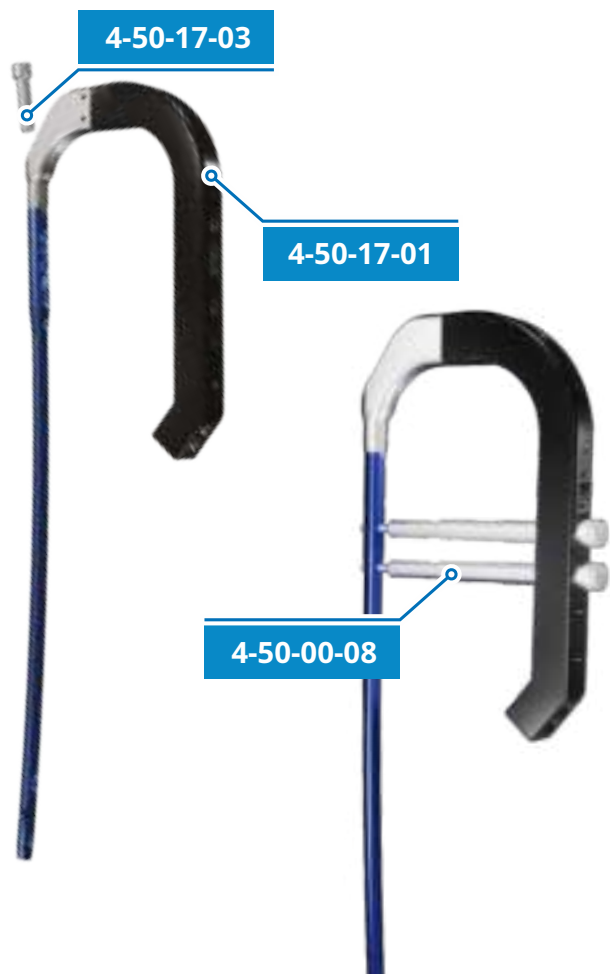


Change guide wire with a limiter **4-50-00-45** to wire **4-50-00-59.1** using tubular slide **4-50-00-48**.



Measure the length of the nail trough the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

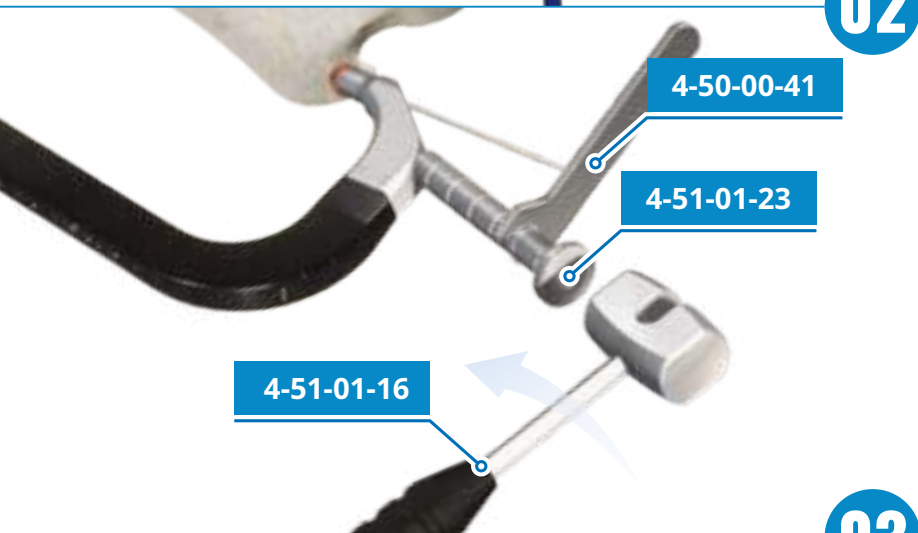


01

NAIL INSERTION

Assembly targeting device **4-50-17-01** and nail using screw **4-50-17-03** and wrench **4-51-01-24**.

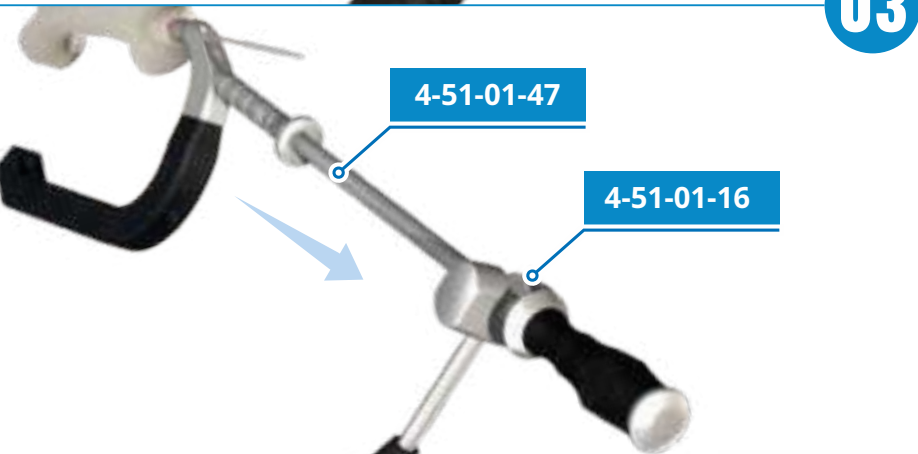
Check static and dynamic holes using control pin **4-50-00-08**.



02

Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.

NOTE :
IMPACTOR SHOULD BE
BLOCKED USING WRENCH **4-50-00-41**
(to prevent damage).



03

If necessary - use the assembled extractor **4-51-01-47** to change the position of the nail in the bone.

NOTE:
Check the connection between nail
and handle, especially after
hammering.

01**STATIC METHOD**

Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

02

Drill through the compression nail hole using sleeve **4-50-00-31** and drill **4-50-00-30**.

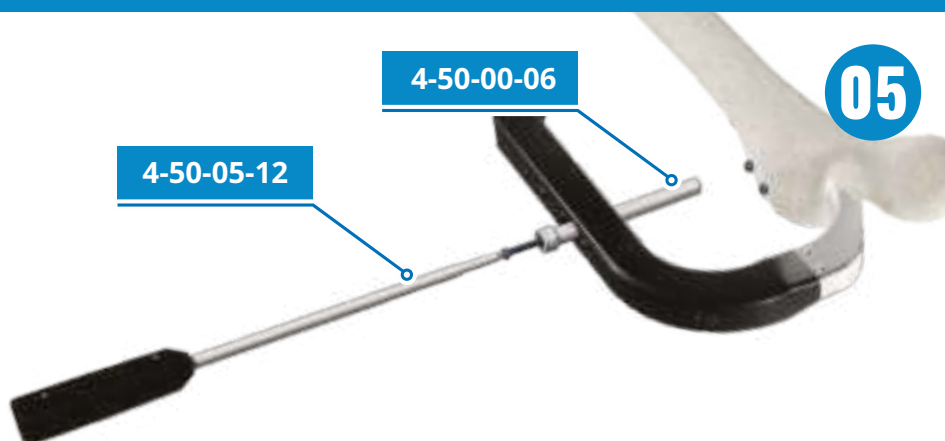
03

Measure the thickness of the bone trough the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

04

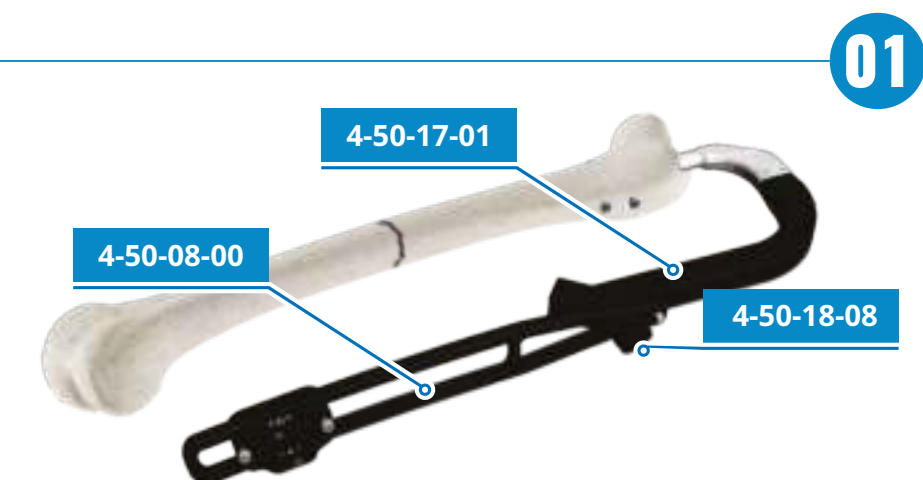
Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.

4-50-00-06**4-50-00-07****4-50-00-06****4-50-00-31****4-50-00-30****4-50-14-02****4-50-05-12**



05

Insert the Ø4,5 mm locking screw into the static hole of nail in the same way as in the compression hole.



01

4. DISTAL TARGETING DEVICE

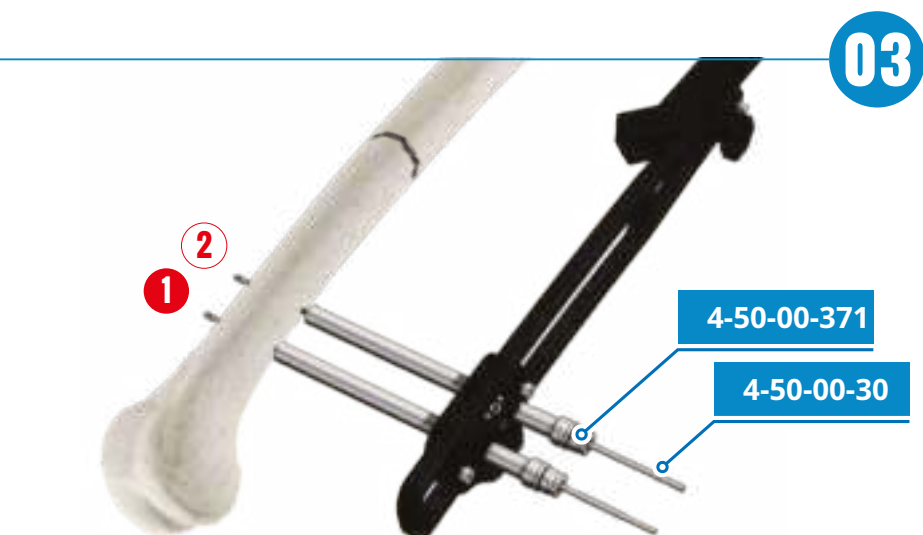
Install distal targeting device **4-50-08-00** into **4-50-17-01** using screw **4-50-18-08**.

Do not change position of the targeting device.



02

Prepare distal hole using trocar **4-50-00-57** and sleeve **4-50-00-29**.



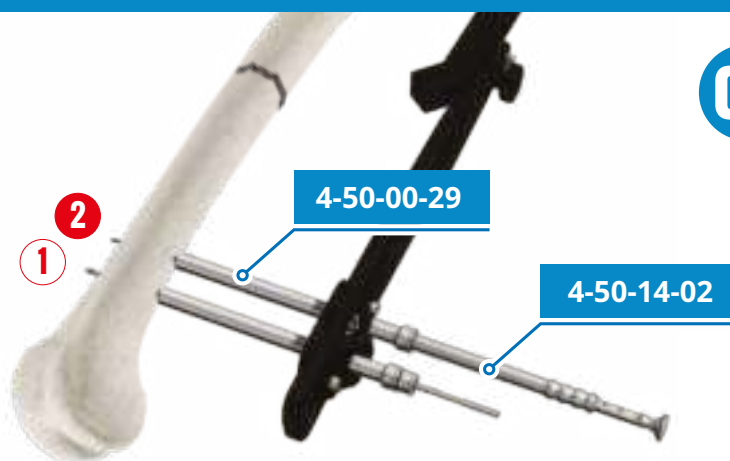
03

Drill through the first distal nail hole using sleeve **4-50-00-371** and drill **4-50-00-30**.

Leave the drill.

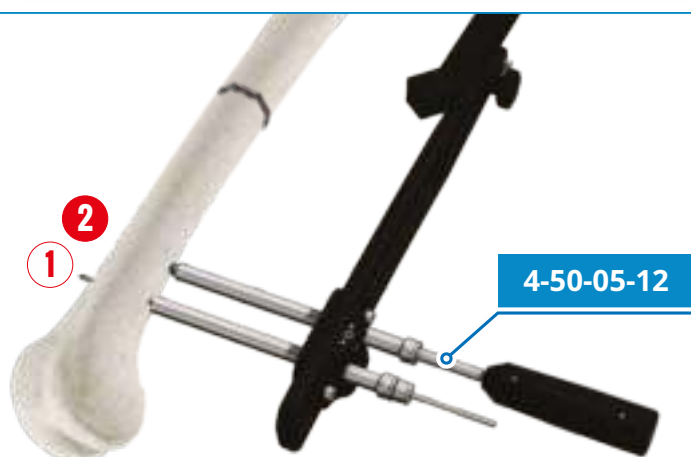
Drill through the second distal nail hole in the same way like first hole.

04



Measure the depth of drilling through the second drilled hole using gauge **4-50-14-02**.

05



Insert Ø 4,5 mm locking screw in second drilled hole using screwdriver **4-50-05-12**.

06



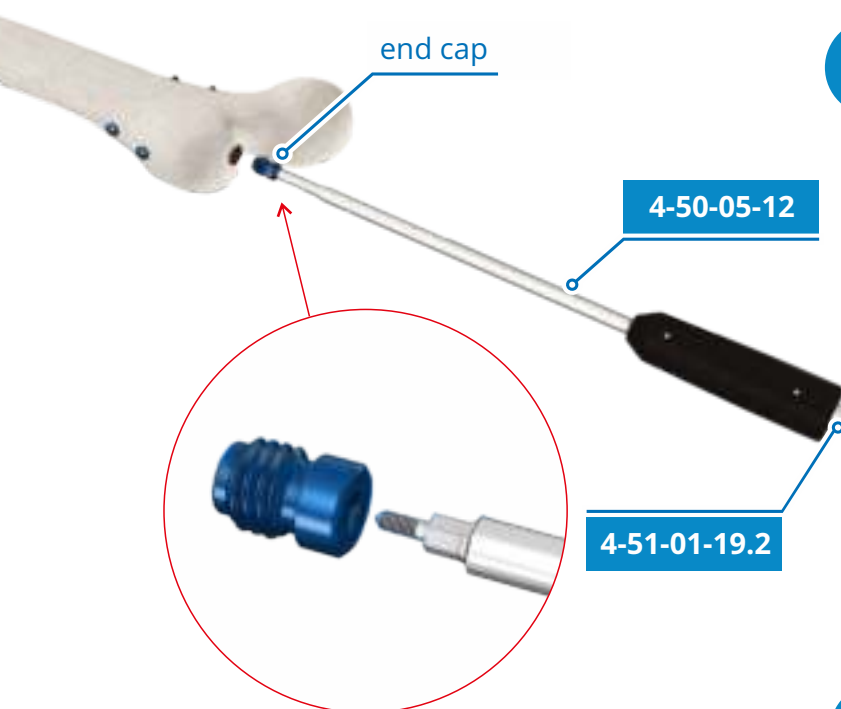
Measure the depth of drilling through the first drilled hole in the same way like second hole.

Insert Ø 4,5 mm locking screw into first drilled hole using screwdriver **4-50-05-12**.

07



Disassemble targeting device.



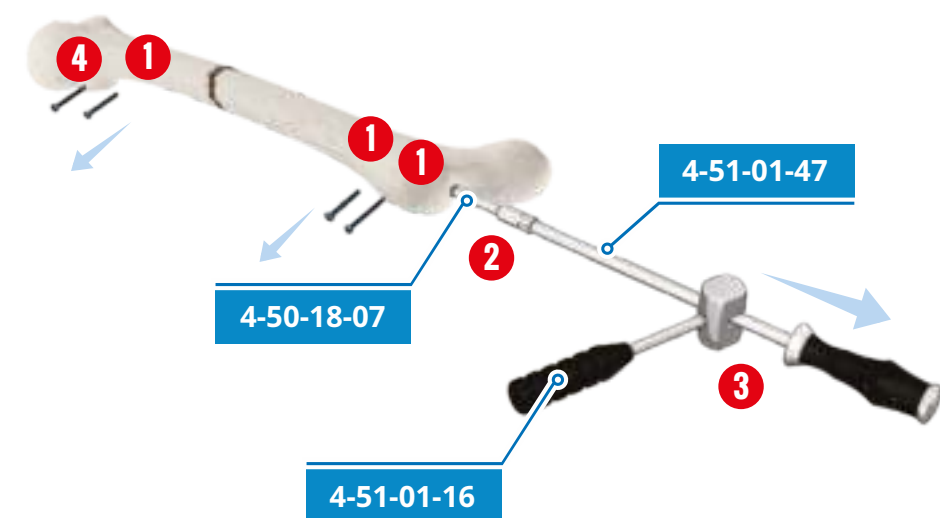
01

END CAP INSERTION

Insert locking screw
4-51-01-19.2 into screwdriver
4-50-05-12.

Lock end cap on screwdriver
4-50-05-12 using locking screw
4-51-01-19.2

Insert end cap into the nail.



01

EXTRACTION OF THE NAIL

Clear sockets of end cup and locking screws from any tissue ingrowth.

- 1.** Remove all locking screws except one of the distal locking screw
- 2.** Insert extractor reducer **4-50-18-07** into extractor **4-51-01-47**
- 3.** Install the set in the nail and remove distal locking screw
- (4).** Remove the nail using hammer **4-51-01-16**.



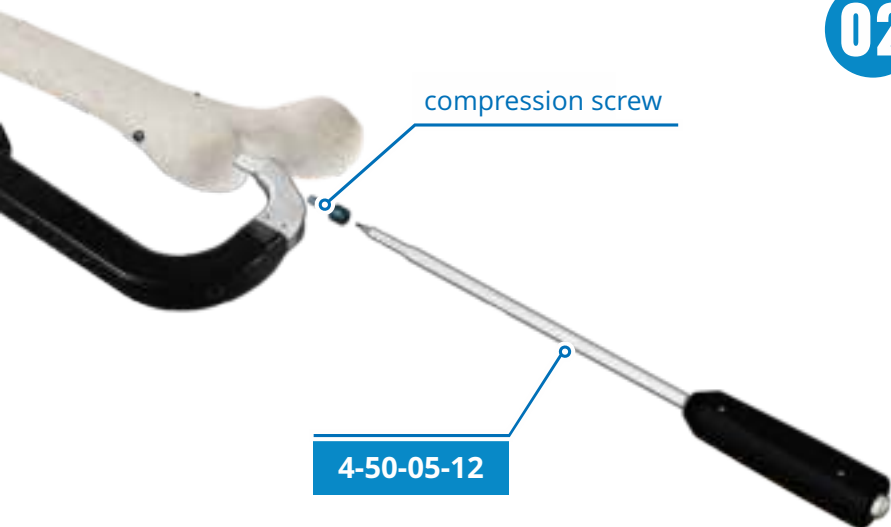
01

COMPRESSION METHOD:

- 1.** Insert the locking screw into the distal nail holes.
- 2.** Insert Ø 4,5 mm molar locking screw **x-01-86-xx** into the compression nail hole using screwdriver **4-50-05-12**.
- 3.** Remove the nail holding screw **4-50-17-03** using T-handle screwdriver **4-51-01-24**.

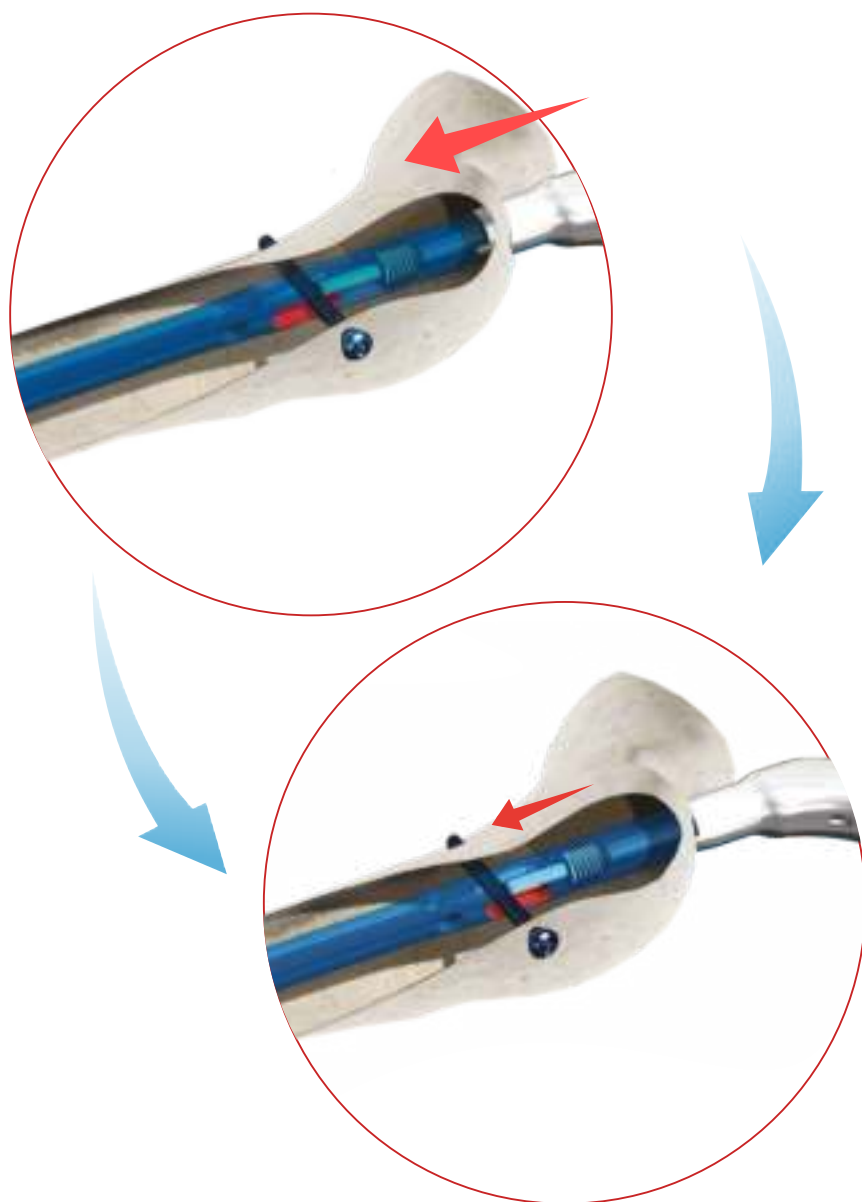
02

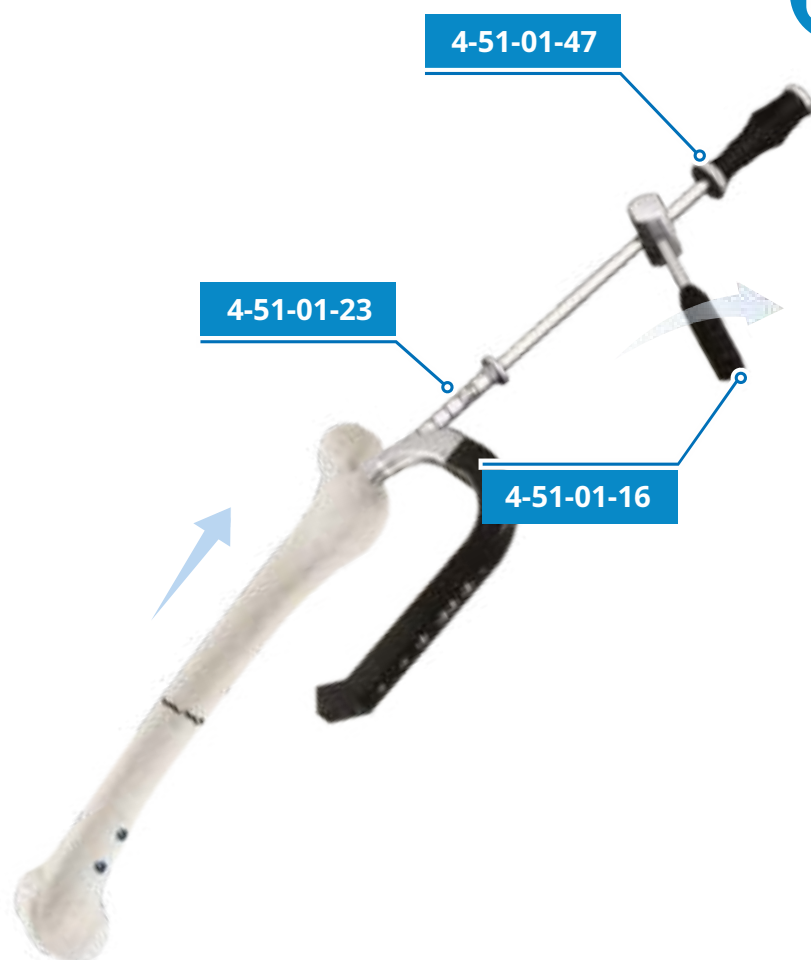
Insert the compression screw into the nail to compress the fracture using screwdriver **4-50-05-12**.



03

Compress the fracture.
The maximum compression value is 11 mm.



01**COMPRESSION METHOD:
EXTRACTOR**

Insert the locking screw into the distal nail holes. Insert impactor **4-51-01-23** into targeting device.

NOTE:

DURING THE POSITIONING OF THE NAIL FRACTURE SITE LENGTH MUST BE CONSIDERED. OTHERWISE THE NAIL WILL PROTRUDE FROM THE BONE AFTER THE COMPRESION.

Compress the fracture using the extractor **4-51-01-47** and hammer **4-51-01-16**.

