MEDIN
ORTHOPAEDIC
IMPLANTS

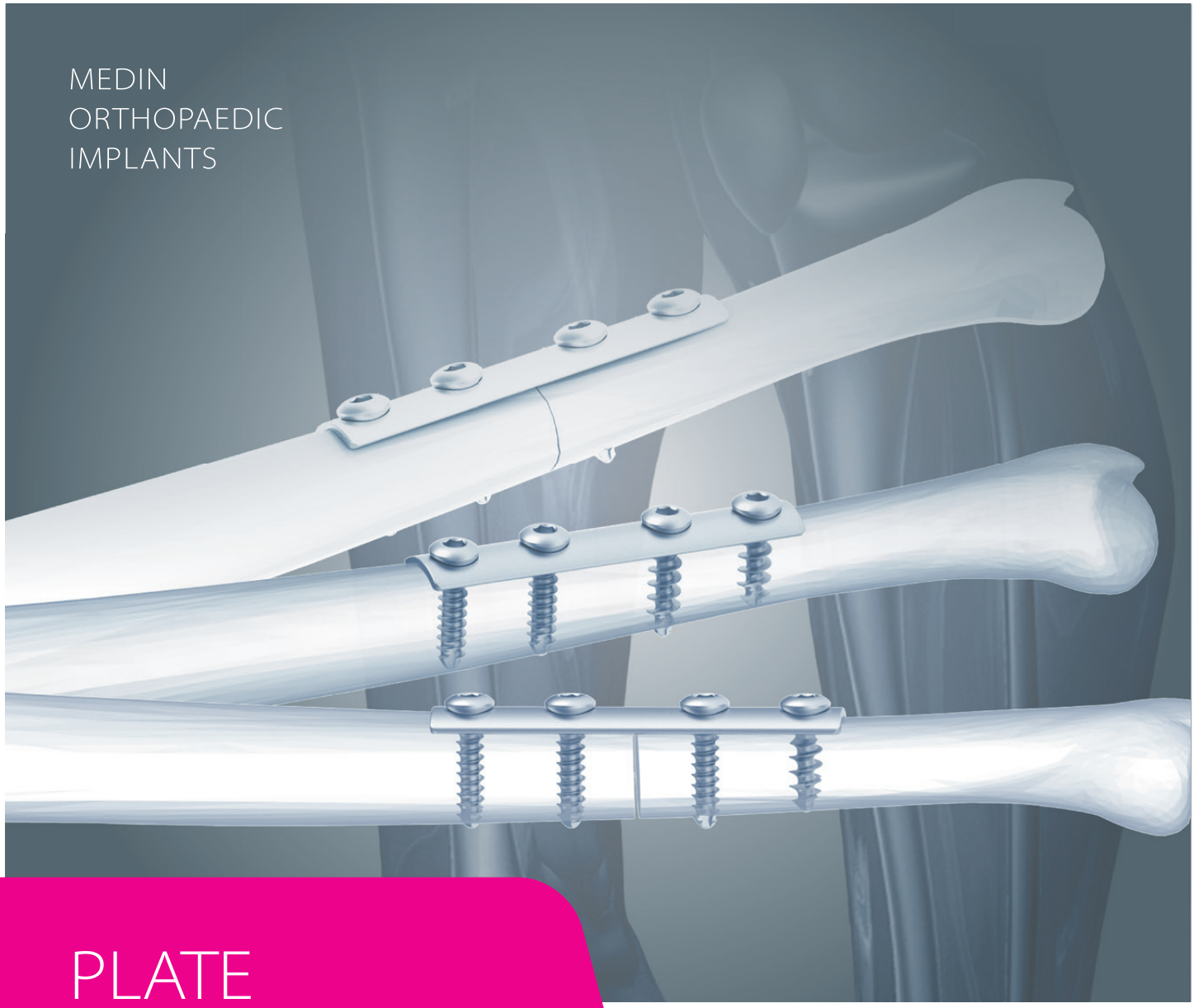


PLATE
TUBULAR

STEEL

→ IMPLANT SYSTEM

MEDIN®

Tubular plates are used for temporary osteosynthesis of ulna, radius and fibula fractures.

The goal of surgical treatment of fractures using a tubular plate with screws is a firm fixation of bone fragments and early active and passive movement of the operated limb.

The plate can be fixed with cortical screws HA 3.5 and cancellous screws HB 4.

Anatomical rounding of the plate edges minimizes soft tissue irritation.

