

1	Marknagelung Intramedullary Nailing
2	Hüftnägel, Winkelplatten, Dynamische Hüftschrauben Hip Nails, Angled Plates, Dynamic Hip Screws
3	Grundinstrumentarium Basic Instrumentation
4	Klein- und Mini - Instrumentarium Small and Mini Instrumentation
5	Durchbohrte Schrauben, Epiphysenklammern Cannulated Screws, Staples
6	Mini - Platten Osteosynthese - System Mini Plate and Osteosynthesis System
7	Drahtinstrumente, Kirschnerdrähte, Extensionsbügel Wire Instruments, Kirschner Wires, Extension Bows
8	Fixateur Fixator
9	Allgemeine Instrumente General Surgical Instruments
10	Gipssäge mit Staubsaugsystem Plaster saw with removal dust system
11	
12	
13	Wirbelsäulenprodukte Spinal Surgery Products
14	Bohrgeräte Drills
15	Sterilisier - Container und Zubehör Sterilizing Containers and Accessories
16	Grafic Cases
17	Becken - Instrumentarium und Implantate Pelvic - Instruments and Implants
18	Hüft-, Knie - und Schulterprothesen Hip, Knee and Shoulder Prostheses
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Küntscher Instrumentation Set



M 01040 Küntscher Instrumentation Set

151010 Container

153012 Tray

11096 1 Diamond Point Awl. Femur 10 mm
11100 1 Reamer
11102 1 Slotted Hammer
11104 1 Slotted Nail Driver
11106 1 Nail Driver 6 - 8 mm
11108 1 Nail Driver 9 - 12 mm
11110 1 Nail Driver 13 - 20 mm
11120 1 Nail Extractor with 2 hooks
11888 1 Measuring Gauge
9704 1 Mallet

Küntscher Cloverleaf Medullary Nails - Single Slot



Length	6 mm	7 mm	8 mm	9 mm	10 mm	11 mm	12 mm	13 mm	14 mm	15 mm	16 mm	17 mm	18 mm
14 cm	010006	010020											
16 cm	010007	010021											
18 cm	010008	010022											
20 cm	010009	010023											
22 cm	010010	010024											
24 cm	010011	010025	010040										
26 cm	010012	010026	010041										
28 cm	010013	010027	010042										
30 cm	010014	010028	010043	010060									
32 cm	010015	010029	010044	010061	010080	010110							
34 cm	010016	010030	010045	010062	010081	010111	010130	010150	010170				
36 cm	010017	010031	010046	010063	010082	010112	010131	010151	010171	010190	010210	010230	010250
38 cm		010032	010047	010064	010083	010113	010132	010152	010172	010191	010211	010231	010251
40 cm		010033	010048	010065	010084	010114	010133	010153	010173	010192	010212	010232	010252
42 cm			010049	010066	010085	010115	010134	010154	010174	010193	010213	010233	010253
44 cm			010050	010067	010086	010116	010135	010155	010175	010194	010214	010234	010254
46 cm			010051	010068	010087	010117	010136	010156	010176	010195	010215	010235	010255
48 cm			010052	010069	010088	010118	010137	010157	010177	010196	010216	010236	010256
50 cm			010053	010070	010089	010119	010138	010158	010178	010197	010217	010237	010257
52 cm				010071	010090	010120	010139	010159	010179	010198	010218	010238	010258

Küntscher Cloverleaf Medullary Nails - Double Slot

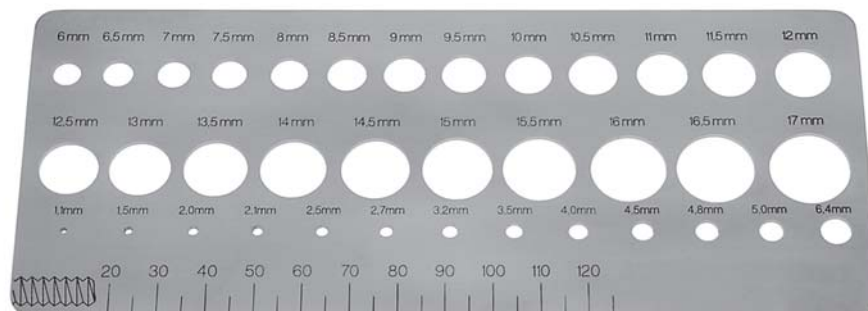


Length	6 mm	7 mm	8 mm	9 mm	10 mm	11 mm	12 mm	13 mm	14 mm	15 mm	16 mm	17 mm	18 mm
14 cm	010300	010320											
16 cm	010301	010321											
18 cm	010302	010322											
20 cm	010303	010323											
22 cm	010304	010324											
24 cm	010305	010325	010340										
26 cm	010306	010326	010341										
28 cm	010307	010327	010342										
30 cm	010308	010328	010343	010360									
32 cm	010309	010329	010344	010361	010380	010410							
34 cm	010310	010330	010345	010362	010381	010411	010430	010450	010470				
36 cm	010311	010331	010346	010363	010382	010412	010431	010451	010471	010490	010500	010520	010540
38 cm		010332	010347	010364	010383	010413	010432	010452	010472	010491	010501	010521	010541
40 cm		010333	010348	010365	010384	010414	010433	010453	010473	010492	010502	010522	010542
42 cm			010349	010366	010385	010415	010434	010454	010474	010493	010503	010523	010543
44 cm			010350	010367	010386	010416	010435	010455	010475	010494	010504	010524	010544
46 cm			010351	010368	010387	010417	010436	010456	010476	010495	010505	010525	010545
48 cm			010352	010369	010388	010418	010437	010457	010477	010496	010506	010526	010546
50 cm			010353	010370	010389	010419	010438	010458	010478	010497	010507	010527	010547
52 cm				010371	010390	010420	010439	010459	010479	010498	010508	010528	010548

Küntscher Nails for Humerus and Tibia



Length	6 mm	7 mm	8 mm	9 mm	10 mm	11 mm	12 mm	13 mm	14 mm
18 cm	010560	010580	010610	010640	010670	010700	010730	010760	
19 cm	010561	010581	010611	010641	010671	010701	010731	010761	
20 cm	010562	010582	010612	010642	010672	010702	010732	010762	
21 cm	010563	010583	010613	010643	010673	010703	010733	010763	
22 cm	010564	010584	010614	010644	010674	010704	010734	010764	
23 cm	010565	010585	010615	010645	010675	010705	010735	010765	
24 cm	010566	010586	010616	010646	010676	010706	010736	010766	
25 cm	010567	010587	010617	010647	010677	010707	010737	010767	
26 cm	010568	010588	010618	010648	010678	010708	010738	010768	
27 cm	010569	010589	010619	010649	010679	010709	010739	010769	
28 cm	010570	010590	010620	010650	010680	010710	010740	010770	
29 cm	010571	010591	010621	010651	010681	010711	010741	010771	
30 cm	010572	010592	010622	010652	010682	010712	010742	010772	010790
31 cm		010593	010623	010653	010683	010713	010743	010773	010791
32 cm		010594	010624	010654	010684	010714	010744	010774	010792
33 cm		010595	010625	010655	010685	010715	010745	010775	010793
34 cm		010596	010626	010656	010686	010716	010746	010776	010794
35 cm		010597	010627	010657	010687	010717	010747	010777	010795
36 cm		010598	010628	010658	010688	010718	010748	010778	010796
37 cm		010599	010629	010659	010689	010719	010749	010779	010797
38 cm		010600	010630	010660	010690	010720	010750	010780	010798
39 cm		010601	010631	010661	010691	010721	010751	010781	010799
40 cm		010602	010632	010662	010692	010722	010752	010782	010800



11888

Measuring Gauge for Nails

Instruments for Intramedullary Nailing



Flexible Medullary Reamer (Hudson Connection)

∅	6,0 mm	6,5 mm	7,0 mm	7,5 mm	8,0 mm	8,5 mm	9,0 mm	9,5 mm	
	10950	10952	10954	10956	10958	10960	10962	10964	
∅	10,0 mm	10,5 mm	11,0 mm	11,5 mm	12,0 mm	12,5 mm	13,0 mm	13,5 mm	14,0 mm
	10966	10968	10970	10972	10974	10976	10978	10980	10982
∅	14,5 mm	15,0 mm	15,5 mm	16,0 mm	16,5 mm	17,0 mm	17,5 mm	18,0 mm	
	10984	10986	10988	10990	10992	10994	10996	10998	



Flexible Medullary Reamer (Aesculap Connection)

∅	6,0 mm	6,5 mm	7,0 mm	7,5 mm	8,0 mm	8,5 mm	9,0 mm	9,5 mm	
	11002	11004	11006	11008	11010	11012	11014	11016	
∅	10,0 mm	10,5 mm	11,0 mm	11,5 mm	12,0 mm	12,5 mm	13,0 mm	13,5 mm	14,0 mm
	11018	11020	11022	11024	11026	11028	11030	11032	11034
∅	14,5 mm	15,0 mm	15,5 mm	16,0 mm	16,5 mm	17,0 mm	17,5 mm	18,0 mm	
	11036	11038	11040	11042	11044	11046	11048	11050	

1.11874 Guide Rod for Reamer, ∅ 2,0 mm, Length 900 mm with ∅ 3,0 mm Spade Tip
use for flexible Reamer ∅ 6,0 - 7,5 mm

1.11879 Guide Rod for Reamer, ∅ 3,0 mm, Length 900 mm with ∅ 4,0 mm Spade Tip
use for flexible Reamer ∅ 8,0 - 18,0 mm



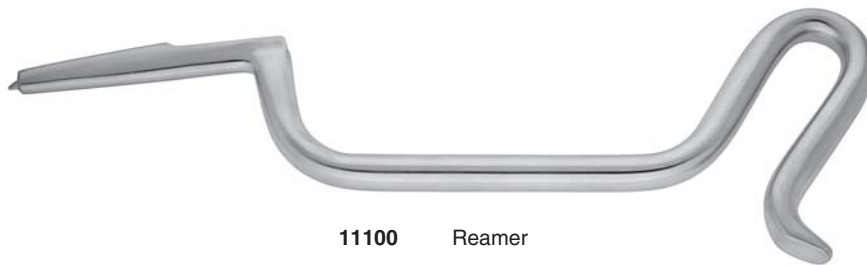
∅	6,0 mm	7,0 mm	8,0 mm	9,0 mm	10,0 mm	11,0 mm	12,0 mm	13,0 mm	14,0 mm
	11054	11056	11058	11060	11062	11064	11066	11068	11070
∅	15,0 mm	16,0 mm	17,0 mm	18,0 mm	19,0 mm	20,0 mm			
	11072	11074	11076	11078	11080	11082			

