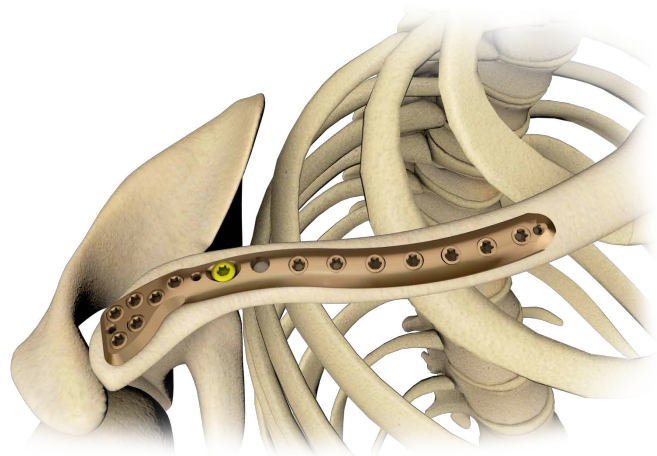


ChM[®]



























5.0 ChM Locked Plating
5.0 ChLP system

5.0ChLP clavicle S plate
3.7014; 3.7015
3.7048; 3.7049

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



SYMBOLS DESCRIPTION

	Titanium or titanium alloy		H length [mm]
	Cobalt		Angle
	Left		available lengths
	Right		Available number of holes
	Available versions: left/right		Thickness [mm]
	Length		Scale 1:1
	Torx drive		Number of threaded holes in the shaft part of the plate
	Torx drive cannulated		Number of locking holes in the plate
	Hexagonal drive		Variable angle
	Hexagonal drive cannulated		Cortical
	Cannulated		Cancellous
	Locking		Available in sterile/ non- sterile condition
	Diameter [mm]		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.

www.chm.eu

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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

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1. INTRODUCTION

This surgical technique applies to 5.0ChLP locked plating system used for fracture stabilization of clavicle in its shaft and distal parts. 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*),
- instrument set used in the surgery,
- surgical technique.

Indications

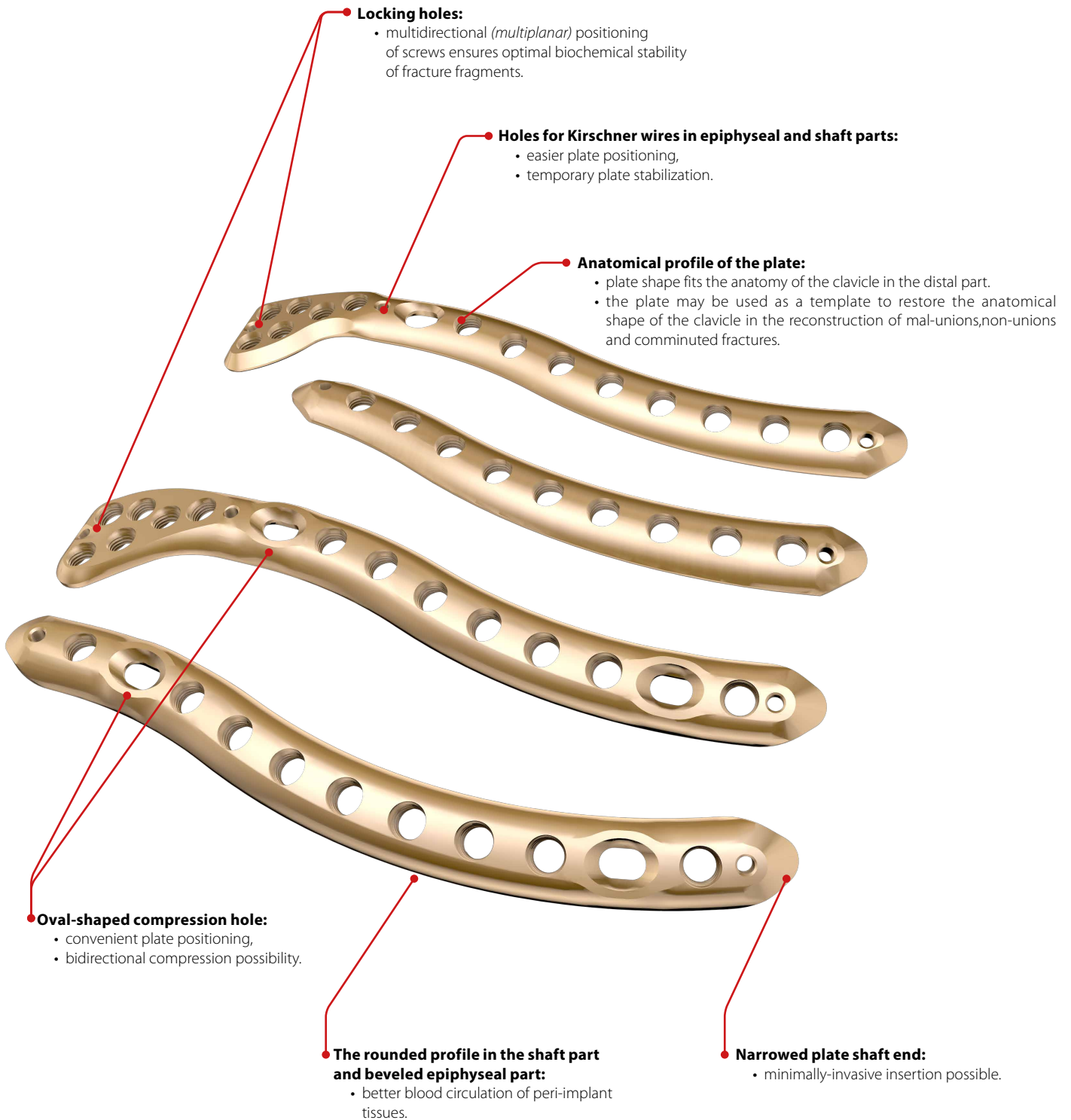
- fractures of the shaft and distal part of the clavicle
- mal-, and non-unions,

Plate selection and shaping

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

2. IMPLANT DESCRIPTION

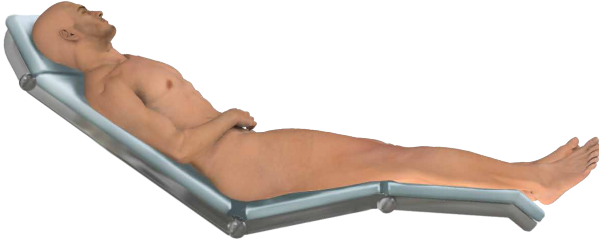
Clavicle S plates are a part of 5.0ChLP system. This system includes also compatible locking screws. To facilitate the identification, both titanium plate and screws are brown anodized.



