ST/80-504

ChM®

5,0 ChM Locked Plating ChLP system

5.0ChLP distal anterolateral tibia plate
3.4051.6xx; 3.4052.6xx

- *SURGICAL TECHNIQUE*
- *IMPLANTS*
- *INSTRUMENT SET*

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SYMBOLS DESCRIPTION

Ti	Titanium or titanium alloy
Co	Cobalt
L	Left
R	Right
L R	Available versions: left/right
Len	Length
	Torx drive
	Torx drive cannulated
	Hexagonal drive
	Hexagonal drive cannulated
	Cannulated
	Locking
	Diameter [mm]
H	H length [mm]
	Angle
88 - 340	available lengths
4-22	Available number of holes
1.8	Thickness [mm]
1:1	Scale 1:1
	Number of threaded holes in the shaft part of the plate
	Number of locking holes in the plate
VA	Variable angle
	Cortical
	Cancellous
Ster Non Ster	Available in sterile/ non- sterile condition
	Refer to surgical technique

	Caution - pay attention to a special procedure.
	Perform the activity under X-Ray control.
	Information about the next stages of a procedure.
	Proceed to the next stage.
	Return to the specified stage and repeat the activity.
	Before using the product, carefully read the Instructions for Use. It contains, among others, indications, contraindications, side effects, recommendations and warnings related to the use of the product.
	The above description is not a detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

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The manufacturer reserves the right to introduce design changes.
Updated INSTRUCTIONS FOR USE are available at the following website: ifu.chm.eu

1. INTRODUCTION

This surgical technique applies to 5.0ChLP locked plating system used for stabilization of distal tibia fractures. The plates are a part of the ChLP locked plating system developed by **ChM**. The presented range of implants is made of materials in accordance with ISO 5832 standards.

The system includes:
- implants *(plates and screws)*,
- nstrument set used in the surgery,
- surgical technique.

Indications

- Comminuted distal tibia fractures and fractures extended to the tibial shaft.
- Comminuted, trans-articular distal fractures of the tibia,
- Mal-unions and non-unions.

Plate selection and shaping

The plates are available in various lengths and for left and right limb separately. This allows for optimal selection of the implant to the fracture type.
Shaping of the plates in their epiphyseal part is not allowed.

Before using the product, carefully read the Instructions for Use. It contains, among others, indications, contraindications, side effects, recommendations and warnings related to the use of the product.

The above description is not a detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

2. IMPLANT DESCRIPTION

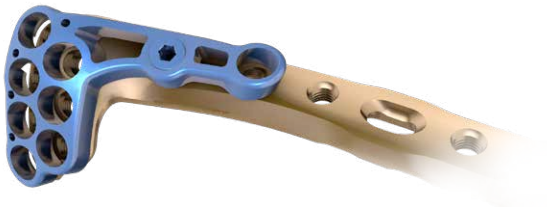
Distal anterolateral tibia plate are a part of 5.0ChLP system. This system includes also compatible locking screws. To facilitate their identification, both titanium plate and screws are brown anodized.

7 distal screws in double row
- first row for support of articular surface
- second row for additional stabilization and complete fixation
- direction parallel to articular surface for direct subchondral insertion
- diverging screws for complete support of articular surface
- enhanced fixation in multi-fragment fractures

Multiple screw options
- non-locking, locking and VA locking screw gives multiple configuration for individual cases
- each locking hole accepts all types of screws

Variable-Angle screws
- high strength cobalt alloy material
- compatible with all locking holes
- 30° angulation cone
- VA screw re-lock possibility

Aiming block:
- fast, collision-free insertion of screws in pre-determined directions.



New locking hole design:
- the screws heads do not protrude above the surface of the plate what significantly reduces the irritation of periimplant tissues,
- increased strength of the screw-to-plate threaded connection,
- bottom protrusion reduces surface area of the contact with the bone.

Compression hole
- convenient plate positioning,
- compression possibility.

Narrowed plate end
- minimally invasive insertion possible.

K-wire holes
- provisional plate positioning
- mimic periarticular screws trajectory
- proximal holes combined with suture cuts

Bottom undercuts of the shaft part
- limited bone-to-plate contact,
- better blood circulation of periimplant tissues.

2 kickstand screws
- enhanced plate and fixation stability

Tapered plate thickness
- minimized soft-tissue irritation in epiphysis
- high plate strength in the shaft and metaphysis

Chamfered plate borders
- minimized soft-tissue irritation
- improved stress distribution

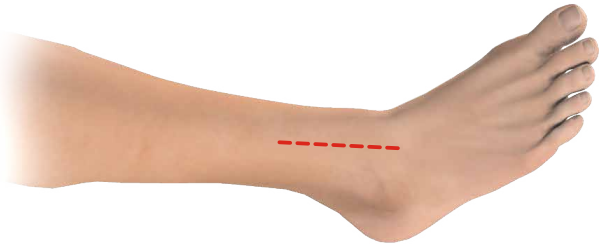
3. SURGICAL TECHNIQUE

3.1. PATIENT'S POSITIONING

It is recommended to place a patient supine. Use surgical pillows to elevate the leg to enable both the lateral and AP visualization.

3.2. SURGICAL APPROACH

Perform an anterolateral approach with incision between the tibia and fibula. The incision should begin approximately 1 cm proximally from the ankle at an appropriate length in relation to the plate.



3.3. FRACTURE REDUCTION

Perform fracture reduction. If need be, temporarily stabilize the bone fragments with Kirschner wires and/or reduction pliers.