11086	Guide Pin	3.0 mm ∅	60 cm long
11088	Guide Pin	3.5 mm ∅	60 cm long
11090	Guide Pin	4.0 mm ∅	60 cm long
11092	Guide Pin	5.0 mm ∅	60 cm long

Instruments for Intramedullary Nailing



11096 Diamond Point Awl. Femur 10 mm
11098 Diamond Point Awl. Tibia 8 mm



11100 Reamer



11102 Slotted Hammer

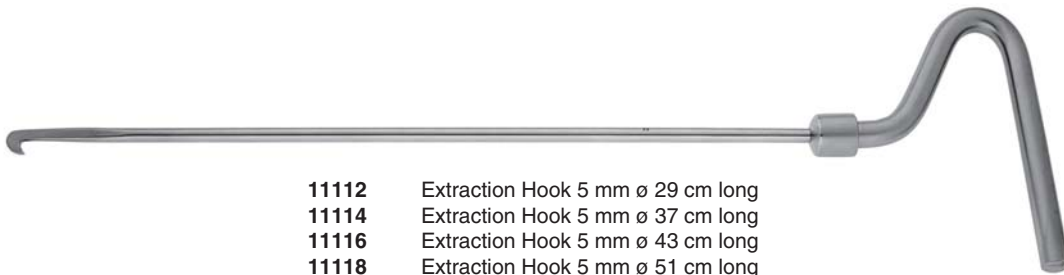
Instruments for Intramedullary Nailing



11104 Slotted Nail Driver



- 11106** Nail Driver for Nails 6 - 8 \emptyset
- 11108** Nail Driver for Nails 9 - 12 \emptyset
- 11110** Nail Driver for Nails 13 - 20 \emptyset



- 11112** Extraction Hook 5 mm \emptyset 29 cm long
- 11114** Extraction Hook 5 mm \emptyset 37 cm long
- 11116** Extraction Hook 5 mm \emptyset 43 cm long
- 11118** Extraction Hook 5 mm \emptyset 51 cm long



11121 Small Hook only



11122 Large Hook only



11120 Nail Extractor with 2 Hooks and Sliding Mallet

Round Intramedullary Pins



11140	Rush Medullary Pin 6,4 ø complete set	9 Pins with Rack
11142	Rush Medullary Pin 4,8 ø complete set	9 Pins with Rack
11144	Rush Medullary Pin 3,2 ø complete set	13 Pins with Rack
11146	Rush Medullary Pin 2,4 ø complete set	13 Pins with Rack
11148	Rush Medullary Pin 2,4 ø complete set	13 Pins with Rack

11141	Rack for Rush Medullary Set Pin 6,4 ø
11143	Rack for Rush Medullary Set Pin 4,8 ø
11145	Rack for Rush Medullary Set Pin 3,2 ø
11147	Rack for Rush Medullary Set Pin 2,4 ø



Individual Pins

6,4 ø	280 mm	295 mm	315 mm	335 mm	355 mm	375 mm	395 mm	410 mm	430 mm length
	11150	11151	11152	11153	11154	11155	11156	11157	11158
4,8 ø	205 mm	220 mm	240 mm	255 mm	280 mm	295 mm	315 mm	335 mm	355 mm length
	11160	11161	11162	11163	11164	11165	11166	11167	11168
3,2 ø	100 mm	115 mm	125 mm	140 mm	150 mm	165 mm	180 mm	190 mm	205 mm length
	11170	11171	11172	11173	11174	11175	11176	11177	11178
	215 mm	235 mm	240 mm	255 mm length					
	11179	11180	11181	11182					
2,4 ø	25 mm	30 mm	40 mm	45 mm	50 mm	60 mm	65 mm	70 mm	75 mm length
	11184	11185	11186	11187	11188	11189	11190	11191	11192
	85 mm	90 mm	95 mm	100 mm length					
	11193	11194	11195	11196					
2,4 ø	100 mm	115 mm	125 mm	140 mm	150 mm	165 mm	180 mm	190 mm	205 mm length
	11196	11199	11200	11201	11202	11203	11204	11205	11206
	215 mm	230 mm	240 mm	255 mm length					
	11207	11208	11209	11210					

Instruments for Round Intramedullary Pins



- 11214** Rush Awl. Reamer 6,4 \varnothing
- 11216** Rush Awl. Reamer 4,8 \varnothing
- 11218** Rush Awl. Reamer 3,2 \varnothing
- 11220** Rush Awl. Reamer 2,4 \varnothing



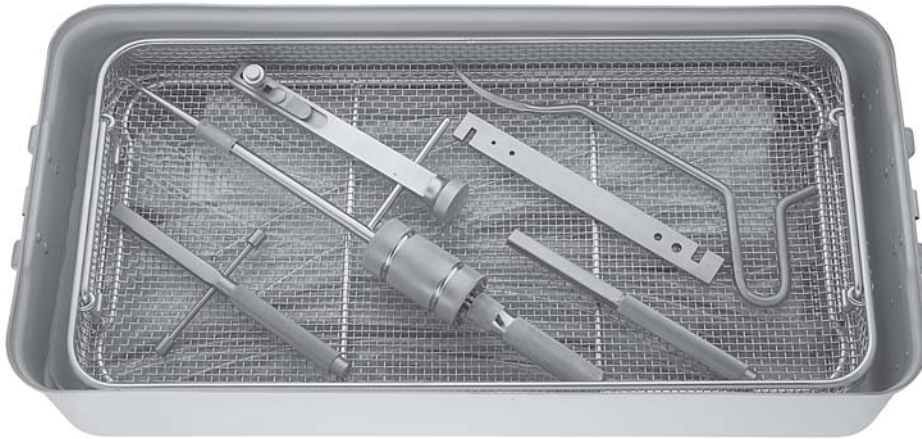
- 11224** Driver and Extractor 6,4 mm \varnothing
- 11226** Driver and Extractor 4,8 mm \varnothing
- 11228** Driver and Extractor 3,2 mm \varnothing
- 11230** Driver and Extractor 2,4 mm \varnothing



- 11234** Bender

4.5 mm Flexible Medullary Nails

Complete Set of 4.5 mm \varnothing



M 01100 Ender Nail Set

151013 Container

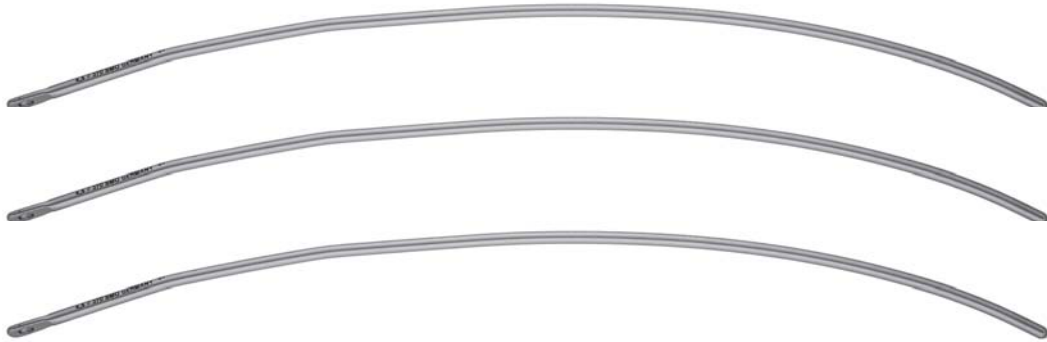
153012 Tray - upper

153012 Tray - lower

11250 3 Flexible Medullary Nails 300 mm
11251 3 Flexible Medullary Nails 310 mm
11252 3 Flexible Medullary Nails 320 mm
11253 3 Flexible Medullary Nails 330 mm
11254 3 Flexible Medullary Nails 340 mm
11255 3 Flexible Medullary Nails 350 mm
11256 3 Flexible Medullary Nails 360 mm
11257 3 Flexible Medullary Nails 370 mm
11258 3 Flexible Medullary Nails 380 mm
11259 3 Flexible Medullary Nails 390 mm
11260 3 Flexible Medullary Nails 400 mm
11261 3 Flexible Medullary Nails 410 mm
11262 3 Flexible Medullary Nails 420 mm
11263 3 Flexible Medullary Nails 430 mm
11264 3 Flexible Medullary Nails 440 mm
11265 3 Flexible Medullary Nails 450 mm
11266 3 Flexible Medullary Nails 460 mm
11267 3 Flexible Medullary Nails 470 mm
11268 3 Flexible Medullary Nails 480 mm
11269 3 Flexible Medullary Nails 490 mm

11272 1 Nail Inserter
11274 1 Impactor
11234 1 Bender
11278 1 Impactor - Extractor
11280 1 Extractor
11098 1 Awl, Cortical

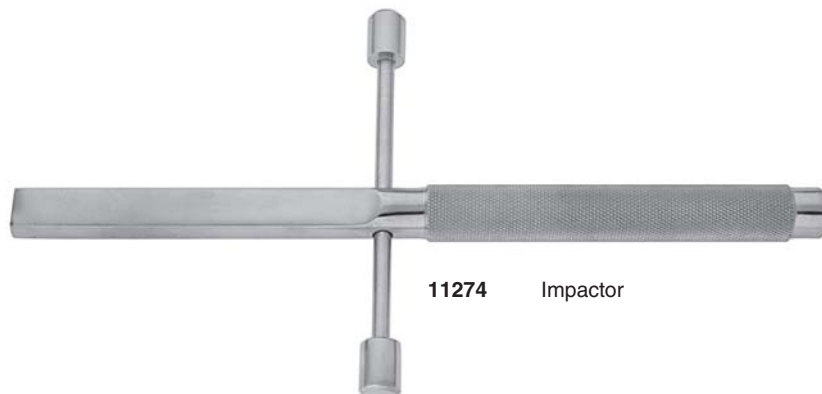
Flexible Medullary Nails



4,5 ø	300 mm	310 mm	320 mm	330 mm	340 mm	350 mm	360 mm	370 mm	380 mm	390 mm
	11250	11251	11252	11253	11254	11255	11256	11257	11258	11259
	400 mm	410 mm	420 mm	430 mm	440 mm	450 mm	460 mm	470 mm	480 mm	490 mm
	11260	11261	11262	11263	11264	11265	11266	11267	11268	11269