The plates are made of implant steel.

PERSISTENT QUALITY OF OUR IMPLANTS GRANTS OSTEOSYNTHESES WITH PERSISTENT OUTCOMES

MEDIN IMPLANTS
FOR PRECISE CARE

CONTENT

SYMBOL LIST

Caution Note Instruments X-ray check

IMPLANT SYSTEM FEATURES

- One third tubular plate is anatomically shaped.
- Plate can be used for different tubular bones – ulna, radius, fibula.
- System is made of implant steel.
- Plate lengths range from 49 to 121 mm.
- Variants with 4, 5, 6, 7, 8 or 10 holes.

INDIKACE

1. Fractures of ulna.
2. Fractures of radius.
3. Fractures of fibula.

CAUTION

1. This Surgical Technique Manual does not contain enough information necessary for immediate use of the implant! Always get acquainted with all information on product label and in the Instruction for Use manual supplied by the manufacturer before using and MEDIN, a. s., products.
2. The use of this device is intended exclusively for physicians specialized in traumatology, orthopedy, and surgery, who went through the professional training for the device provided by MEDIN, a. s.
3. The implant system contains, in addition to the plate itself, other implantable components and instruments designed for its insertion and extraction. All devices and instruments intended for use with this device are listed in the corresponding part of this ST Manual. Compatibility of individual implants and instruments has been tested and certified. Combined use with other implants or instruments is not permitted since it could lead to a damage of the implant and/or harming of the patient.

   MEDIN, a. s., bears no responsibility for any possible complications due to a breach of this directive.
4. Perioperative X-ray checks are recommended for verification of the plate and screws position.

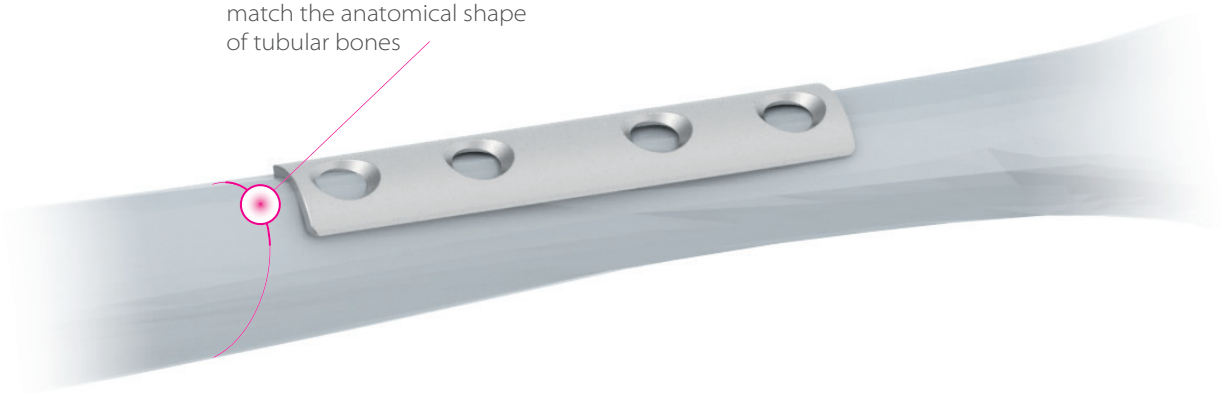
Note

The symbol of X-ray radiation always represents the necessity of carrying out the X-ray multi-projection imaging checks.

5. The supplied implants are not sterile and are intended for sterilisation before use. Instructions necessary for the preparation of the implants can be found in the Instructions for Use manual.
6. Always check the number of previous uses of the drill bit. The limit has been assessed to maximum of 30 uses per a drill bit. After reaching the limit, do not extend the use of the drill bit. Either dispose of it or send it back to the manufacturer for resharpening. Failing that creates the risk of a prolonged surgery or of making driving in the screws impossible.
7. Make sure the surface of the instruments is unimpaired, and that they are correctly set and functional. Do not use impaired instruments; neither those with unreadable label marks; nor those that bear signs of corrosion; or those with a blunt blade. Dispose of such instruments.

   Your MEDIN, a. s., sales representative will provide you with further detailed instructions regarding functionality testing. Only the manufacturer is authorized to carry out service maintenance.