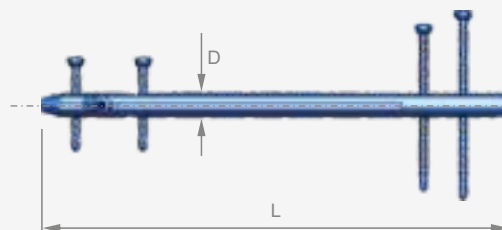
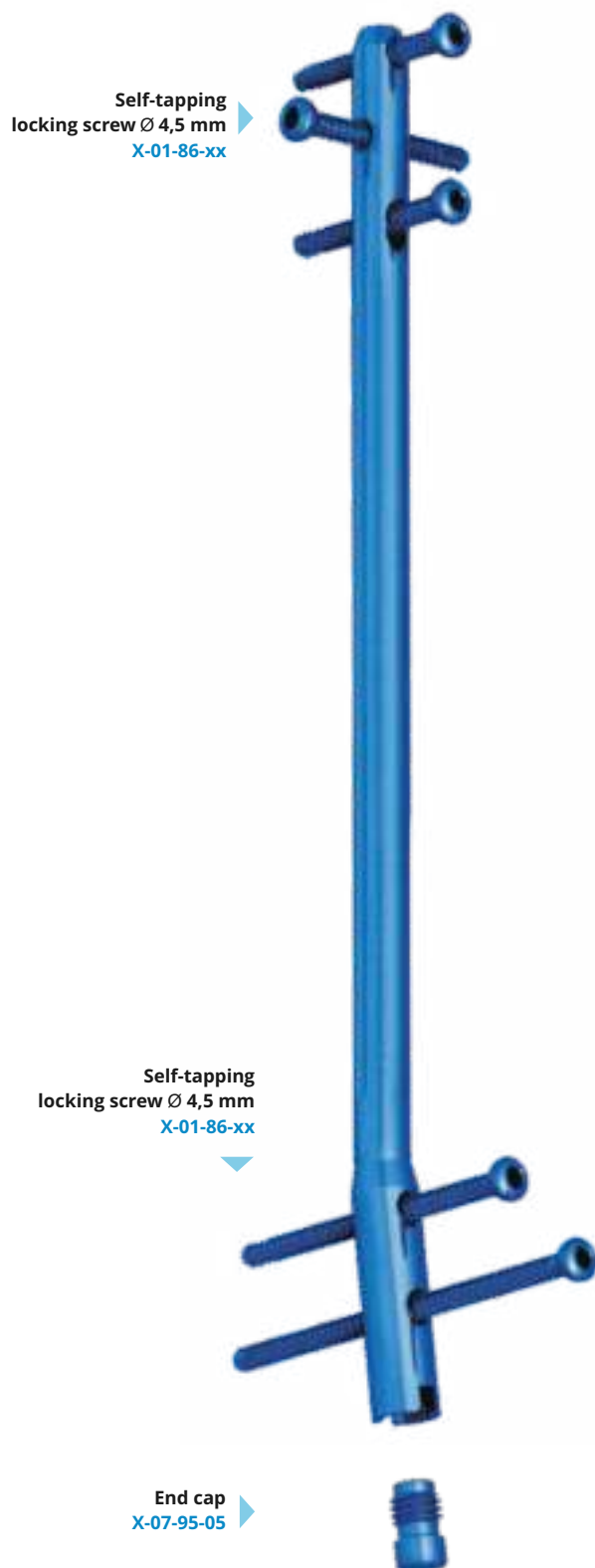
NOTE:

IMPACTOR SHOULD BE BLOCKED USING WRENCH **4-50-00-41** (to prevent damage).

02

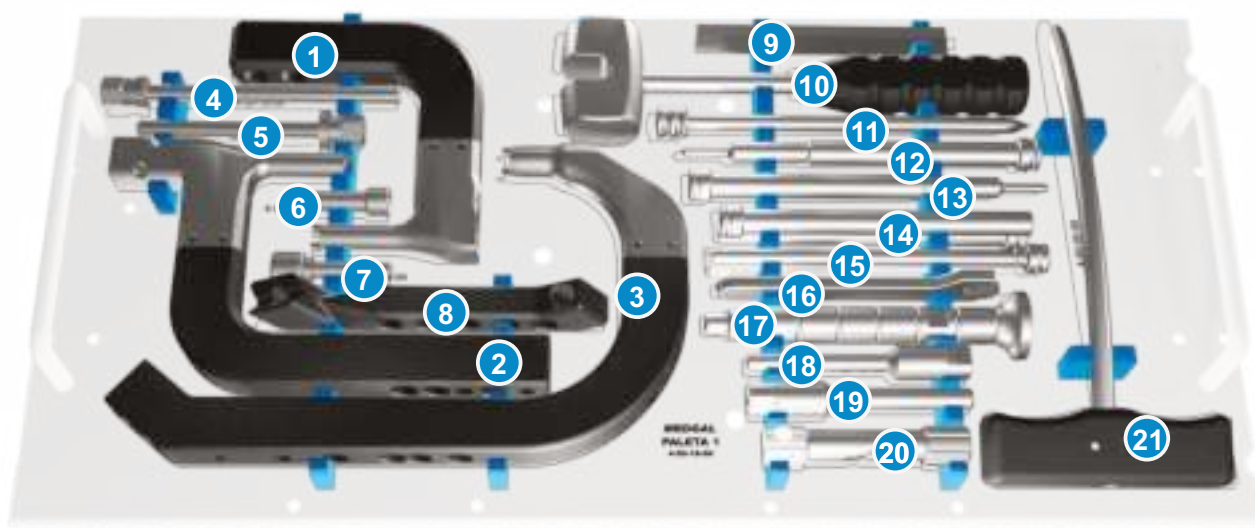
Lock the proximal holes of the nail using screwdriver **4-51-05-12**.

RETROGRADE FEMORAL NAIL



L (mm)	D=9mm	D=10mm	D=11mm	D=12mm	D=13mm
150	X-07-64-150	X-07-65-150	X-07-66-150	X-07-67-150	X-07-68-150
160	X-07-64-160	X-07-65-160	X-07-66-160	X-07-67-160	X-07-68-160
170	X-07-64-170	X-07-65-170	X-07-66-170	X-07-67-170	X-07-68-170
180	X-07-64-180	X-07-65-180	X-07-66-180	X-07-67-180	X-07-68-180
190	X-07-64-190	X-07-65-190	X-07-66-190	X-07-67-190	X-07-68-190
200	X-07-64-200	X-07-65-200	X-07-66-200	X-07-67-200	X-07-68-200
210	X-07-64-210	X-07-65-210	X-07-66-210	X-07-67-210	X-07-68-210
220	X-07-64-220	X-07-65-220	X-07-66-220	X-07-67-220	X-07-68-220
230	X-07-64-230	X-07-65-230	X-07-66-230	X-07-67-230	X-07-68-230
240	X-07-64-240	X-07-65-240	X-07-66-240	X-07-67-240	X-07-68-240
250	X-07-64-250	X-07-65-250	X-07-66-250	X-07-67-250	X-07-68-250
260	X-07-64-260	X-07-65-260	X-07-66-260	X-07-67-260	X-07-68-260
270	X-07-64-270	X-07-65-270	X-07-66-270	X-07-67-270	X-07-68-270
280	X-07-64-280	X-07-65-280	X-07-66-280	X-07-67-280	X-07-68-280
290	X-07-64-290	X-07-65-290	X-07-66-290	X-07-67-290	X-07-68-290
300	X-07-64-300	X-07-65-300	X-07-66-300	X-07-67-300	X-07-68-300
310	X-07-64-310	X-07-65-310	X-07-66-310	X-07-67-310	X-07-68-310
320	X-07-64-320	X-07-65-320	X-07-66-320	X-07-67-320	X-07-68-320
330	X-07-64-330	X-07-65-330	X-07-66-330	X-07-67-330	X-07-68-330
340	X-07-64-340	X-07-65-340	X-07-66-340	X-07-67-340	X-07-68-340
350	X-07-64-350	X-07-65-350	X-07-66-350	X-07-67-350	X-07-68-350
360	X-07-64-360	X-07-65-360	X-07-66-360	X-07-67-360	X-07-68-360
370	X-07-64-370	X-07-65-370	X-07-66-370	X-07-67-370	X-07-68-370
380	X-07-64-380	X-07-65-380	X-07-66-380	X-07-67-380	X-07-68-380
390	X-07-64-390	X-07-65-390	X-07-66-390	X-07-67-390	X-07-68-390
400	X-07-64-400	X-07-65-400	X-07-66-400	X-07-67-400	X-07-68-400
410	X-07-64-410	X-07-65-410	X-07-66-410	X-07-67-410	X-07-68-410
420	X-07-64-420	X-07-65-420	X-07-66-420	X-07-67-420	X-07-68-420
430	X-07-64-430	X-07-65-430	X-07-66-430	X-07-67-430	X-07-68-430
440	X-07-64-440	X-07-65-440	X-07-66-440	X-07-67-440	X-07-68-440

TRAY 1



1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protecion sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

H = 200 mm
CONTAINER
4-99-100-200



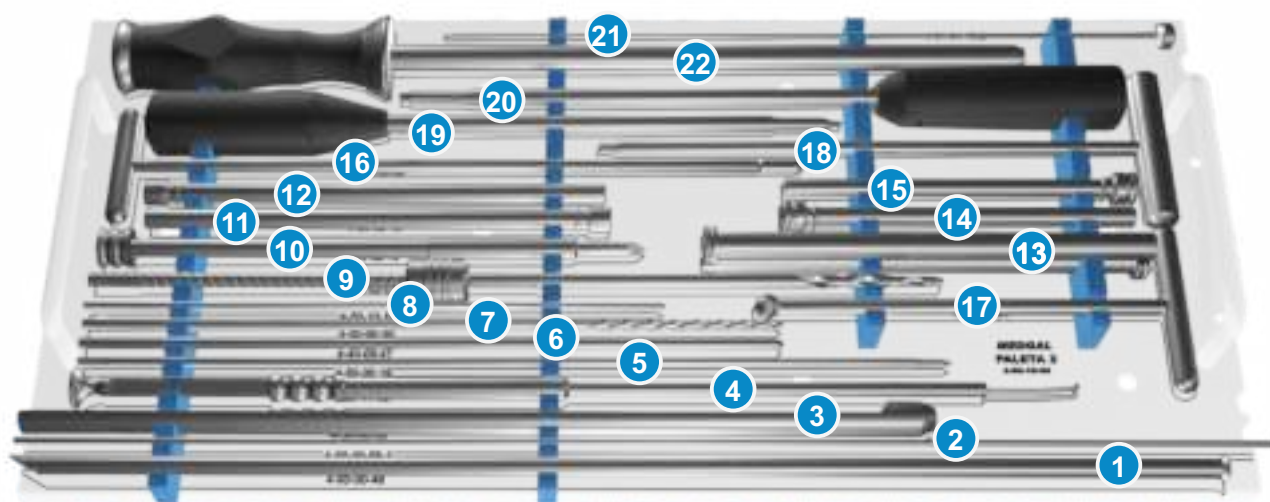
Elements used
for the selected nail



Not used elements



TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 - 2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocars	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2 pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



*	Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)	4-50-16-01.M.
---	---	---------------

H = 200 mm
CONTAINER
4-99-100-200

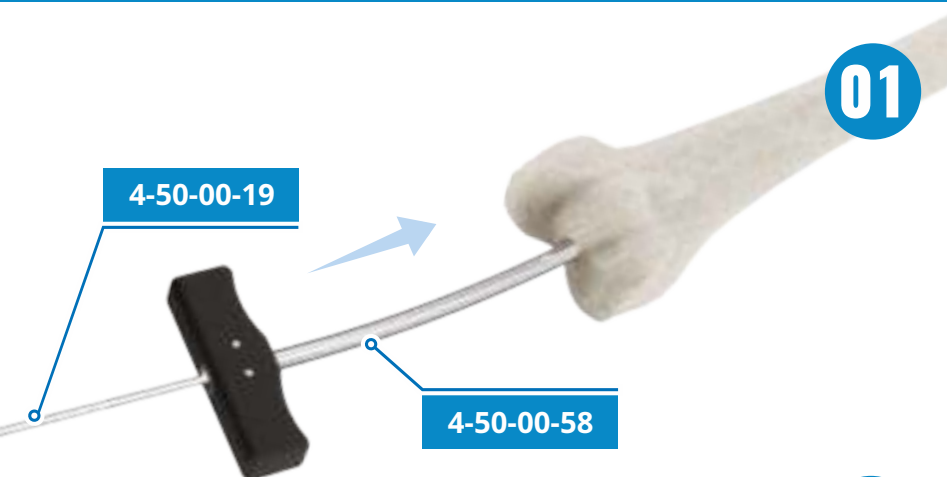


Elements used
for the selected nail ■
Not used elements ■



CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.

01**BONE PREPARATION**

Insert guide wire **4-50-00-19**.

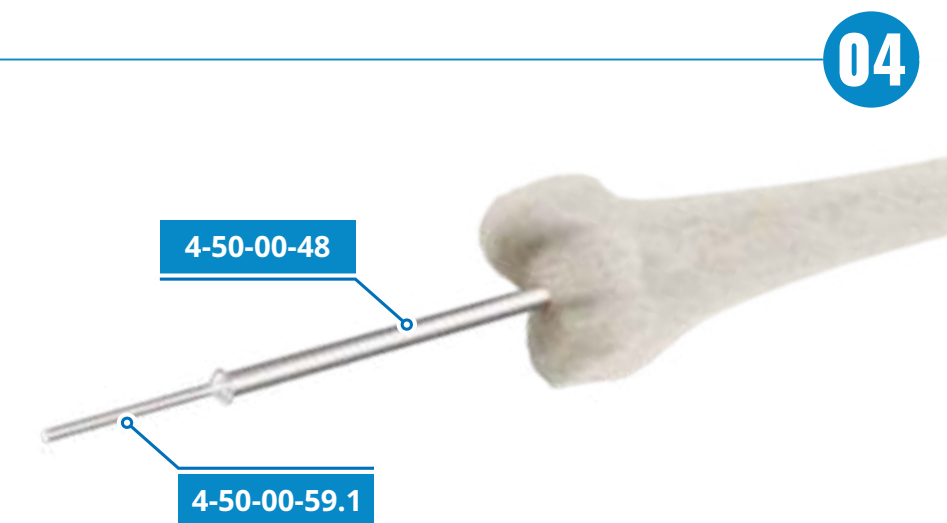
Open the intramedullary canal using cannulated awl **4-50-00-58**.

02

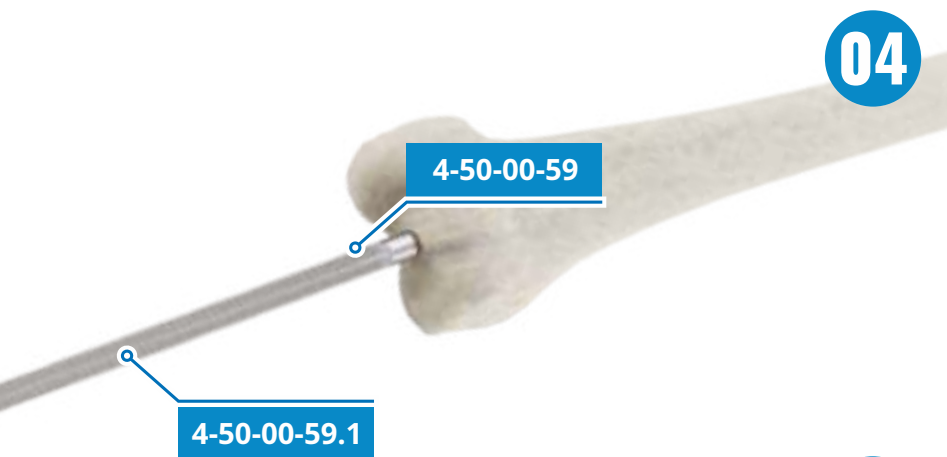
Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.

03

Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

04

Change guide wire with a limiter **4-50-00-45** to guide wire **4-50-00-59.1** using tubular slide **4-50-00-48**.



Measure the length of the nail through the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.



NAIL INSERTION

Assembly targeting device **4-50-18-10** and nail using screw **4-50-18-05** and wrench **4-51-01-24**.

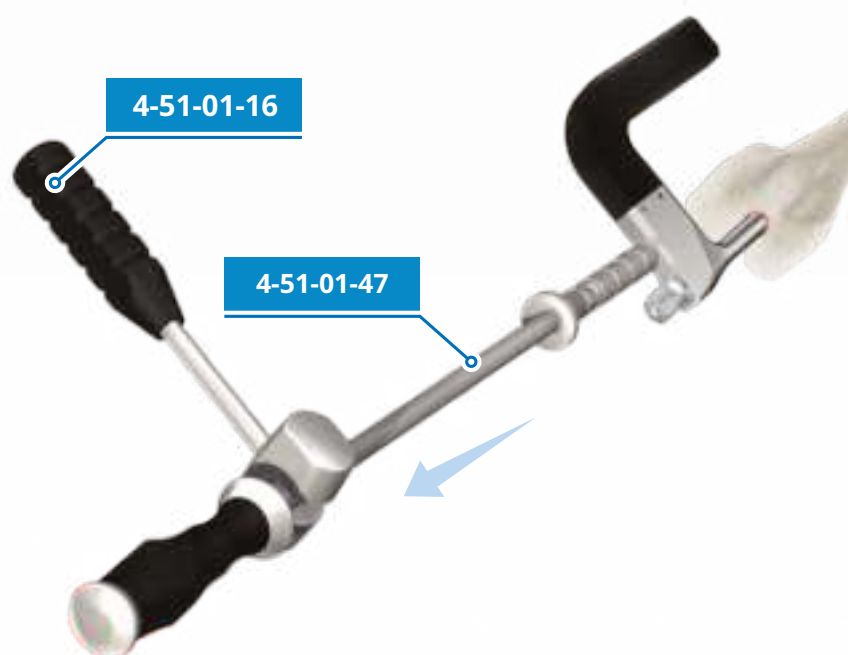


Check holes using control pin **4-50-00-08**.

03

Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.

NOTE :
IMPACTOR SHOULD BE
BLOCKED USING WRENCH **4-50-00-41**
(to prevent damage).

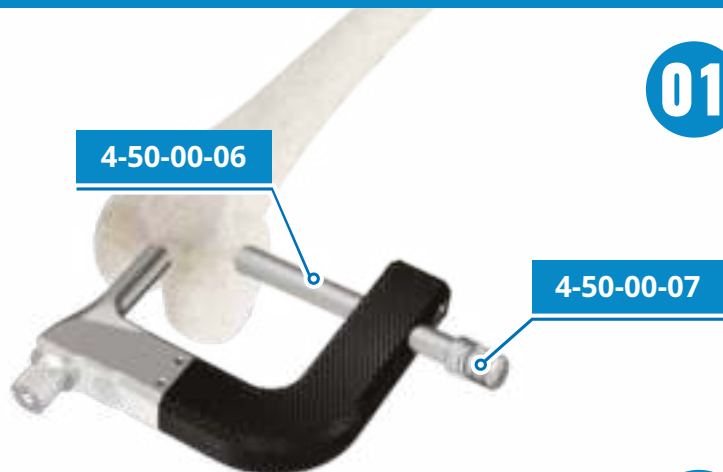
04

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

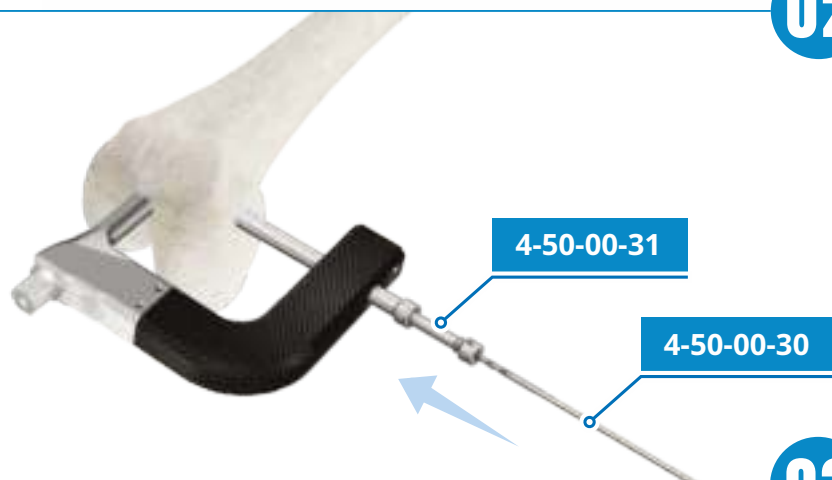
NOTE:
Check the connection between nail
and handle, especially after
hammering.

01**STATIC METHOD**

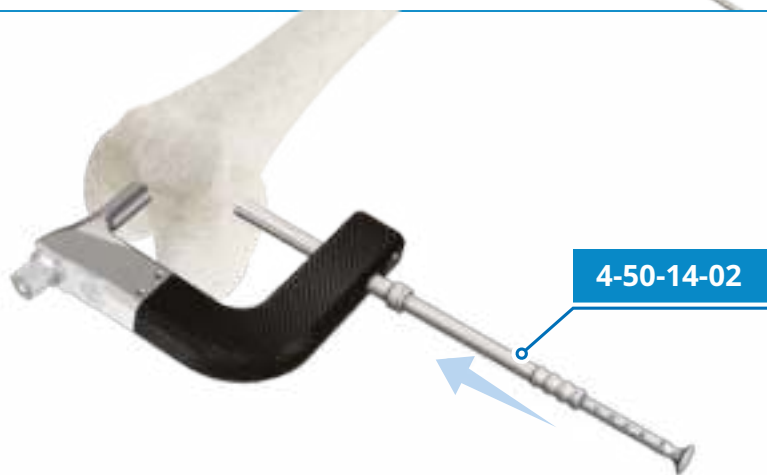
Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

**02**

Drill through the compression nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

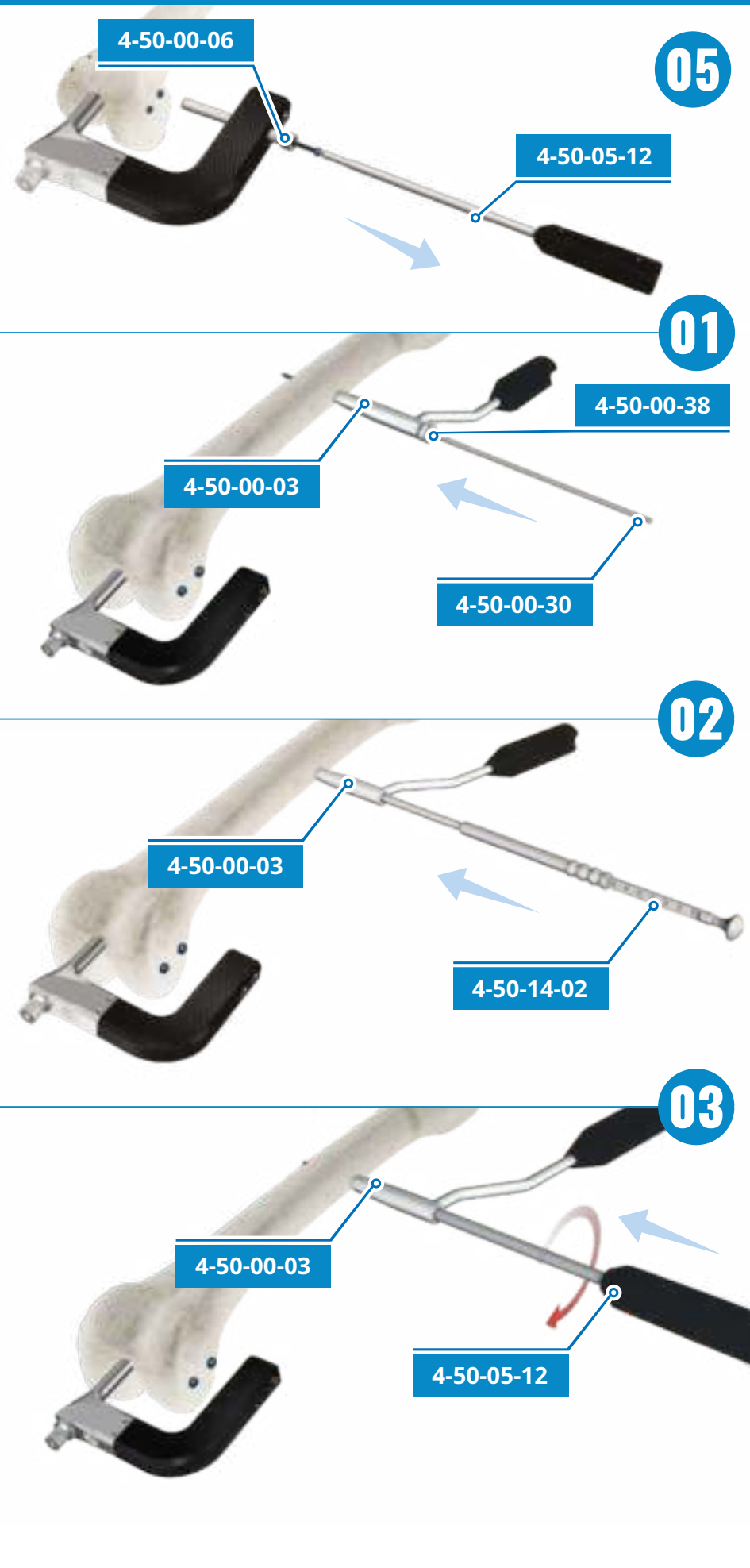
**03**

Measure the thickness of the bone through the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

**04**

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.





05

Insert the Ø4,5 mm locking screw into the second hole of nail **in the same way** as in the first hole.

01

FREEHAND LOCKING TECHNIQUE

Drill first distal nail hole using hand targeting device **4-50-00-03** sleeve **4-50-00-38** and drill **4-50-00-30**.

02

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

03

Insert Ø 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.

Lock other distal holes **in the same way** like the first proximal hole.

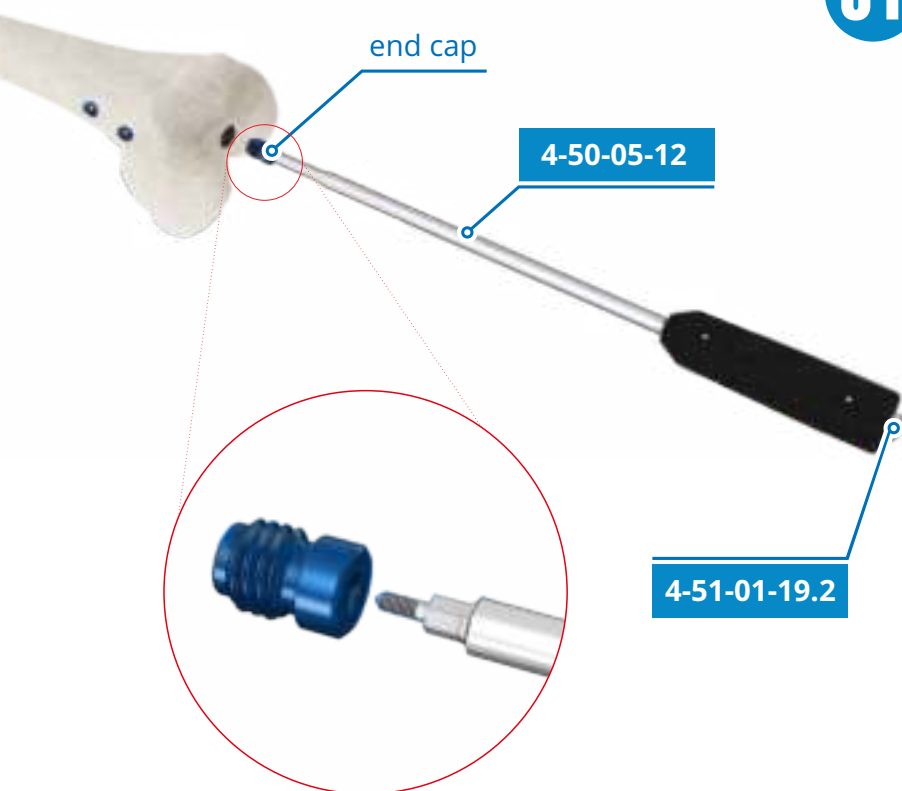
01

END CAP INSERTION

Insert locking screw
4-51-01-19.2 into screwdriver
4-50-05-12.