3.4. DOBÓR IMPLANTU

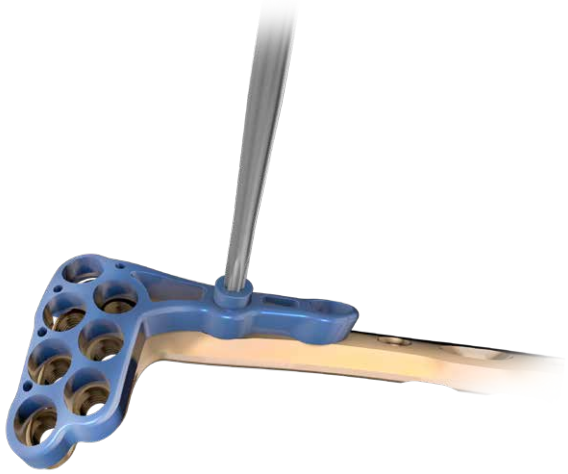
Select the right size of an implant to the type of fracture, bone size and structure. Use plate trials**[43.4051.607]**/**[43.4052.607]** to determine the length of the implant.

Plate 3.4052.607 trial	43.4052.607
Plate 3.4051.607 trial	43. 4051.607

3.5. USE OF AIMING BLOCK

Attach appropriate aiming block to the plate by tightening the fixing screw of the block using screwdriver tip T15 **[40.5677.000]**.

Aiming block L *(3.4051.6xx)*		40.8235.000
Aiming block R *(3.4052.6xx)*		40.8234.000
		40.6654.000
		40.5677.000



Most ChLP locking plates are available with aiming blocks as additional supplementary instruments. The use of aiming blocks ensures proper guide sleeves locking in the plate epiphyseal locking holes. Aiming blocks facilitate also the surgery procedure, shorten its time and ensure drilling in the axis of the locking hole.

Not using aiming blocks may lead to improper device implantation. Incorrectly locked screws can cause complications when removing the plates.

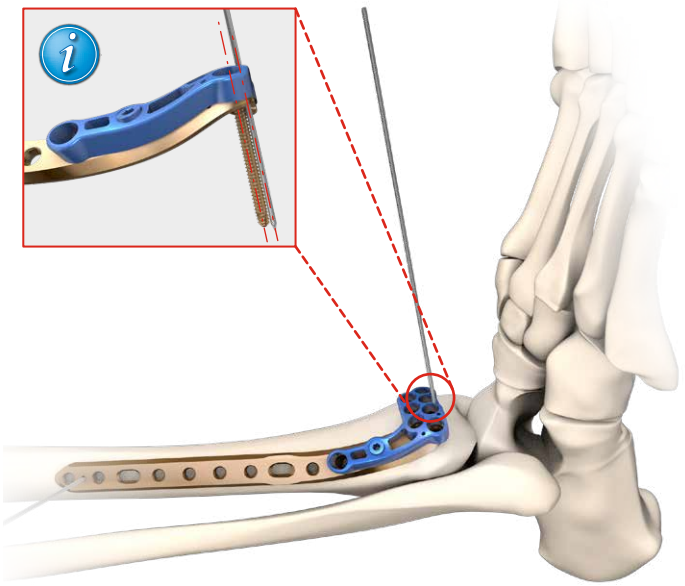
3.6. PLATE INSERTION

Position the implant correctly on the bone.

3.7. TEMPORARY PLATE STABILIZATION

Stabilize the position of the implant inserting Kirschner wires into appropriate holes or using setting-compressing screw *(acc. to procedure 4a)*.

Kirschner wire illustrates *(in the A-P projection)* the plane of the screws that support the joint surface.



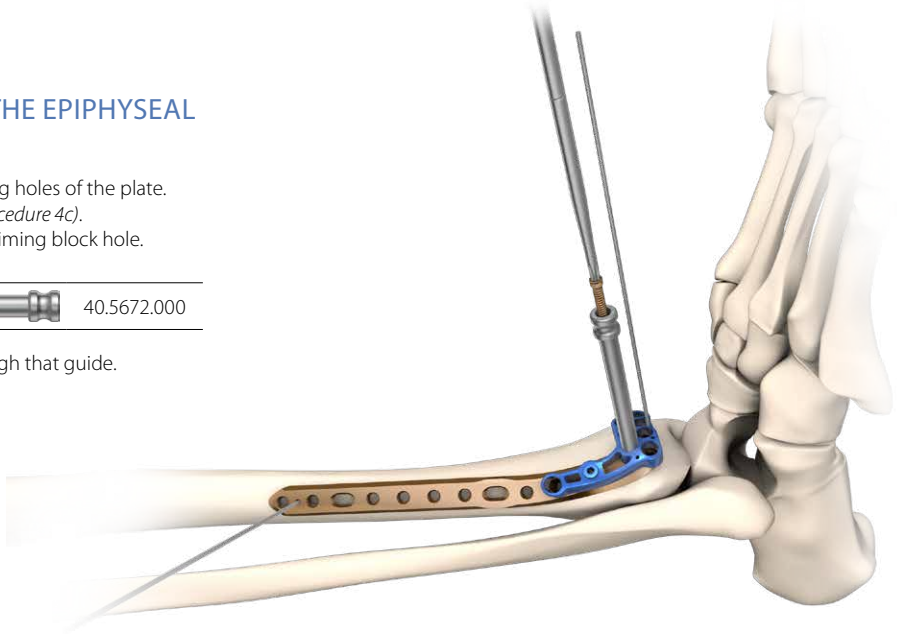
3.8. LOCKING SCREWS INSERTION IN THE EPIPHYSEAL PART OF THE PLATE

Insert locking screws of a suitable length, into the locking holes of the plate.

- 5.0ChLP self-tapping screw 3.5 **[3.5200]** *(acc. to procedure 4c)*.
  Insert protective guide 7/5 **[40.5672]** into the aiming block hole.