11272 Nail Inserter



11274 Impactor



11234 Bender

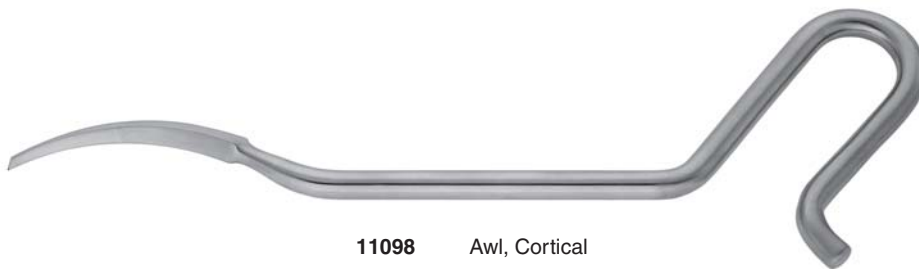
Flexible Medullary Nails



11278 Impactor-Extractor



11280 Extractor



11098 Awl, Cortical

Instrument for gliding Nail



9018 \varnothing 2.7 mm
9020 \varnothing 3.2 mm
9027 \varnothing 4.5 mm



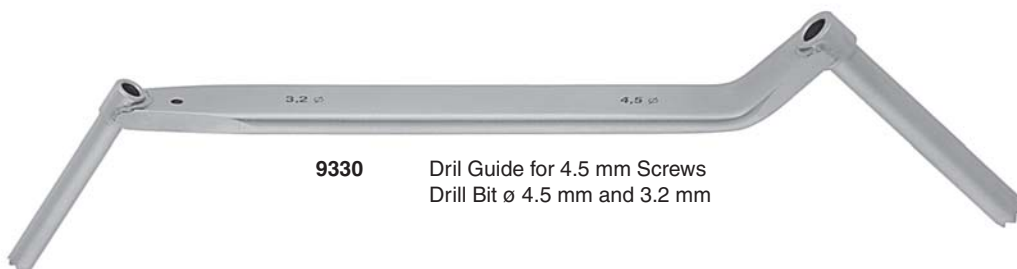
91452 Perthes, 16,0 cm



91456 16,0 cm



9090 Tap Handle for Jacobs Chuck



9330 Drill Guide for 4.5 mm Screws
Drill Bit \varnothing 4.5 mm and 3.2 mm



9702 Weight approx: 350 g



Nail Driver
15300 for 1.5 - 2.0 mm
15302 for 2.5 - 3.0 mm
15304 for 3.5 - 4.5 mm



7403 Flat-nosed Pliers, parallel,
with lateral Wire Cutter, 180 mm
Stainless Steel ϕ 1.6 mm



7434 Wire Cutter 220 mm TC
soft wire 3.0 mm
hard wire 2.5 mm



7436 Wire Cutter 220 mm TC
soft wire 2.5 mm
hard wire 2.2 mm



7452 260 mm
Hard wire 3.5 mm



7446 Cutter for cutting of Kirschner wires
Steinmann Pins up to 6 mm ø hard
460 mm TC



7394 Extraction Pliers TC jaws



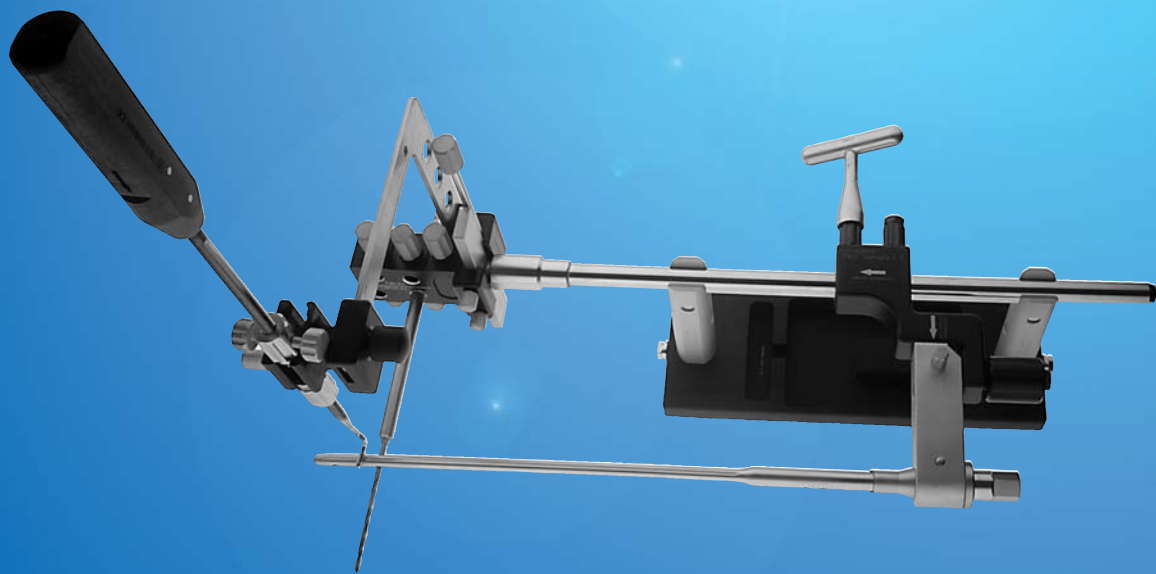
7397 Vise Grip 200 mm
Stainless Steel



7406 Extraction Pliers, 200 mm TC

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



Targeting Device with Pre - Adjustment Device
Zielgerät mit Voreinstellgerät

Reduction of the X - Ray exposure
Reduzierung der Röntgenstrahlen

INTERLOCKING NAIL SYSTEM
VERRIEGELUNGSNAGEL SYSTEM

INTERLOCKING-NAIL SYSTEM FOR FEMUR AND TIBIA:

The Interlocking Nail System is the result of long - term experiences in intramedullary nailing. After 1994, this system was introduced to the international markets, tested and improved. Decisive for the success of this system is the universal DNS Femur Nail System for shafts and neck fractures.

DEVELOPMENT OF DISTAL TARGETING DEVICE FOR FEMORAL AND TIBIAL NAILS

Distal locking without X-rays? Why not?

It is known, that distal locking is still a big problem!

With the new Targeting Device of Mattes - Instrumente the following problems can be avoided or reduced:

- X - Ray exposure during distal locking (one shot only for documentation and control).
- Inaccurate positioning of locking screws and bolts.

THE SOLUTION:

The mechanical Targeting Device for Femur and Tibia renders possible the exact positioning of the locking screws / bolt in the anterior - posterior (A.P.) and mediolateral (M.L.) planes, without the use of an image intensifier.

FUNCTION:

Nail deformation, caused during insertion, leads, in case of use of rigid Target Devices, to faultily positioned holes. In case of slotted nails (dorsale and lateral translation in sagital plane) torsion will occur.

Based on these studies, Mattes - Instrumente has developed a Targeting Device which assures an exceptional accuracy for non slotted nails for the placing of distal screws / bolts. This is achieved by a fixation hook, which, during surgery, is in direct contact with the impacted nail, which secures a stable alignment between Targeting Device and nail. (Closed nails are torsion - free.)

ADVANTAGES:

- Reduction of the X-rays, both, for patients and operating team.
- Exact positioning of drill holes and locking screws / bolts with small harm to implants.
- Easy handling.
- The technique can be simply and quickly assimilated.
- Reliable calculation of duration of surgery.

VERRIEGELUNGSNAGEL - SYSTEM, FEMUR UND TIBIA:

Das Verriegelungsnagel - System ist das Ergebnis langjähriger Erfahrungen in der Marknagelung. Dieses System ist seit 1994 auf den internationalen Märkten eingeführt und erprobt sowie weiterentwickelt worden. Ausschlaggebend für den Erfolg dieses Systems ist das universale DNS.- Femur - Nagelsystem.

ENTWICKLUNG EINES DISTALEN ZIELGERÄTS FÜR FEMUR - UND TIBIA - NÄGEL

Distales Verriegeln ohne Röntgen ? Warum nicht ?

Wie bekannt , ist die distale Verriegelung immer noch ein sehr großes Problem !

Mit dem neuen distalen Zielgerät von Mattes - Instrumente, lassen sich folgende Probleme vermeiden oder einschränken:

- Röntgenstrahlenexposition bei der distalen Verriegelung (ein Strahlengang zur Dokumentation und Kontrolle)
- Nicht exakt positionierte Verriegelungsschrauben / Bolzen.

DIE LÖSUNG:

Die mechanische Zielvorrichtung für Femur- und Tibianägel ermöglicht die exakte Positionierung der Verriegelungsschrauben / Bolzen in der anteroposterioren (a.p.) und mediolateralen (m.l.) Ebene, ohne Bildwandlertechnik.

FUNKTION:

Die insertionsbedingte Nagelverformung führt bei starren Zielvorrichtungen zu Fehlbohrungen, bei durchgehend geschlitzten Nägeln (dorsale - u. laterale Translation in der Sagittalebene) zur Torsion der durchgehend geschlitzten Nägel. Anhand dieser Studien wurde durch die Firma Mattes - Instrumente eine Zielvorrichtung entwickelt, die für die neue Generation von geschlossenen (nicht geschlitzten) Nägeln für eine außerordentliche Zielgenauigkeit bei der Plazierung der distalen Bohrungen sorgt. Dies wird durch einen Fixierhaken erzielt, der bei der OP. mit direkten Kontakt auf der Nageloberfläche steht und somit eine parallele Stabilität der Zielvorrichtung mit dem Nagel bildet. (geschlossene Nägel sind torsionsfrei)

VORTEILE:

- Reduzierung der Röntgenstrahlen: Die Strahlenexposition für Patient und Operationsteam wird reduziert.
- Exakte Positionierung der Bohrlöcher und Verriegelungsschrauben / Bolzen mit geringer Implantatbeschädigung.
- Einfaches Handling.
- Technik ist auch für unerfahrene Chirurgen schnell und einfach erlernbar.
- Hervorragende Kalkulation der Operationszeit.

Multi - FEMORAL NAIL

„MFN“ PAT.