3. SURGICAL TECHNIQUE

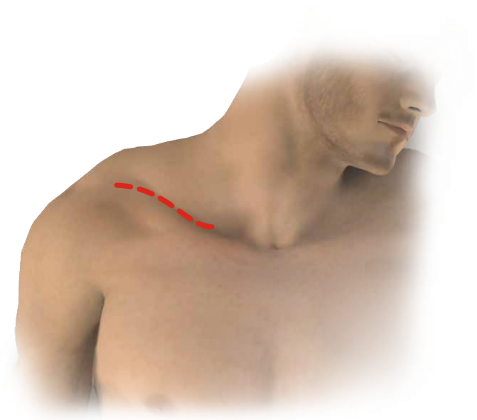
3.1. PATIENT'S POSITIONING

A beach-chair or supine position is recommended. Provide appropriate access to the clavicle for X-Rays imaging.



3.2. SURGICAL APPROACH

Horizontal parallel incision to the clavicle in the supraclavicular fossa or over the clavicular region.



3.3. FRACTURE REDUCTION

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

3.4. IMPLANT SELECTION

Select the right size of an implant to the type of fracture, bone size and structure. Use plate trials to determine the length of the implant.

Plate 3.7014.505 trial		43.7014.505
Plate 3.7015.505 trial		43.7015.505
Plate 3.7048.508 trial		43.7048.508
Plate 3.7049.508 trial		43.7049.508

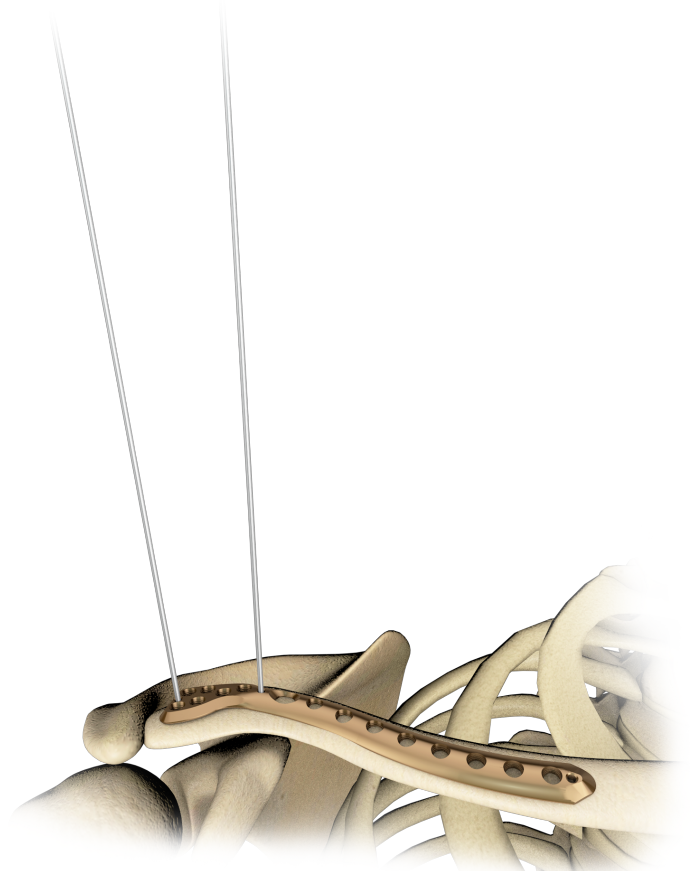


3.5. PLATE INSERTION

Position the implant correctly on the bone.

3.6. TEMPORARY PLATE STABILIZATION

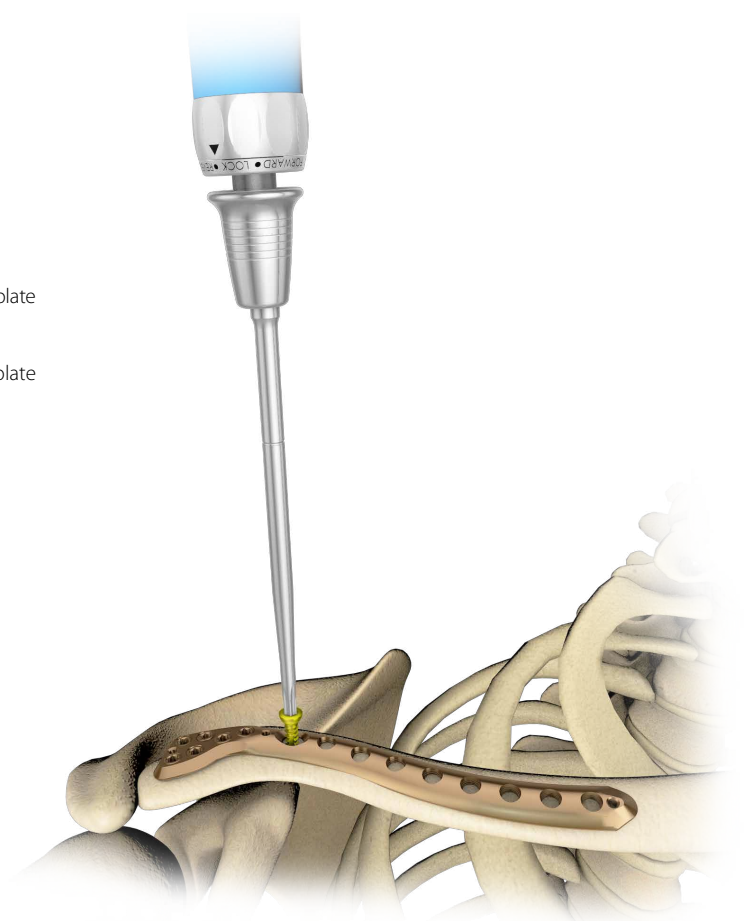
Stabilize the position of the implant inserting Kirschner wires into appropriate holes or using setting-compressing screw (acc. to procedure 4a).