40.5672.000

Insert the self-tapping screw 3.5 **[3.5200]** through that guide.



- 5.0ChLP screw VA 3.5 **[3.5236]** *(acc. to procedure 4d)*.

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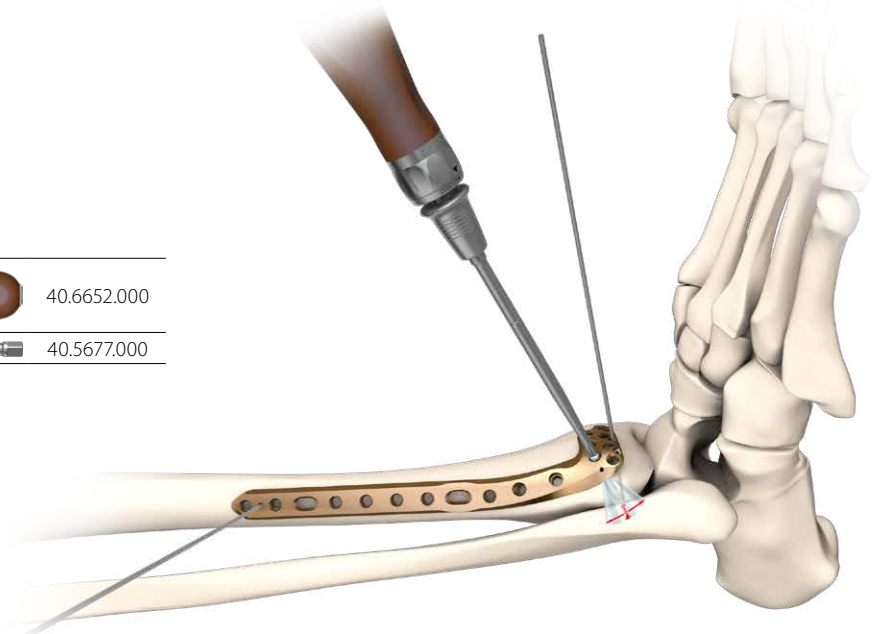
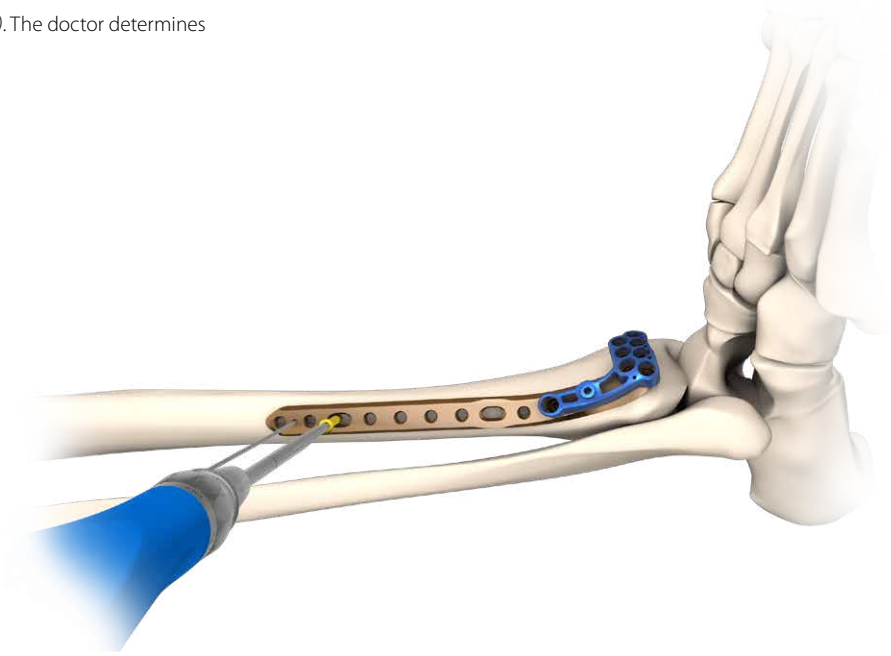


3.9. CORTICAL SCREWS INSERTION IN THE SHAFT

Insert cortical self-tapping screw 3.5 [3.1306] into the oval-shaped hole of the plate.
If necessary, perform compression *(acc. to procedure 4b)*. The doctor determines the order and number of screws to be inserted.



3.10. AIMING BLOCK REMOVAL

Use screwdriver tip T15 **[40.5677.000]** to remove the aiming block from the plate.