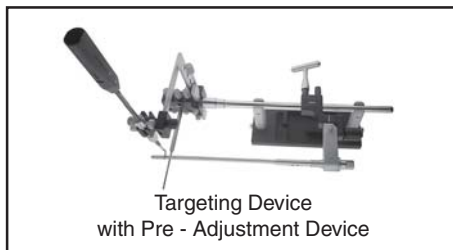
multifunctional femoral nail (D.N.S.)
for pertrochanteric, intertrochanteric,
high and low subtrochanteric and femoral shaft
fractures

CE 0123

this nail may substitute
all existing system

ADVANTAGES:

- one nail for left and right Femoral Bone
distal nail dia. 10 mms and 12 mms
proximal dia. 15 mms
nail lengths short nails 240 mms
nail lengths long nails
320 - 480 mm
- highly economical, owing to
multifunctional application and
reduced stocks in hospitals
- insertion over guide wire, all nails
are cannulated
- rotation stability, two lag screws
6,4 mms provide intra- and
postoperative security
- retrograde and antegrade
application possible
- anteversion angle 8° is integrated
in proximal bore holes



*We produce also the complete
traumatology programme*

Multi - Femurnagel

„MFN“ PAT.

Multifunktionaler Femurnagel für
Schenkelhals- und Schaftfrakturen

CE 0123

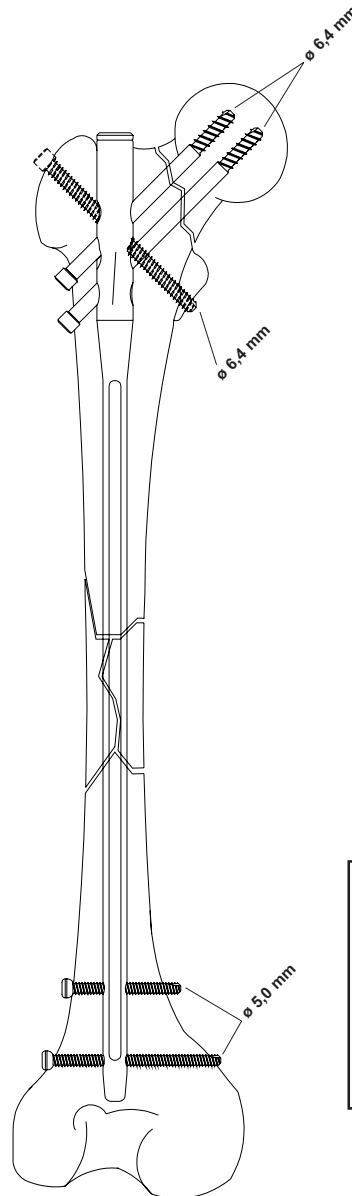
Ersetzt sämtliche auf dem Markt
befindlichen Systeme durch pa-
tentierte Lochanordnung

VORTEILE:

- Ein Nagel für linken und rechten
Femur - Knochen
ø 10 - 12 mm distal
ø 15 mm proximaler Schaft
Längen:
Kurz: 240 mm
Lang: 320 - 480 mm
Dadurch limitierte Lagerhaltung
und hohe Wirtschaftlichkeit.
- Unaufgebohrtes Einbringen über
Führungsdraht.
- Alle Nägel durchbohrt.
- Rotationssicher durch zwei
selbstschneidende Gleitbolzen
- ø dia. 6,4 mm.
- Retrograde und antegrade
Anwendung möglich
- Anteversionswinkel 8° in den
Bohrlöchern integriert.



*Wir fertigen weiterhin das komplette
Programm der Traumatologie*



Multi - FEMORAL NAIL

„MFN“ PAT.

multifunctional femoral nail MFN. (DNS.)
for pertrochanteric, intertrochanteric,

high and low subtrochanteric and femoral shaft fractures

MFN. / DNS. (Double Neck Shaft Fracture) Nail - " ONE NAIL FOR LEFT AND RIGHT " - PAT. PENDING

MFN. / DNS. (Nagel für Schenkelhals und Femurfrakturen) - " Nagel für links und rechts " - Patentiert

for ø 6.4 mm Lag Bolts prox.
für ø 6,4 mm Schenkelhals V - Bolzen prox.



Multifunctional Femoral Nail MFN. (short)
proximal shaft diam. 15,0 mm
Multi - Femurnägel MFN. (kurz),
proximaler Schaftdurchmesser 15,0 mm

Cat. No.	ø mm	Length cm
1.12230	10	24
1.12260	12	24

Multifunctional Femoral Nail MFN. (long)
proximal shaft diam. 15,0 mm
Multi - Femurnägel MFN. (lang),
proximaler Schaftdurchmesser 15,0 mm

Cat. No.	ø mm	Length cm
1.12232	10	32
1.12234	10	34
1.12236	10	36
1.12238	10	38
1.12240	10	40
1.12242	10	42
1.12244	10	44
1.12246	10	46
1.12248	10	48
1.12262	12	32
1.12264	12	34
1.12266	12	36
1.12268	12	38
1.12270	12	40
1.12272	12	42
1.12274	12	44
1.12276	12	46
1.12278	12	48

for ø 5.0 mm Locking Screws distal
für ø 5,0 mm Verriegelungsschrauben distal



1.11822

Screw Plug for Femoral Nails
Threaded 3/8" Head ø 15 mm
Verschlußschrauben mit
3/8" Gewinde

Multi - Femurnagel

„MFN“ PAT.

Multifunktionseller Femurnagel für
Schenkelhals- und Schafffrakturen

Lag Bolts with shaft ø 6.4 mm
Cannulated proximal / retrograde
Schenkelhals V - Bolzen ø 6,4mm
kannuliert proximal / retrograd



Cat. No.	Length mm
1.13108	65
1.13109	70
1.13110	75
1.13111	80
1.13112	85
1.13113	90
1.13114	95
1.13115	100
1.13116	105
1.13117	110
1.13118	115
1.13119	120
1.13120	125

Locking Bolts ø 6.4 mm
for proximal antegrade holes
Verriegelungsbolzen ø 6,4 mm
für proximale antegrade Bohrlöcher



Cat. No.	Length mm
1.11507	30
1.11508	35
1.11510	40
1.11512	45
1.11514	50
1.11516	55
1.11518	60
1.11520	65
1.11522	70
1.11524	75
1.11526	80
1.11528	85
1.11530	90

MFN. / DNS. (Double Neck Shaft Fracture) Nail - " ONE NAIL FOR LEFT AND RIGHT " - PAT. PENDING
MFN. / DNS. (Nagel für Schenkelhals und Femurfrakturen) - " Nagel für Links und Rechts " - Patentiert

U/R MFN. / DNS. Femoral Interlocking Nails
(Reaming of bone not required) ø 13 mm
U/R MFN. / DNS. Fem. V - Nägel
(Bez.: U/R ohne Markraumböhrren) ø 13 mm

for ø 5,0 mm Lag Screws prox.
für ø 5,0 mm Schenkelhals V - Schrauben prox.



for ø 5,0 mm Locking Screws distal
für ø 5,0 mm Verriegelungsschrauben distal

Cat. No.	ø mm	Length cm
1.12060	8	24
1.12062	8	26
1.12064	8	28
1.12066	8	30
1.12068	8	32
1.12070	8	34
1.12072	8	36
1.12074	8	38
1.12080	9	24
1.12082	9	26
1.12084	9	28
1.12086	9	30
1.12088	9	32
1.12090	9	34
1.12092	9	36
1.12094	9	38
1.12096	9	40
1.12098	9	42
1.12100	9	44
1.12110	10	32
1.12112	10	34
1.12114	10	36
1.12116	10	38
1.12118	10	40
1.12120	10	42
1.12122	10	44
1.12124	10	46
1.12126	10	48
1.12130	11	32
1.12132	11	34
1.12134	11	36
1.12136	11	38
1.12138	11	40
1.12140	11	42
1.12142	11	44
1.12144	11	46
1.12146	11	48



1.11820

Screw Plug for Femoral Nails
Threaded 3/8" Head ø 13 mm
Verschlußschrauben mit
3/8" Gewinde

Lag Screws ø 5.0 mm
Schenkelhals V - Schrauben ø 5,0 mm



Cat. No.	Length mm
1.13008	65
1.13009	70
1.13010	75
1.13011	80
1.13012	85
1.13013	90
1.13014	95
1.13015	100
1.13016	105
1.13017	110
1.13018	115
1.13019	120
1.13020	125

Locking Screws ø 5.0 mm
for distal holes
Verriegelungsschrauben ø 5,0 mm
für distale Bohrlöcher



Cat. No.	Length mm
1.11781	25
1.11782	30
1.11783	35
1.11784	40
1.11785	45
1.11786	50
1.11787	55
1.11788	60
1.11789	65
1.11790	70
1.11791	75
1.11792	80
1.11793	85
1.11794	90

Product Discription for Condylar Femoral Nail System Produktbeschreibung für Kondylennägel Femur System