Lock end cap on screwdriver
4-50-05-12 using locking screw
4-51-01-19.2.

Insert end cap into the nail.
Unscrew the end cap from the
screwdriver.

**01**

EXTRACTION OF THE NAIL

Clear sockets of end cap and locking
screws from any tissue ingrowth.

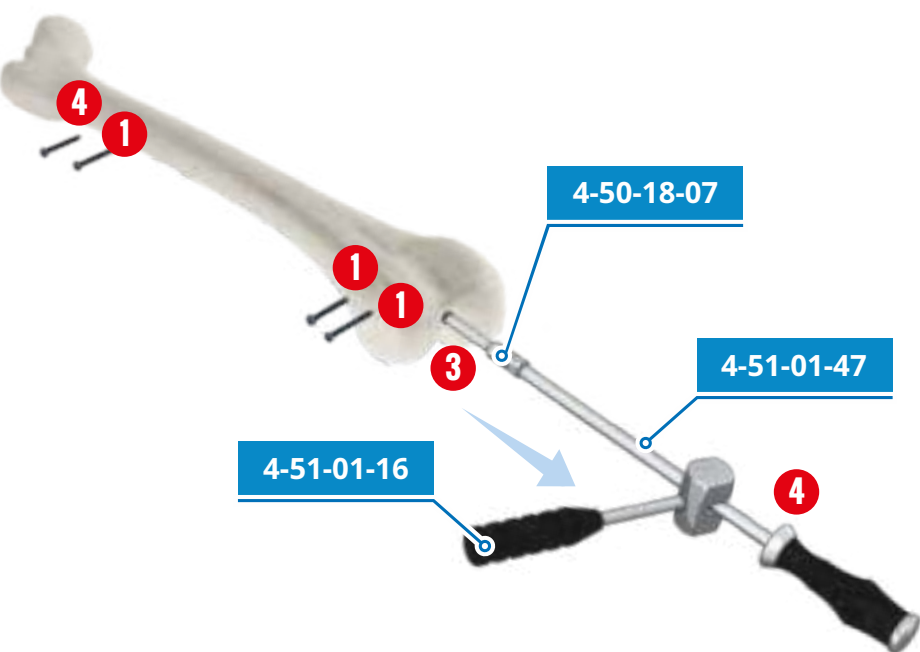
1. Remove all locking screws except
one of the distal locking screw.

2. Remove end cap.

3. Insert extractor reducer **4-50-18-07**
into extractor **4-51-01-47**.

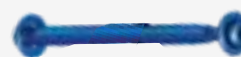
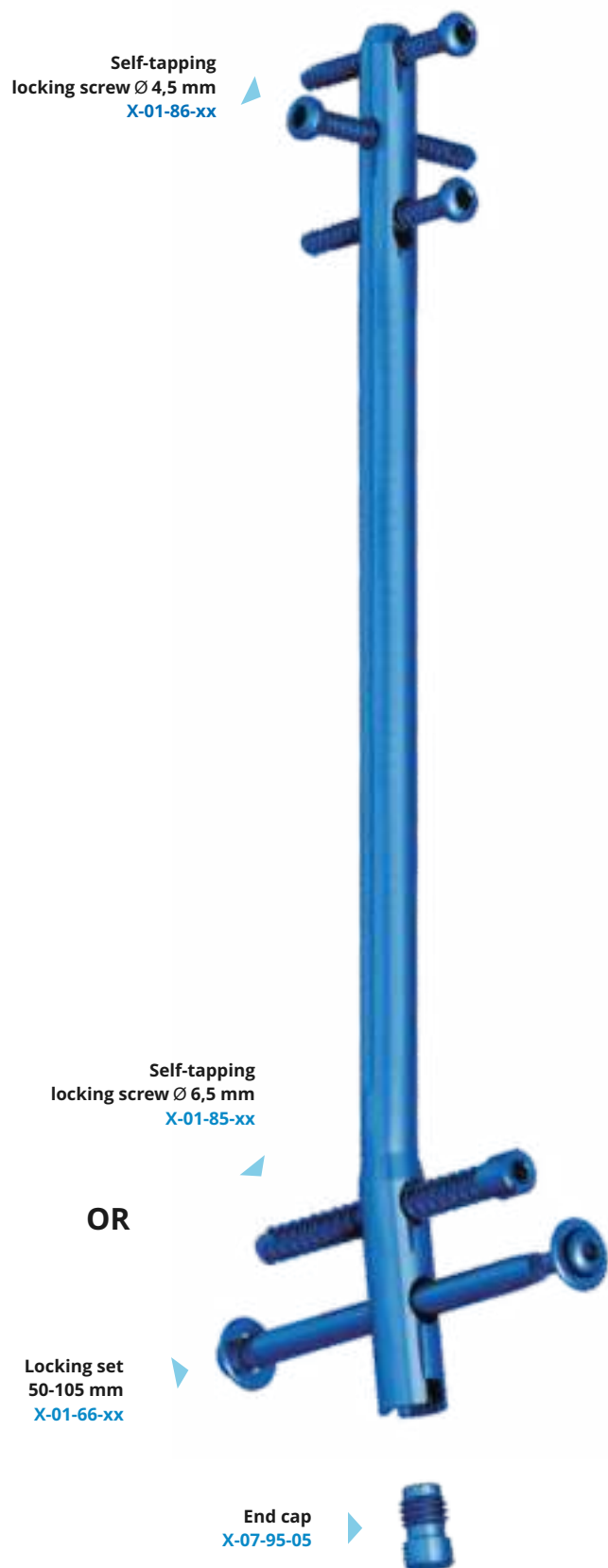
Install the set in the nail and remove
distal locking screw **(4)**.

Remove the nail using hammer
4-51-01-16.

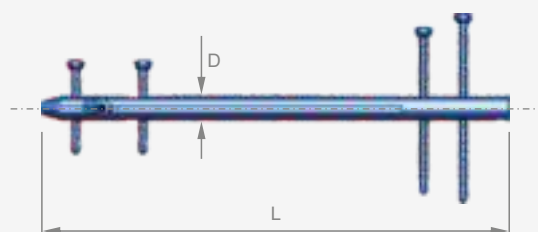


RETROGRADE FEMORAL NAIL

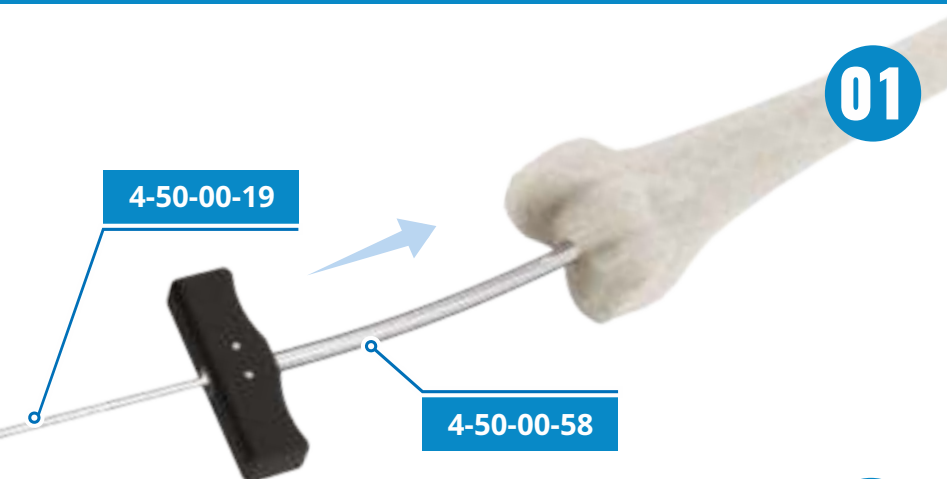
with the proximal holes for the Ø 6,5 or for the locking sets.



RANGE (mm)	REF
50-60	X-01-66-50
60-75	X-01-66-60
70-85	X-01-66-70
80-95	X-01-66-80
90-105	X-01-66-90

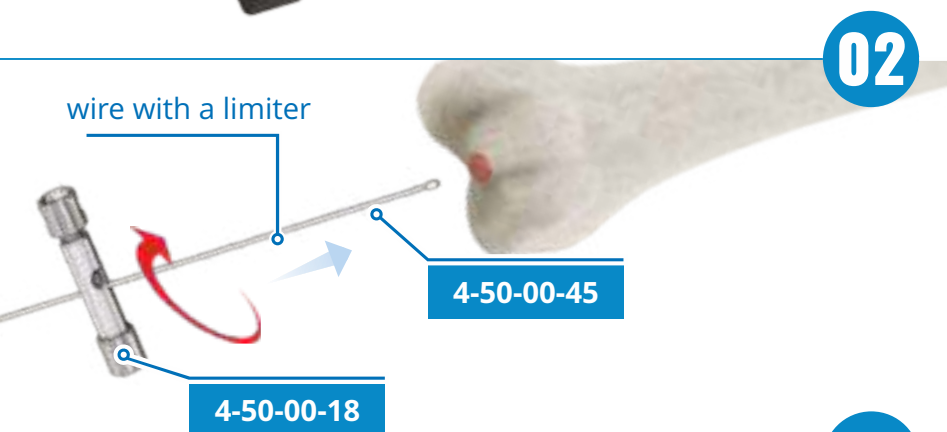


L mm	D=8mm	D=9mm	D=10mm	D=11mm	D=12mm	D=13mm
140	X-07-100-140	X-07-101-140	X-07-102-140	X-07-103-140	X-07-104-140	X-07-105-140
150	X-07-100-150	X-07-101-150	X-07-102-150	X-07-103-150	X-07-104-150	X-07-105-150
160	X-07-100-160	X-07-101-160	X-07-102-160	X-07-103-160	X-07-104-160	X-07-105-160
170	X-07-100-170	X-07-101-170	X-07-102-170	X-07-103-170	X-07-104-170	X-07-105-170
180	X-07-100-180	X-07-101-180	X-07-102-180	X-07-103-180	X-07-104-180	X-07-105-180
190	X-07-100-190	X-07-101-190	X-07-102-190	X-07-103-190	X-07-104-190	X-07-105-190
200	X-07-100-200	X-07-101-200	X-07-102-200	X-07-103-200	X-07-104-200	X-07-105-200
210	X-07-100-210	X-07-101-210	X-07-102-210	X-07-103-210	X-07-104-210	X-07-105-210
220	X-07-100-220	X-07-101-220	X-07-102-220	X-07-103-220	X-07-104-220	X-07-105-220
230	X-07-100-230	X-07-101-230	X-07-102-230	X-07-103-230	X-07-104-230	X-07-105-230
240	X-07-100-240	X-07-101-240	X-07-102-240	X-07-103-240	X-07-104-240	X-07-105-240
250	X-07-100-250	X-07-101-250	X-07-102-250	X-07-103-250	X-07-104-250	X-07-105-250
260	X-07-100-260	X-07-101-260	X-07-102-260	X-07-103-260	X-07-104-260	X-07-105-260
270	X-07-100-270	X-07-101-270	X-07-102-270	X-07-103-270	X-07-104-270	X-07-105-270
280	X-07-100-280	X-07-101-280	X-07-102-280	X-07-103-280	X-07-104-280	X-07-105-280
290	X-07-100-290	X-07-101-290	X-07-102-290	X-07-103-290	X-07-104-290	X-07-105-290
300	X-07-100-300	X-07-101-300	X-07-102-300	X-07-103-300	X-07-104-300	X-07-105-300
310	X-07-100-310	X-07-101-310	X-07-102-310	X-07-103-310	X-07-104-310	X-07-105-310
320	X-07-100-320	X-07-101-320	X-07-102-320	X-07-103-320	X-07-104-320	X-07-105-320
330	X-07-100-330	X-07-101-330	X-07-102-330	X-07-103-330	X-07-104-330	X-07-105-330
340	X-07-100-340	X-07-101-340	X-07-102-340	X-07-103-340	X-07-104-340	X-07-105-340
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390	X-07-100-390	X-07-101-390	X-07-102-390	X-07-103-390	X-07-104-390	X-07-105-390
400	X-07-100-400	X-07-101-400	X-07-102-400	X-07-103-400	X-07-104-400	X-07-105-400
410	X-07-100-410	X-07-101-410	X-07-102-410	X-07-103-410	X-07-104-410	X-07-105-410
420	X-07-100-420	X-07-101-420	X-07-102-420	X-07-103-420	X-07-104-420	X-07-105-420
430	X-07-100-430	X-07-101-430	X-07-102-430	X-07-103-430	X-07-104-430	X-07-105-430
440	X-07-100-440	X-07-101-440	X-07-102-440	X-07-103-440	X-07-104-440	X-07-105-440

**01****BONE PREPARATION**

Insert guide wire **4-50-00-19**.

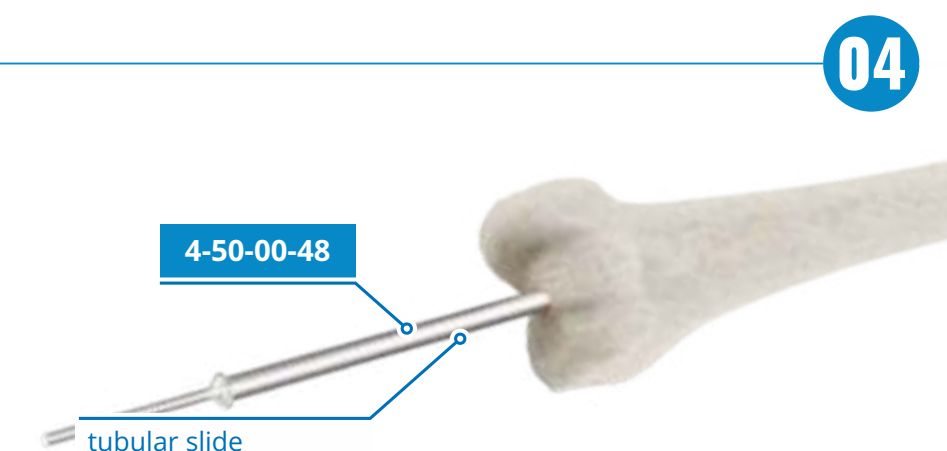
Open the intramedullary canal using cannulated awl **4-50-00-58**.

**02**

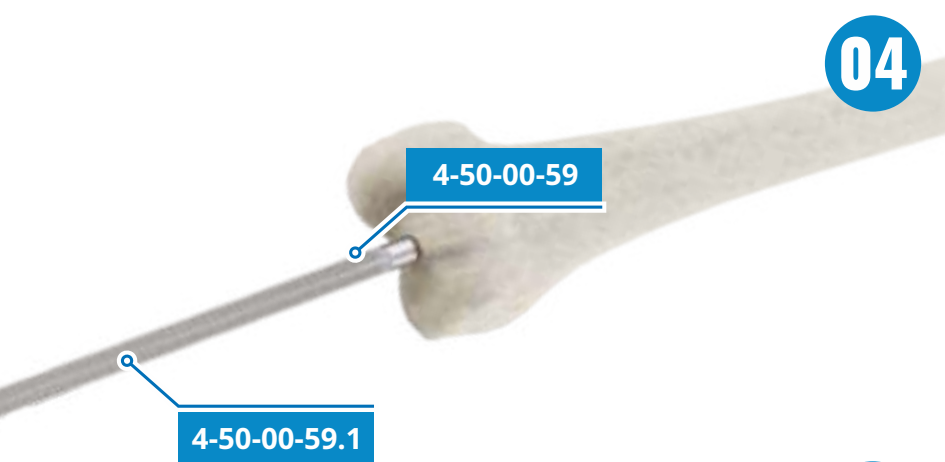
Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.

**03**

Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

**04**

Change guide wire with a limiter **4-50-00-45** to guide wire **4-50-00-59.1** using tubular slide **4-50-00-48**.

**04**

Measure the length of the nail through the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

**01**

NAIL INSERTION

Assembly targeting device **4-50-18-10** and nail using screw **4-50-18-05** and wrench **4-51-01-24**.

**02**

Check holes using sleeve **4-50-00-06**, **4-50-05-11** and drill **4-50-02-07**.

4-50-00-06

01**STATIC METHOD**

Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

4-50-00-07

02

Drill through the first nail hole using step drill **4-50-02-07**, sleeve **4-50-00-06** and drill sleeve **4-50-05-11**.

4-50-00-06

4-50-05-11

4-50-02-07

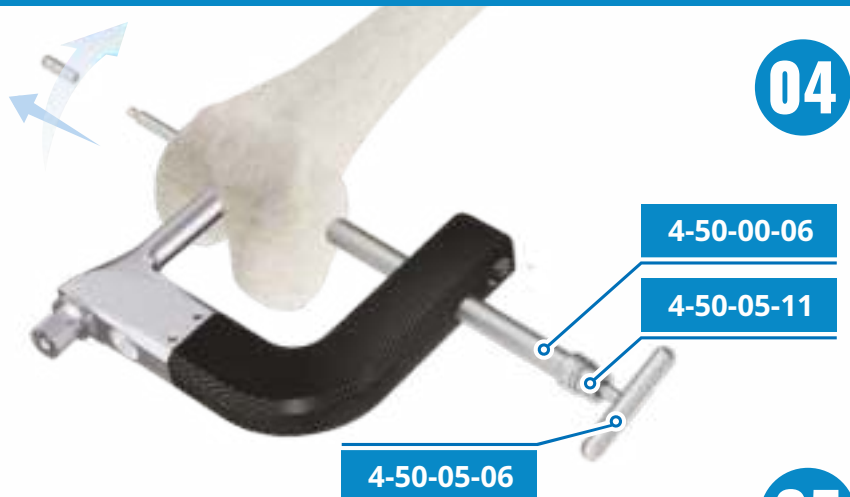
03

Insert the pilot of the locking set **4-50-05-06** through drill sleeve **4-50-05-11**.

4-50-00-06

4-50-05-11

4-50-05-06

**04**

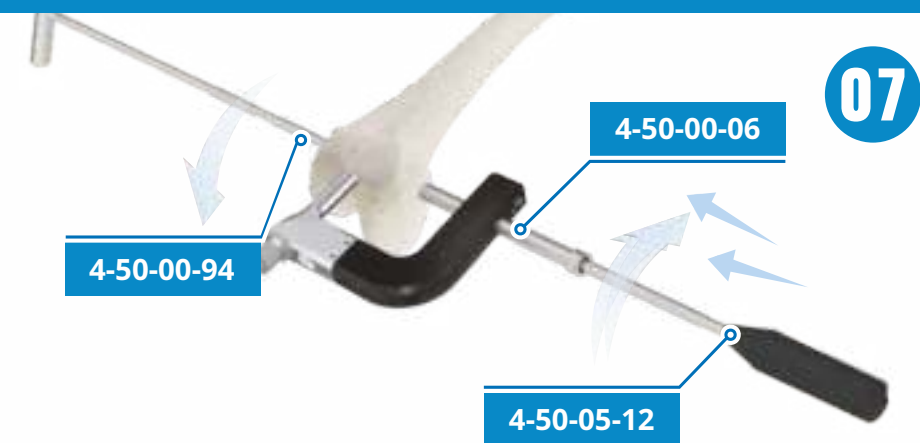
Remove ending of the locking set pilot.

**05**

Fix the pivot **X-01-66-XX** on the pilot **4-50-05-06**.

**06**

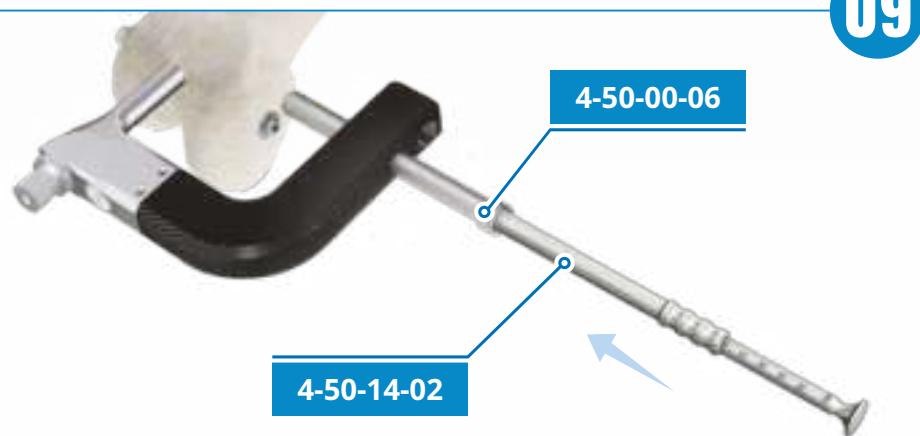
Remove the pilot from the locking set pivot. To fix rotation movement of the pivot, use the T-handle screwdriver **4-50-00-94**.

**07**

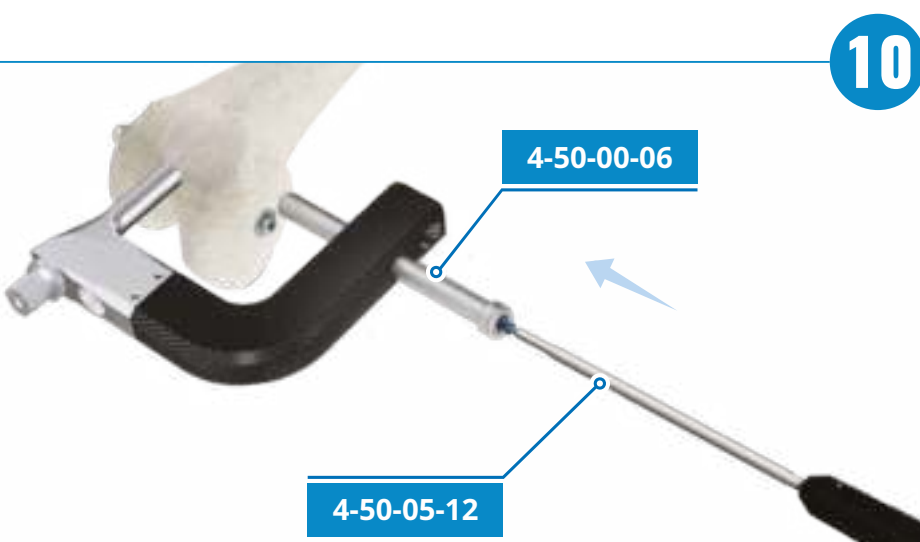
Insert screw of the locking set into the pivot using the s 3,5 screwdriver **4-50-05-12** and T-handle screwdriver **4-50-00-94**.

**08**

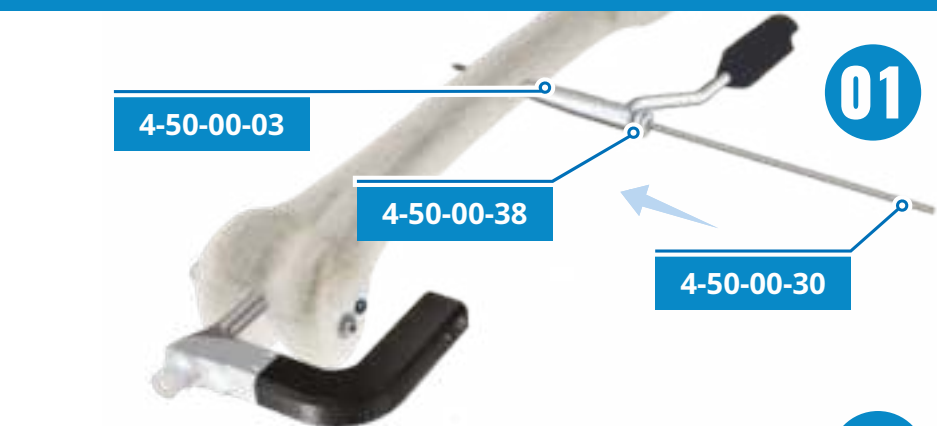
Drill through the second nail hole using the Ø 4,7 drill **4-50-05-47**.

**09**

Measure the thickness of the bone through the drilled hole, in order to determine the length of the locking screw using **4-50-14-02**.

**10**

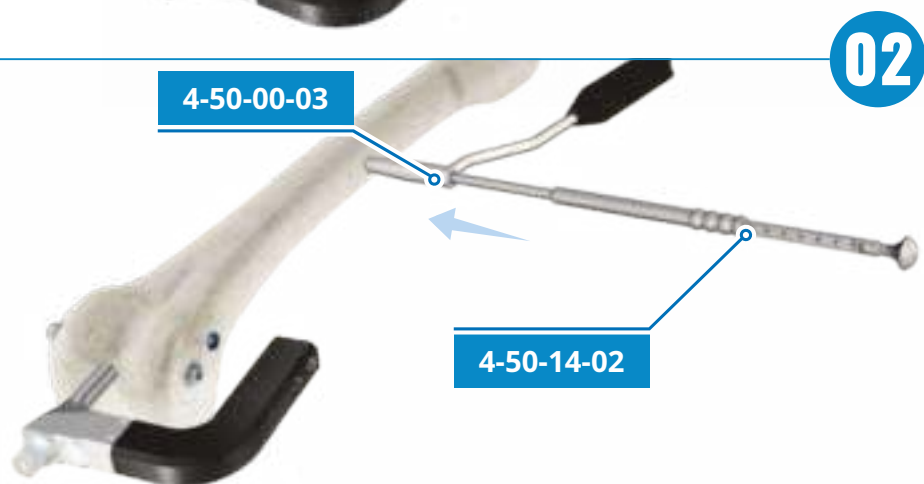
Insert the Ø 6,5 molar locking screw using screwdriver **4-50-05-12**.



01

FREEHAND LOCKING TECHNIQUE

Drill first distal nail hole using hand targeting device **4-50-00-03** sleeve **4-50-00-38** and drill **4-50-00-30**.



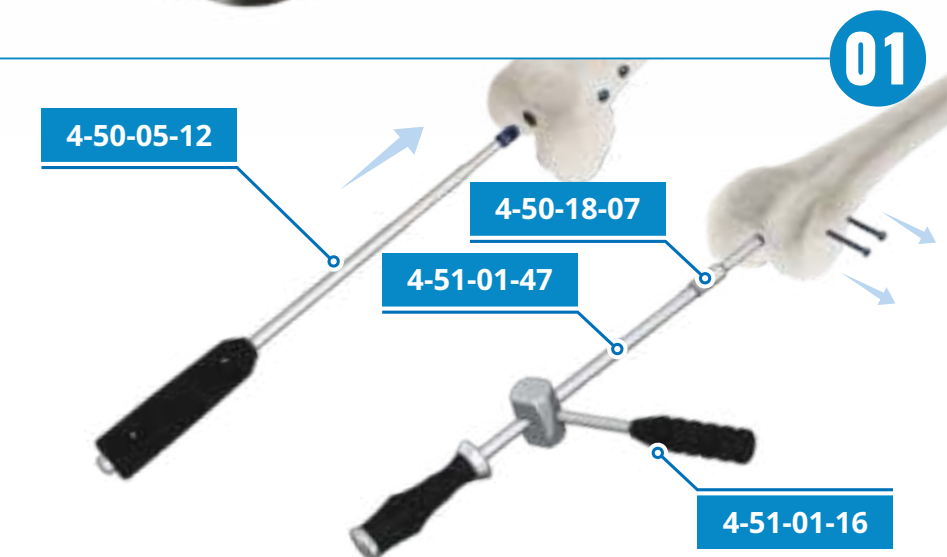
02

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.