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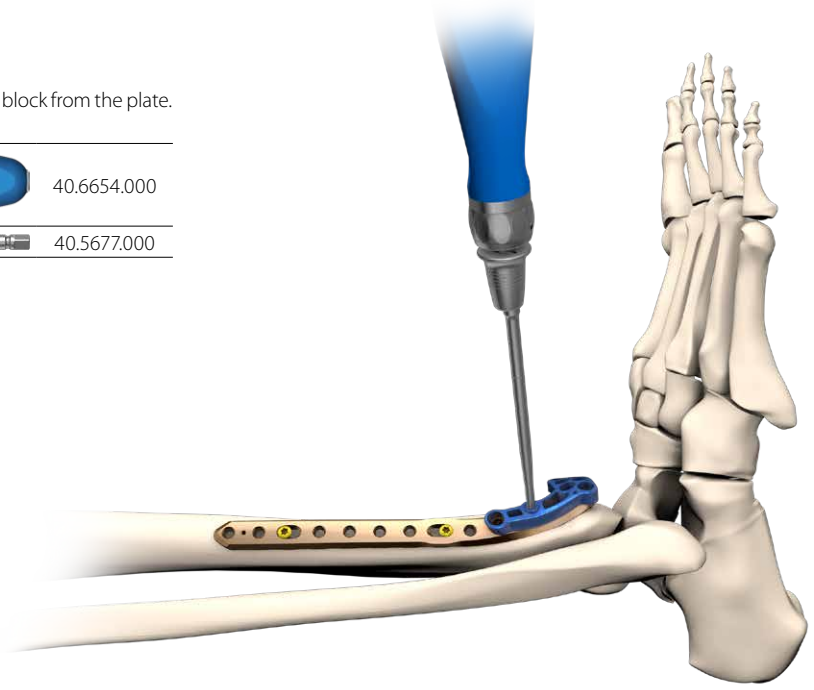
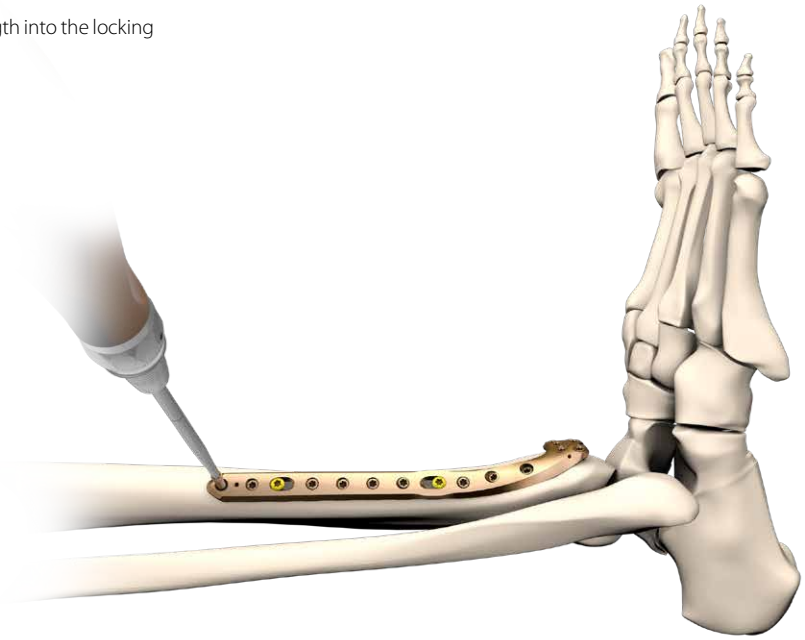


3.11. LOCKING SCREWS INSERTION IN THE SHAFT PART OF THE PLATE

Insert 5.0ChLP self-tapping screw 3.5 **[3.5200]** of a suitable length into the locking holes of the shaft part of the plate *(acc. to procedure 4c)*.



Insert the cortical screws 3.5 into a bone fragment before inserting the locking screws.

The doctor decides about the order and number of locking and cortical screws to be inserted.

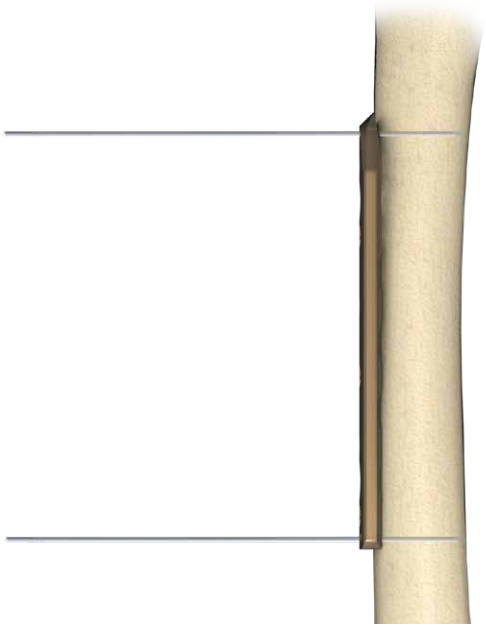
3.12. WOUND CLOSURE

Before closing the wound, take an X-Ray image in at least two projections to confirm implant position and fracture reduction. Make sure all the screws are properly tightened and do not penetrate the joint surface.

Use appropriate surgical technique to close the wound.

4. SURGICAL PROCEDURES

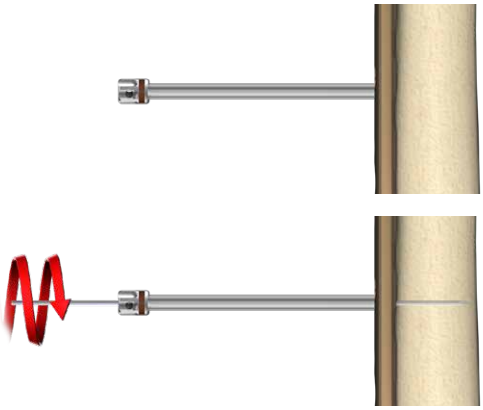
4a. PROCEDURE OF TEMPORARY IMPLANT STABILIZATION



Stabilization using Kirschner wires

- Stabilize temporary the implant inserting Kirschner wires 1.5/210 **[40.4592.210]** into dedicated holes in the plate.