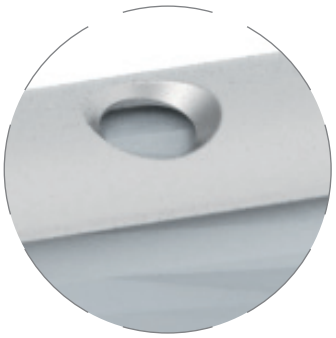
Shape of the plate
is designed so as to best match the anatomical shape of tubular bones



FUNCTIONAL ELEMENTS OF THE PLATE

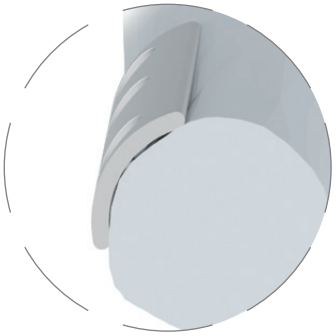
> The functional elements of the plate are the holes for cortical screws HA 3.5 or cancellous screws HB 4.

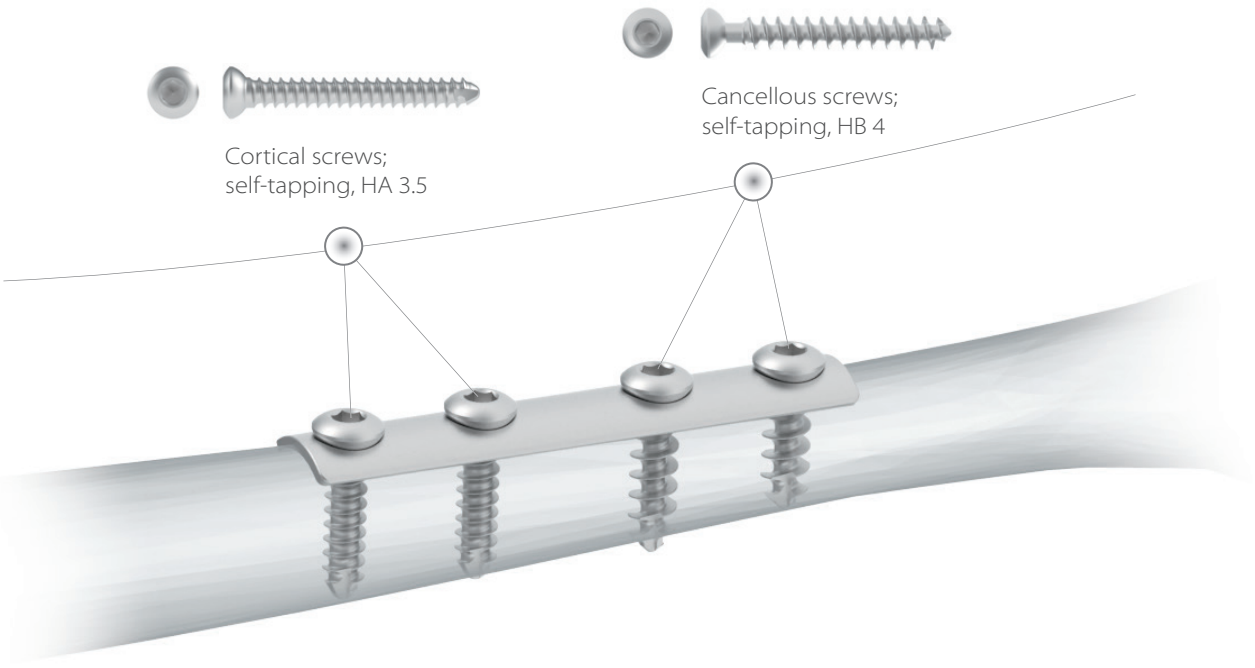
>The plate has a profile of one third of a cylinder shell to match the shape of tubular bones as best as possible.



RECOMMENDED TYPES OF SCREWS

> Recommended screws for use together with the tubular plates are Cortical self-tapping screws HA 3.5 or Cancellous self-tapping screws HB 4.





PREOPERATIVE PLANNING

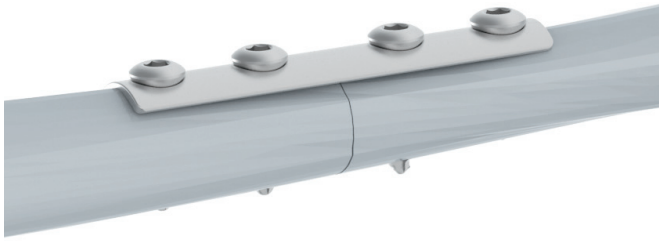
Selection of a suitable plate is crucial for successful osteosynthesis. Choose the plate variant with regard to the nature and location of the fracture, the patient's anatomy and the subsequent rehabilitation plan. For a list of all available plate variants, see section C of this surgical technique manual.