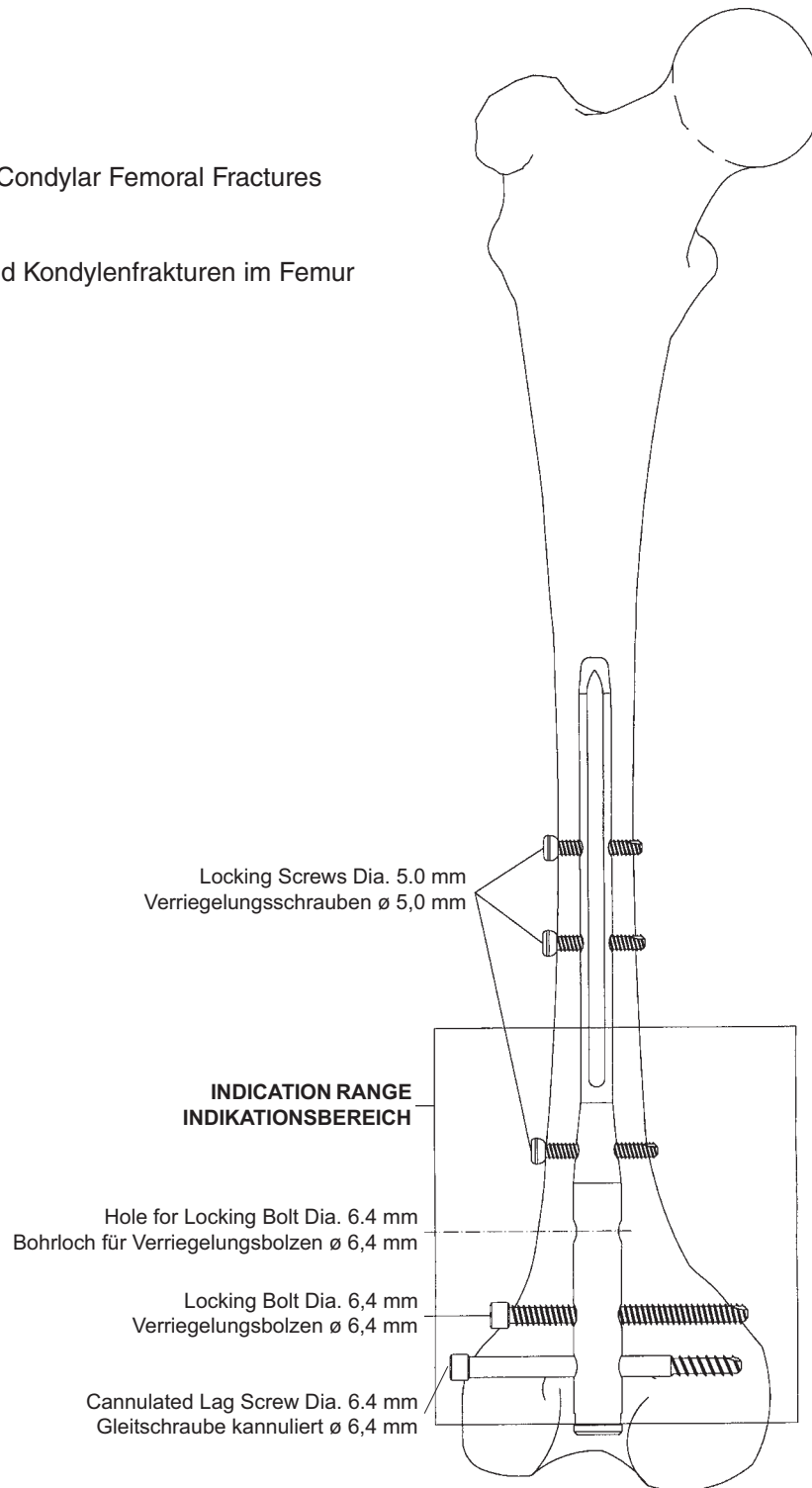
Condylar Femoral Nails Kondylennägel für Femur

INDICATION:

Distal Shaft- and Condylar Femoral Fractures

INDIKATION:

Distale Schaft- und Kondylenfrakturen im Femur



Condylar Nail System Kondylennagel System

Condylar Femoral Nails Kondylennägel für Femur

Cat. No.	ø mm	Length cm
1.12280	10	24
1.12281	11	24
1.12282	12	24

Lag Bolts with shaft ø 6.4 mm Cannulated proximal / retrograde Schenkelhals V - Bolzen ø 6,4mm kannuliert proximal / retrograd

Cat. No.	Length mm
1.13108	65
1.13109	70
1.13110	75
1.13111	80
1.13112	85
1.13113	90
1.13114	95
1.13115	100
1.13116	105
1.13117	110
1.13118	115
1.13119	120
1.13120	125

Locking Bolts ø 6.4 mm for proximal and distal holes Verriegelungsbolzen ø 6,4 mm für proximale und distale Bohrlöcher

Cat. No.	Length mm
1.11507	30
1.11508	35
1.11510	40
1.11512	45
1.11514	50
1.11516	55
1.11518	60
1.11520	65
1.11522	70
1.11524	75
1.11526	80
1.11528	85
1.11530	90

for ø 6.4 mm Lag Bolts prox.
für ø 6,4 mm Schenkelhals V-Bolzen prox.

for ø 6.4 mm Locking Bolts prox.
für ø 6,4 mm Verriegelungsbolzen prox.

for ø 5.0 mm Locking Screws distal
für ø 5,0 mm Verriegelungsschrauben distal

Locking Screws ø 5.0 mm for proximal and distal holes Verriegelungsschrauben ø 5,0 mm für proximale und distale Bohrlöcher

Cat. No.	Length mm
1.11781	25
1.11782	30
1.11783	35
1.11784	40
1.11785	45
1.11786	50
1.11787	55
1.11788	60
1.11789	65
1.11790	70
1.11791	75
1.11792	80
1.11793	85
1.11794	90

Instruments for Condylar Nail System
Instrumente für Kondylennägel



1.13334 Proximale-Distal Targeting Device for Condylar Nails
Proximales-distales Zielinstrument für Kondylennägel



1.13332 Nail Adapter Bolt for Drill Guide 1.13333 MFN. / DNS.
Nageladaptionsschraube für Zielgerät 1.13333 MFN. / DNS.

Information:

All the other Instruments are include in the Basic Instrument Set 1.11400 for Condylar Nail System. Alle sonstig benötigten Instrumente sind im Basissatz 1.11400 für Kondylennagel System enthalten.

Standard Femoral Interlocking Nails Standard Femur Verriegelungsnägel

for ø 6.4 mm Locking Bolts prox.
für ø 6,4 mm Verriegelungsbolzen prox.



Cat. No.	ø mm	Length cm
1.11410	12	32
1.11412	12	34
1.11414	12	36
1.11416	12	38
1.11418	12	40
1.11420	12	42
1.11422	12	44
1.11424	12	46
1.11426	12	48
1.11428	12	50
1.11436	13	36
1.11438	13	38
1.11440	13	40
1.11442	13	42
1.11444	13	44
1.11446	13	46
1.11448	13	48
1.11450	13	50
1.11456	14	36
1.11458	14	38
1.11460	14	40
1.11462	14	42
1.11464	14	44
1.11466	14	46
1.11468	14	48

for ø 6.4 mm Locking Bolts distal
für ø 6,4 mm Verriegelungsbolzen distal

**Locking Bolts ø 6.4 mm
für proximal and distal holes
Verriegelungsbolzen ø 6,4 mm
für proximale und distale Bohrlöcher**



Cat. No.	Length mm
1.11507	30
1.11508	35
1.11510	40
1.11512	45
1.11514	50
1.11516	55
1.11518	60
1.11520	65
1.11522	70
1.11524	75
1.11526	80
1.11528	85
1.11530	90

**Screw Plugs threaded 3/8"
Verschlußschrauben mit 3/8"**



Cat. No.	ø mm
1.11820	13

**U/R Femoral Interlocking Nails
(Reaming of bone not required)
U/R Femur Verriegelungsnägel
(Bez.: U/R ohne Markraumbohren)**

for ø 5.0 mm Locking Screws prox.
für ø 5.0 mm Verriegelungsschrauben prox.



for ø 5.0 mm Locking Screws distal
für ø 5.0 mm Verriegelungsschrauben distal

Cat. No.	ø mm	Length cm
1.11640	8	24
1.11641	8	26
1.11642	8	28
1.11643	8	30
1.11644	8	32
1.11645	8	34
1.11646	8	36
1.11647	8	38
1.11648	9	24
1.11649	9	26
1.11650	9	28
1.11651	9	30
1.11652	9	32
1.11653	9	34
1.11654	9	36
1.11655	9	38
1.11656	9	40
1.11657	9	42
1.11658	9	44
1.11660	9	46
1.11670	10	24
1.11672	10	26
1.11674	10	28
1.11676	10	30
1.11678	10	32
1.11680	10	34
1.11682	10	36
1.11686	10	38
1.11688	10	40
1.11690	10	42
1.11692	10	44
1.11694	10	46
1.11696	10	48
1.11700	11	32
1.11702	11	34
1.11704	11	36
1.11706	11	38
1.11708	11	40
1.11710	11	42
1.11712	11	44
1.11714	11	46
1.11716	11	48

**Locking Screws ø 5.0 mm
for proximal and distal holes
Verriegelungsschrauben ø 5,0 mm
für proximale und distale Bohrlöcher**



Cat. No.	Length mm
1.11781	25
1.11782	30
1.11783	35
1.11784	40
1.11785	45
1.11786	50
1.11787	55
1.11788	60
1.11789	65
1.11790	70
1.11791	75
1.11792	80
1.11793	85
1.11794	90

**Screw Plugs Threaded 3/8"
Verschlußschrauben mit 3/8"**



Cat. No.	ø mm
1.11820	13

**U/R Tibial Interlocking Nails
(Reaming of bone not required)
U/R Tibia Verriegelungsnägel
(Bez.: U/R ohne Markraumbohren)**

for ø 4,5 mm Locking Screws prox.
für ø 4,5 mm Verriegelungsschrauben prox.



for ø 4,5 mm Locking Screws distal
für ø 4,5 mm Verriegelungsschrauben distal

Cat. No.	ø mm	Length cm
1.11722	8	27.0
1.11724	8	28.5
1.11726	8	30.0
1.11728	8	31.5
1.11729	8	33.0
1.11730	8	34.5
1.11732	8	36.0
1.11734	8	38.0
1.11736	8	40.0
1.11738	8	42.0
1.11740	9	27.0
1.11742	9	28.5
1.11744	9	30.0
1.11746	9	31.5
1.11748	9	33.0
1.11750	9	34.5
1.11752	9	36.0
1.11754	9	38.0
1.11756	9	40.0
1.11758	9	42.0
1.11759	9	44.0
1.11760	10	27.0
1.11762	10	28.5
1.11764	10	30.0
1.11766	10	31.5
1.11768	10	33.0
1.11770	10	34.5
1.11772	10	36.0
1.11774	10	38.0
1.11776	10	40.0
1.11778	10	42.0
1.11780	10	44.0

**Locking Screws ø 4.5 mm
for proximal and distal holes
Verriegelungsschrauben ø 4,5 mm
für proximale und distale Bohrlöcher**



Cat. No.	Length mm
1.11800	20
1.11802	25
1.11804	30
1.11806	35
1.11808	40
1.11810	45
1.11812	50
1.11814	55
1.11816	60
1.11818	65

**Screw Plugs threaded 5/16"
Verschlußschrauben 5/16" Gewinde**



Cat. No.	ø mm
1.11826	12

Tibial Interlocking Nails Tibia Verriegelungsnägel

for ø 5.0 mm Locking Screws prox.
für ø 5,0 mm Verriegelungsschrauben prox.