40.4592.210

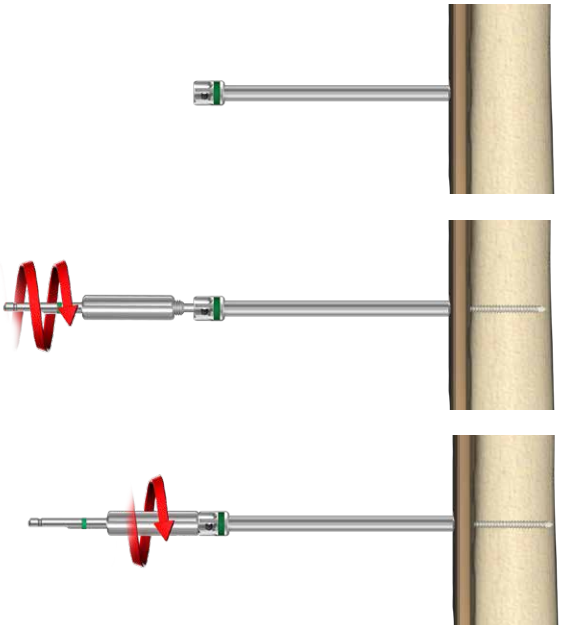


Stabilization in locking holes using Kirschner wires

- Insert guide sleeve 5.0/1.8 **[40.5673.718]** into the locking hole of the plate.
- Insert Kirschner wire **[40.4592.210]** through the guide sleeve 5.0/1.8 **[40.5673.718]**.


40.5673.718

40.4592.210



Stabilization using setting-compressing screw

- Insert guide sleeve 5.0/2.8 **[40.5673.728]** into the locking hole of the plate.
- Insert setting-compressing screw 2.8/180 **[40.5674.728]** through the guide sleeve 5.0/2.8 **[40.5673.728]**.
- Tighten the nut of the setting-compressing screw **[40.5674.728]** and push the plate to the bone.


40.5673.728


40.5674.728

4b. PROCEDURE OF CORTICAL SELF-TAPPING SCREW 3.5 [3.1306]INSERTION

Compression guide positioning

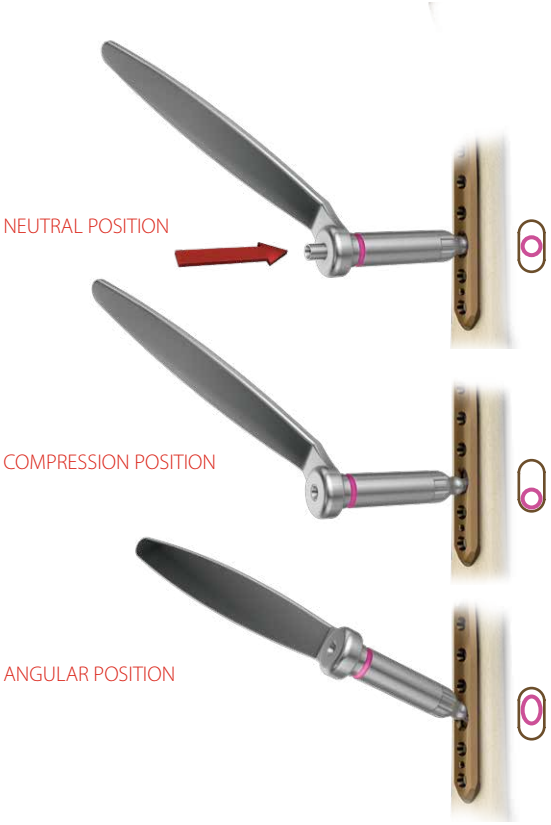
Position the compression guide 2.5 **[40.4804.725]** in a desired position:

40.4804.725

NEUTRAL POSITION: Push the guide to the plate. It will position itself so as neutral insertion of the screw is allowed.

COMPRESSION POSITION: Do not push the guide and move it to the edge of the compression hole. The hole drilled in this position allows compressive insertion of the screw.

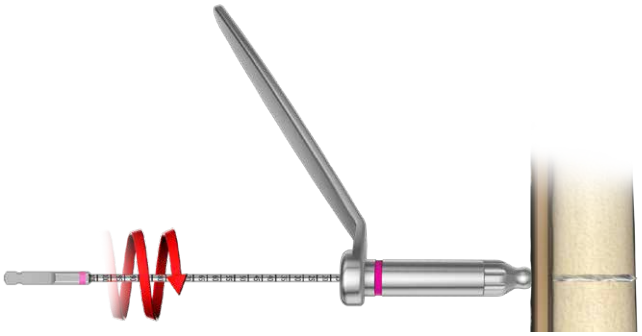
ANGULAR POSITION: Angular position of the guide may also be applied.



Hole drilling

Perform a hole through both cortices for a cortical screw 3.5 insertion. For drilling, use drill with scale 2.5/210 **[40.5912.212]** and compression guide in a desired position.

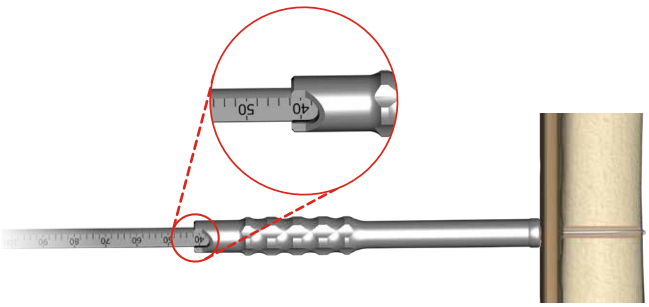
40.5912.212



Measurement of hole depth

Insert depth measure **[40.4639.550]** into drilled hole until the hook of the measure rests against the outer surface of the second cortex.

40.4639.550



Screw insertion

Insert cortical screw using handle ratchet device **[40.6654.000]** and screwdriver tip T15 **[40.5677.000]**.

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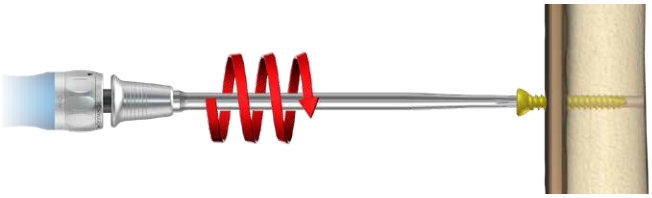
40.5677.000

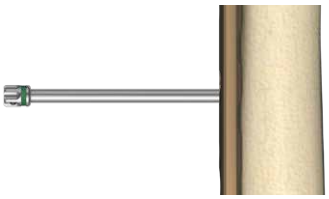


4c. PROCEDURE OF 5.0ChLP SELF-TAPPING SCREW 3.5 [3.5200] INSERTION

Guide sleeve insertion

- Insert guide sleeve 5.0/2.8 **[40.5673.728]** into a locking hole of the plate.