3.7. CORTICAL SCREWS INSERTION

Insert cortical self-tapping screw 3.5 [3.1306] into the oval-shaped hole of the plate (acc. to procedure 4b).

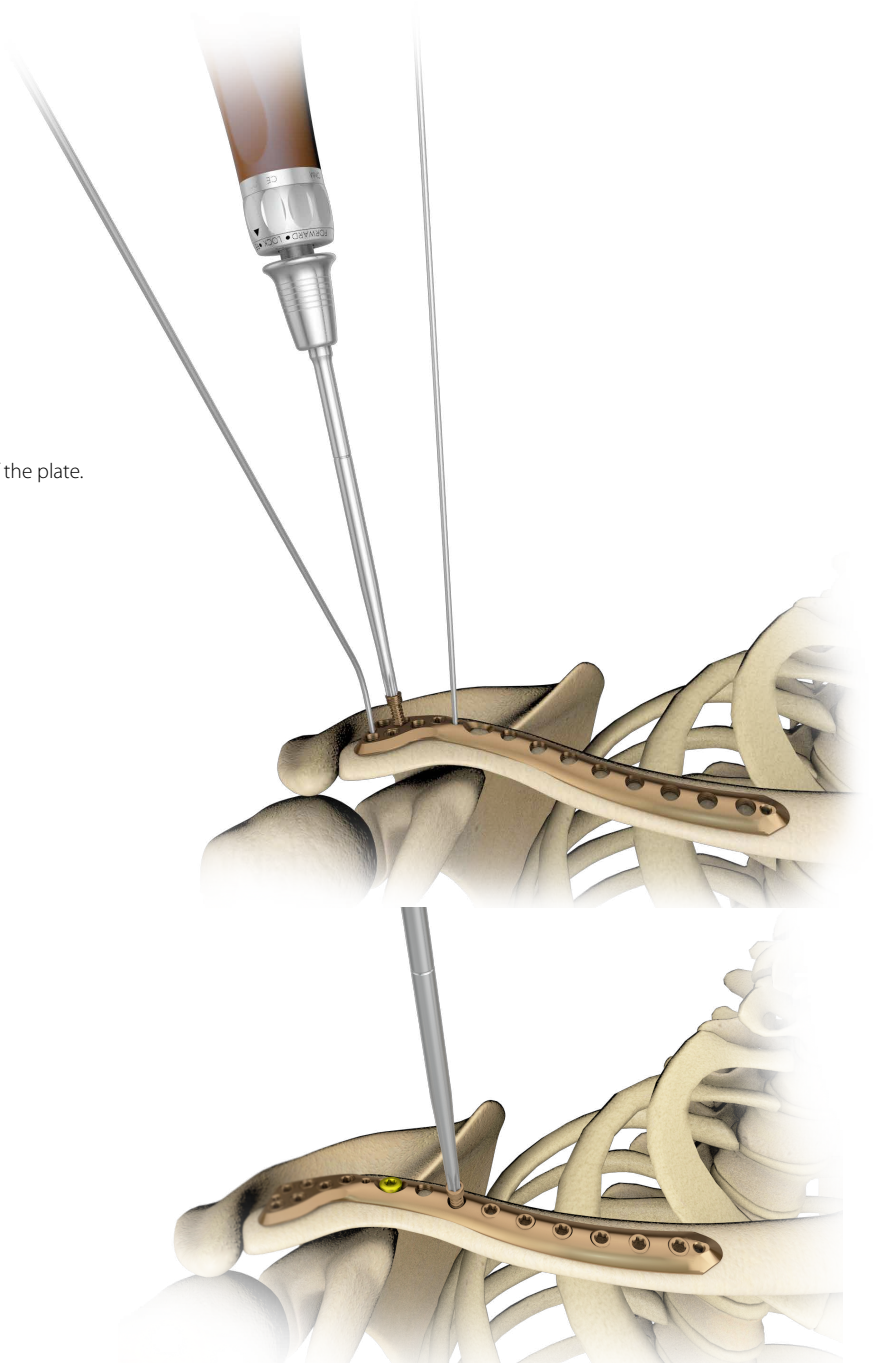
The oval-shaped compression hole can be used to determine the correct plate position on the bone and its initial stabilization.



3.8. LOCKING SCREWS INSERTION

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*).
- 4.5ChLP screw 2.4 **[3.5225]** (*acc. to procedure 4d*).
- 5.0ChLP screw VA 3.5 **[3.5236]** (*acc. to procedure 4e*).



Insert the cortical screws 3.5 into the fracture before inserting the locking screws.



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

3.9. 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.

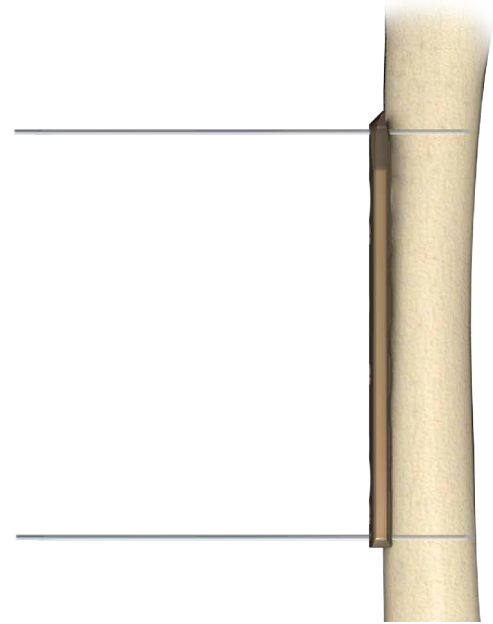
Use appropriate surgical technique to close the wound.