for ø 5.0 mm Locking Screws distal
für ø 5,0 mm Verriegelungsschrauben distal

Cat. No.	ø mm	Length cm
1.11550	11	28.5
1.11552	11	30.0
1.11554	11	31.5
1.11556	11	33.0
1.11558	11	34.5
1.11560	11	36.0
1.11562	11	38.0
1.11564	11	40.0
1.11566	11	42.0
1.11570	12	28.5
1.11572	12	30.0
1.11574	12	31.5
1.11576	12	33.0
1.11578	12	34.5
1.11580	12	36.0
1.11582	12	38.0
1.11584	12	40.0
1.11586	12	42.0
1.11588	13	28.5
1.11590	13	30.0
1.11592	13	31.5
1.11594	13	33.0
1.11596	13	34.5
1.11598	13	36.0
1.11600	13	38.0
1.11602	14	30.0
1.11604	14	31.5
1.11606	14	33.0
1.11608	14	34.5
1.11610	14	36.0
1.11612	14	38.0

Locking Screws ø 5.0 mm for proximal and distal holes Verriegelungsschrauben ø 5,0 mm für proximale und distale Bohrlöcher



Cat. No.	Length mm
1.11781	25
1.11782	30
1.11783	35
1.11784	40
1.11785	45
1.11786	50
1.11787	55
1.11788	60
1.11789	65
1.11790	70
1.11791	75
1.11792	80
1.11793	85
1.11794	90

Screw Plugs threaded 5/16" Verschlußschrauben 5/16" Gewinde



Cat. No.	ø mm
1.11826	12

Special Screws for Distal Holes Spezielle Schrauben für distale Bohrlöcher

Locking Bolts \varnothing 6.4 mm
Cannulated for \varnothing 1.8 mm wire
Verriegelungsbolzen \varnothing 6,4 mm
kannuliert für \varnothing 1,8 mm Bohrdraht



Cat. No.	Length mm
1.11532	30
1.11534	35
1.11536	40
1.11538	45
1.11540	50
1.11542	55
1.11544	60
1.11546	65

For Standard Femoral Nails (distal holes)
Für Standard Femur Nägel (distale Bohrlöcher)

Locking Screws 5.0 mm
Cannulated for \varnothing 1.8 mm wire
Verriegelungsschrauben \varnothing 5,0 mm
kannuliert für \varnothing 1,8 mm Bohrdraht



Cat. No.	Length mm
1.11620	25
1.11622	30
1.11624	35
1.11626	40
1.11628	45
1.11630	50
1.11632	55
1.11634	60
1.11636	65

For U/R Femoral Nails
For U/R MFN. / DNS. Femoral Nails
For Tibial Standard Nails
Für U/R Femur Nägel
Für U/R MFN. / DNS. Femur Nägel
Für Tibia Standard Nägel



151515 Container
Siebschale

1.11840 Screw Box (empty)
to include in **1.11840**:
Fem. Locking Bolts \varnothing 6,4 mm, proximal from Cat. No.:
1.11507 to **1.11530**
(4 pieces from each length)

Distal Fem. Locking Bolts \varnothing 6,4 mm cannulated from
Cat. No.: **1.11532** to **1.11546**
(4 pieces from each length)

D.N.S. Standard \varnothing 6,4 mm Lag Screws cannulated for
proximal holes from Cat. No.: **1.13108** to **1.13120**
(4 pieces from each length)

U/R D.N.S. \varnothing 5,0 mm Lag - Screws for proximal holes
from Cat. No.: **1.13008** to **1.13020**
(4 pieces from each length)

DNS. / Fem. Threaded Screw Plugs 3/8"
Cat. No.: **1.11820** \varnothing 13 mm (4 pieces)
Cat. No.: **1.11821** \varnothing 14 mm (3 pieces)
Cat. No.: **1.11822** \varnothing 15 mm (3 pieces)
Cat. No.: **1.11823** \varnothing 16 mm (3 pieces)



1.11840 Schrauben Box (Ungefüllt)
Folgende Artikel zur Integration in **1.11840**:
Fem. Verriegelungsbolzen \varnothing 6,4 mm, proximal von Art. Nr.:
1.11507 bis **1.11530**
(4 Stück pro Länge können integriert werden)

Distal Fem. Verriegelungsbolzen \varnothing 6,4 mm kannuliert von
Art. Nr.: **1.11532** bis **1.11546**
(4 Stück pro Länge können integriert werden)

D.N.S. Standard Schenkelhalsschrauben \varnothing 6,4 mm kannuliert
für proximale Nagelbohrungen von Art. Nr.: **1.13108** bis **1.13120**
(4 Stück pro Länge können integriert werden)

U/R D.N.S. Schenkelhalsschraube \varnothing 5,0 mm kannuliert
für proximale Nagelbohrungen von Art. Nr.: **1.13008** bis **1.13020**
(4 Stück pro Länge können integriert werden)

Nagelverschlußschrauben mit 3/8" Gewinde für D.N.S. / Femur Nägel
Art. Nr.: **1.11820** \varnothing 13 mm (4 Stück)
Art. Nr.: **1.11821** \varnothing 14 mm (3 Stück)
Art. Nr.: **1.11822** \varnothing 15 mm (3 Stück)
Art. Nr.: **1.11823** \varnothing 16 mm (3 Stück)



151515 Container
Siebschale

1.11841 Screw Box (empty)
to include in **1.11841**:

U/R Fem. Locking Screws for Tibial Standard \varnothing 5,0 mm,
proximal from Cat. No.: **1.11781** to **1.11794**
(4 pieces from each length)

U/R Fem. Locking Screws for Tibial Standard \varnothing 5,0 mm,
Cannulated for Distal Holes from
Cat. No.: **1.11620** to **1.11636**
(4 pieces from each length)

U/R Tibial Locking Screws, \varnothing 4,5 mm for proximal and
distal holes from Cat. No.: **1.11800** to **1.11820**
(4 pieces from each length)

Humeral Locking Screws, \varnothing 4,0 mm, proximal and distal
from Cat. No.: **1.12300** to **1.12334**
(4 pieces from each length)

U/R Fem. / U/R DNS. Threaded Screw Plugs 3/8"
Cat. No.: **1.11820** \varnothing 13 mm (3 pieces)

Tibial Threaded Screw Plugs 5/16"
Cat. No.: **1.11826** \varnothing 12 mm (3 pieces)
Cat. No.: **1.11827** \varnothing 13 mm (3 pieces)
Cat. No.: **1.11828** \varnothing 14 mm (3 pieces)

Humeral Threaded Screw Plugs 1/4"
Cat. No.: **1.12025** \varnothing 9 mm (3 pieces)



1.11841 Schrauben Box (ungefüllt)
Folgende Artikel zur Integration in **1.11841**:

U/R Fem. Verriegelungsbolzen / Tibia Standard \varnothing 5,0 mm
proximal, von Art. Nr.: **1.11781** bis **1.11794**
(4 Stück pro Länge können integriert werden)

U/R Fem. Verriegelungsschrauben / Tibia Standard \varnothing 5,0 mm
kannuliert für distale Nagelbohrungen, von
Art. Nr.: **1.11620** bis **1.11636**
(4 Stück pro Länge können integriert werden)

U/R Tibia Verriegelungsschrauben \varnothing 4,5 mm für proximale und
distale Nagelbohrungen, von Art. Nr.: **1.11800** to **1.11820**
(4 Stück pro Länge können integriert werden)

Humerus Verriegelungsschrauben \varnothing 4,0 mm für proximale und
distale Nagelbohrungen, von Art. Nr.: **1.12300** to **1.12334**
(4 Stück pro Länge können integriert werden)

Nagelverschlußschraube mit 3/8" Gewinde, für U/R Fem. und U/R D.N.S. Nägel:
Art Nr.: **1.11820** \varnothing 13 mm (3 Stück)

Nagelverschlußschrauben mit 5/16" Gewinde, für U/R Tibia und Tibia Standard Nägel:
Art Nr.: **1.11826** \varnothing 12 mm (3 Stück)
Art Nr.: **1.11827** \varnothing 13 mm (3 Stück)
Art Nr.: **1.11828** \varnothing 14 mm (3 Stück)

Nagelverschlußschraube mit 1/4" Gewinde, für Humerus Nägel:
Art. Nr.: **1.12025** \varnothing 9 mm (3 Stück)