Before starting the measurement, verify the position of the individual bone fragments under sciascopic control. Then verify the measurement in relation to the performed reduction.

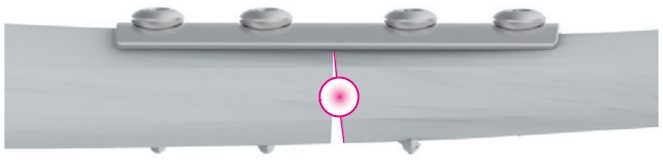
Use X-ray projections to determine the appropriate variant of the plate - the required number of holes (screws) in individual fragments and thus the length of the plate.

Caution

Pay special attention to selection of plate and screw type for multifragmental fractures and osteoporotic bone.



→ Fig. 2.1



→ Fig. 2.2

01

PATIENT POSITIONING, REDUCTION, SURGICAL APPROACH

- One third plates can be used for osteosynthesis of different types of fractures of different tubular bones (ulna, radius and fibula). For this reason, this surgical technique is generalized.
- Select the patient's position and surgical approach with regard to the implantation site.
- Perform (closed) reduction manually under sciascopic control on the extension device of the operating table. If the results are not satisfactory, perform an open reduction.
- The reduced bone can be clamped (unless it is a transverse fracture). In the case of multifragmental fractures, external temporary fixation of fragments using an external fixator or distractor may also be considered.

Note

Precise anatomical reduction and safe immobilization of the patient on the operating table is essential to achieve a good result of the operation.

02

PLATE POSITIONING

- Perform the incision and access to the bone according to the general AO principles applicable to the operated limb/bone.
- Place the plate on the bone surface so that it copies the line of the bone axis and the center of the plate spans the fracture site. The fracture is bridged by a part of the plate, where there is a larger gap between the individual holes than in the rest of the plate [Fig. 2.1].
- The plate can be temporarily fixed to the bone surface, e.g. with clamps.

Caution

Pay attention to the location of the plate relative to the medullary cavity. The holes in the plate must point through the medullary cavity of the bone, otherwise there is a risk of inserting the screw outside the medullary cavity and increasing the risk of secondary fracture.

Note

If the plate accurately copies the surface of the bone prior to securing with screws, tightening the screws may cause the fracture fragments on the opposite side of the bone to retract [Fig. 2.2]. It is therefore recommended to slightly bend the plate in the middle part between the holes so that there is a gap of approximately 1–2 mm between the center of the plate and the surface of the bone at the fracture site.

03
PLATE FIXATION

- When drilling holes for screws and inserting screws, the sizes of the drills differ depending on the intended purpose of the screw (for the procedure of using lag screws outside the plate see chapter 04).

Note

For easier orientation, the drilling tools are color-coded.

- HA 3.5 cortical screws and HB 4 cancellous screws are intended for use with the one third tubular plate.
- Introduce the HA 3.5 cortical screws and the HB 4 cancellous screws according to the following procedure.
- Introduce a 6/2.5 x 25 mm drill sleeve (red marking) to the plate hole closest to the fracture. [Fig. 3.1]
- Using a 2.5 x 125 mm drill bit (red marking), drill a hole through both cortices through the drill sleeve. [Fig. 3.2] Sciascopically check the passage of the drill through the medullary cavity and avoid damage to soft tissues after the drill has passed through the far cortex.
- Insert the 1.8 x 80 mm depth gauge hook into the pre-drilled hole and hook it into the outer surface of the far cortex. Read the length of the screw from the scale on the depth gauge. [Fig. 3.3] Introduce the cortical screw into the pre-drilled hole in the plate using an AO hex 2.5 mm screwdriver fixed in the AO handle. [Fig. 3.4]
- In the second fracture fragment, fix the plate to the bone following the same procedure as previously. [Fig. 3.5]