4. SURGICAL PROCEDURES

4.a. PROCEDURE OF TEMPORARY IMPLANT STABILIZATION

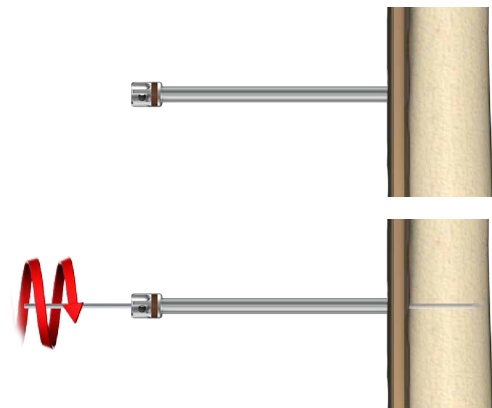
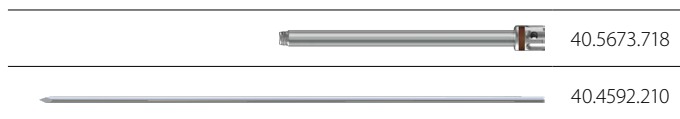
Stabilization using Kirschner wires

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



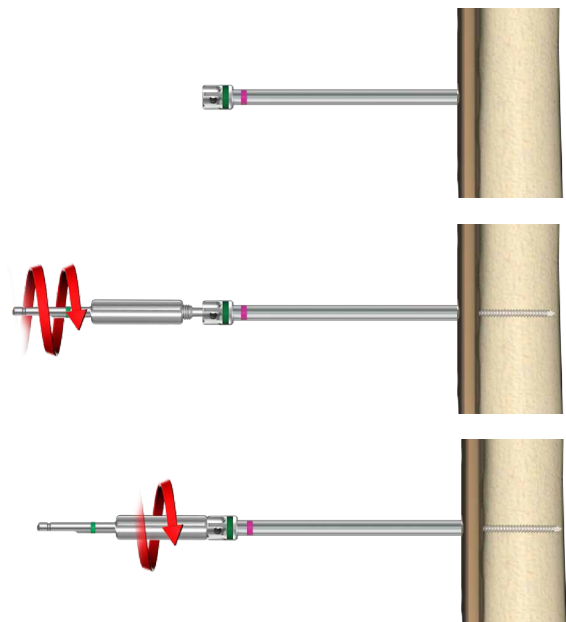
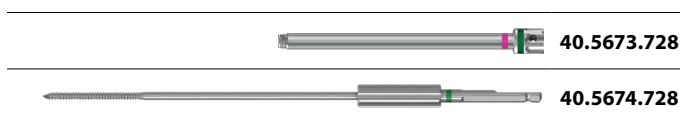
Stabilization in locking holes using Kirschner wires

- 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]**.



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.



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

Compression guide positioning

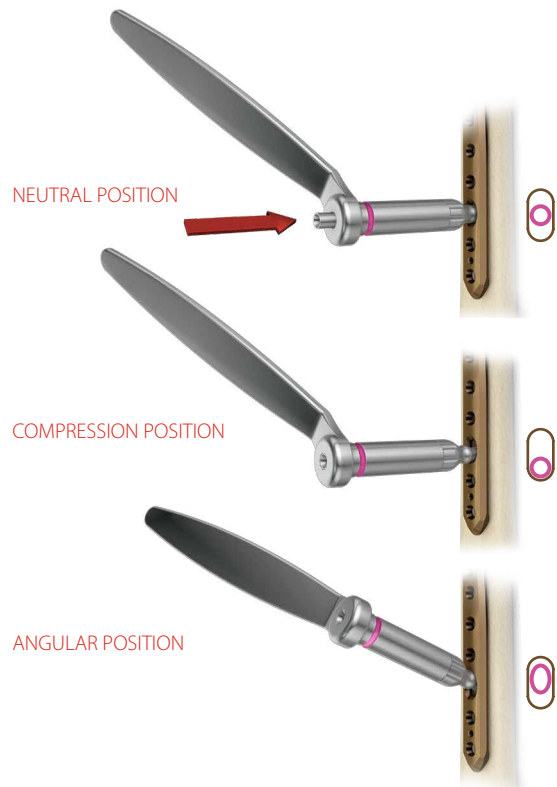
Position the compression guide 2.5 [40.4804.725] in a desired position:



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

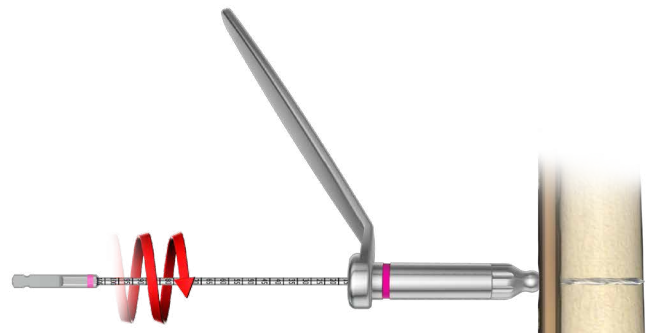
COMPRESSION POSITION: Do not push the guide and move it to the edge of the compression hole. The hole drilled in this position allows compressive insertion of the screw.

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



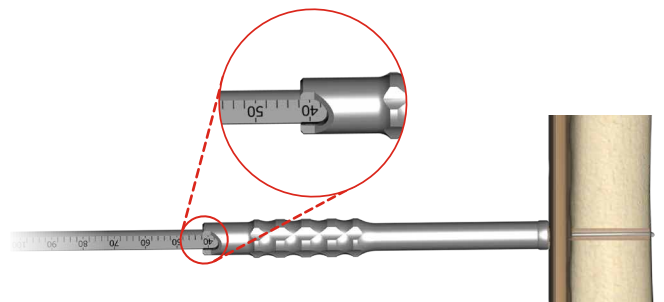
Hole drilling

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.