03

Insert Ø 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.



01

EXTRACTION OF THE NAIL

Remove end cup.

Insert extractor reducer **4-50-18-07** into extractor **4-51-01-47**.

Install the set in the nail and remove distal locking screw.

Remove the nail using hammer **4-51-01-16**

COMPRESSION TIBIAL NAIL



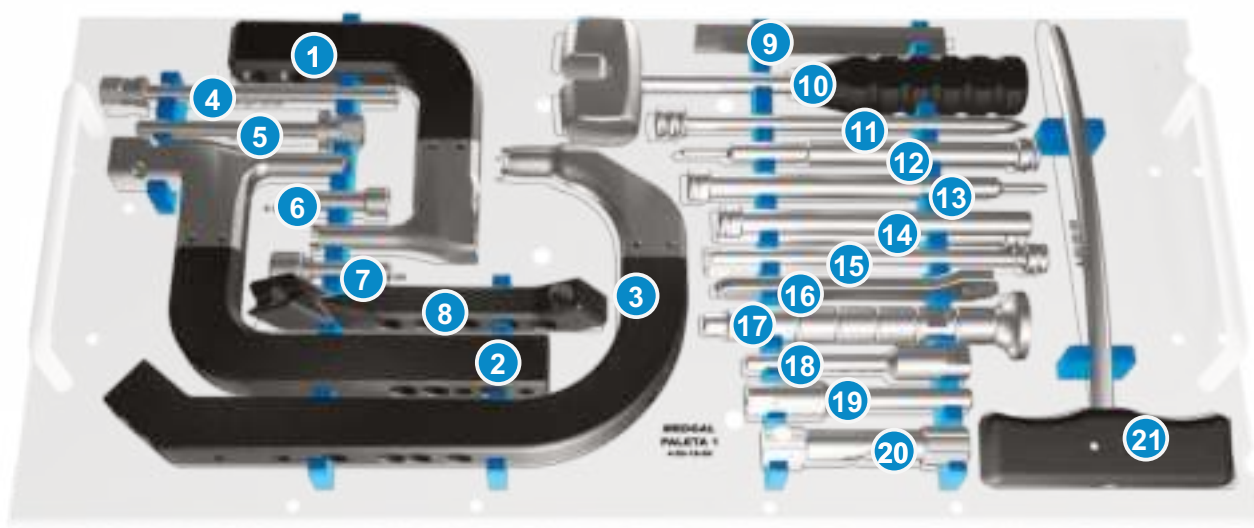
End cap

Size	REF
0	X-07-95-20
+5	X-07-95-21
+10	X-07-95-22
+15	X-07-95-23
+20	X-07-95-24
+25	X-07-95-25
+30	X-07-95-26



L (mm)	D=8mm	D=9mm	D=10mm	D=11mm	D=12mm
180	X-08-01-180	X-08-02-180	X-08-03-180	X-08-04-180	X-08-05-180
190	X-08-01-190	X-08-02-190	X-08-03-190	X-08-04-190	X-08-05-190
200	X-08-01-200	X-08-02-200	X-08-03-200	X-08-04-200	X-08-05-200
210	X-08-01-210	X-08-02-210	X-08-03-210	X-08-04-210	X-08-05-210
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250	X-08-01-250	X-08-02-250	X-08-03-250	X-08-04-250	X-08-05-250
260	X-08-01-260	X-08-02-260	X-08-03-260	X-08-04-260	X-08-05-260
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290	X-08-01-290	X-08-02-290	X-08-03-290	X-08-04-290	X-08-05-290
300	X-08-01-300	X-08-02-300	X-08-03-300	X-08-04-300	X-08-05-300
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330	X-08-01-330	X-08-02-330	X-08-03-330	X-08-04-330	X-08-05-330
340	X-08-01-340	X-08-02-340	X-08-03-340	X-08-04-340	X-08-05-340
350	X-08-01-350	X-08-02-350	X-08-03-350	X-08-04-350	X-08-05-350
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370	X-08-01-370	X-08-02-370	X-08-03-370	X-08-04-370	X-08-05-370
380	X-08-01-380	X-08-02-380	X-08-03-380	X-08-04-380	X-08-05-380
390	X-08-01-390	X-08-02-390	X-08-03-390	X-08-04-390	X-08-05-390
400	X-08-01-400	X-08-02-400	X-08-03-400	X-08-04-400	X-08-05-400

TRAY 1



1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protecion sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

H = 200 mm
CONTAINER
4-99-100-200



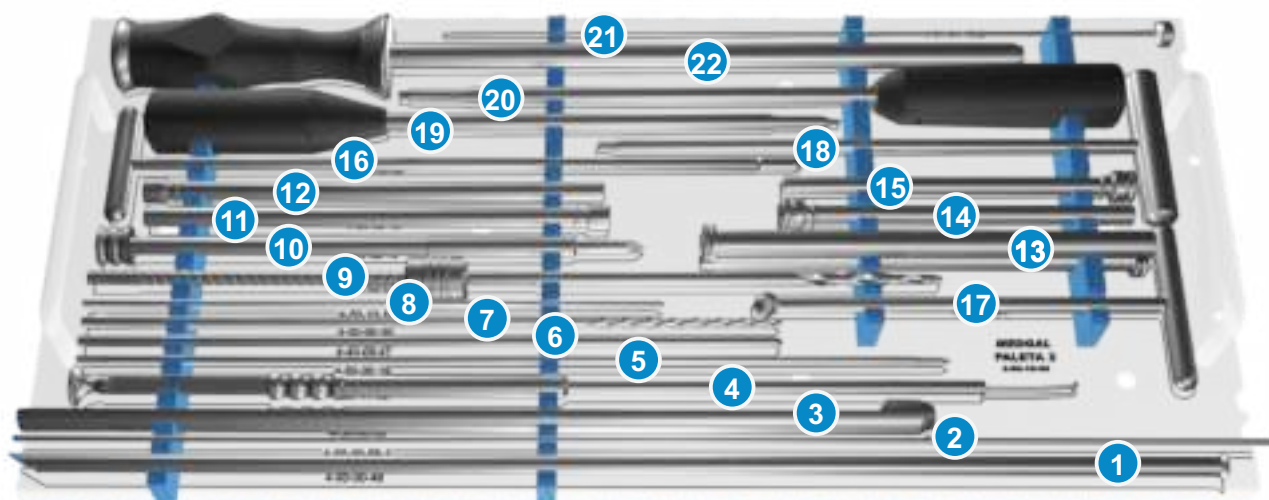
Elements used
for the selected nail



Not used elements



TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 - 2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocars	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



*	Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)	4-50-16-01.M.
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H = 200 mm
CONTAINER
4-99-100-200



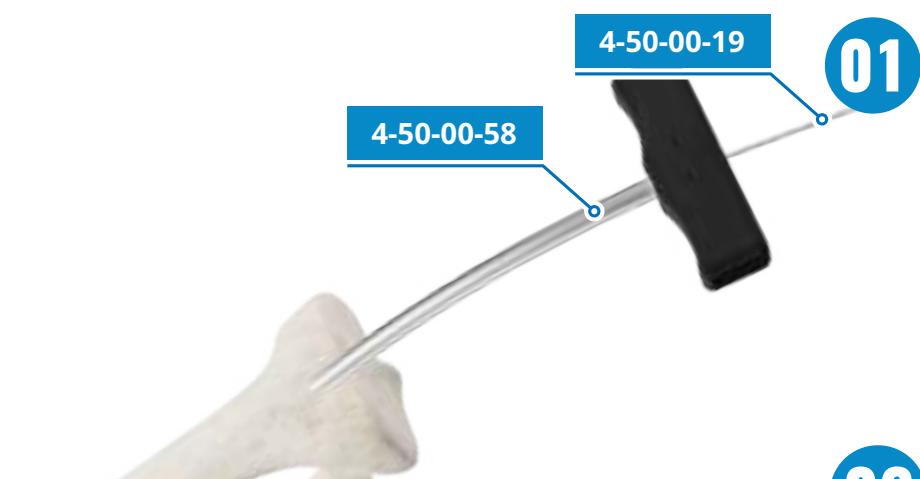
Elements used
for the selected nail

Not used elements



CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

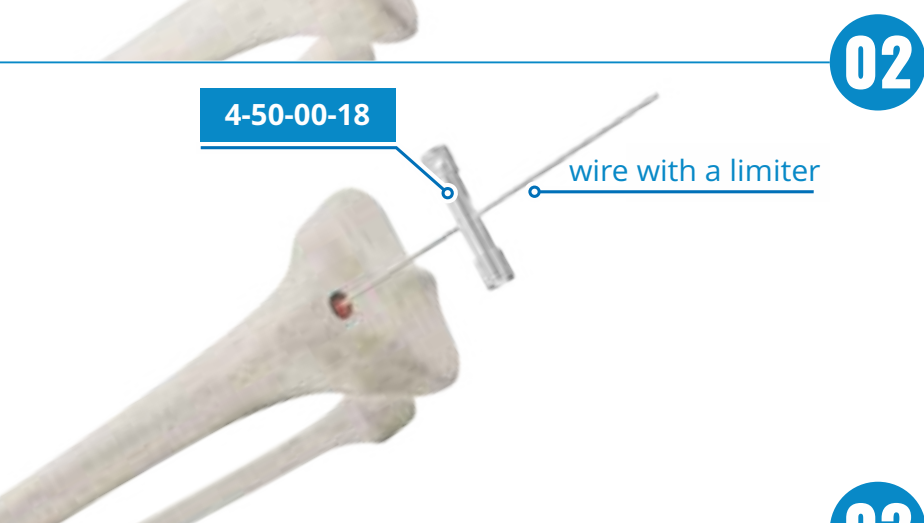
CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.



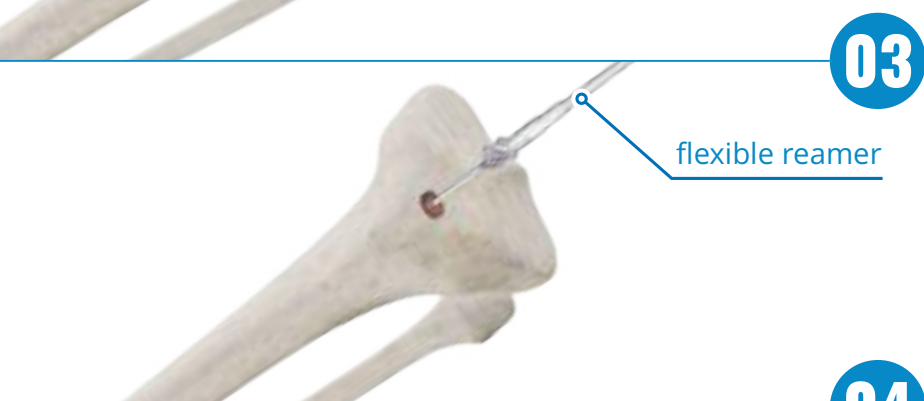
BONE PREPARATION

Insert K-wire **4-50-00-19**.

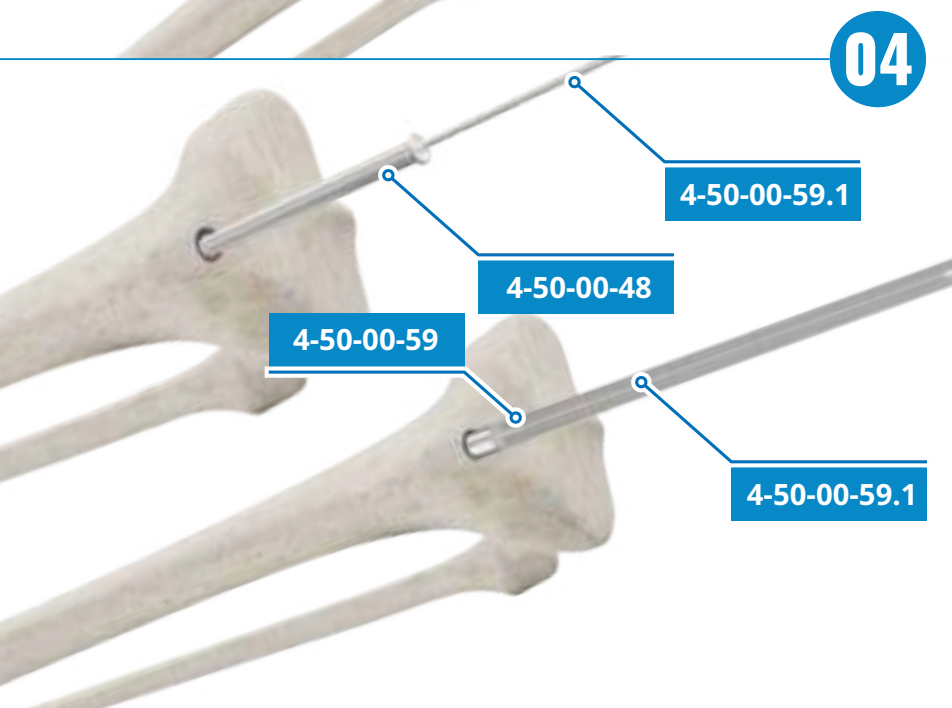
Open the intramedullary canal using cannulated awl **4-50-00-58**.



Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.



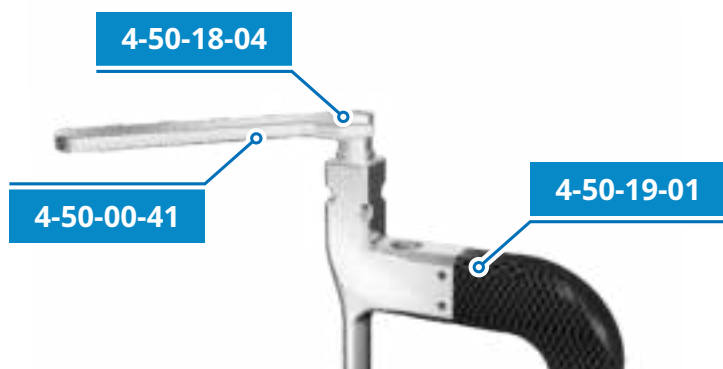
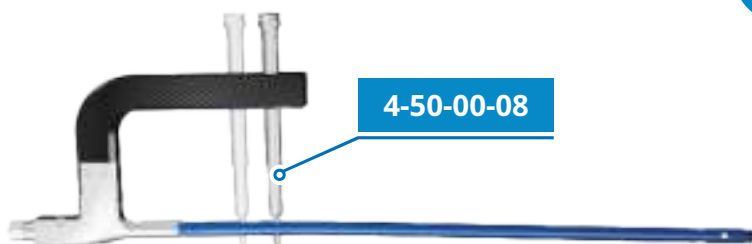
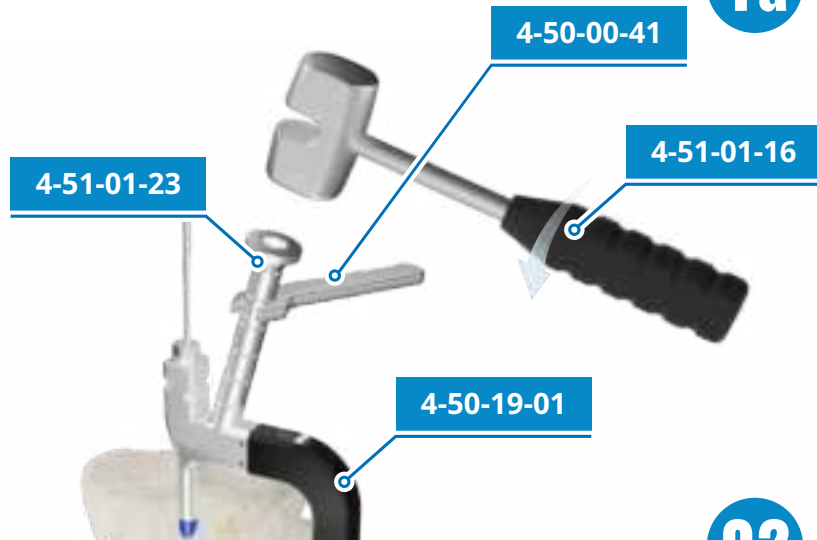
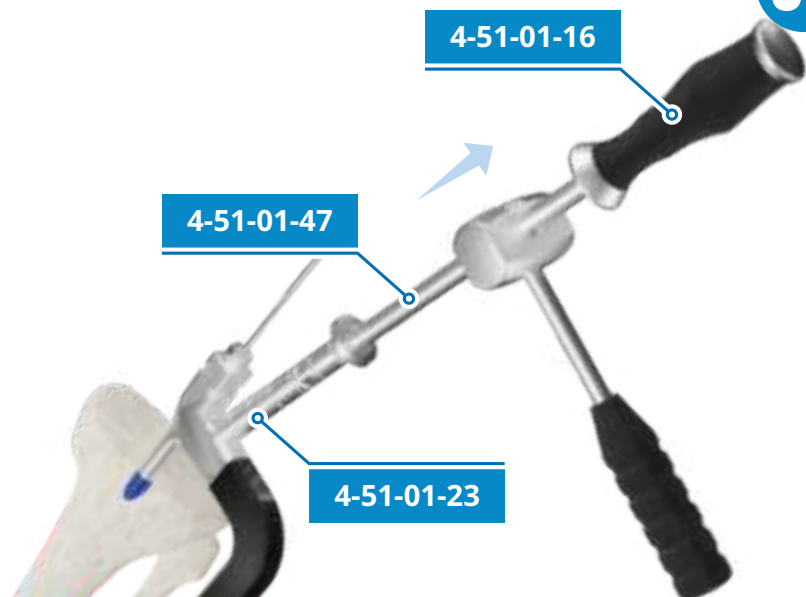
Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).



Change guide wire with a limiter **4-50-00-45** to guide wire **4-50-00-59.1** using tubular slide **4-50-00-48**.

Measure the length of the nail trough the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

05**01****1a****02**

Assembly targeting handle **4-50-19-01** and nail using screw **4-50-18-04** and wrench **4-50-00-41**.

Check holes using control pins **4-50-00-08**.

Screw impactor **4-51-01-23** into targeting handle using **4-50-00-41**.

Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.

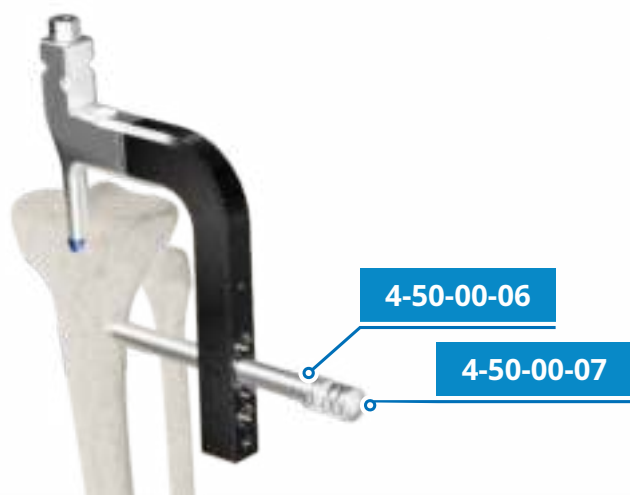
NOTE :
IMPACTOR SHOULD BE
BLOCKED USING WRENCH **4-50-00-41**
(to prevent damage).

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

NOTE:
Check the connection between nail
and handle, especially after
hammering.

01**3. STATIC METHOD**

Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

**02**

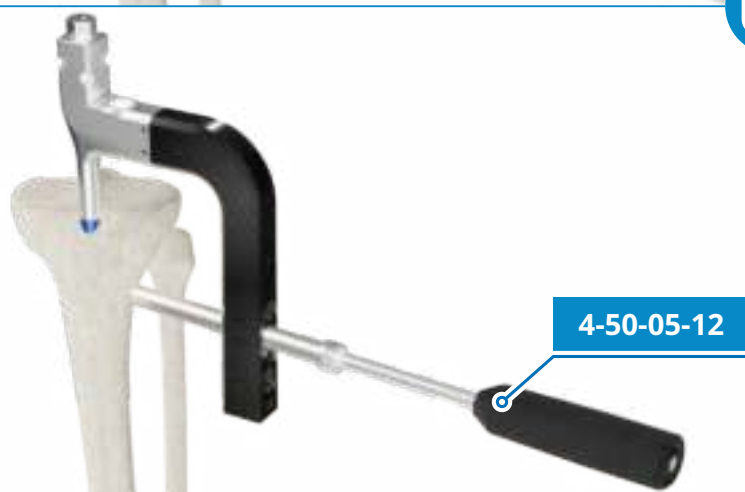
Drill through the compression nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

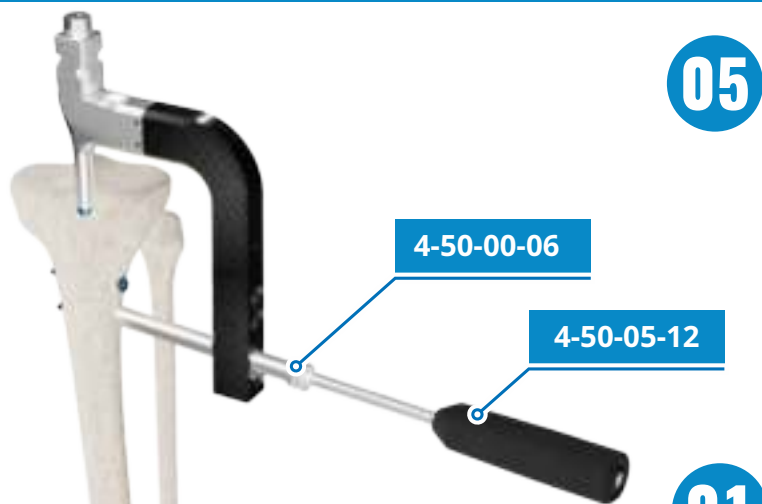
**03**

Measure the thickness of the bone through the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

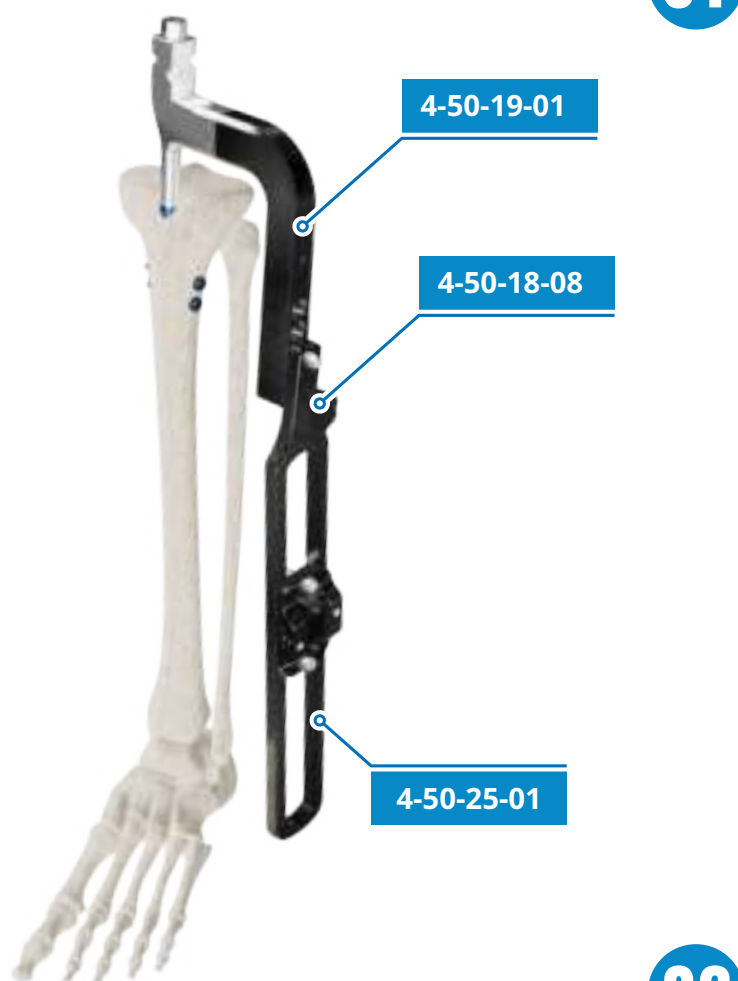
**04**

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.



**05**

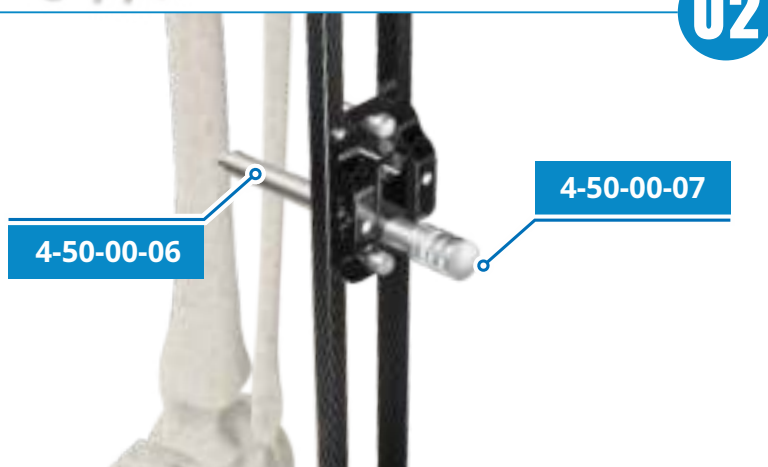
Insert the Ø4,5 mm locking screw into the static hole of nail **in the same way** as in the compression hole.