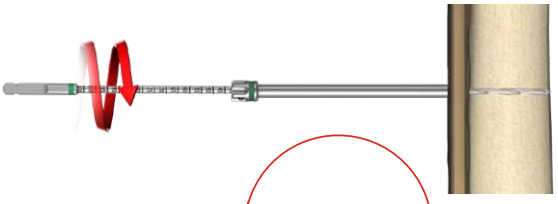

40.5673.728



Hole drilling

Drill using drill with scale 2.8/210**[40.5653.212]** until desired depth is reached.

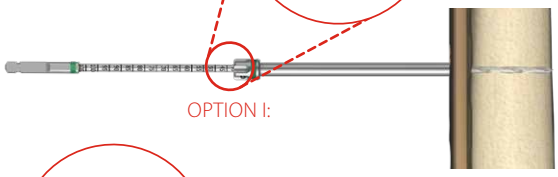
40.5653.212



Measurement of hole depth

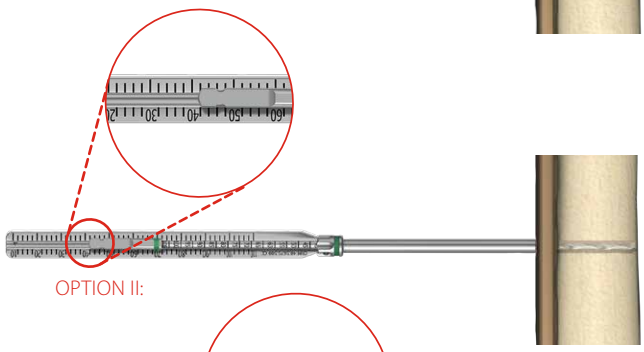
OPTION I: Read the length of the screw from the drill measure **[40.5653.212]**

40.5653.212



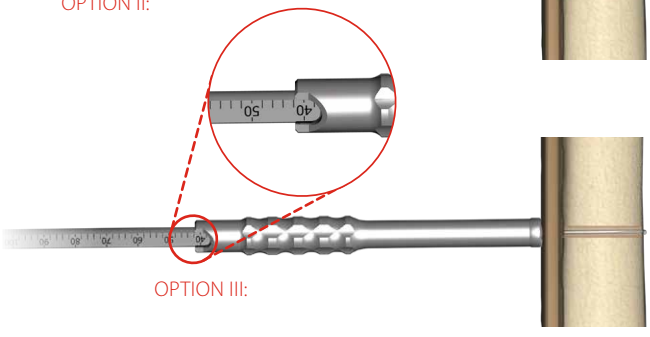
OPTION II: or use screw length measure **[40.5675.500]**.


40.5675.500



OPTION III: Having removed the guide sleeve 5.0/2.8 **[40.5673.728]**, use depth measure **[40.4639.550]** to determine the length of a screw.


40.4639.550

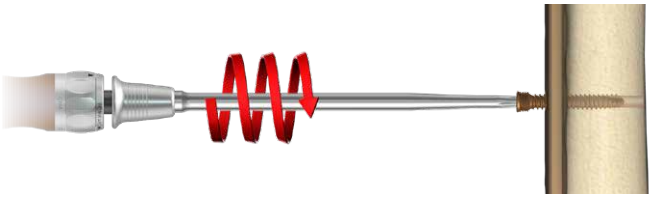


Screw insertion

Remove the guide sleeve 5.0/2.8 **[40.5673.728]**. Use torque limiting ratchet handle 2Nm **[40.6652.000]** and screwdriver tip T15 **[40.5677.000]** to insert the locking screw.


40.6652.000


40.5677.000



The final tightening of the locking screw, especially when a drive is used, should always be performed with the use of torque limiting handle. Failure to use the torque limiting handle may lead to intraoperative and postoperative complications *(during later removal of the plate and locking screws)*.

4d. PROCEDURE OF 5.0ChLP SCREW VA 3.5 [4.5236] INSERTION

When using variable angle *(VA)* screws, there is a risk of collision of screws or a drill with already implanted screws.
Well-thought-out trajectory of inserted screws and intraoperative X-Ray control of drilling reduces the risk of the collision.

Guide VA positioning

- Insert the guide VA 2.8 **[40.8206.028]** into the locking hole co-axially.
- Set the desired inclination of the guide in relation to the locking hole axis. The guide enables the inclination of 15° in each direction with respect to the axis of the locking hole.

40.8206.028

Exceeding the inclination angle of more than 15° may prevent proper locking of the VA screw in the plate hole.

Hole drilling

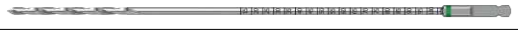
- Drill using drill with scale 2.8/210 **[40.5653.212]** until desired depth is reached.

40.5653.212

Drill under X-Ray control to avoid a collision of the drill with already implanted screws.

Measurement of hole depth

OPTION I: Read the length of the screw from the drill measure **[40.5653.212]**.