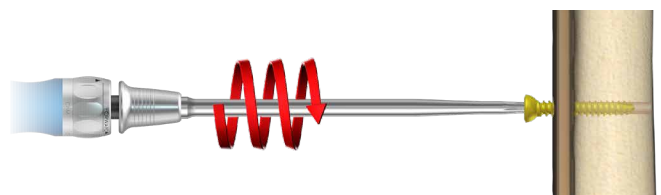
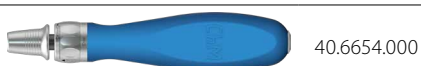
Measurement of hole depth

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



Screw insertion

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



4.c. 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.



Hole drilling

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



Measurement of hole depth

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



OPTION II: or use screw length measure [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.

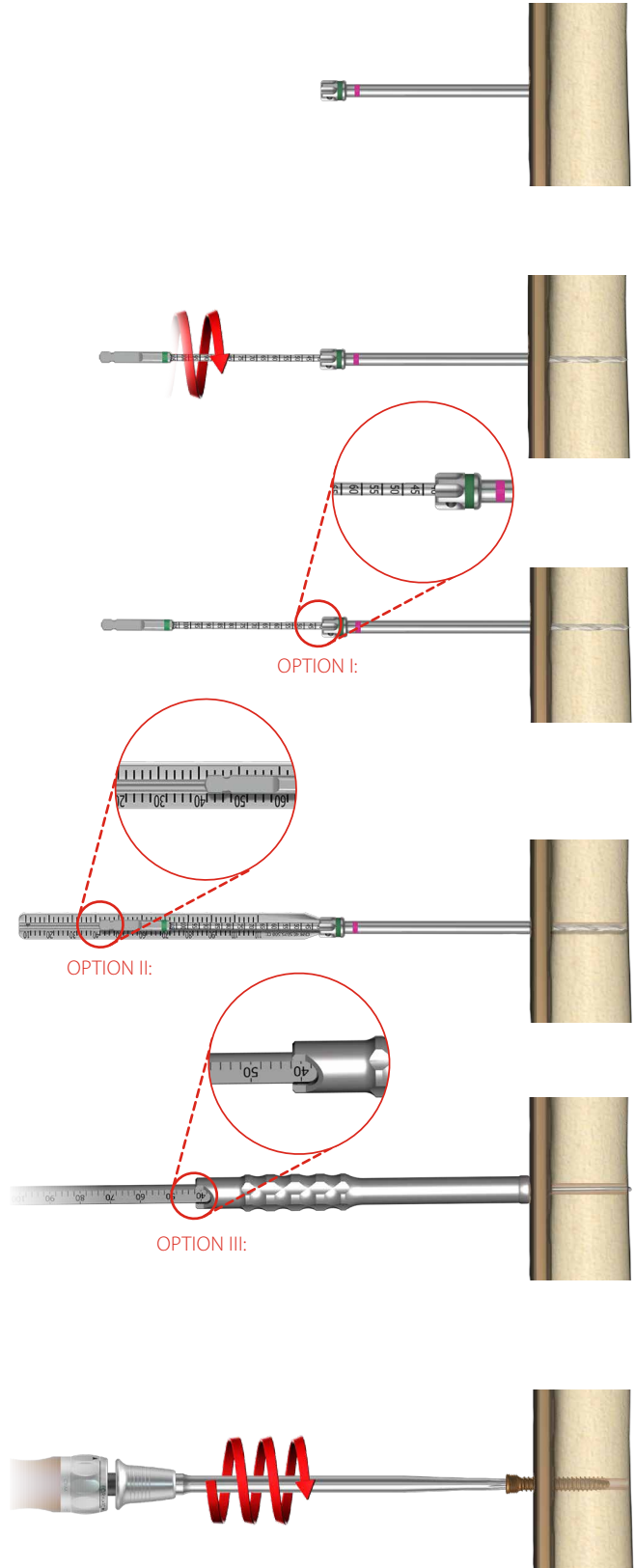


Screw insertion

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.



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*).



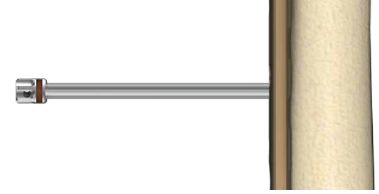
4.d. PROCEDURE OF 4.5ChLP SCREW 2.4 [3.5225] INSERTION

Guide sleeve insertion

- Insert guide sleeve 5.0/1.8 [40.5673.718] into a locking hole of the plate.



40.5673.718



Hole drilling

Drill using drill with scale 1.8/210 [40.2063.222] until desired depth is reached.



40.2063.212

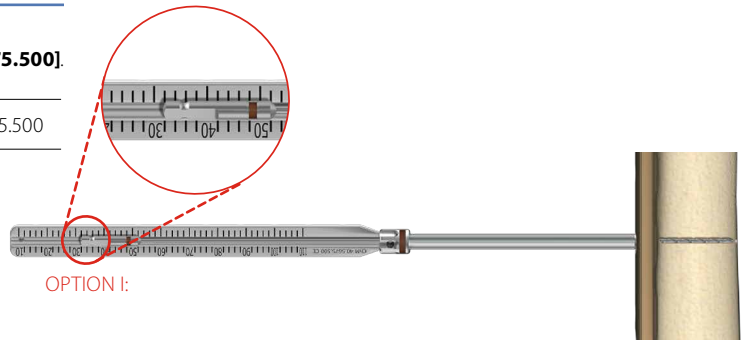


Measurement of hole depth

OPTION I: Read the length of the screw from screw length measure [40.5675.500].