**01**

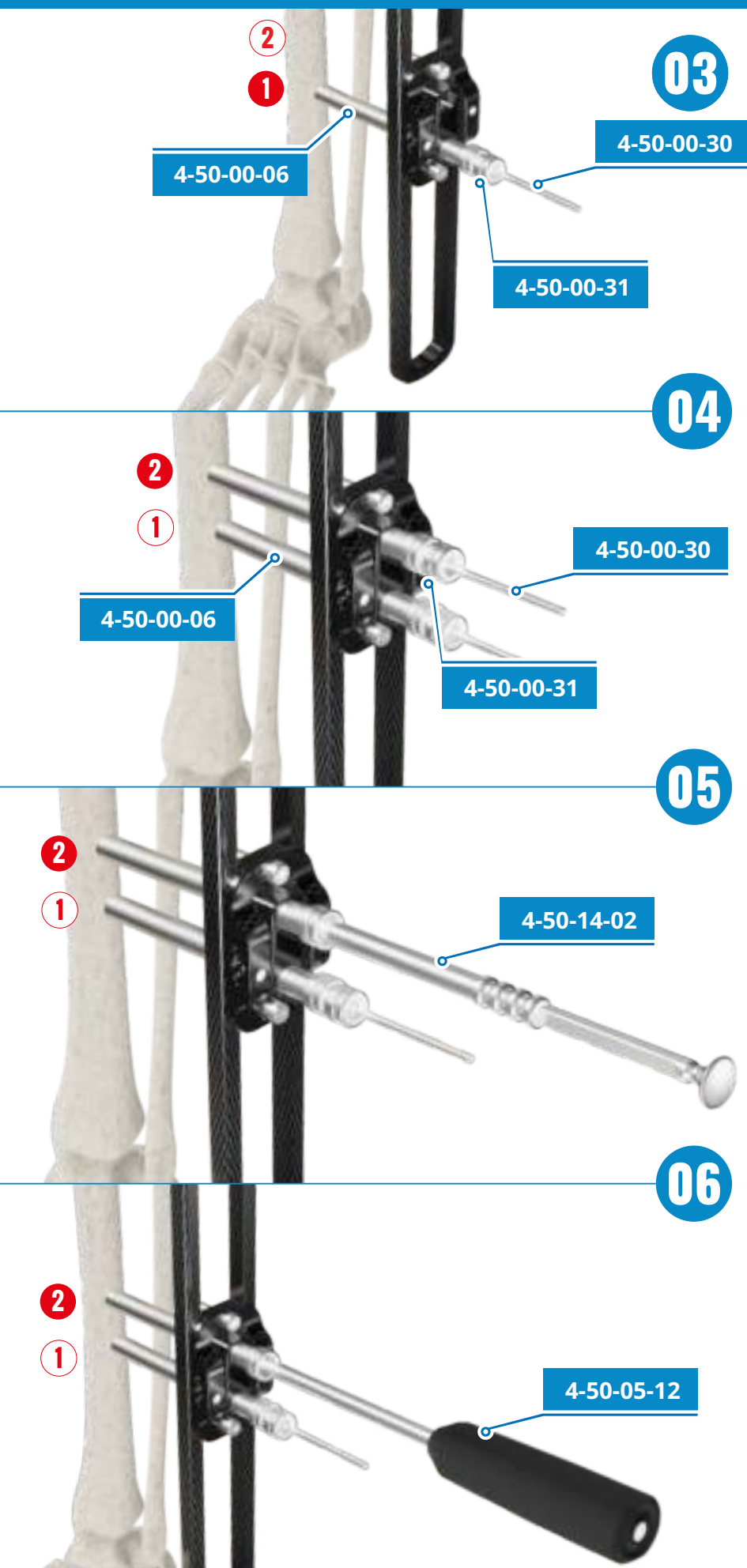
4. DISTAL TARGETING DEVICE

Install distal targeting device **4-50-25-01** into **4-50-19-01** using screw **4-50-18-08**.

Do not change position of the targeting device.

**02**

Prepare distal hole using trocar **4-50-00-07** and sleeve **4-50-00-06**.



Drill through the first distal nail hole using sleeve **4-50-00-06**, sleeve **4-50-00-31** and drill **4-50-00-30**.

Leave the drill.

Drill through the second distal nail hole in the same way like first hole.

Measure the depth of drilling through the second drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

Insert Ø 4,5 mm locking screw in second drilled hole using screwdriver **4-50-05-12**.

Insert locking screw in first drilled hole in **the same way** as in the second hole.

Disassemble targeting device.

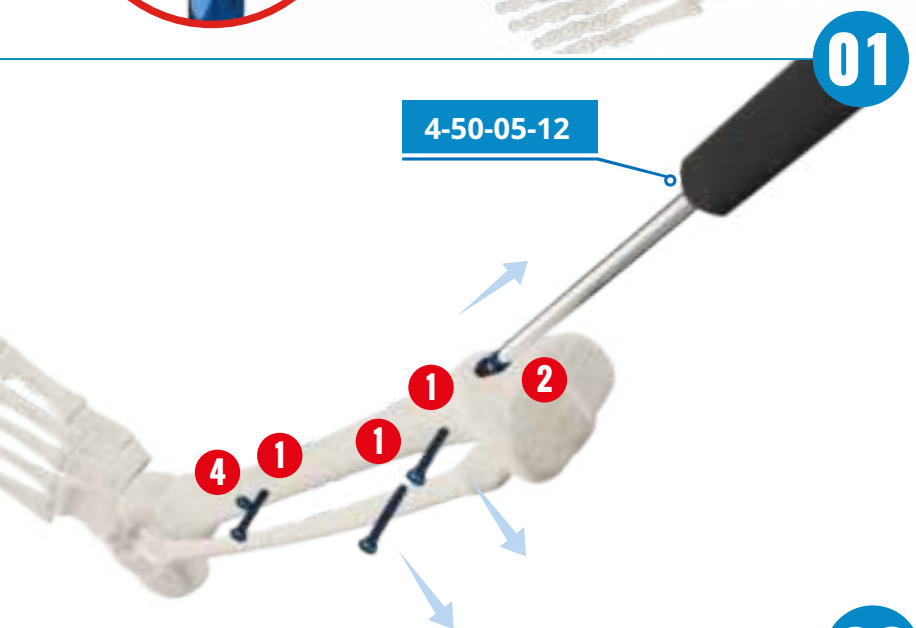


END CAP INSERTION

Insert locking screw
4-51-01-19.2 into screwdriver
4-50-05-12.

Lock end cap on screwdriver
4-50-05-12 using locking screw
4-51-01-19.2

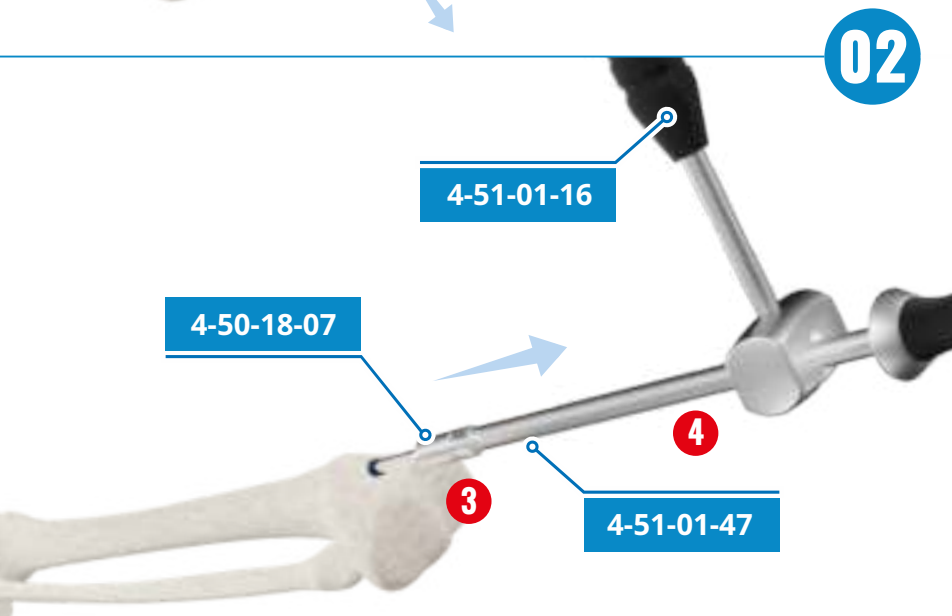
Insert end cap into the nail.



EXTRACTION OF THE NAIL

Clear sockets of end cap and locking screws from any tissue ingrowth.

- 1.** Remove all locking screws except one of the distal locking screw.
- 2.** Remove end cup.



3. Insert extractor reducer **4-50-18-07** into extractor **4-51-01-47**.

4. Install the set in the nail and remove distal locking screw.

5. Remove the nail using hammer
4-51-01-16.

01

COMPRESSION METHOD: COMPRESSION SCREW

1. Insert the locking screw into the distal nail holes.
2. Insert Ø 4,5 mm molar locking screw **x-01-86-xx** into the compression nail hole using screwdriver **4-50-05-12**
3. Remove the nail holding screw **4-50-18-04** using wrench **4-50-18-04**.

NOTE :
IMPACTOR SHOULD BE
BLOCKED USING WRENCH **4-50-00-41**
(to prevent damage).

01

Insert the compression screw into the nail to compress the fracture.

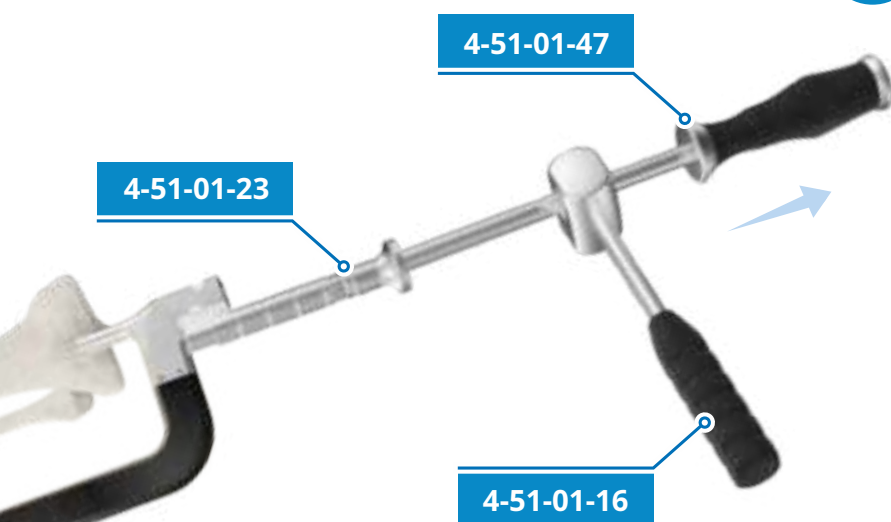
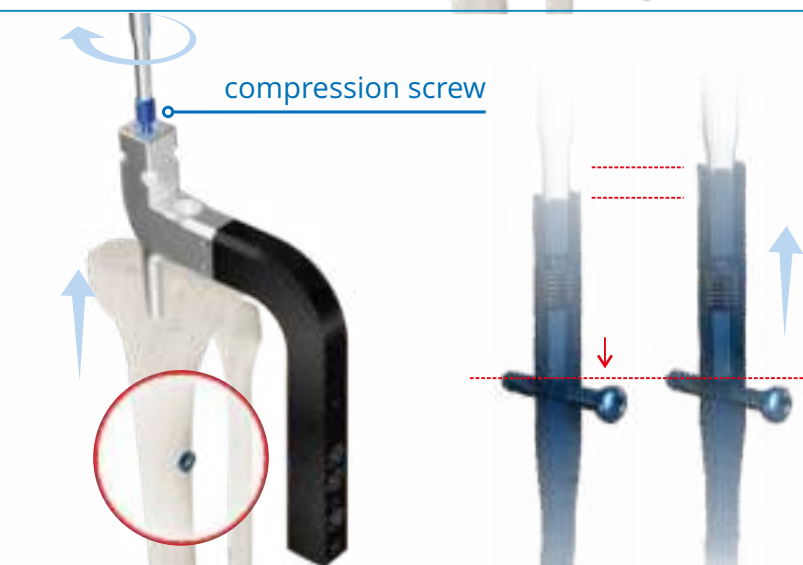
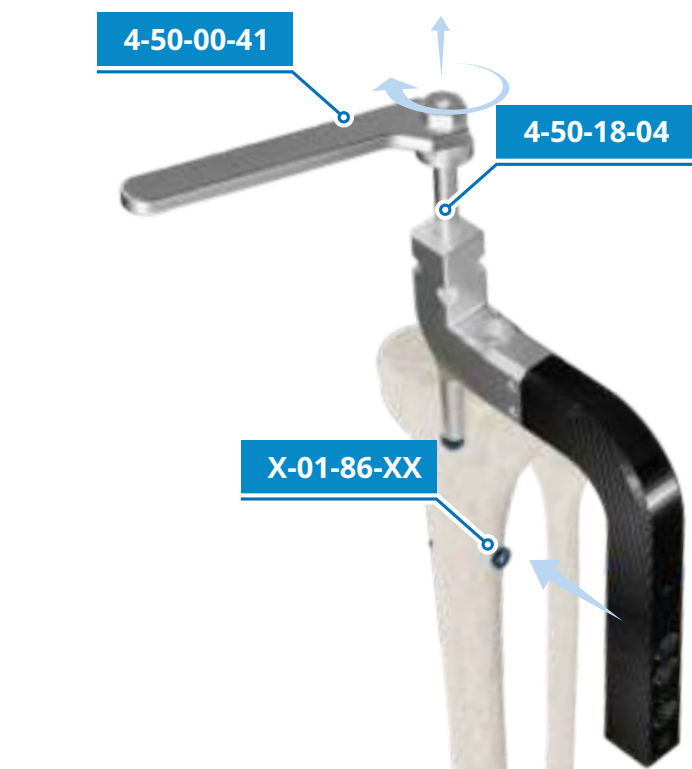
02

COMPRESSION METHOD: EXTRACTOR

Insert the locking screw into the distal nail holes. Insert impactor **4-51-01-23** into targeting device.

Compress the fracture using the extractor **4-51-01-47** and hammer **4-51-01-16**.

Lock the proximal holes of the nail.



RECONSTRUCTION TIBIAL NAIL

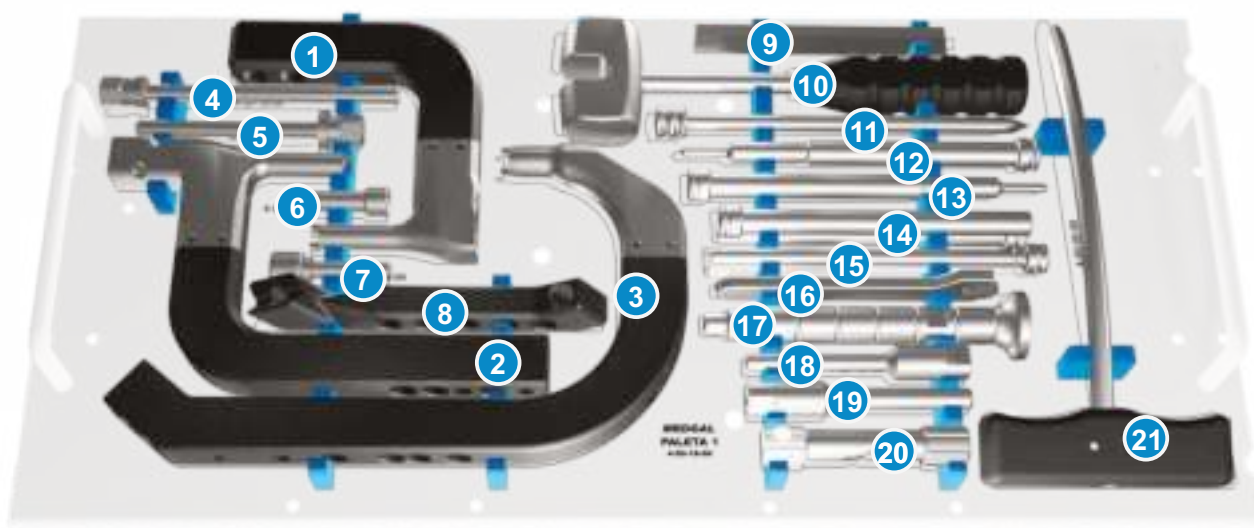


End caps

Size	REF
0	X-07-95-20
+5	X-07-95-21
+10	X-07-95-22
+15	X-07-95-23
+20	X-07-95-24
+25	X-07-95-25
+30	X-07-95-26

L (mm)	D=8mm	D=9mm	D=10mm	D=11mm	D=12mm
180	X-08-45-180	X-08-46-180	X-08-47-180	X-08-48-180	X-08-49-180
190	X-08-45-190	X-08-46-190	X-08-47-190	X-08-48-190	X-08-49-190
200	X-08-45-200	X-08-46-200	X-08-47-200	X-08-48-200	X-08-49-200
210	X-08-45-210	X-08-46-210	X-08-47-210	X-08-48-210	X-08-49-210
220	X-08-45-220	X-08-46-220	X-08-47-220	X-08-48-220	X-08-49-220
230	X-08-45-230	X-08-46-230	X-08-47-230	X-08-48-230	X-08-49-230
240	X-08-45-240	X-08-46-240	X-08-47-240	X-08-48-240	X-08-49-240
250	X-08-45-250	X-08-46-250	X-08-47-250	X-08-48-250	X-08-49-250
260	X-08-45-260	X-08-46-260	X-08-47-260	X-08-48-260	X-08-49-260
270	X-08-45-270	X-08-46-270	X-08-47-270	X-08-48-270	X-08-49-270
280	X-08-45-280	X-08-46-280	X-08-47-280	X-08-48-280	X-08-49-280
290	X-08-45-290	X-08-46-290	X-08-47-290	X-08-48-290	X-08-49-290
300	X-08-45-300	X-08-46-300	X-08-47-300	X-08-48-300	X-08-49-300
310	X-08-45-310	X-08-46-310	X-08-47-310	X-08-48-310	X-08-49-310
320	X-08-45-320	X-08-46-320	X-08-47-320	X-08-48-320	X-08-49-320
330	X-08-45-330	X-08-46-330	X-08-47-330	X-08-48-330	X-08-49-330
340	X-08-45-340	X-08-46-340	X-08-47-340	X-08-48-340	X-08-49-340
350	X-08-45-350	X-08-46-350	X-08-47-350	X-08-48-350	X-08-49-350
360	X-08-45-360	X-08-46-360	X-08-47-360	X-08-48-360	X-08-49-360
370	X-08-45-370	X-08-46-370	X-08-47-370	X-08-48-370	X-08-49-370
380	X-08-45-380	X-08-46-380	X-08-47-380	X-08-48-380	X-08-49-380
390	X-08-45-390	X-08-46-390	X-08-47-390	X-08-48-390	X-08-49-390
400	X-08-45-400	X-08-46-400	X-08-47-400	X-08-48-400	X-08-49-400

TRAY 1



1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protecion sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

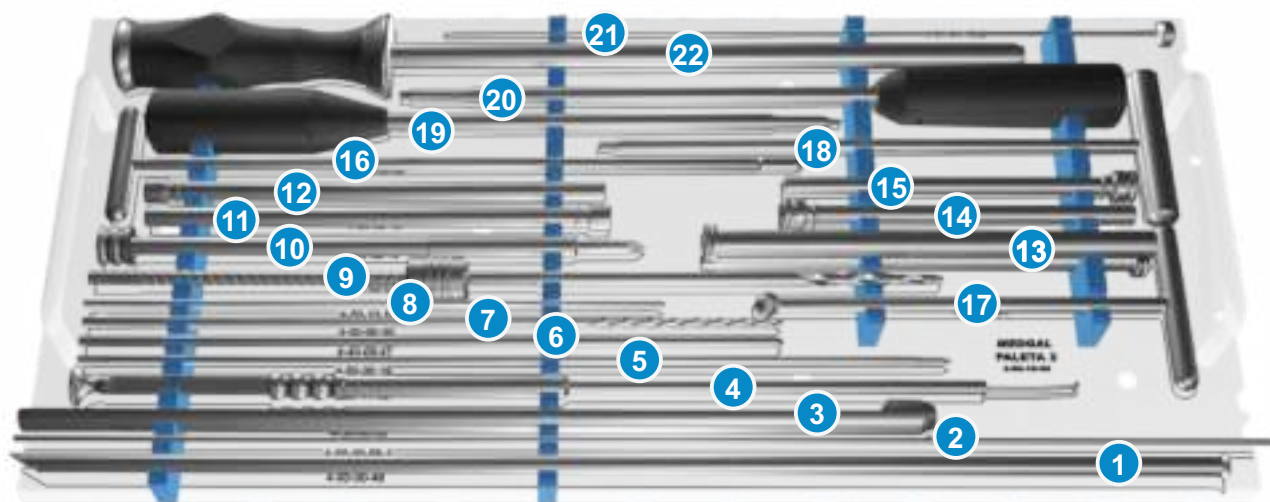
H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 -2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocar	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



* Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)

4-50-16-01.M.

H = 200 mm
CONTAINER
4-99-100-200



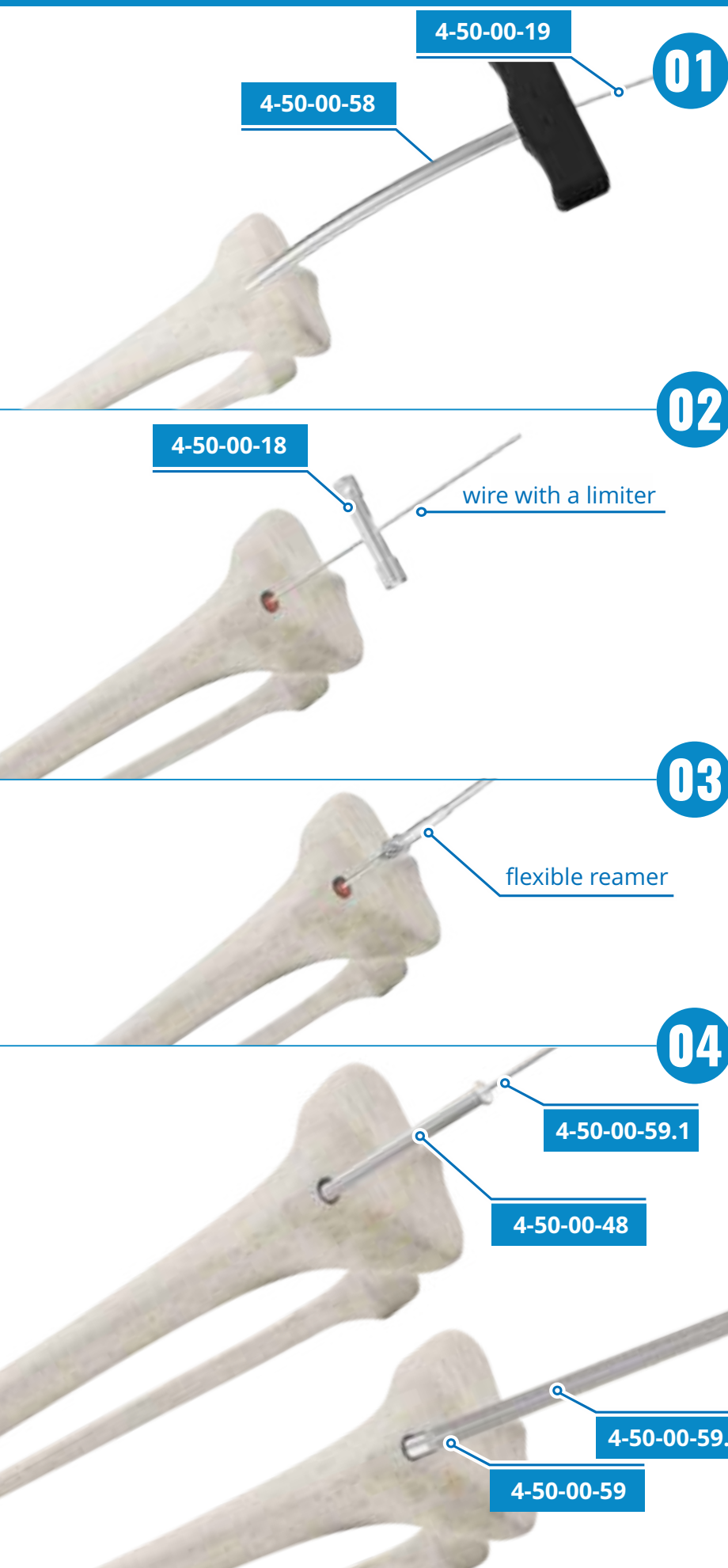
Elements used
for the selected nail

Not used elements



CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.



BONE PREPARATION

Insert K-wire **4-50-00-19**.
Open the intramedullary canal using cannulated awl **4-50-00-58**.

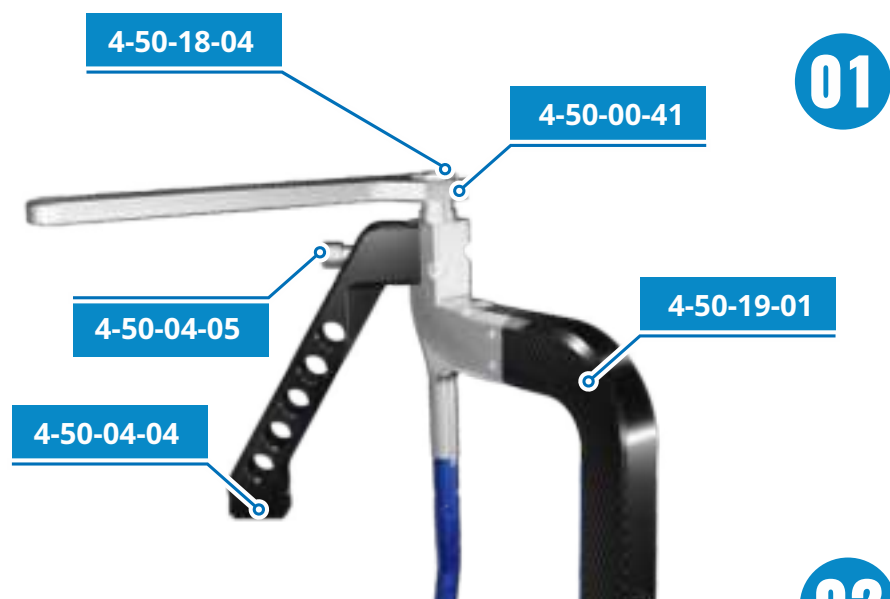
Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.

Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

Change guide wire with a limiter **4-50-00-45** to guide **4-50-00-59.1** using tubular slide **4-50-00-48**.

Measure the length of the nail through the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

**01**

Assembly large handle

4-50-19-01 and nail, using nail holding screw 4-50-18-04 and wrench 4-50-00-41 .

Join targeting adapter 4-50-04-04 and targeting device 4-50-19-01 using screw 4-50-04-05.

**02**

Check holes using control pins 4-50-00-08 and 4-50-00-09.