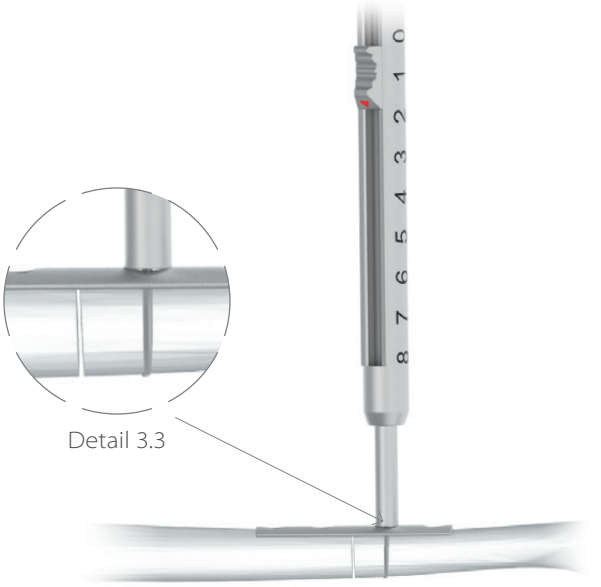
Note

It is not necessary to introduce screws into all holes in the plate. For forearm bones, it is recommended to use at least three screws for each fracture fragment.

- When securing multiple fracture fragments in place with a plate, perform the fixation sequentially: first secure the first two fragments using the procedure above.
- Next, secure the other fragment(s) in the same way - predrill a hole with a 2.5 x 125 mm drill bit through the 6/2.5 x 20 mm drill sleeve, measure the length of the required screw with a 1.8 x 80 mm depth gauge and insert the screw with an AO hex 2.5 mm screwdriver.

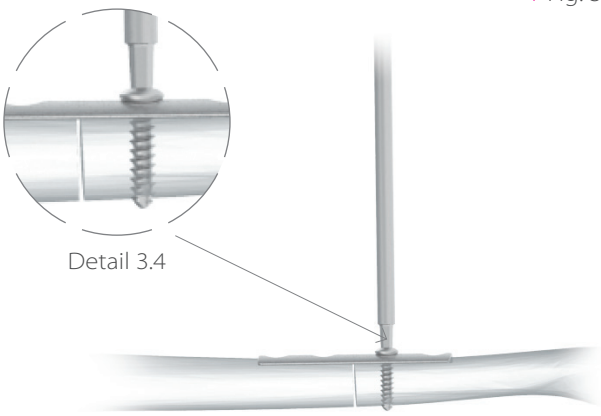
→ Fig. 3.1

→ Fig. 3.2



Detail 3.3

→ Fig. 3.3



Detail 3.4

→ Fig. 3.4

→ Fig. 3.5

→ INSTRUMENTS

REF	Name
397 129 69 8750	Dril sleeve; 6/3.5 x 20 mm; 6/2.5 x 25 mm
397 129 69 8770	Drill; 2.5 x 125 mm, AO coupling
397 129 69 7675	Depth gauge; 1.8 x 80 mm
397 129 69 5231	Screwdriver; AO, hex, 2.5 x 160 mm, conical
BD23-110-AO	Handle AO; 30 x 151 mm

04

FIXATION OF FRAGMENTS OUTSIDE PLATE

- In the case of multifragmental fractures and also to increase the fixation stability and reduce the wear of the plate, it may be convenient to use a cortical screw to connect the fragments outside the plate. In that case, first pre-drill the first cortex through a 6/3.5 x 20 mm drill sleeve (black marking) with a larger 3.5 x 125 mm drill bit (black marking). [Fig. 4.1] The use of a larger drill will allow the screw to pass freely through the first cortex and firmly tighten the second fracture fragment.
- Then insert the 6/2.5 x 25 mm drill sleeve (red marking) into the drilled hole and drill a hole in the far cortex with a 2.5 x 125 mm drill bit (red marking). [Fig. 4.2]
- Before introducing the screw outside the plate, manually create a conical hole for the screw head with a 6 mm countersink to ensure its best alignment with the bone surface. [Fig. 4.3]
- Insert the screw with an AO hex 2.5 mm screwdriver fastened to the AO handle. [Fig. 4.4]

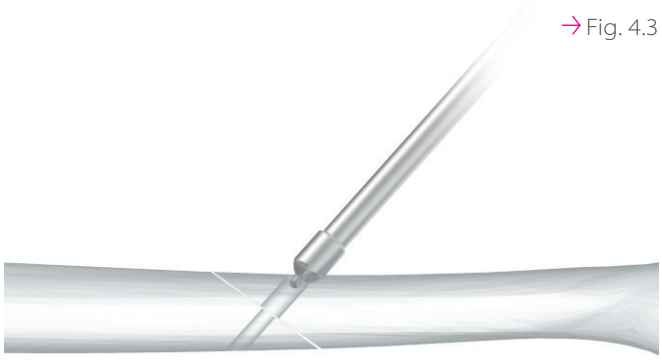
→ INSTRUMENTS

REF	Name
397 129 69 8750	Dril sleeve; drill, 6/3.5 x 20 mm; 6/2.5 x 25 mm
397 129 69 8790	Drill; 3.5 x 125 mm, AO coupling
397 129 69 9491	Countersink; 6 mm
397 129 69 7675	Depth gauge; 1.8 x 80 mm
397 129 69 5231	Screwdriver; AO, hex, 2.5 x 160 mm, conical
BD23-110-AO	Handle AO; 30 x 151 mm