151013 Container
Sterilbehälter

1.11928 Flexible Reamer Set Trays (2 pieces), empty
Siebschalen für flexible Markraumbohrer (nicht gefüllt)

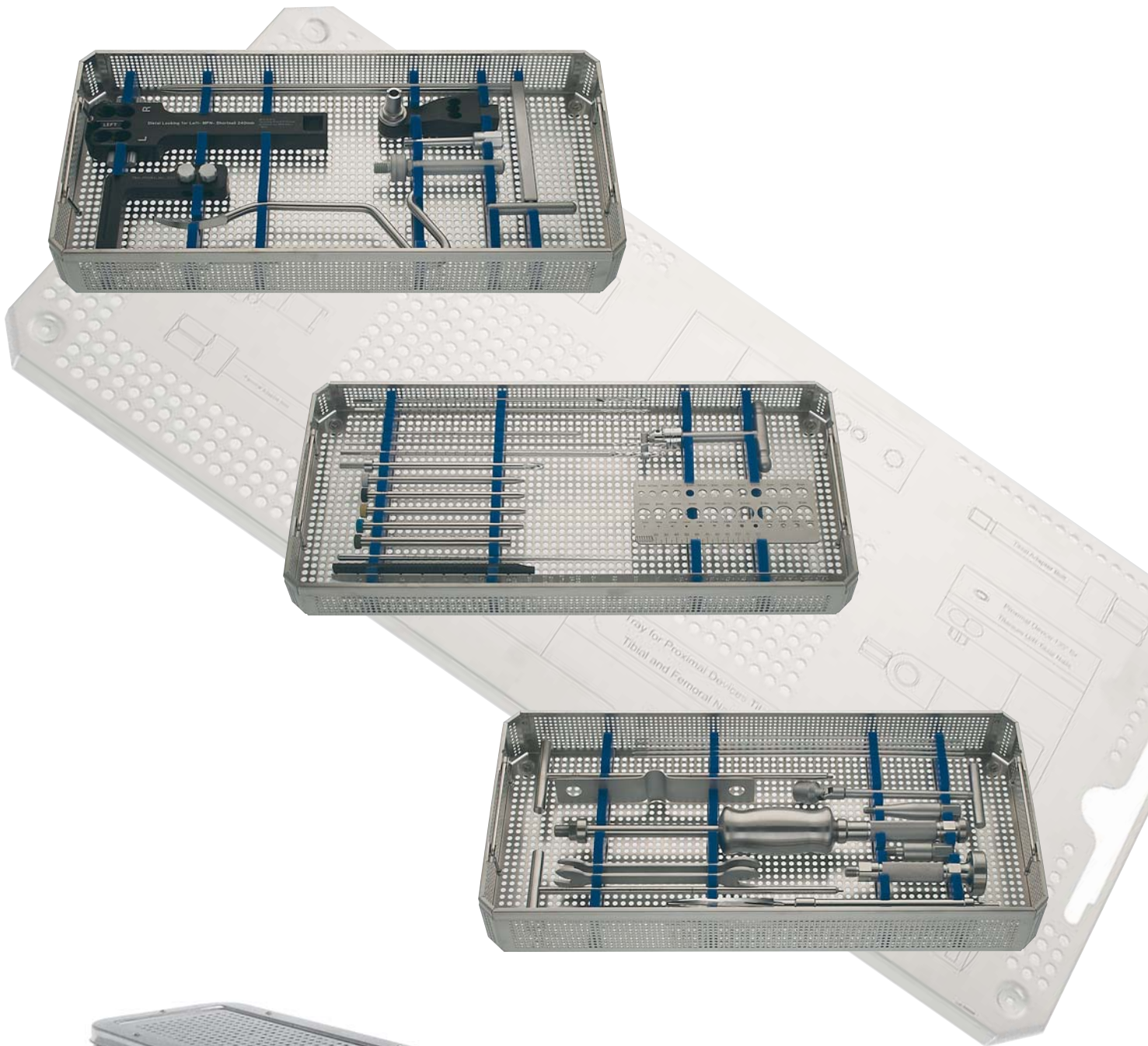


1.11927 Complete Flexible Medullary Reamer Set
Flexibler Markraumbohrer Satz, komplett

Cat. No.:	Description	Diameter	Art. Nr.:	Beschreibung	Durchmesser
11002	Flexible Medullary Reamer	6,0 mm	11002	Flexibler Markraumbohrer	6,0 mm
11004	Flexible Medullary Reamer	6,5 mm	11004	Flexibler Markraumbohrer	6,5 mm
11006	Flexible Medullary Reamer	7,0 mm	11006	Flexibler Markraumbohrer	7,0 mm
11008	Flexible Medullary Reamer	7,5 mm	11008	Flexibler Markraumbohrer	7,5 mm
11010	Flexible Medullary Reamer	8,0 mm	11010	Flexibler Markraumbohrer	8,0 mm
11012	Flexible Medullary Reamer	8,5 mm	11012	Flexibler Markraumbohrer	8,5 mm
11014	Flexible Medullary Reamer	9,0 mm	11014	Flexibler Markraumbohrer	9,0 mm
11016	Flexible Medullary Reamer	9,5 mm	11016	Flexibler Markraumbohrer	9,5 mm
11018	Flexible Medullary Reamer	10,0 mm	11018	Flexibler Markraumbohrer	10,0 mm
11020	Flexible Medullary Reamer	10,5 mm	11020	Flexibler Markraumbohrer	10,5 mm
11022	Flexible Medullary Reamer	11,0 mm	11022	Flexibler Markraumbohrer	11,0 mm
11024	Flexible Medullary Reamer	11,5 mm	11024	Flexibler Markraumbohrer	11,5 mm
11026	Flexible Medullary Reamer	12,0 mm	11026	Flexibler Markraumbohrer	12,0 mm
11028	Flexible Medullary Reamer	12,5 mm	11028	Flexibler Markraumbohrer	12,5 mm
11030	Flexible Medullary Reamer	13,0 mm	11030	Flexibler Markraumbohrer	13,0 mm
11032	Flexible Medullary Reamer	13,5 mm	11032	Flexibler Markraumbohrer	13,5 mm
11034	Flexible Medullary Reamer	14,0 mm	11034	Flexibler Markraumbohrer	14,0 mm
11036	Flexible Medullary Reamer	14,5 mm	11036	Flexibler Markraumbohrer	14,5 mm
11038	Flexible Medullary Reamer	15,0 mm	11038	Flexibler Markraumbohrer	15,0 mm
11040	Flexible Medullary Reamer	15,5 mm	11040	Flexibler Markraumbohrer	15,5 mm
11042	Flexible Medullary Reamer	16,0 mm	11042	Flexibler Markraumbohrer	16,0 mm
11044	Flexible Medullary Reamer	16,5 mm	11044	Flexibler Markraumbohrer	16,5 mm
11046	Flexible Medullary Reamer	17,0 mm	11046	Flexibler Markraumbohrer	17,0 mm

1.11400 BASIC INSTRUMENTATION SET FOR INTERLOCKING NAIL SYSTEM
BASIS INSTRUMENTARIUMSATZ FÜR VERRIEGELUNGS-NAGELSYSTEM

1.11401 Tray - Set for 1.11400 (3 pieces) Graphic Case
Siebschaleneinsatz für 1.11400 (3 Stück)



151026 Container for 1.11400
Sterilbehälter für 1.11400

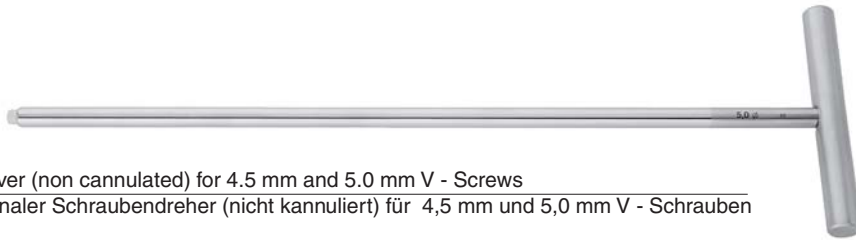
(recommended)

Listing: Basic Instruments for 1.11400
Liste: Basis Instrumente für 1.11400

1.11850	Universal Socket Wrench	1.11850	Kardanschlüssel SW 17
1.11849	Hex Driver (non cannulated) for 4.5 mm and 5.0 mm V - Screws	1.11849	Hexagonaler Schraubendreher (nicht kannuliert) für 4,5 mm und 5,0 mm V - Schrauben
1.11851	Hex Driver (cannulated) for 6.4 mm Solid and Cannulated Locking Bolts	1.11851	Hexagonaler Schraubendreher (kannuliert) für 6,4 mm, - kannulierte 6,4 mm V - Bolzen
1.11854	Medullary Exchange Tube	1.11854	Wechsel Tube
1.11856	Internal Fracture Alignment Device	1.11856	Internes Ausrichtungsinstrument
1.11858	Depth Gauge	1.11858	Tiefenmesser
1.11869	Twist Drill, ø 3.5 mm, Length 305 mm	1.11869	Kalibrierter Bohrer, ø 3,5 mm, Länge 305 mm
1.11870	Twist Drill, ø 4.0 mm, Length 305 mm	1.11870	Kalibrierter Bohrer, ø 4,0 mm, Länge 305 mm
1.11871	Twist Drill, ø 4.8 mm, Length 305 mm	1.11871	Kalibrierter Bohrer, ø 4,8 mm, Länge 305 mm
1.11875	Trocar ø 4.0 mm x 240 mm	1.11875	Trokar ø 4,0 mm x 240 mm
1.11878	Guide Rod for Cannulated Screws, ø 1,8 mm x 350 mm (10 pieces)	1.11878	Bohrdraht für kannulierte Schrauben, ø 1,8 mm x 350 mm (10 Stück)
1.11882	Open End Wrench SW 17 / 14 (2 pieces)	1.11882	Gabelschlüssel SW 17 / 14 (2 Stück)
1.11888	Reamer / Nail and Screw Template	1.11888	Fräser / Bohrer / Nagel und Schraubenschablone
1.11890	Nail Length Gauge	1.11890	Nagel - Längenmeßlehre
1.11892	Supine Driver	1.11892	Einschläger
9090	Handle with Jakobs Chuck	9090	Handstück mit Jakobsfutter
1.11896	Tibial Proximal Device	1.11896	Proximal Tibia - Zielgerät
1.11900	Skin Protector	1.11900	Hautschutz
1.11901	Tapered Reamer, cannulated ø 15.5 mm for Femoral MFN. (DNS.) - Nails	1.11901	Kannulierter Formfräser ø 15,5 mm für Femur MFN. (DNS.) - Nägel
1.11902	Curved Awl	1.11902	Gebogene Öffnungssahle
1.11906	Tapered Reamer, cannulated ø 13.5 mm for Femoral / DNS. - U/R Nails	1.11906	Kannulierter Formfräser ø 13,5 mm für Femur / DNS.- U/R Nägel
1.11910	Green Drill Sleeve ø 8.0 mm	1.11910	Bohrhülse Grün ø 8,0 mm
1.11911	Silver Drill Sleeve ø 2.1 mm	1.11911	Bohrhülse Silber ø 2,1 mm
1.11913	Blue Drill Sleeve ø 4.8 mm	1.11913	Bohrhülse Blau ø 4,8 mm
1.11914	Gold Drill Sleeve ø 4.0 mm	1.11914	Bohrhülse Gold ø 4,0 mm
1.11915	Black Drill Sleeve ø 3.5 mm	1.11915	Bohrhülse Schwarz ø 3,5 mm
1.11922	Slide Hammer	1.11922	Gleithammer
1.11923	Tibial Extractor Bolt	1.11923	Tibia Extraktionsschraube
1.11966	Femoral and DNS. / MFN. - Femoral Nail, Extractor Bolt	1.11966	Femur und DNS. / MFN. - Femur Nagel, Extraktionsschraube
1.11891	Length Gauge DNS. / MFN.	1.11891	Längenmesslehre DNS. / MFN.
1.13332	Nail Adapter Bolt for Drill Guide 1.13333 DNS.	1.13332	Nageladaptionsschraube für Zielgerät 1.13333
1.13333	Universal Proximal Device for Femoral and DNS. / MFN. - Femoral Nails	1.13333	Universales Proximalzielgerät für Femur und DNS. / MFN. - Femur Nägel
1.13335	Twist Drill Cannulated ø 4.0 mm, Length 305 mm	1.13335	Kannulierter Bohrer ø 4,0 mm, Länge 305 mm
1.13336	Twist Drill Cannulated ø 4.8 mm, Length 305 mm	1.13336	Kannulierter Bohrer ø 4,8 mm, Length 305 mm
1.13337	DNS. / MFN. - Reamer ø 6.4 mm - Proximal	1.13337	DNS. / MFN. - Fräser ø 6,4 mm - Proximal