40.5675.500

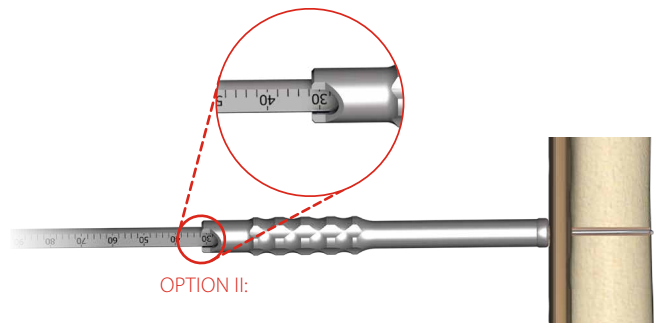


OPTION I:

OPTION II: Having removed the guide sleeve 5.0/1.8 [40.5673.718], use depth measure [40.4639.550] to determine the length of a screw.



40.4639.550



OPTION II:

Screw insertion

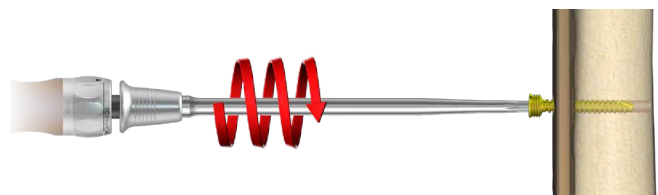
Remove the guide sleeve 5.0/1.8 [40.5673.718]. Use torque limiting ratchet handle 2Nm [40.6652.000] and screwdriver tip T15 [40.5677.000] to insert the locking screw.



40.6652.000



40.5677.000



4.e. 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].

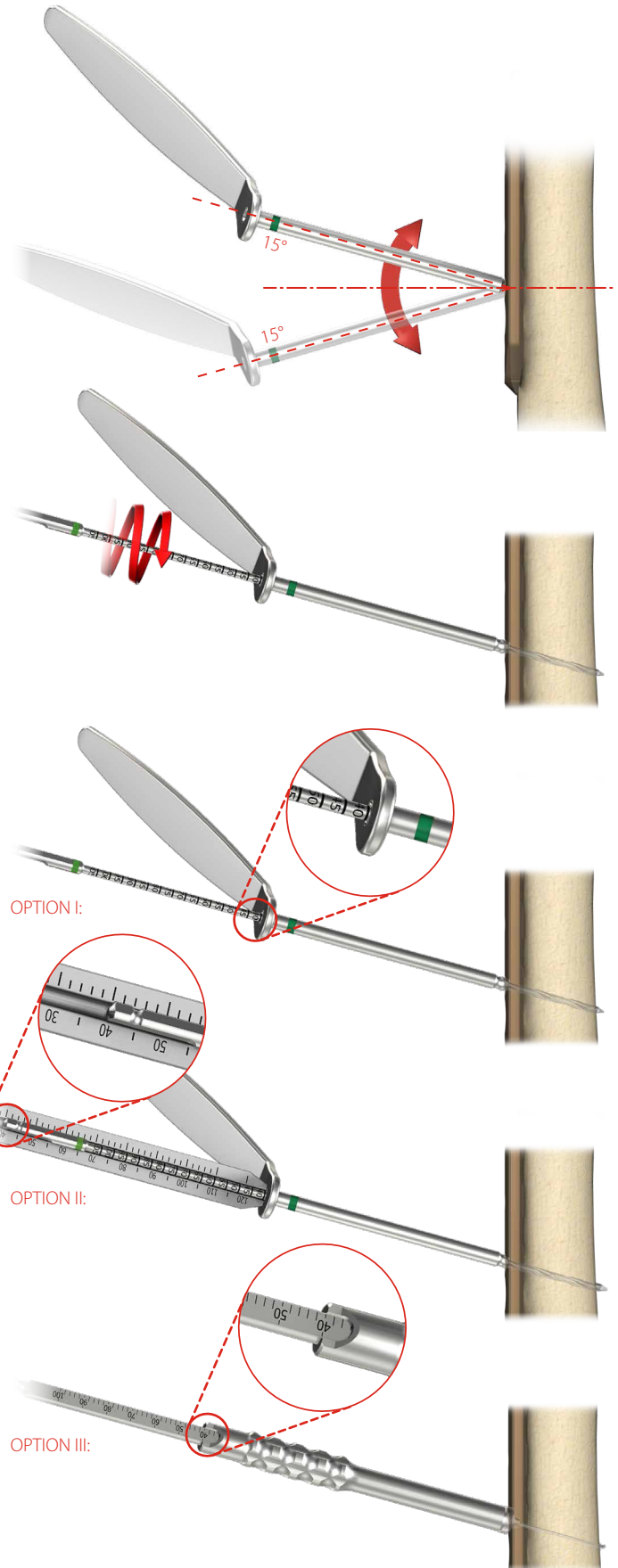


40.5675.500

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

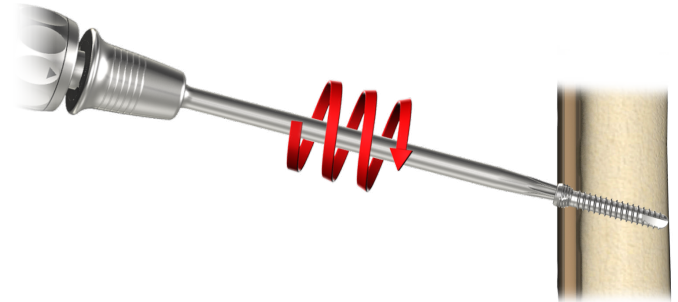
Use torque limiting ratchet handle 2Nm **[40.6652.000]** and screwdriver tip T15 **[40.5677.000]** to insert the VA screw.