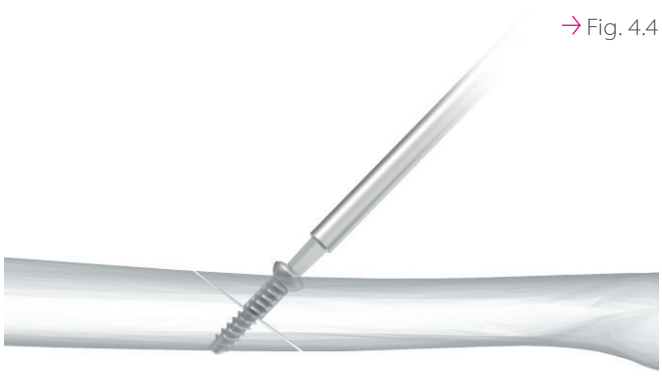
→ Fig. 4.1

→ Fig. 4.2

→ Fig. 4.3



→ Fig. 4.4



05

PLATE EXTRACTION

- The plate can be extracted with the standard tools under X-ray control if needed.
- In case of any doubts, do not hesitate to contact the sales representative of MEDIN, a. s.

→ TUBULAR PLATES

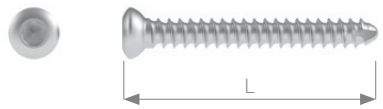
Tubular plates

REF	Variant	Plate length L [mm]	Number of holes
397 129 78 1090	1/3, 4 holes, 49 mm	49	4
397 129 78 1100	1/3, 5 holes, 61 mm	61	5
397 129 78 1110	1/3, 6 holes, 73 mm	73	6
397 129 78 1120	1/3, 7 holes, 85 mm	85	7
397 129 78 1130	1/3, 8 holes, 97 mm	97	8
397 129 78 1140	1/3, 10 holes, 121 mm	121	10

	REF	Name	pcs
	397 129 68 2660	Basket; for tubular plates	1
		240 x 240 x 41 mm excluding implants	

→ CORTICAL SCREWS

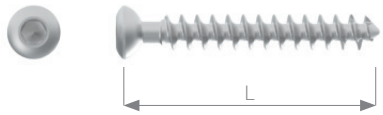
Cortical screw; self-tapping, HA 3,5 x L mm



Technical data	Diameter [mm]
Drill	2,5
Screwdriver	⬡ 2,5

REF	L [mm]
397 129 79 5201	8
397 129 79 5211	10
397 129 79 5221	12
397 129 79 5231	14
397 129 79 5241	16
397 129 79 5251	18
397 129 79 5261	20
397 129 79 5271	22
397 129 79 5281	24
397 129 79 5291	26
397 129 79 5301	28
397 129 79 5311	30
397 129 79 5321	32
397 129 79 5331	34
397 129 79 5341	36
397 129 79 5351	38
397 129 79 5361	40
397 129 79 5371	42
397 129 79 5441	44
397 129 79 5451	46
397 129 79 5461	48
397 129 79 5391	50
397 129 79 5401	55
397 129 79 5411	60
397 129 79 5421	65
397 129 79 5431	70

Cancellous screw; self-tapping, HA 4 x L mm



Technical data	Diameter [mm]
Drill	2,0
Screwdriver	⬡ 2,5

REF	L [mm]
397 129 79 6000	14
397 129 79 6010	16
397 129 79 6020	18
397 129 79 6030	20
397 129 79 6040	22
397 129 79 6050	24
397 129 79 6060	26
397 129 79 6070	28
397 129 79 6080	30
397 129 79 6090	32
397 129 79 6630	34
397 129 79 6640	36
397 129 79 6650	38
397 129 79 6110	40
397 129 79 6660	42
397 129 79 6670	44
397 129 79 6680	46
397 129 79 6690	48
397 129 79 6130	50
397 129 79 6140	55
397 129 79 6150	60