**03**

NAIL POSITIONING

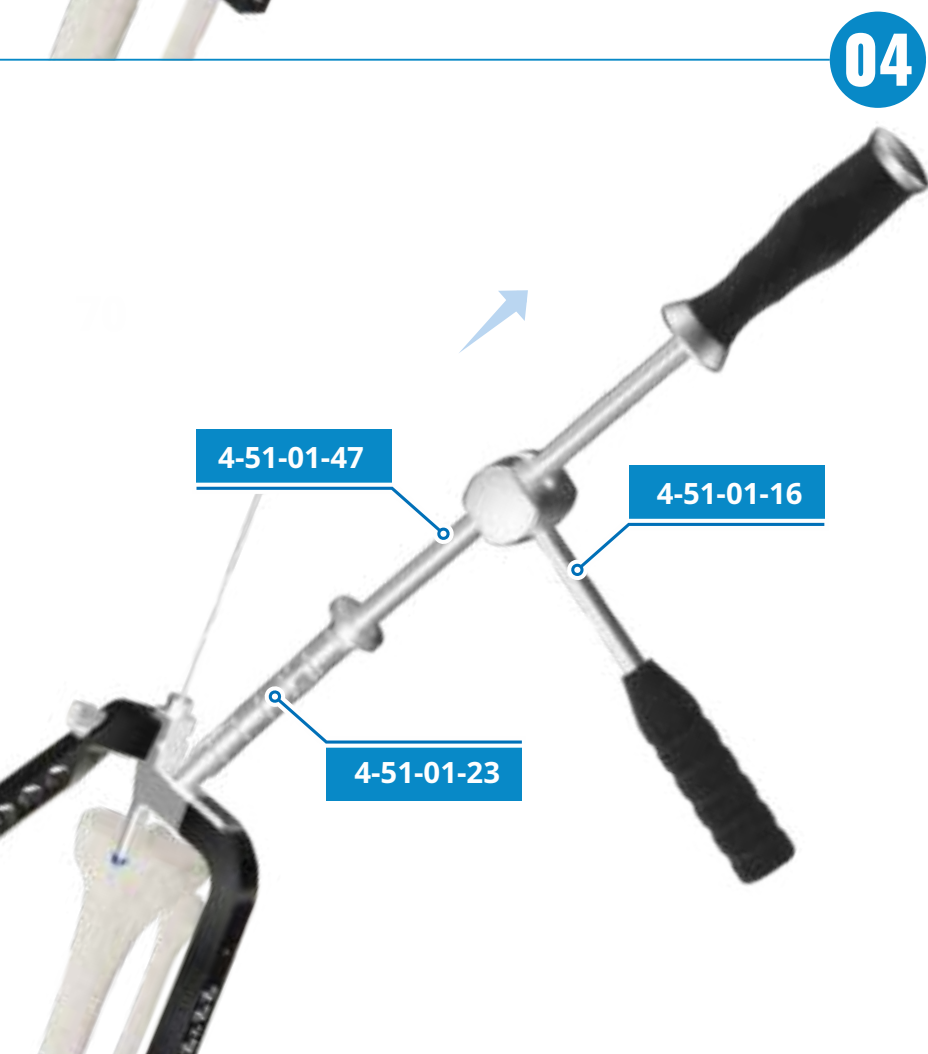
Insert the nail into the bone through the wire **4-50-00-44** using the assembled targeting device.

NOTE:

SET DISTAL TARGETING DEVICE BEFORE THE INTRODUCTION OF NAIL

Screw impactor **4-51-01-23** into targeting handle using **4-50-00-41**.

Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.

**04**

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

NOTE:

Check the connection between nail and handle, especially after hammering.

01

3. STATIC METHOD

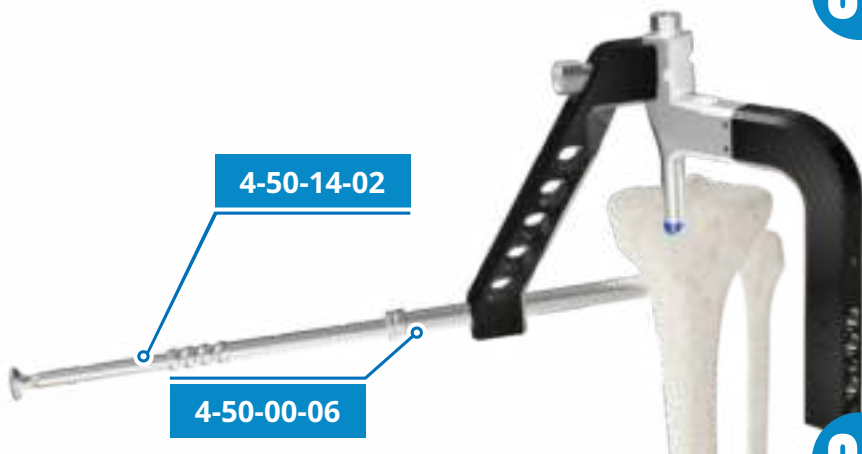
Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

**02**

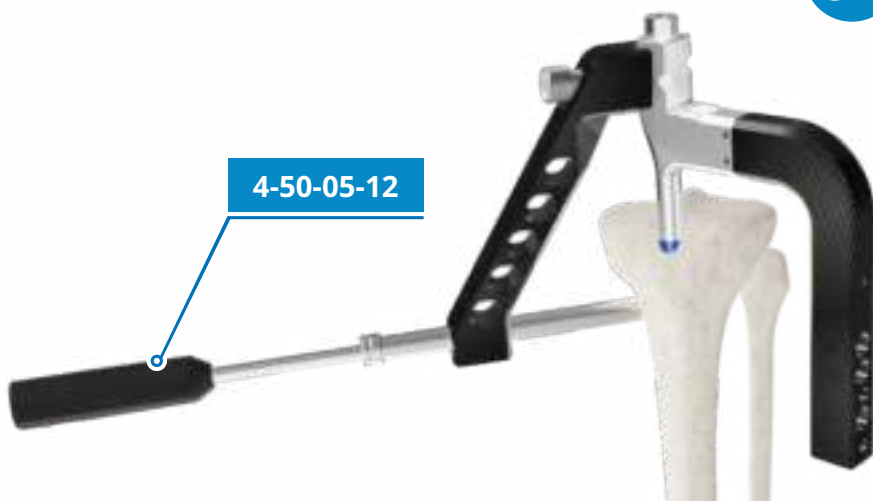
Drill through the first nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

**03**

Measure the thickness of the bone through the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

**04**

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.



05

Change the position of the targeting adapter for reconstruction holes in the direction of the second reconstruction nail hole.

4-50-00-06

4-50-00-07

06

Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

4-50-00-06

4-50-00-31

4-50-00-30

07

Drill through the reconstruction nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

4-50-00-06

4-50-14-02

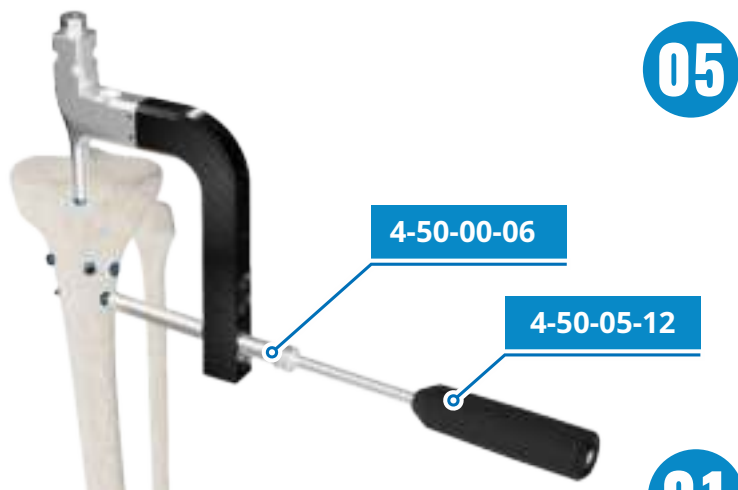
08

Measure the thickness of the bone trough the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

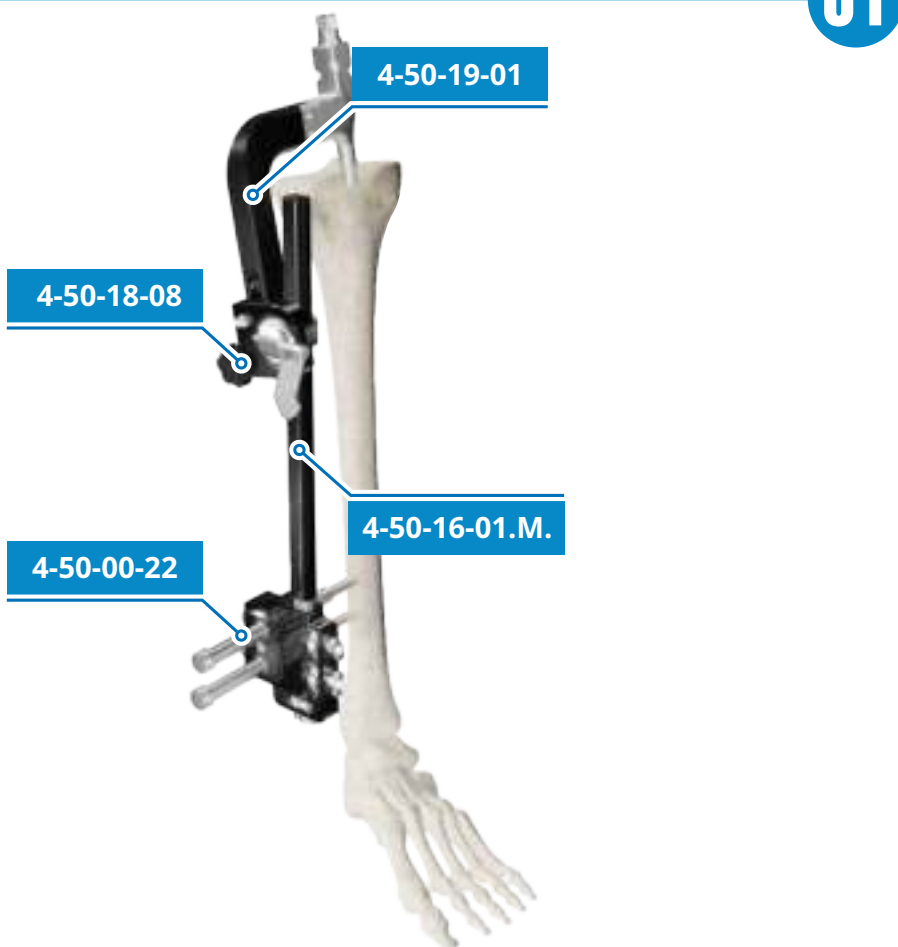
4-50-00-06

4-50-05-12

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.



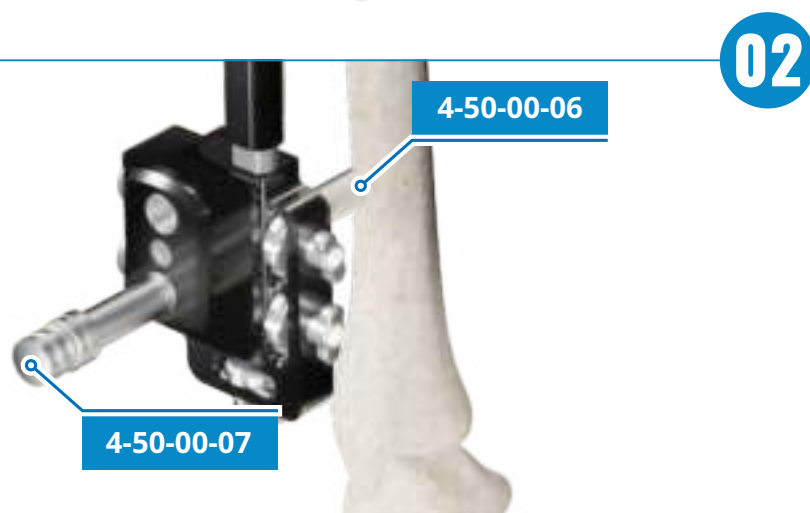
Insert the Ø 5,0 mm locking screw in both static hole in the same way as in reconstruction hole.



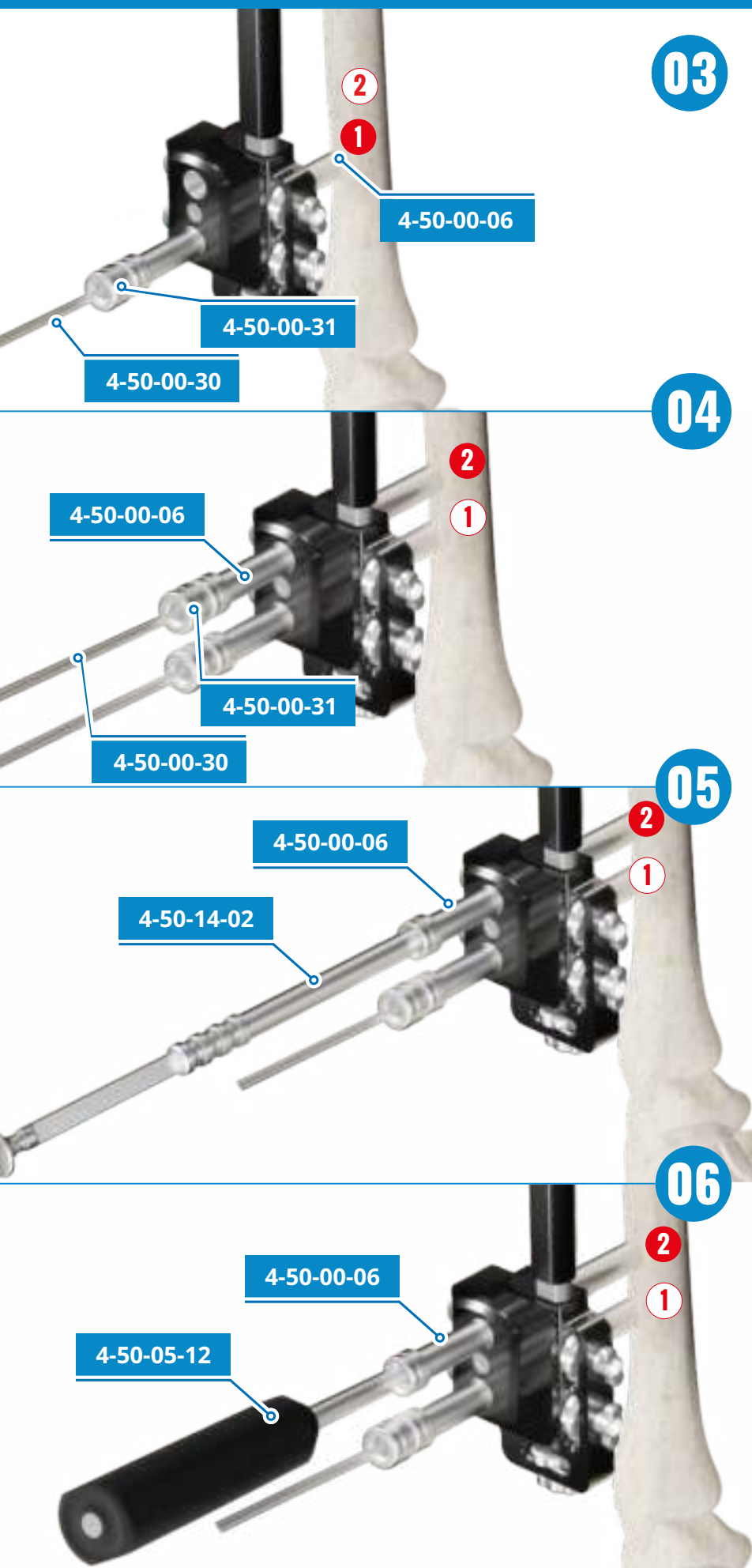
4. DISTAL TARGETING DEVICE

Install distal targeting device **4-50-16-01.M.** into **4-50-19-01** using screw **4-50-18-08**.

Do not change position of the targeting device.



Prepare distal hole using trocar **4-50-00-07** and sleeve **4-50-00-06**.



03

Drill through the first distal nail hole using sleeve **4-50-00-31** and drill **4-50-00-30**.

Leave the drill.

04

Drill through the second distal nail hole in the same way like first hole.

05

Measure the depth of drilling through the second drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

06

Insert Ø 4,5 mm locking screw in second drilled hole using screwdriver **4-50-05-12**.

Insert Ø 4,5 mm locking screw in first drilled hole in the same way like in second hole.

Disassemble targeting device.



END CAP INSERTION

Insert locking screw **4-51-01-19.2** into screwdriver **4-50-05-12**. Lock end cap on screwdriver **4-50-05-12** using locking screw **4-51-01-19.2**

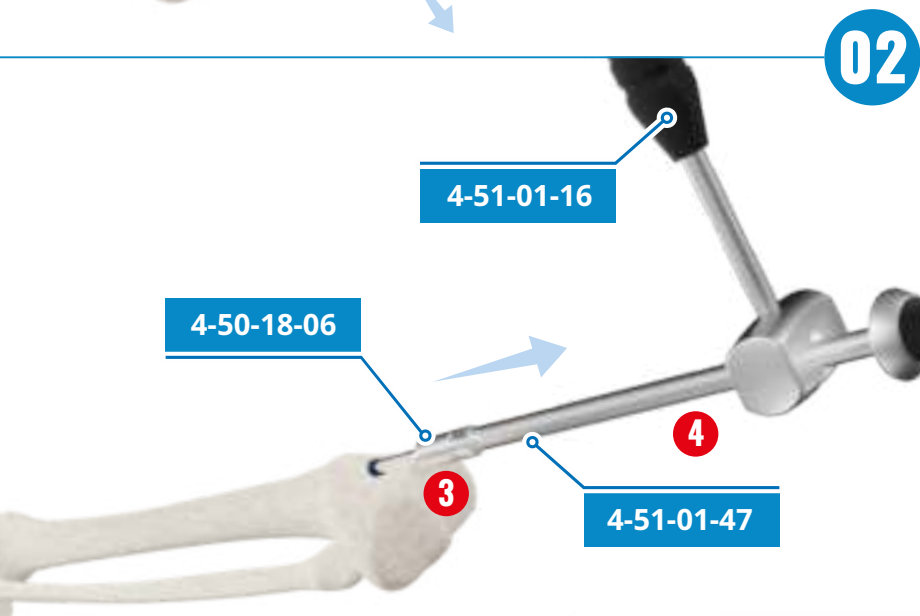
Insert end cap into the nail.



6. USUWANIE GWOŹDZIA

Clear sockets of end cap and locking screws from any tissue ingrowth.

- 1.** Remove all locking screws except one of the distal locking screw.
- 2.** Remove end cup.



- 3.** Insert extractor reducer **4-50-18-06** into extractor **4-51-01-47**.

- 4.** Install the set in the nail and remove distal locking screw.

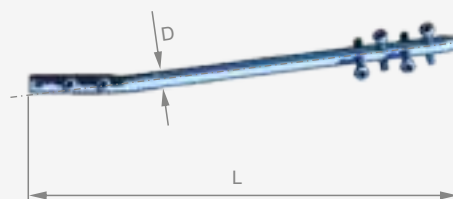
- 5.** Remove the nail using hammer **4-51-01-16**.

RETROGRADE TIBIAL NAIL

Self tapping
locking screws Ø 4.5 mm
X-01-86-xx

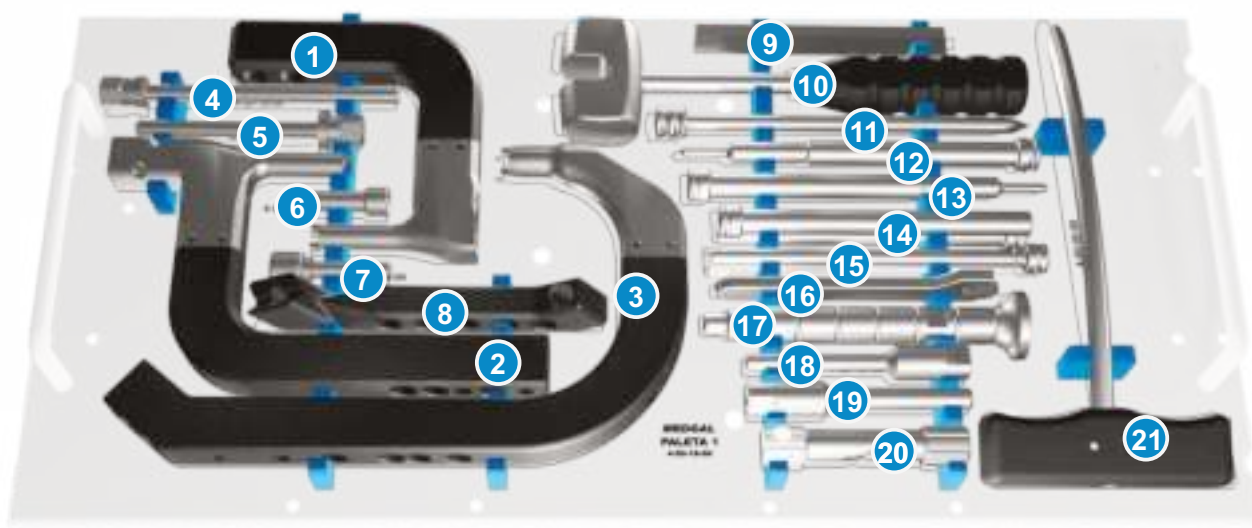
Self tapping
locking screws Ø 4.5 mm
X-01-86-xx

End cap
X-07-95-05



L (mm)	D=9mm	D=10mm	D=11mm
140	X-08-11-140	X-08-12-140	X-08-13-140
150	X-08-11-150	X-08-12-150	X-08-13-150
160	X-08-11-160	X-08-12-160	X-08-13-160
170	X-08-11-170	X-08-12-170	X-08-13-170
180	X-08-11-180	X-08-12-180	X-08-13-180
190	X-08-11-190	X-08-12-190	X-08-13-190
200	X-08-11-200	X-08-12-200	X-08-13-200
210	X-08-11-210	X-08-12-210	X-08-13-210
220	X-08-11-220	X-08-12-220	X-08-13-220
230	X-08-11-230	X-08-12-230	X-08-13-230
240	X-08-11-240	X-08-12-240	X-08-13-240
250	X-08-11-250	X-08-12-250	X-08-13-250
260	X-08-11-260	X-08-12-260	X-08-13-260
270	X-08-11-270	X-08-12-270	X-08-13-270
280	X-08-11-280	X-08-12-280	X-08-13-280
290	X-08-11-290	X-08-12-290	X-08-13-290
300	X-08-11-300	X-08-12-300	X-08-13-300
310	X-08-11-310	X-08-12-310	X-08-13-310
320	X-08-11-320	X-08-12-320	X-08-13-320

TRAY 1



1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protecion sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

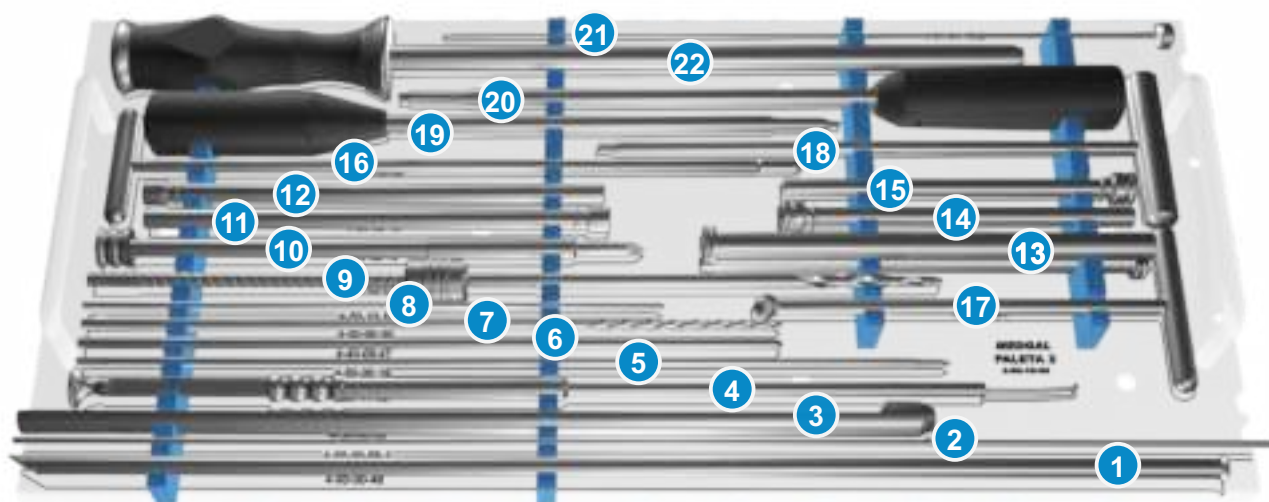
H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 - 2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocars	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



*	Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)	4-50-16-01.M.
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H = 200 mm
CONTAINER
4-99-100-200

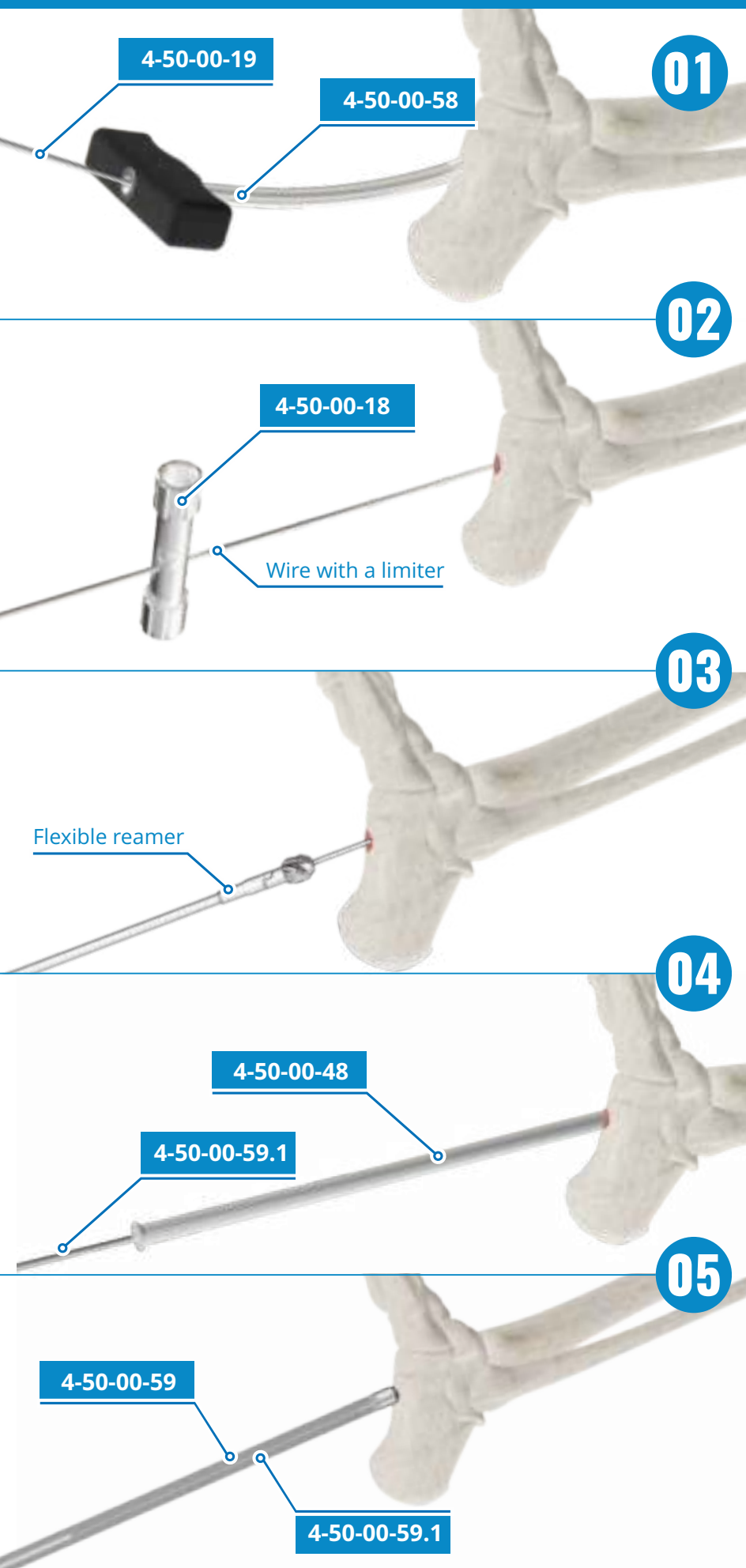


Elements used
for the selected nail ■
Not used elements ■



CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.