40.6652.000



40.5677.000



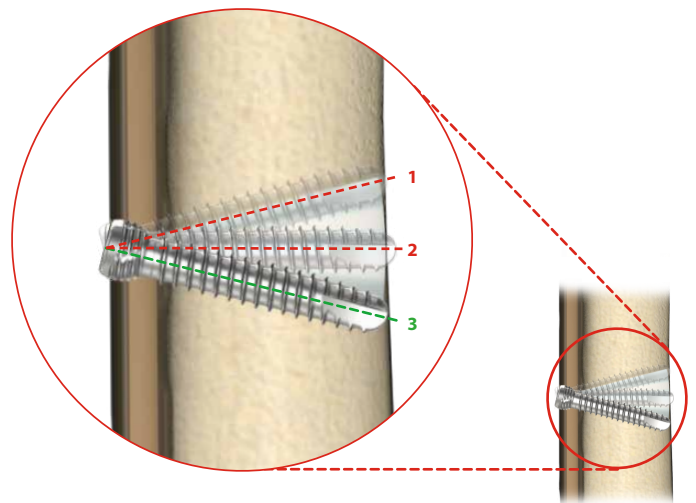
When using torque limiting handle to tighten the VA screw with large inclination in relation to the axis of the locking hole, the head of the screw may protrude above the plate. In this case, it may be necessary to use a handle ratchet device **[40.6654]** and screwdriver tip T15 **[40.5677]**. Use the 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



40.5677.000



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 post-operative 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







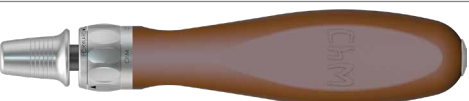


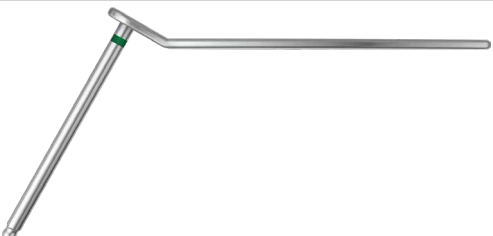
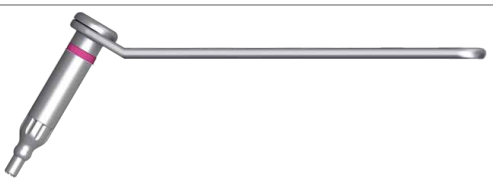



The physician decides about implant removal. In order to remove the implants from the body, unlock all the locking screws first and then remove them from the bone. This will prevent any rotation of the plate when removing the last locking screw.







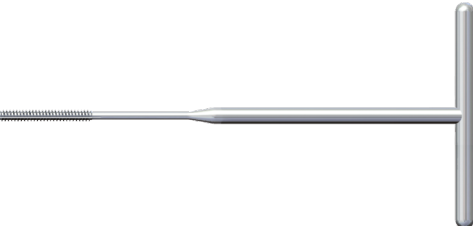
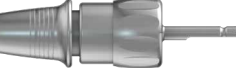
7. CATALOGUE PAGES

7.a. INSTRUMENT SET

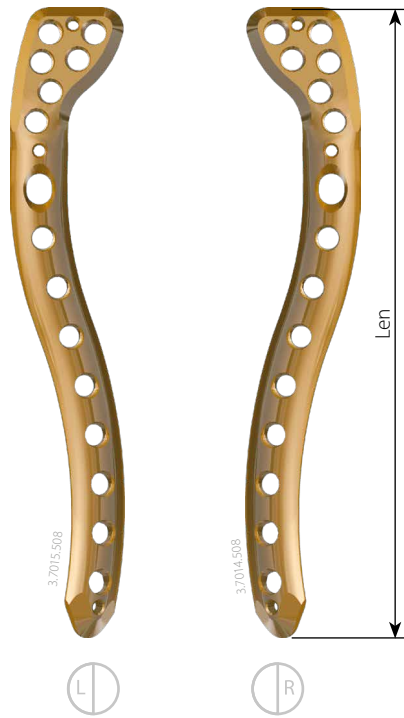
Instrument set for 5.0ChLP 4x4 1/2H

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

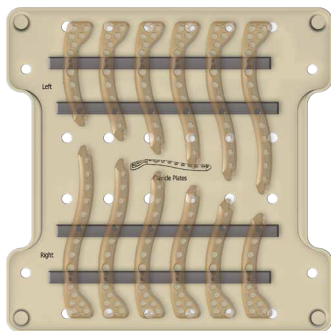
	Name	Catalogue No.	Pcs
	Tray for 5.0ChLP instrument set 4x4 1/2H	14.0205.202	1
	Setting-compressing screw 2.8/180	40.5674.728	1
	Screw length measure	40.5675.500	1
	Plates bender 5.0	40.4643.500	2
	Tripod screwdriver tip 5.0ChLP	40.6271.500	1
	T15 screwdriver tip with holder	40.6254.000	1
	Cortical tap 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 clavicle S plate



	Len	L	Ti	R
3	71	3.7015.503		3.7014.503
4	80	3.7015.504		3.7014.504
5	90	3.7015.505		3.7014.505
6	99	3.7015.506		3.7014.506
7	108	3.7015.507		3.7014.507
8	116	3.7015.508		3.7014.508
9	125	3.7015.509		3.7014.509
10	134	3.7015.510		3.7014.510
11	143	3.7015.511		3.7014.511

	TiA	Co		VA			
3.5200.xxx	✓		✓	✓	✓		3.5
4.5236.xxx		✓	✓	✓	✓		3.5
3.5205.xxx	✓		✓		✓		3.5
3.5225.xxx	✓		✓	✓	✓		2.4
3.5231.xxx	✓		✓	✓		✓	3.9
3.1306.xxx	✓		✓		✓		3.5
3.5207.006	✓		✓	✓			3.5