→ INSTRUMENTS FOR TUBULAR PLATES

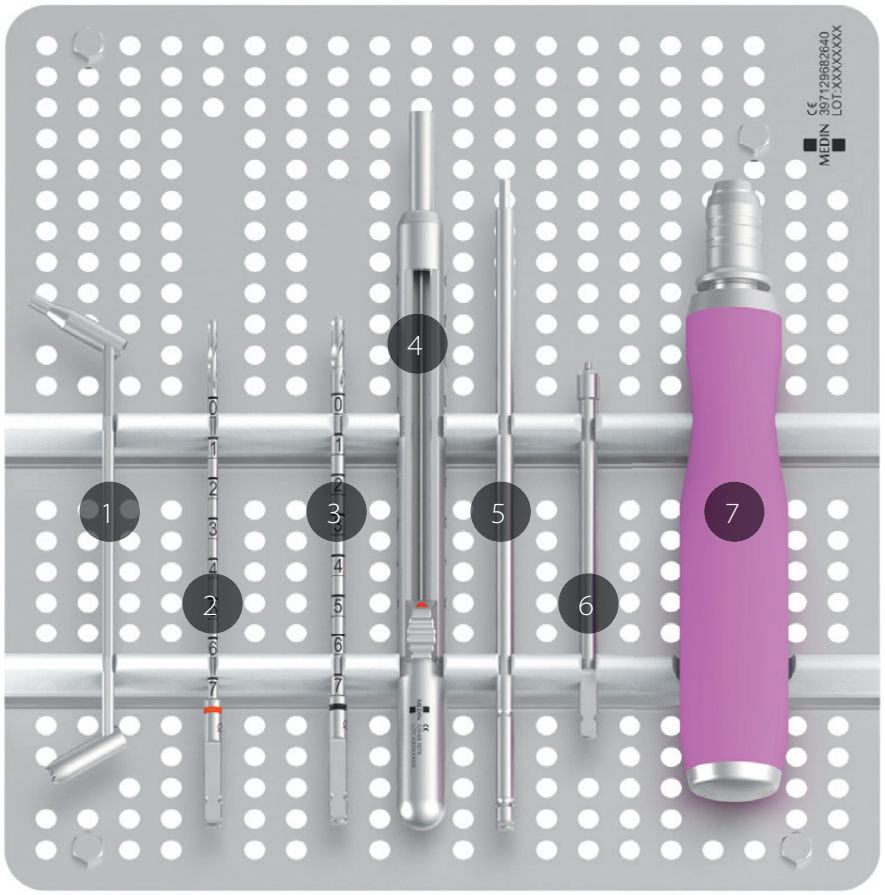
	397 139 09 1310	Set of instruments for tubular plates – instruments	1
No.	**REF**	**Name**	**pcs**
1	397 129 69 8750	Dril sleeve; drill, 6/3.6 x 20 mm; 6/2.5 x 25 mm	1
2	397 129 69 8770	Drill; 2.5 x 125 mm, AO coupling	2
3	397 129 69 8790	Drill; 3.5 x 125 mm, AO coupling	2
4	397 129 69 7675	Depth gauge; 1.8 x 80 mm	1
5	397 129 69 5231	Screwdriver; AO, hex, 2.5 x 160 mm, conical	2
6	397 129 69 9491	Countersink; 6 mm	1
7	BD23-110-AO	Handle AO; 30 x 151 mm	1

	REF	Name	pcs
	397 129 68 2640	Basket; for instruments for tubular plates	1
		240 x 240 x 50 mm excluding instruments	

	REF	Name	pcs
	397 129 68 2650	Stand; for screws for tubular plates	1
		220 x 125 x 82,5 mm excluding instruments	

→ INSTRUMENTS DIAGRAM

BASKET 1



Note

Instruments are color-coded.

→ INSTRUMENTS

No.	Name
1	Dril sleeve; 6/3.6x20 mm; 6/2.5 x 25 mm
2	Drill; 2.5 x 125 mm, AO coupling
3	Drill; 3.5 x 125 mm, AO coupling
4	Depth gauge; 1.8 x 80 mm
5	Screwdriver; AO, hex, 2.5 x 160 mm, conical
6	Countersink; 6 mm
7	Handle AO; 30 x 151 mm

Tubular plate

REF	UDI-DI	Variant
397 129 78 1090	8591712031533	1/3, 4 holes, 49 mm
397 129 78 1100	8591712031540	1/3, 5 holes, 61 mm
397 129 78 1110	8591712031557	1/3, 6 holes, 73 mm
397 129 78 1120	8591712031564	1/3, 7 holes, 85 mm
397 129 78 1130	8591712031571	1/3, 8 holes, 97 mm
397 129 78 1140	8591712237294	1/3, 10 holes, 121 mm