BONE PREPARATION

Insert K-wire **4-50-00-19**.

Open the intramedullary canal using cannulated awl **4-50-00-58**.

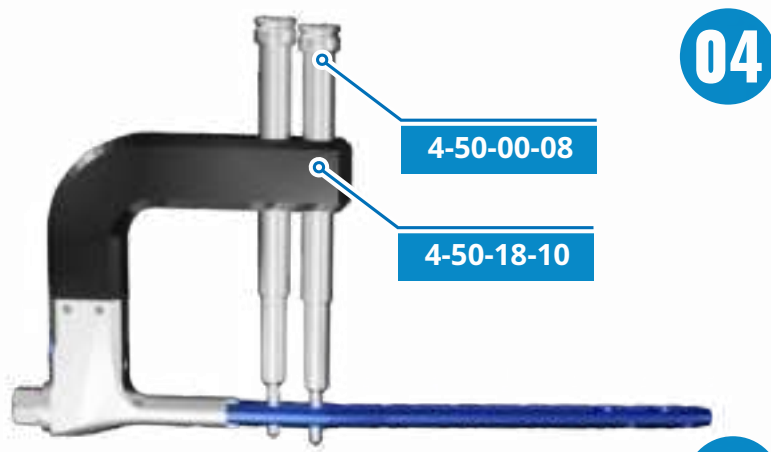
Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.

Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

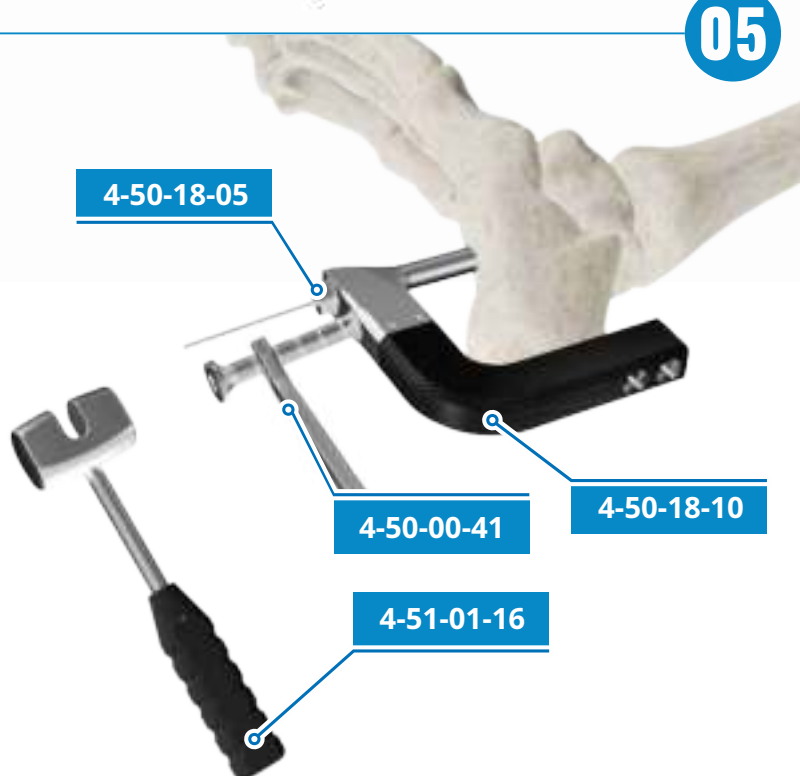
Change guide wire with a limiter **4-50-00-45** to guide **4-50-00-59.1** using tubular slide **4-50-00-48**.

Measure the length of the nail trough the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

**04**

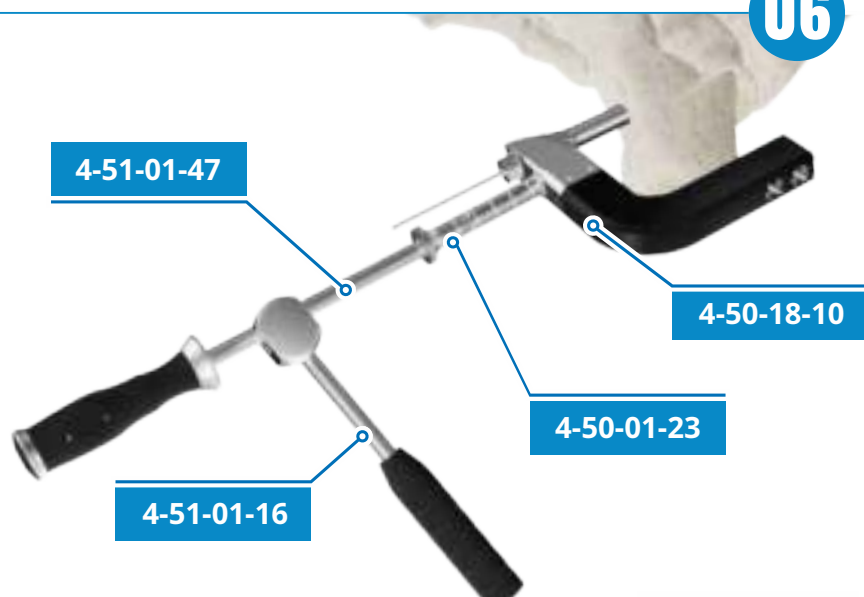
Check holes using control pins
4-50-00-08.

**05**

Install impactor **4-50-01-23** into distal targeting device **4-50-18-10**.

Screw impactor **4-51-01-23** into targeting handle using **4-50-00-41**.

Assembly nail using screw **4-50-18-05**.

06

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

07

Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

**08**

Drill through the compression nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

**09**

Measure the thickness of the bone through the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.



**10**

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.

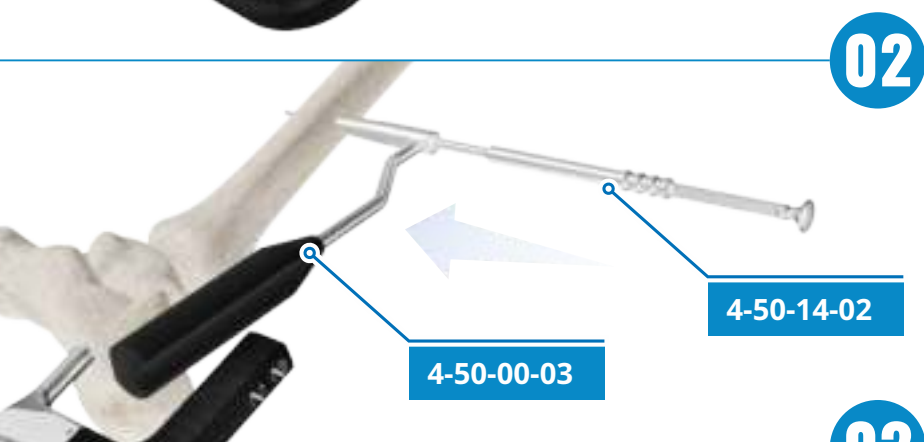
Insert Ø 4,5 mm locking screw in **B** drilled hole using screwdriver **4-50-05-12**.

Measure the depth of drilling through the second (**B**) drilled hole in the same way like first hole.
Insert Ø 4,5 mm locking screw into second (**B**) drilled hole using screwdriver **4-50-05-12**.

Disassemble targeting device.

**01****FREEHAND LOCKING TECHNIQUE**

Drill first distal nail hole using hand targeting device **4-50-00-03** sleeve **4-50-00-38** and drill **4-50-00-30**.

**02**

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

**03**

Insert $\varnothing$ 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.

**04**

Repeat steps **1-3** to insert second $\varnothing$ 4,5 mm molar locking screw **x-01-84-xx**.

Lock distal holes.

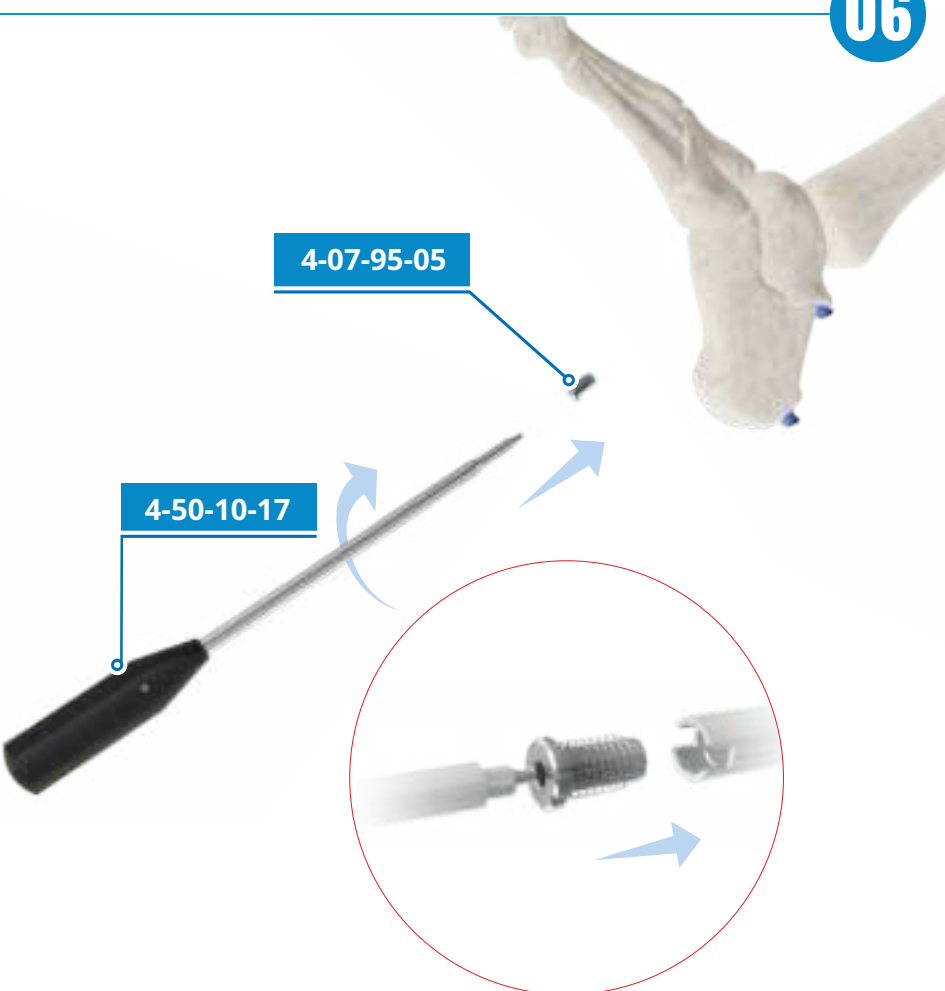
05

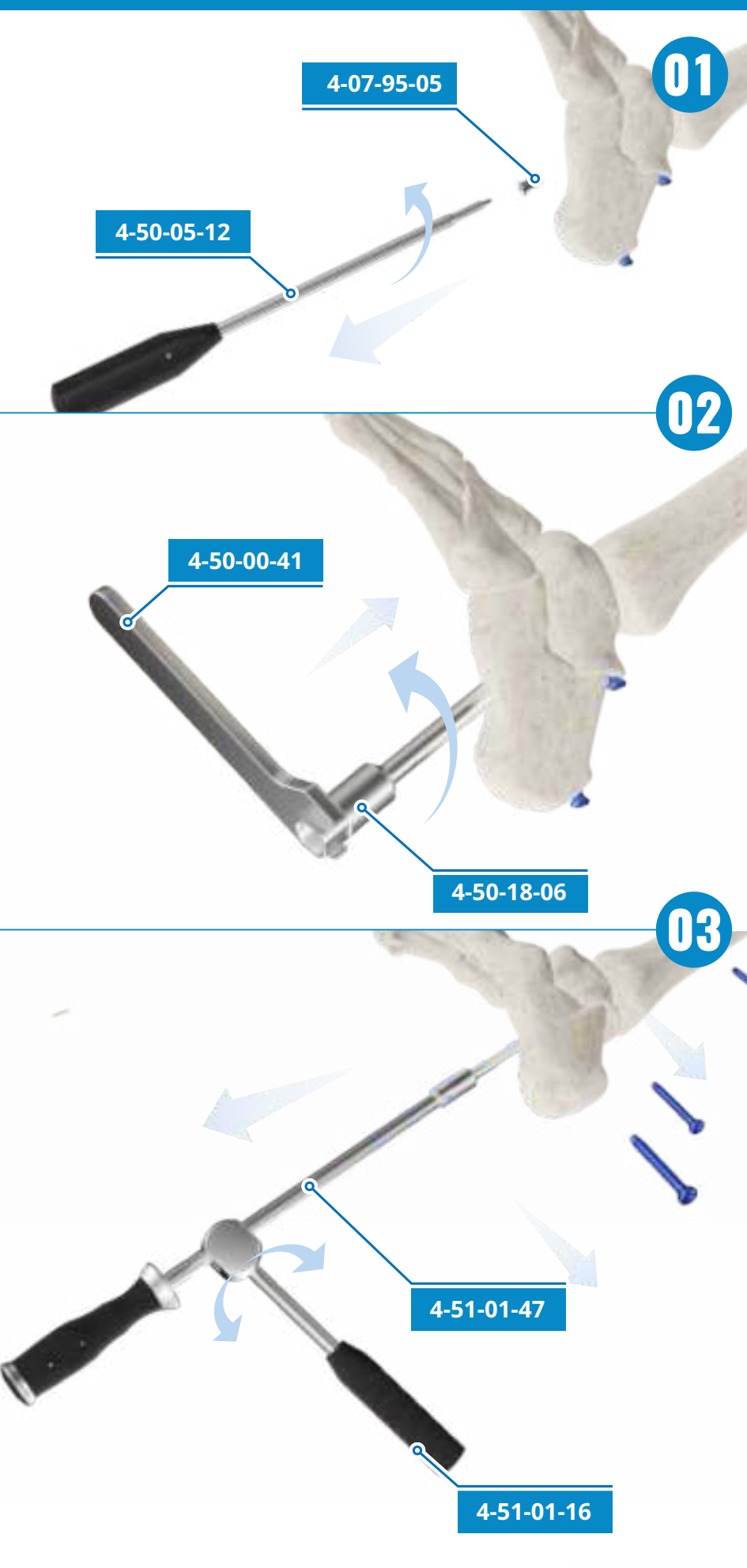
Remove M8 screw **4-50-18-04** and targeting device **4-50-18-10**.



06

Insert end cap **4-07-95-05** using screwdriver **4-50-10-17**.





NAIL EXTRACTION

Remove end cap **4-07-95-05**
using screwdriver **4-50-05-12**.

Insert extractor reducer
4-50-18-06 into extractor
4-51-01-47 using wrench
4-50-00-41.

Install extractor **4-51-01-47** in the nail
and remove distal locking screw.

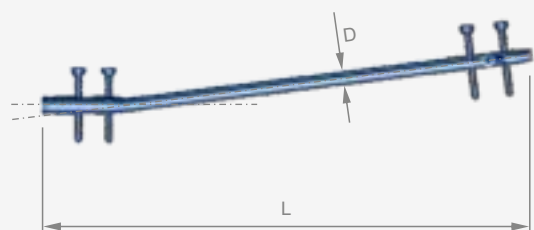
Remove the nail using hammer
4-51-01-16

COMPRESSION HUMERAL NAIL



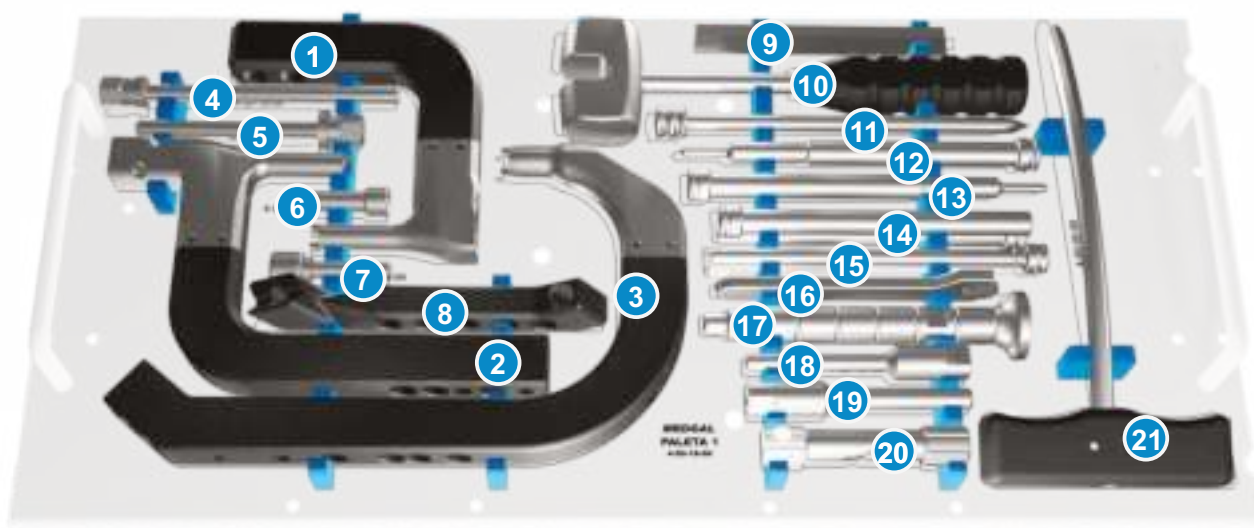
End caps

Size	REF
0	X-07-95-20
+5	X-07-95-31
+10	X-07-95-32
+15	X-07-95-33
+20	X-07-95-34
+25	X-07-95-35
+30	X-07-95-36



L (mm)	D=8mm	D=9mm	D=10mm	D=11mm	D=12mm
180	X-09-01-180	X-09-02-180	X-09-03-180	X-09-04-180	X-09-05-180
185	X-09-01-185	X-09-02-185	X-09-03-185	X-09-04-185	X-09-05-185
190	X-09-01-190	X-09-02-190	X-09-03-190	X-09-04-190	X-09-05-190
195	X-09-01-195	X-09-02-195	X-09-03-195	X-09-04-195	X-09-05-195
200	X-09-01-200	X-09-02-200	X-09-03-200	X-09-04-200	X-09-05-200
205	X-09-01-205	X-09-02-205	X-09-03-205	X-09-04-205	X-09-05-205
210	X-09-01-210	X-09-02-210	X-09-03-210	X-09-04-210	X-09-05-210
215	X-09-01-215	X-09-02-215	X-09-03-215	X-09-04-215	X-09-05-215
220	X-09-01-220	X-09-02-220	X-09-03-220	X-09-04-220	X-09-05-220
225	X-09-01-225	X-09-02-225	X-09-03-225	X-09-04-225	X-09-05-225
230	X-09-01-230	X-09-02-230	X-09-03-230	X-09-04-230	X-09-05-230
235	X-09-01-235	X-09-02-235	X-09-03-235	X-09-04-235	X-09-05-235
240	X-09-01-240	X-09-02-240	X-09-03-240	X-09-04-240	X-09-05-240
245	X-09-01-245	X-09-02-245	X-09-03-245	X-09-04-245	X-09-05-245
250	X-09-01-250	X-09-02-250	X-09-03-250	X-09-04-250	X-09-05-250
255	X-09-01-255	X-09-02-255	X-09-03-255	X-09-04-255	X-09-05-255
260	X-09-01-260	X-09-02-260	X-09-03-260	X-09-04-260	X-09-05-260
265	X-09-01-265	X-09-02-265	X-09-03-265	X-09-04-265	X-09-05-265
270	X-09-01-270	X-09-02-270	X-09-03-270	X-09-04-270	X-09-05-270
275	X-09-01-275	X-09-02-275	X-09-03-275	X-09-04-275	X-09-05-275
280	X-09-01-280	X-09-02-280	X-09-03-280	X-09-04-280	X-09-05-280
285	X-09-01-285	X-09-02-285	X-09-03-285	X-09-04-285	X-09-05-285
290	X-09-01-290	X-09-02-290	X-09-03-290	X-09-04-290	X-09-05-290
295	X-09-01-295	X-09-02-295	X-09-03-295	X-09-04-295	X-09-05-295
300	X-09-01-300	X-09-02-300	X-09-03-300	X-09-04-300	X-09-05-300
310	X-09-01-310	X-09-02-310	X-09-03-310	X-09-04-310	X-09-05-310
320	X-09-01-320	X-09-02-320	X-09-03-320	X-09-04-320	X-09-05-320
330	X-09-01-330	X-09-02-330	X-09-03-330	X-09-04-330	X-09-05-330
340	X-09-01-340	X-09-02-340	X-09-03-340	X-09-04-340	X-09-05-340
350	X-09-01-350	X-09-02-350	X-09-03-350	X-09-04-350	X-09-05-350
360	X-09-01-360	X-09-02-360	X-09-03-360	X-09-04-360	X-09-05-360
370	X-09-01-370	X-09-02-370	X-09-03-370	X-09-04-370	X-09-05-370
380	X-09-01-380	X-09-02-380	X-09-03-380	X-09-04-380	X-09-05-380
390	X-09-01-390	X-09-02-390	X-09-03-390	X-09-04-390	X-09-05-390
400	X-09-01-400	X-09-02-400	X-09-03-400	X-09-04-400	X-09-05-400

TRAY 1



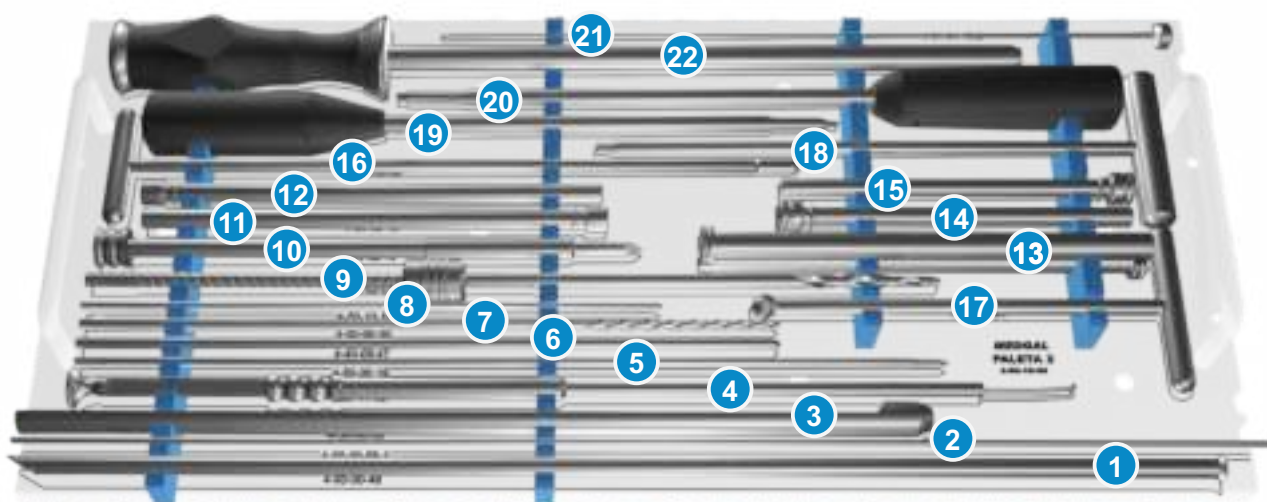
1	Targeting handle for humeral nail	4-50-18-10
2	Targeting handle for tibial nail	4-50-19-01
3	Targeting handle for femoral nail	4-50-17-01
4	Nail holding screw M8 - long	4-50-18-04
5	Nail holding screw M8 - short	4-50-18-05
6	Nail holding screw M10	4-50-17-03
7	Connecting screw	4-50-04-05
8	Targeting adapter for reconstruction holes	4-50-04-04
9	Gauge	4-50-01-12
10	Hammer	4-51-01-16
11	Trocar	4-50-00-07
12	Control Pin Ø 4,6	4-50-00-08
13	Control Pin Ø 4,2	4-50-05-09
14	Protecion sleeve 2 pcs.	4-50-00-06
15	Drill sleeve Ø 3,7 2 pcs.	4-50-00-31
16	Wrench	4-50-00-41
17	Impactor	4-51-01-23
18	Extractor reducer M12/M8	4-50-18-06
19	Extractor reducer M12/M10	4-50-18-07
20	Guide wire handle	4-50-00-18
21	Cannulated awl	4-50-00-58

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail ■
Not used elements ■

TRAY 2



1	Tubular slide	4-50-00-48
2	Guide wire for Nail length gauge	4-50-00-59.1
3	Nail length gauge	4-50-00-59
4	Bone thickness gauge	4-50-14-02
5	Kirschner wire Ø 3 - 2 pcs	4-50-00-19
6	Drill Ø 4,7	4-40-05-47
7	Drill Ø 3,7	4-50-00-30
8	Drill Ø 2,5	4-50-10-16
9	Step drill 6,5/4,8	4-50-02-07
10	Trocars	4-50-02-10
11	Drill sleeve Ø 6,5x Ø 9x205mm	4-50-02-12
12	Drill sleeve Ø 3,2x Ø 9x205mm	4-50-02-13
13	Drill sleeve Ø 9/ Ø 12x200mm	4-50-02-11
14	Drill sleeve Ø 4,7/ Ø 8x145mm	4-50-05-10
15	Drill sleeve Ø 6,5x Ø 8x155mm	4-50-05-11
16	Locking set pilot	4-50-05-06
17	Ball-tip screwdriver 10mm	4-51-01-24
18	Screwdriver s3.5 T handle	4-50-00-94
19	Screwdriver s2.5	4-50-10-17
20	Cannulated screwdriver s3,5	4-50-05-12
21	Locking screw of 4-50-05-12	4-51-01-19.2
22	Extractor	4-51-01-47

H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail

Not used elements

TRAY 3



1	Distal targeting device - femoral nail *	4-50-08-00
2	Distal targeting device - tibial nail *	4-50-25-01
3	Hand targeting device	4-50-00-03
4	Drill sleeve Ø3,7	4-50-00-38
5	Drill sleeve Ø2,5	4-50-10-15
6	Protection sleeve	4-50-00-29
7	Drill sleeve Ø3,7 2pcs.	4-50-00-371
8	Trocar	4-50-00-57
9	Control pins 2pcs.	4-50-00-22
10	Connecting screw	4-50-18-08



*	Universal distal targeting device - tibial and femoral nail - (4-50-25-01 and 4-50-08-00)	4-50-16-01.M.
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H = 200 mm
CONTAINER
4-99-100-200



Elements used
for the selected nail
Not used elements



CONTAINED PHRASES ARE NOT DETAILED INSTRUCTION!

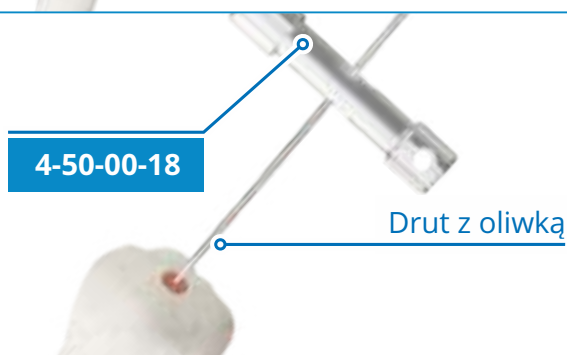
CHOOSING THE RIGHT OPERATIVE TECHNIQUE IS RESPONSIBILITY OF THE DOCTOR.