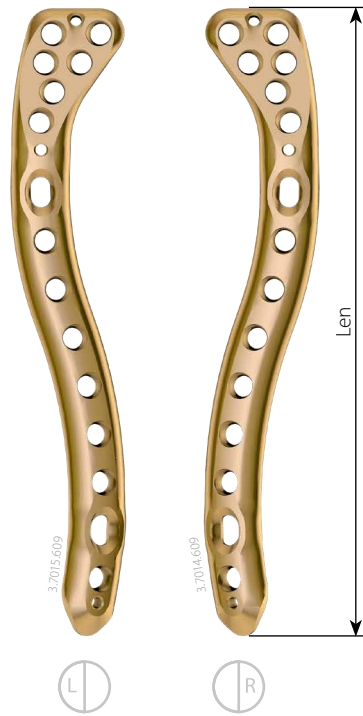


Tray for plates 5.0ChLP 3.7014/3.7015 4x4 1/2H 14.0205.405

Plate 3.7014.505 trial 43.7014.505
Plate 3.7015.505 trial 43.7015.505

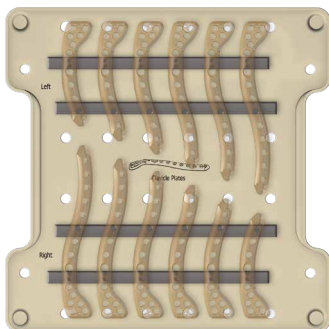
*Tray does not include implants

5.0ChLP clavicle S plate



	Len	L	Ti	R
4	71	3.7015.604		3.7014.604
5	80	3.7015.605		3.7014.605
6	90	3.7015.606		3.7014.606
7	99	3.7015.607		3.7014.607
8	108	3.7015.608		3.7014.608
9	116	3.7015.609		3.7014.609
10	125	3.7015.610		3.7014.610
11	134	3.7015.611		3.7014.611

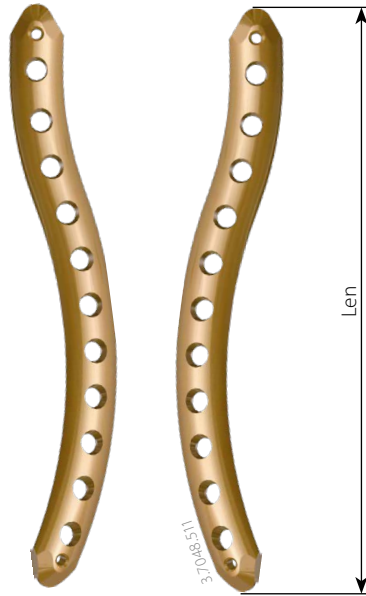
	TiA	Co		VA			
3.5200.xxx	✓		✓	✓	✓		3.5
4.5236.xxx		✓	✓	✓	✓		3.5
3.5205.xxx	✓		✓		✓		3.5
3.5225.xxx	✓		✓	✓	✓		2.4
3.5231.xxx	✓		✓	✓		✓	3.9
3.1306.xxx	✓		✓		✓		3.5
3.5207.006	✓		✓	✓			3.5



Tray for plates 5.0ChLP 3.7014/3.7015 4x4 1/2H 14.0205.405

*Tray does not include implants

5.0ChLP clavicle shaft S plate

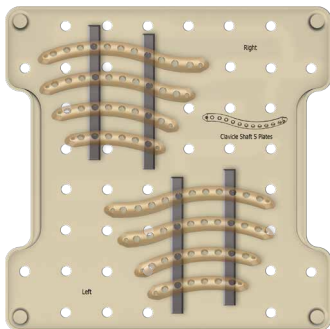


	Len	L	Ti	R
6	66	3.7049.506		3.7048.506
8	84	3.7049.508		3.7048.508
10	104	3.7049.510		3.7048.510

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	3.5200.xxx	✓	✓	✓	✓	3.5
	4.5236.xxx		✓	✓	✓	3.5
	3.5205.xxx	✓	✓		✓	3.5
	3.5225.xxx	✓	✓	✓	✓	2.4
	3.5231.xxx	✓	✓	✓		3.9
	3.1306.xxx	✓	✓		✓	3.5
	3.5207.006	✓	✓	✓		3.5



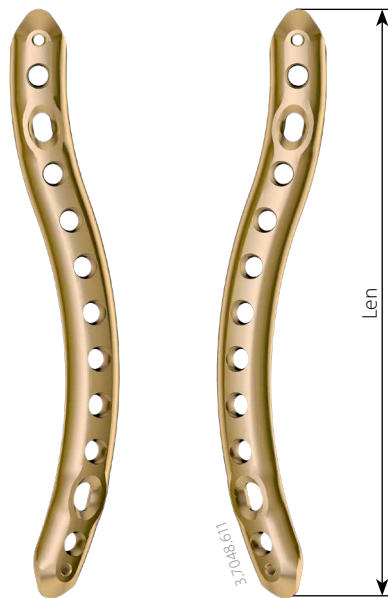
Tray for plates 5.0ChLP 3.7048/3.7049 4x4 1/2H 14.0205.406

Plate 3.7048.508 trial 43.7048.508

Plate 3.7049.508 trial 43.7049.508

* Tray does not include implants

5.0ChLP clavicle shaft S plate

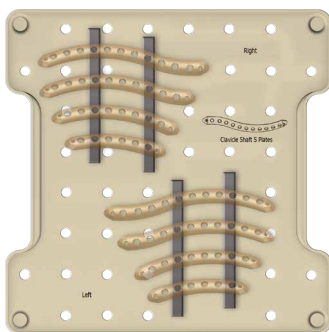


Len	L	R	Ti
66	3.7049.606	3.7048.606	
84	3.7049.608	3.7048.608	
104	3.7049.610	3.7048.610	

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Part Number	TiA	Co	Circle	Spiral	VA	C	Diamond	Arrow	Length
3.5200.xxx	✓		✓	✓		✓			3.5
4.5236.xxx		✓	✓	✓	✓	✓			3.5
3.5205.xxx	✓		✓			✓			3.5
3.5225.xxx	✓		✓	✓		✓			2.4
3.5231.xxx	✓		✓	✓			✓		3.9
3.1306.xxx	✓		✓			✓			3.5
3.5207.006	✓		✓	✓					3.5



Tray for plates 5.0ChLP 3.7048/3.7049 4x4 1/2H 14.0205.406

*Tray does not include implants

5.0ChLP self-tapping screw 3.5



Len	TiA
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
90	4.5236.090
95	4.5236.095

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

4.5ChLP screw 2.4



Len	Ti
16	3.5225.016
18	3.5225.018
20	3.5225.020
22	3.5225.022
24	3.5225.024
26	3.5225.026
28	3.5225.028
30	3.5225.030
32	3.5225.032
34	3.5225.034
36	3.5225.036
38	3.5225.038
40	3.5225.040

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