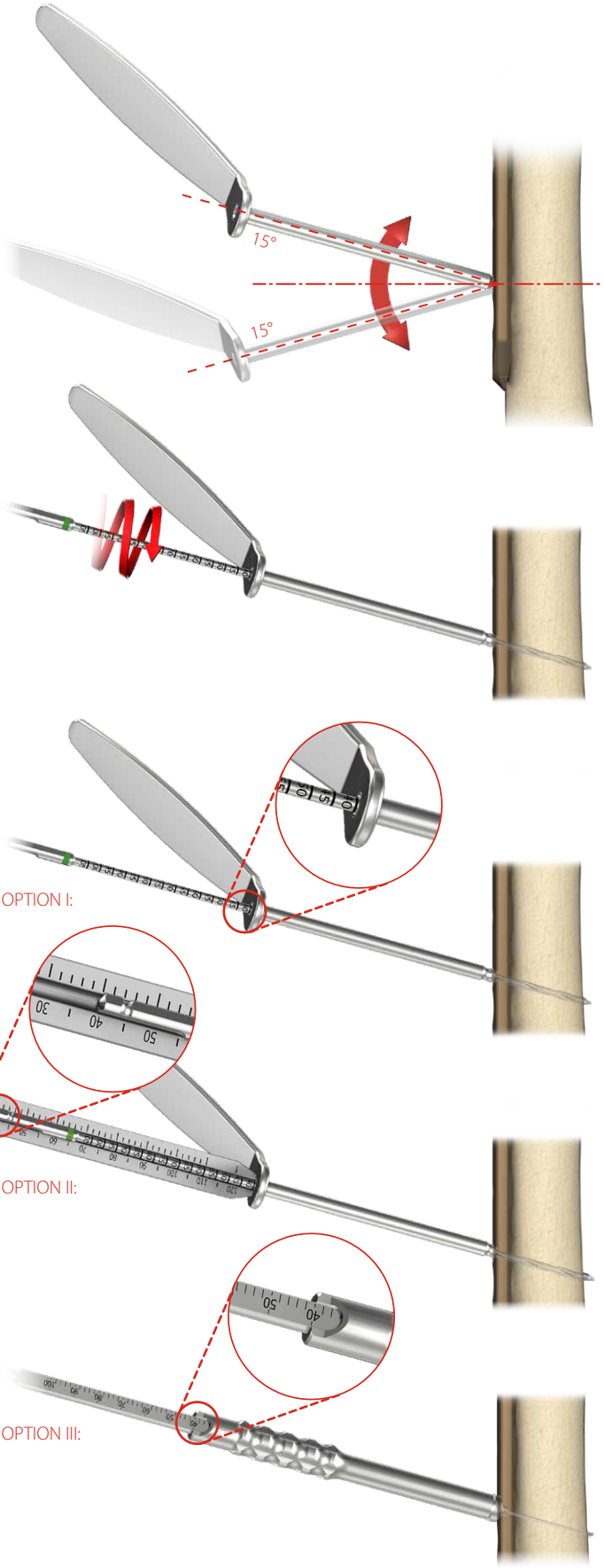
40.5653.212

OPTION II: or use screw length measure **[40.5675.500]**.

40.5675.500

OPTION III: Having removed the guide VA, use depth measure **[40.4639.550]** to determine the length of the screw.

40.4639.550

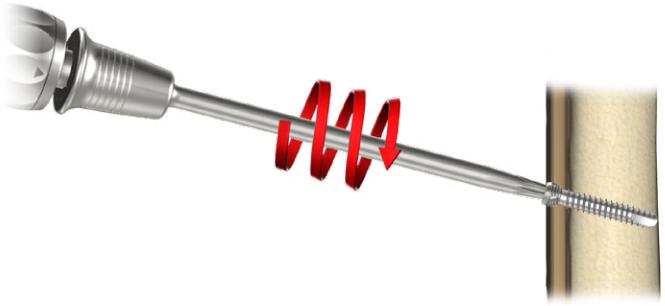


Screw insertion

Use torque limiting ratchet handle 2Nm **[40.6652.000]** and screwdriver tip T15 **[40.5677.000]** to insert the VA screw.

40.6652.000

40.5677.000



When using torque limiting handle to tighten the VA screw with large inclination in relation to the axis of the locking hole, the head of the screw may protrude above the plate. In this case, it may be necessary to use a handle ratchet device **[40.6654]** and screwdriver tip T15 **[40.5677]**. Use the instruments carefully to tighten the VA screw. Avoid damaging the screw socket or screwdriver tip. Do not insert the screw too deep into the plate.

40.6654.000

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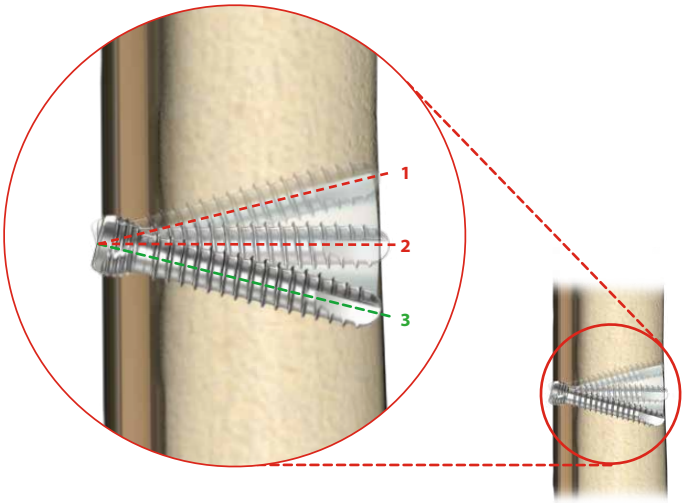

Change of the VA screw positioning

It is possible to lock the VA screw three times in the threaded hole of the plate.
The hole in the plate in which the VA screw was locked cannot be used to insert a standard locking screw.