**01**

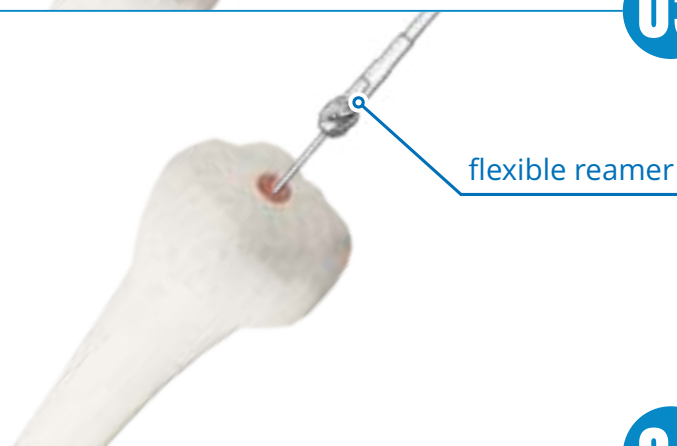
1. BONE PREPARATION

Insert K-wire **4-50-00-19**.

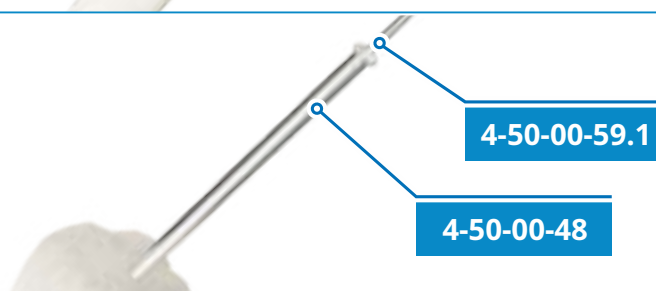
Open the intramedullary canal using cannulated awl **4-50-00-58**.

**02**

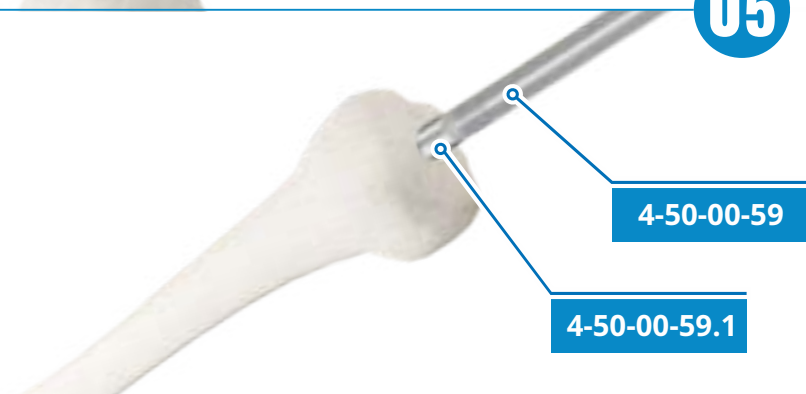
Insert guide wire with a limiter **4-50-00-45** into the intramedullary canal using handle **4-50-00-18**.

**03**

Prepare the intramedullary canal using flexible reamer (starting with the Ø 8,0 mm reaming head, ream to a diameter of 1-2 mm greater than the nail diameter. Ream with 0,5 mm increments. Do not force the reamer).

**04**

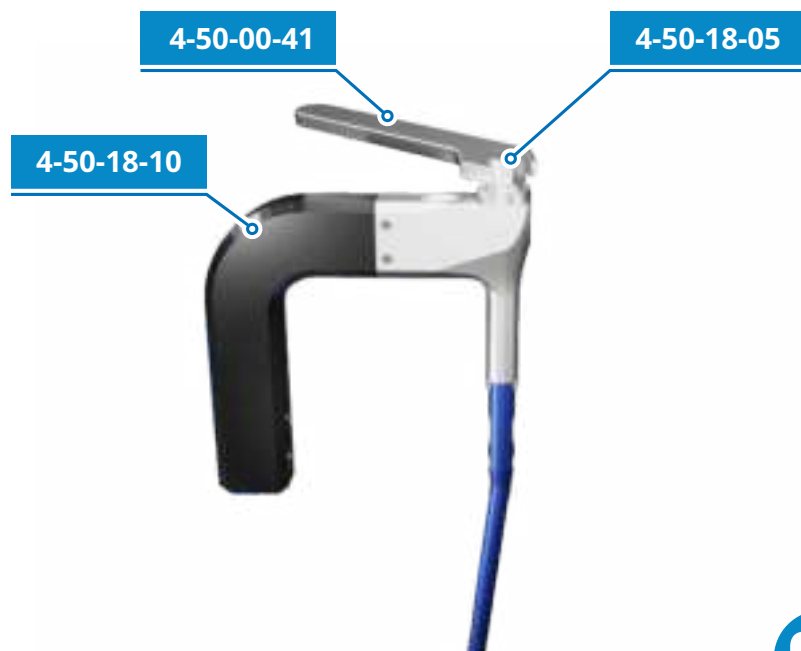
Change guide wire with a limiter **4-50-00-45** to guide wire **4-50-00-59.1** using tubular slide **4-50-00-48**.

**05**

Measure the length of the nail through the drilled hole using gauge **4-50-00-59** and wire **4-50-00-59.1**.

Change guide wire **4-50-00-59.1** to wire **4-50-00-44** using tubular slide **4-50-00-48**.

01



Assembly large handle

4-50-18-10 and nail, using nail holding screw 4-50-18-05 wrench 4-51-00-41.

02



Check holes using control pins 4-50-00-08.

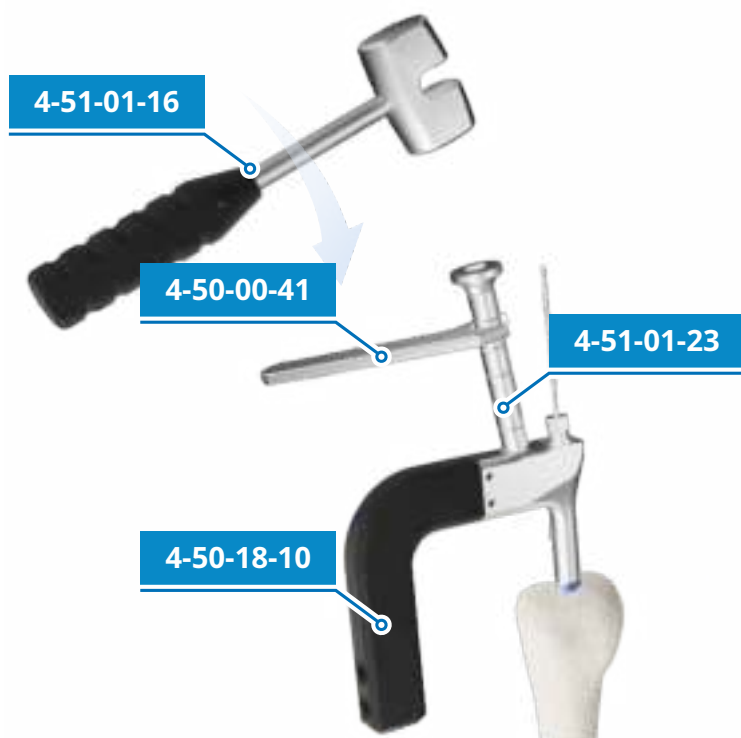
01

2. NAIL POSITIONING

Insert the nail into the bone through the wire **4-50-00-44** using the assembled targeting device.

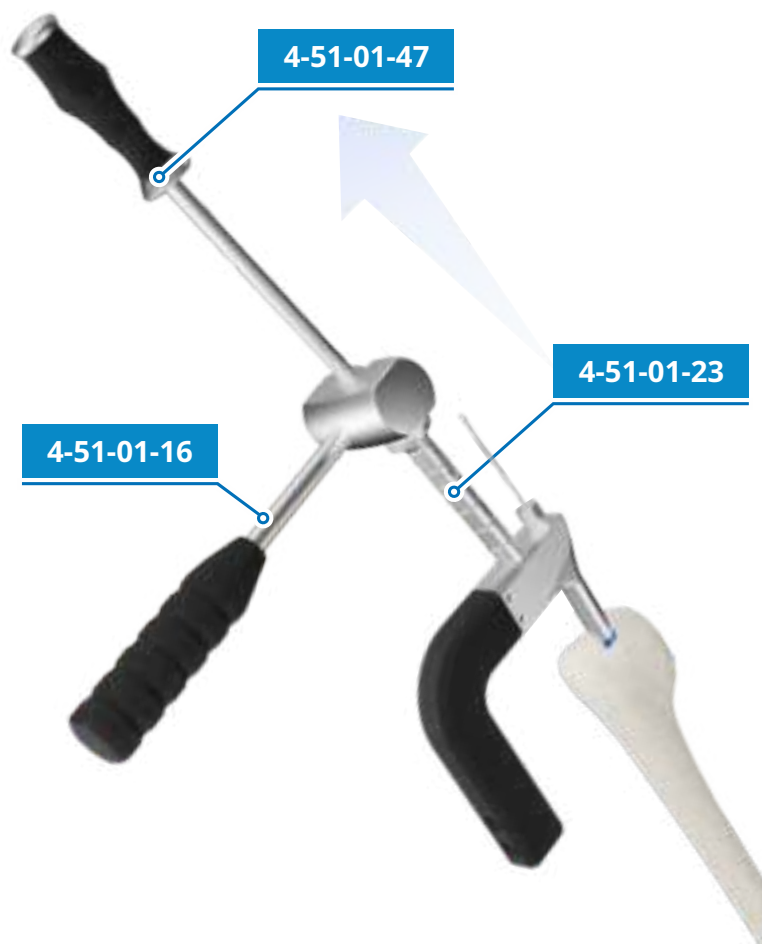
Insert impactor **4-51-01-23** into targeting device **4-50-18-10** using wrench **4-50-00-41**.

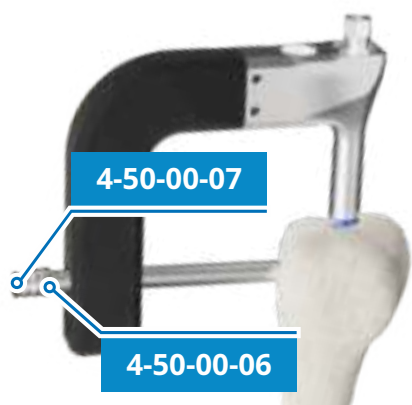
Use impactor **4-51-01-23** and hammer **4-51-01-16** to position the nail.



02

If necessary - use extractor rod **4-51-01-47** to change position of the nail in the bone.

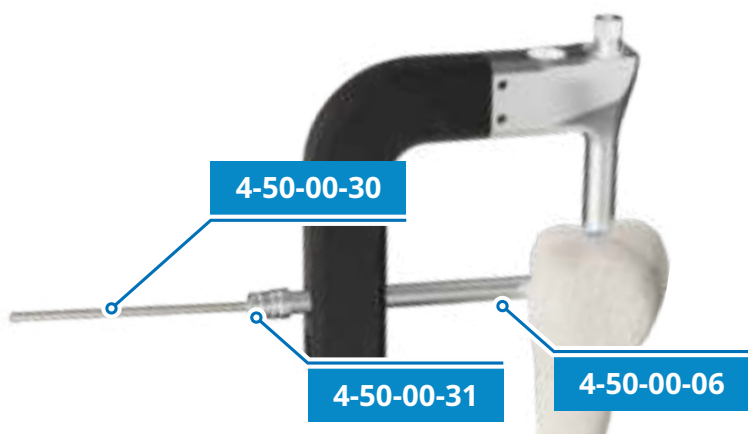


01**3. STATIC METHOD**

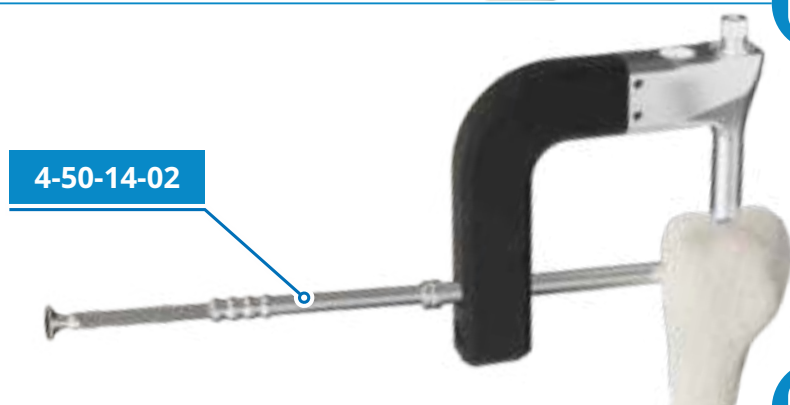
Prepare the cortical bone using the trocar **4-50-00-07** and sleeve **4-50-00-06**.

02

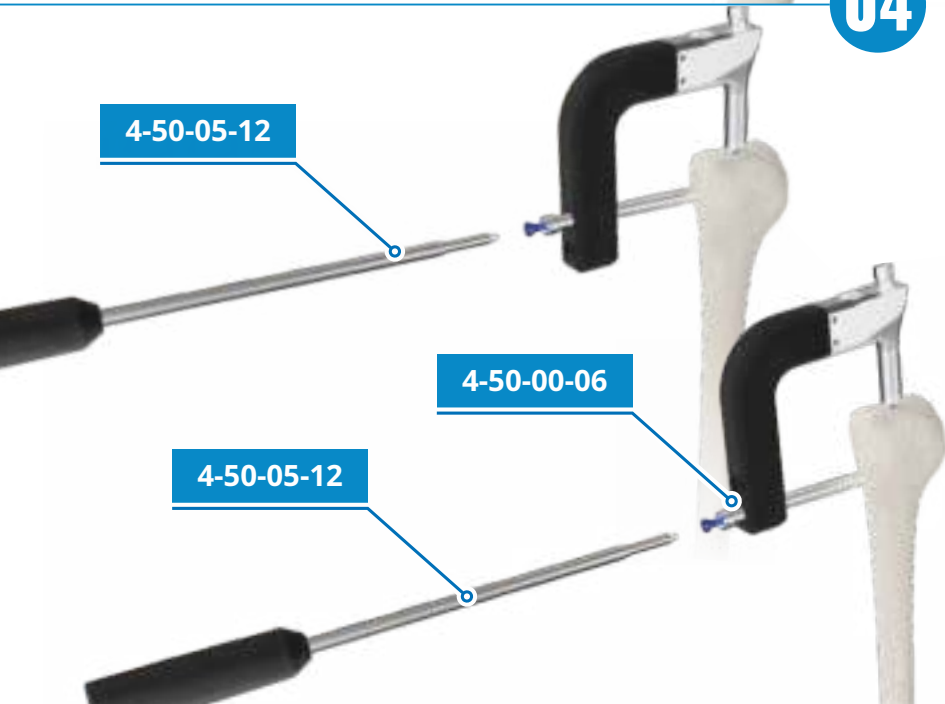
Drill through the compression nail hole using drill **4-50-00-30** and drill sleeve **4-50-00-31**.

**03**

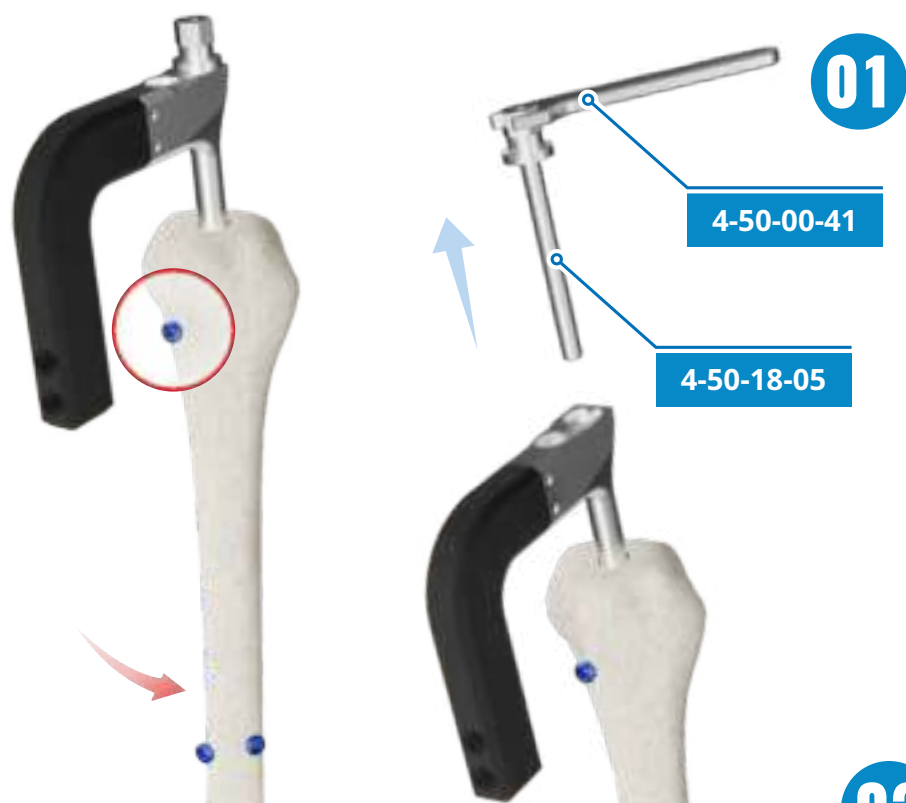
Measure the thickness of the bone through the drilled hole using **4-50-14-02** in order to determine the length of the locking screw.

**04**

Insert the Ø 4,5 mm locking screw using screwdriver **4-50-05-12**.



Insert the Ø 4,5 mm locking screw into static hole of nail in the same way as in the compression hole.



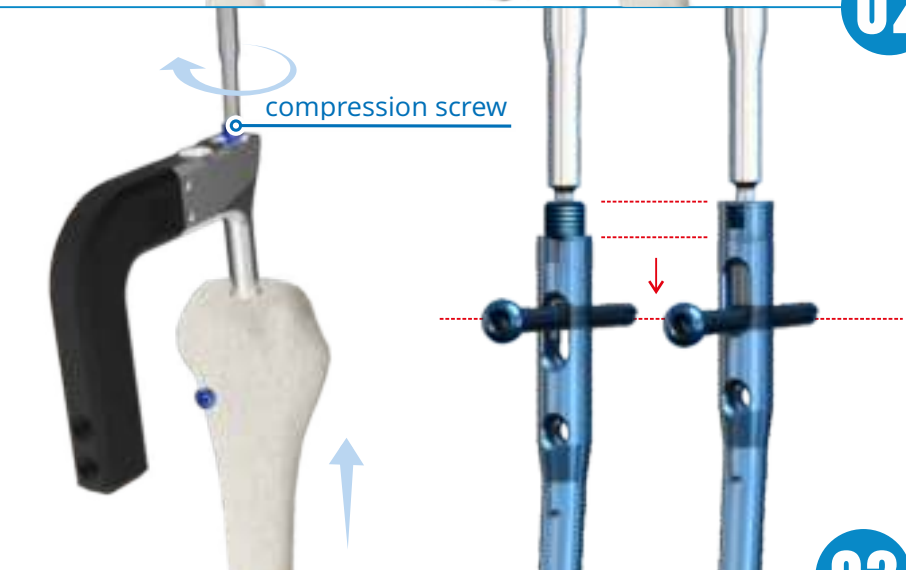
01

7. COMPRESSION METHOD: COMPRESSION SCREW

Insert the locking screw into the distal nail holes.

Insert Ø 4,5 mm molar locking screw **x-01-86-xx** into the compression nail hole using screwdriver **4-50-05-12**.

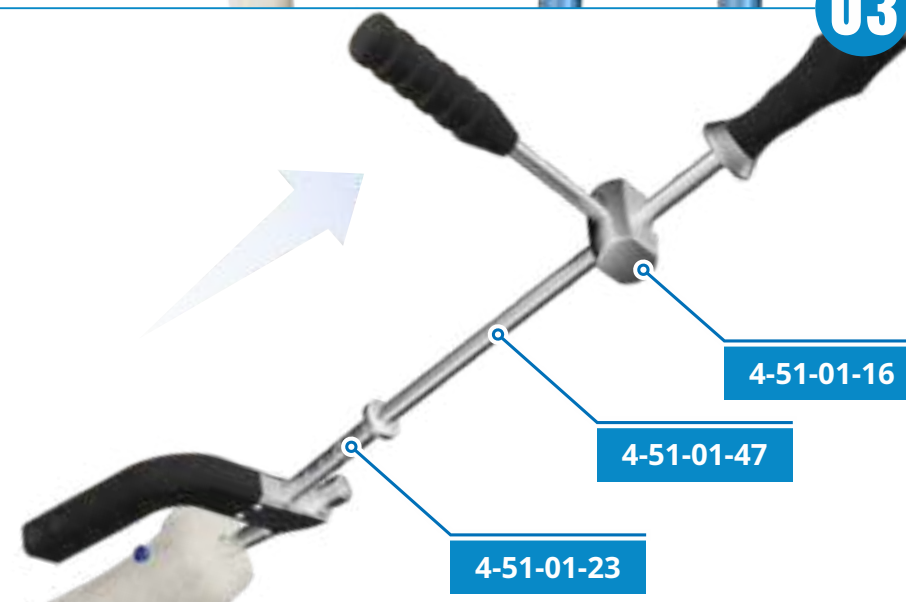
Remove the nail holding screw **4-50-18-05** using wrench **4-50-00-41**.



02

Insert the set screw into the nail to compress the fracture.

Screw should be locked on screwdriver.



03

8. COMPRESSION METHOD: EXTRACTOR

Insert the locking screw into the distal nail holes. Insert impactor **4-51-01-23** into targeting device.

Compress the fracture using the extractor **4-51-01-47** and hammer **4-51-01-16**.

Lock the proximal holes of the nail.

01**4. FREEHAND LOCKING TECHNIQUE**

Drill first distal nail hole using hand targeting device **4-50-00-03** sleeve **4-50-00-38** and drill **4-50-00-30**.

4-50-00-30**4-50-00-03****4-50-00-38****02**

Measure the depth of drilling through the drilled hole, with bone thickness gauge **4-50-14-02** in order to determine the length of locking screw.

4-50-14-02**03**

Insert Ø 4,5 mm locking screw in first drilled hole using screwdriver **4-50-05-12**.

4-50-05-12

Insert the Ø 4,5 mm locking screw into second hole in the same way as in the first hole.

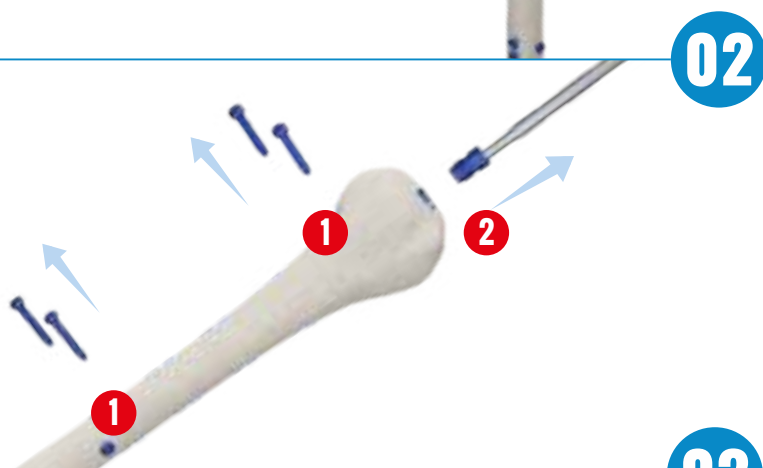


5. END CAP INSERTION

Insert locking screw
4-51-01-19.2 into screwdriver
4-50-05-12.

Lock end cap on screwdriver
4-50-05-12 using locking screw
4-51-01-19.2

Insert end cap into the nail.

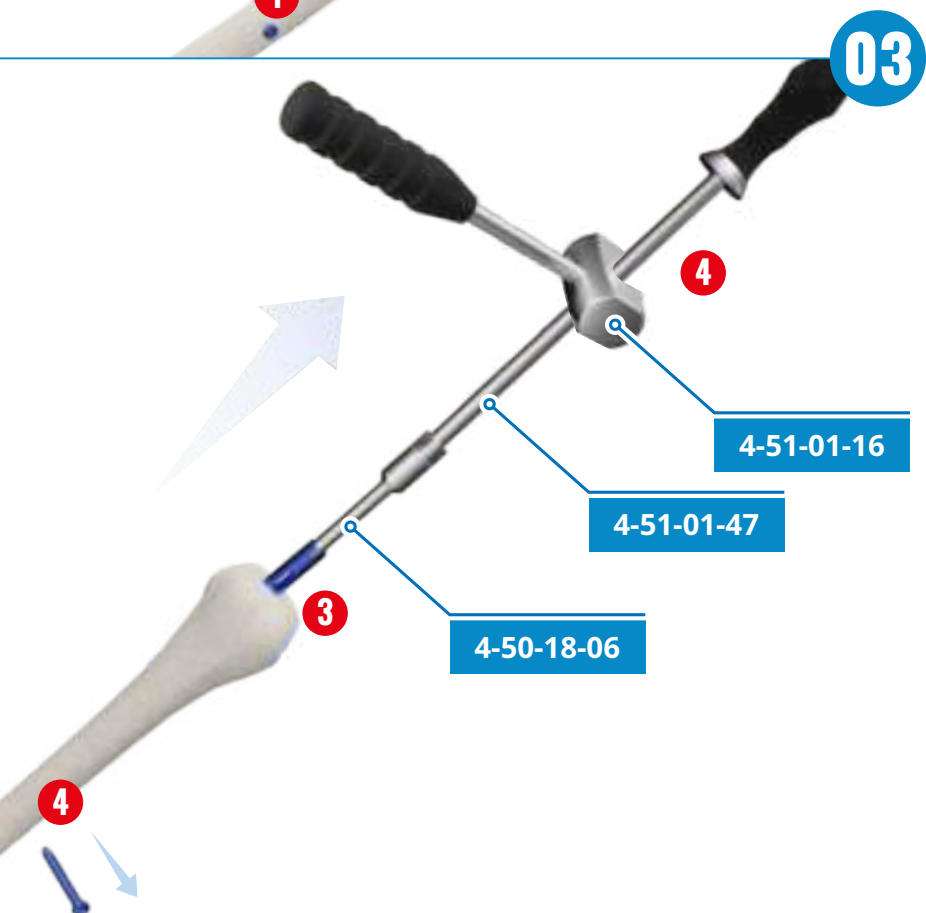


6. EXTRACTION OF THE NAIL

Clear sockets of end cap and locking screws from any tissue ingrowth.

1. Remove all locking screws except one of the distal locking screw.

2. Remove end cup.



3. Insert extractor reducer 4-50-18-06 into extractor 4-51-01-47.

4. Install the set in the nail and remove distal locking screw.

5. Remove the nail using hammer 4-51-01-16.

NOTES

NOTES

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