Cortical screw

REF	UDI-DI	Variant
397 129 79 5201	8591712035609	self-tapping, HA 3,5 x 8 mm
397 129 79 5211	8591712035623	self-tapping, HA 3,5 x 10 mm
397 129 79 5221	8591712035647	self-tapping, HA 3,5 x 12 mm
397 129 79 5231	8591712035661	self-tapping, HA 3,5 x 14 mm
397 129 79 5241	8591712035685	self-tapping, HA 3,5 x 16 mm
397 129 79 5251	8591712035708	self-tapping, HA 3,5 x 18 mm
397 129 79 5261	8591712035722	self-tapping, HA 3,5 x 20 mm
397 129 79 5271	8591712035746	self-tapping, HA 3,5 x 22 mm
397 129 79 5281	8591712035760	self-tapping, HA 3,5 x 24 mm
397 129 79 5291	8591712035791	self-tapping, HA 3,5 x 26 mm
397 129 79 5301	8591712035814	self-tapping, HA 3,5 x 28 mm
397 129 79 5311	8591712035838	self-tapping, HA 3,5 x 30 mm
397 129 79 5321	8591712035852	self-tapping, HA 3,5 x 32 mm
397 129 79 5331	8591712035883	self-tapping, HA 3,5 x 34 mm
397 129 79 5341	8591712035906	self-tapping, HA 3,5 x 36 mm
397 129 79 5351	8591712035920	self-tapping, HA 3,5 x 38 mm
397 129 79 5361	8591712035944	self-tapping, HA 3,5 x 40 mm
397 129 79 5371	8591712035968	self-tapping, HA 3,5 x 42 mm
397 129 79 5441	8591712138492	self-tapping, HA 3,5 x 44 mm
397 129 79 5451	8591712138508	self-tapping, HA 3,5 x 46 mm
397 129 79 5461	8591712138515	self-tapping, HA 3,5 x 48 mm
397 129 79 5391	8591712036002	self-tapping, HA 3,5 x 50 mm
397 129 79 5401	8591712036026	self-tapping, HA 3,5 x 55 mm
397 129 79 5411	8591712036040	self-tapping, HA 3,5 x 60 mm
397 129 79 5421	8591712036064	self-tapping, HA 3,5 x 65 mm
397 129 79 5431	8591712036088	self-tapping, HA 3,5 x 70 mm

Cancellous screw

REF	UDI-DI	Variant
397 129 79 6000	8591712036606	self-tapping, HB 4 x 14 mm
397 129 79 6010	8591712036613	self-tapping, HB 4 x 16 mm
397 129 79 6020	8591712036620	self-tapping, HB 4 x 18 mm
397 129 79 6030	8591712036637	self-tapping, HB 4 x 20 mm
397 129 79 6040	8591712036644	self-tapping, HB 4 x 22 mm
397 129 79 6050	8591712036651	self-tapping, HB 4 x 24 mm
397 129 79 6060	8591712036668	self-tapping, HB 4 x 26 mm
397 129 79 6070	8591712036675	self-tapping, HB 4 x 28 mm
397 129 79 6080	8591712036682	self-tapping, HB 4 x 30 mm
397 129 79 6090	8591712036699	self-tapping, HB 4 x 32 mm
397 129 79 6630	8591712141577	self-tapping, HB 4 x 34 mm
397 129 79 6640	8591712141584	self-tapping, HB 4 x 36 mm
397 129 79 6650	8591712141591	self-tapping, HB 4 x 38 mm
397 129 79 6110	8591712036712	self-tapping, HB 4 x 40 mm
397 129 79 6660	8591712141607	self-tapping, HB 4 x 42 mm
397 129 79 6670	8591712141614	self-tapping, HB 4 x 44 mm
397 129 79 6680	8591712141621	self-tapping, HB 4 x 46 mm
397 129 79 6690	8591712141638	self-tapping, HB 4 x 48 mm
397 129 79 6130	8591712036736	self-tapping, HB 4 x 50 mm
397 129 79 6140	8591712036743	self-tapping, HB 4 x 55 mm
397 129 79 6150	8591712036750	self-tapping, HB 4 x 60 mm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MEDIN ORTHOPAEDIC IMPLANTS

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