5. POSTOPERATIVE PROCEDURE

Introduce appropriate postoperative treatment. The physician decides on the post-operative treatment and its conduct. In order to avoid patient's movement limitations, introduce exercises as soon after surgery as possible. However, make sure that the limb is not fully loaded before fragments osteosynthesis is complete.

6. IMPLANT REMOVAL

The physician decides about implant removal. In order to remove the implants from the body, unlock all the locking screws first and then remove them from the bone. This will prevent any rotation of the plate when removing the last locking screw.

Having cleaned the outer surface of the plate and the screws sockets, it is recommended to attach the aiming block to the plate. Using aiming block and protective sleeve ensures positioning of the screwdriver tip in the axis of the screw, its full placement in the recess, and reduces the risk of twisting the screw while removing.

7. CATALOGUE PAGES

7a. INSTRUMENT SET

Instrument set for 5.0ChLP 4x4 1/2H — 15.0205.206

	Name	Catalogue No.	Pcs
	Tray for 5.0ChLP instrument set 4x4 1/2H	**14.0205.206**	1
	Kirschner wire 1.5/210	**40.4592.210**	4
	Drill 1.8/210	**40.2063.212**	2
	Drill with scale 2.5/210	**40.5912.212**	2
	Drill with scale 2.8/210	**40.5653.212**	2
	Screwdriver tip T15	**40.5677.000**	1
	Torque limiting ratchet handle 2Nm	**40.6652.000**	1
	Handle ratchet device	**40.6654.000**	1
	Protective guide 7/5	**40.5672.000**	2
	Guide VA 2.8	**40.8206.028**	1
	Compression guide 2.5	**40.4804.725**	1
	Guide sleeve 5.0/1.8	**40.5673.718**	2
	Guide sleeve 5.0/2.8	**40.5673.728**	4
	Depth measure	**40.4639.550**	1

Instrument set for 5.0ChLP 4x4 1/2H

15.0205.202

	Name	Catalogue No.	Pcs
	Tray for 5.0ChLP instrument set 4x4 1/2H	**14.0205.202**	1
	Setting-compressing screw 2.8/180	**40.5674.728**	1
	Screw length measure	**40.5675.500**	1
	Plates bender 5.0	**40.4643.500**	2
	Tripod screwdriver tip 5.0ChLP	**40.6271.500**	1
	T15 screwdriver tip with holder	**40.6254.000**	1
	Cortical tap HA 3.5 with handle	**40.2548.200**	1
	Tap 5.0ChLP-3.5	**40.5661.000**	1
Optional instrument			
	Torque connector 2Nm	**40.5927.020**	1

5.0ChLP distal tibial L plate

Ti

Ster Non Ster

Ti

L R

Ster Non Ster

	Len	L	R
3	89	3.4051.603	3.4052.603
5	115	3.4051.605	3.4052.605
7	141	3.4051.607	3.4052.607
9	167	3.4051.609	3.4052.609
11	193	3.4051.611	3.4052.611
13	219	3.4051.613	3.4052.613
15	245	3.4051.615	3.4052.615
17	271	3.4051.617	3.4052.617

	Ti	Co						
 3.5200.012÷095	✓		✓	✓	✓			3,5
 4.5236.012÷095		✓	✓	✓	✓			3,5
 3.1306.012÷095	✓		✓		✓			4.5

Tray for plates 5.0ChLP 3.4051/3.4052 4x4 1/2H	14.0205.428	Aiming block R *(3.4052.6xx)*	40.8234.000	Plate 3.4052.607 trial	43.4052.607
		Aiming block L *(3.4051.6xx)*	40.8235.000	Plate 3.4051.607 trial	43. 4051.607

5.0ChLP self-tapping screw 3.5

Len	Ti
12	3.5200.012
14	3.5200.014
16	3.5200.016
18	3.5200.018
20	3.5200.020
22	3.5200.022
24	3.5200.024
26	3.5200.026
28	3.5200.028
30	3.5200.030
32	3.5200.032
34	3.5200.034
36	3.5200.036
38	3.5200.038
40	3.5200.040
42	3.5200.042
44	3.5200.044
46	3.5200.046
48	3.5200.048
50	3.5200.050
52	3.5200.052
54	3.5200.054
56	3.5200.056
58	3.5200.058
60	3.5200.060
65	3.5200.065
70	3.5200.070
75	3.5200.075
80	3.5200.080
85	3.5200.085

5.0ChLP screw VA 3.5

Len	Co
12	4.5236.012
14	4.5236.014
16	4.5236.016
18	4.5236.018
20	4.5236.020
22	4.5236.022
24	4.5236.024
26	4.5236.026
28	4.5236.028
30	4.5236.030
32	4.5236.032
34	4.5236.034
36	4.5236.036
38	4.5236.038
40	4.5236.040
42	4.5236.042
44	4.5236.044
46	4.5236.046
48	4.5236.048
50	4.5236.050
52	4.5236.052
54	4.5236.054
56	4.5236.056
58	4.5236.058
60	4.5236.060
65	4.5236.065
70	4.5236.070
75	4.5236.075
80	4.5236.080
85	4.5236.085

Cortical self-tapping screw 3.5

Len	Ti
10	3.1306.010
12	3.1306.012
14	3.1306.014
16	3.1306.016
18	3.1306.018
20	3.1306.020
22	3.1306.022
24	3.1306.024
26	3.1306.026
28	3.1306.028
30	3.1306.030
32	3.1306.032
34	3.1306.034
36	3.1306.036
38	3.1306.038
40	3.1306.040
45	3.1306.045
50	3.1306.050
55	3.1306.055
60	3.1306.060
65	3.1306.065
70	3.1306.070
75	3.1306.075
80	3.1306.080
85	3.1306.085

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