1.11850 Universal Socket Wrench
Kardanschlüssel SW 17



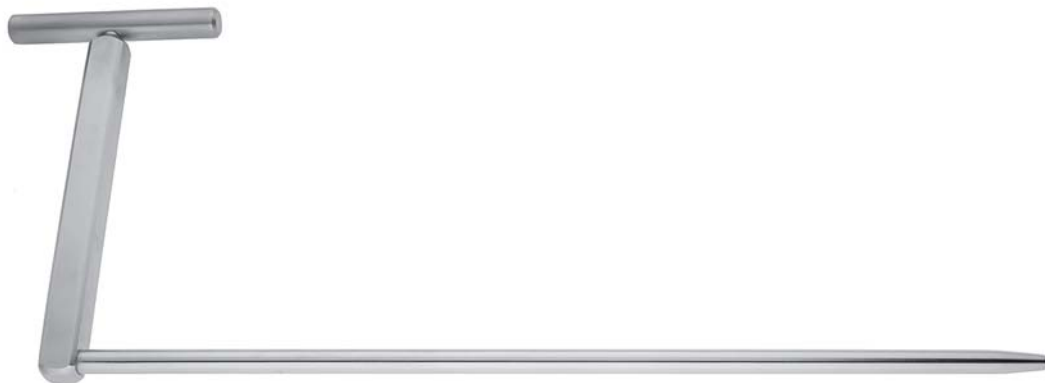
1.11849 Hex Driver (non cannulated) for 4.5 mm and 5.0 mm V - Screws
Hexagonaler Schraubendreher (nicht kannuliert) für 4,5 mm und 5,0 mm V - Schrauben

1.11851 Hex Driver (cannulated) for 6.4 mm Solid and Cannulated Locking Bolts
Hexagonaler Schraubendreher (kannuliert) für 6,4 mm, - kannulierte 6,4 mm V - Bolzen

1.11852 Hex Driver (cannulated) for 5.0 mm cannulated Locking Screws
Hexagonaler Schraubendreher (kannuliert) für kannulierte 5,0 mm Schrauben



1.11854 Medullary Exchange Tube
Wechsel Tube



1.11856 Internal Fracture Alignment Device
Internes Ausrichtungsinstrument



1.11858 Depth Gauge
Tiefenmesser



Drill Bits Cannulated hole \varnothing 2.1 mm Length 150 mm (recommended)
Kannulierter Bohrer Bohrung \varnothing 2,1 mm Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11861	3,5
1.11862	4,0
1.11863	4,8



Drill Bits Length 150 mm (recommended)
Bohrer Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11864	2,7
1.11865	3,5
1.11866	4,0
1.11867	4,8



Twist Drills Length 305 mm
Kalibrierter Bohrer Länge 305 mm

Cat. No.	\varnothing mm
1.11869	3,5
1.11870	4,0
1.11871	4,8



1.11875 Trocar \varnothing 4.0 mm x 240 mm
 Trokar \varnothing 4,0 mm x 240 mm



1.11876 Tip Threaded Guide Pin \varnothing 3.2 mm x 305 mm (recommended)
 Bohrdraht mit Gewinde \varnothing 3,2 mm x 305 mm (empfohlen)



1.11878 Guide Rod for Cannulated Screws, \varnothing 1,8 mm x 350 mm
 Bohrdraht für kannulierte Schrauben, \varnothing 1,8 mm x 350 mm

Guide Rods with Spade Tip are only for Flexible Medullary Reamers Führungsdrähte

1.11872 Guide Rod for IM Nail, \varnothing 2,4 mm, Length 900 mm
Führungsdraht \varnothing 2,4 mm, Länge 900 mm

1.11873 Guide Rod for IM Nail, \varnothing 3,0 mm, Length 900 mm
Führungsdraht \varnothing 3,0 mm, Länge 900 mm

1.11874 Guide Rod for Reamer, \varnothing 2,0 mm, Length 900 mm with \varnothing 3,0 mm Spade Tip
Führungsdraht mit Olive \varnothing 2,0 mm, Länge 900 mm

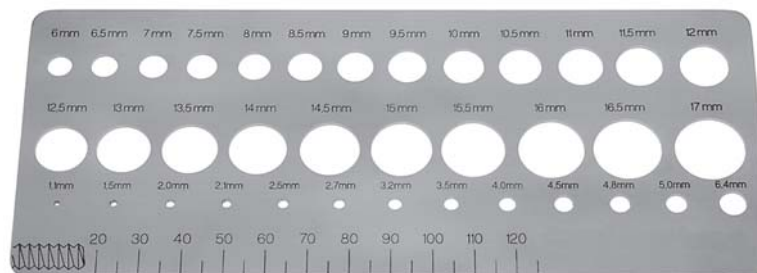
1.11879 Guide Rod for Reamer, \varnothing 3,0 mm, Length 900 mm with \varnothing 4,0 mm Spade Tip
Führungsdraht mit Olive \varnothing 3,0 mm, Länge 900 mm

1.11880 Guide Rod, \varnothing 3,0 mm, Length 900 mm with curved Tip
Führungsdraht gebogen \varnothing 3,0 mm, Länge 900 mm

1.11883 Guide Rod, \varnothing 2,4 mm, Length 900 mm with curved Tip
Führungsdraht gebogen \varnothing 2,4 mm, Länge 900 mm



1.11882 Open End Wrench SW 17 / 14
Gabelschlüssel SW 17 / 14



1.11888 Reamer / Nail and Screw Template
Fräser / Bohrer / Nagel und Schraubensablonne



1.11890 Nail Length Gauge
Nagel - Längenmeßlehre



1.11892 Supine Driver
Einschläger



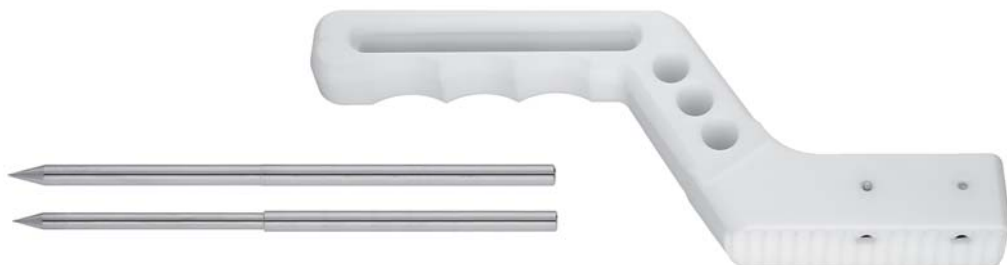
9090 Handle with Jakobs Chuck
Handstück mit Jakobsfutter



1.11896 Tibial Proximal Device
Proximal Tibia - Zielgerät

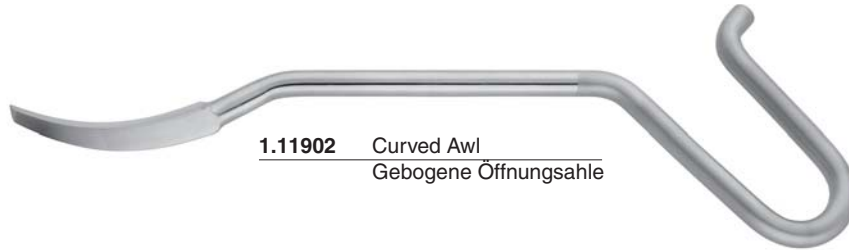


1.11900 Skin Protector
Hautschutz

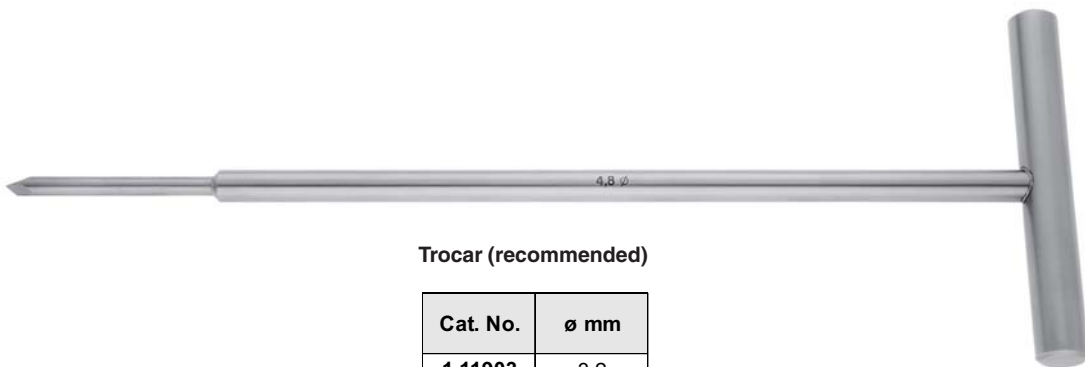


1.11953 Distal Aiming Device, Double Sleeve
for Femoral with Trocar \varnothing 4,8 mm, \varnothing 4,0 mm (recommended)
Distales Freihand - Zielgerät mit dualer Führung für Femur,
dazugehörige Trokare in \varnothing 4,8 / 4,0 mm (empfohlen)

1.11954 Distal Aiming Device, Double Sleeve
for Tibial with Trocar \varnothing 4,0 mm, \varnothing 3,5 mm, \varnothing 2,7 mm (recommended)
Distales Freihand - Zielgerät mit dualer Führung für Tibia,
dazugehörige Trokare in \varnothing 4,0 / 3,5 / 2,7 mm (empfohlen)



1.11902 Curved Awl
Gebogene Öffnungssahle



Trocar (recommended)

Cat. No.	ø mm
1.11903	3,2
1.11904	4,0
1.11905	4,8
1.11907	8,0



1.11901 Tapered Reamer, cannulated ø 15.5 mm for Femoral MFN. / DNS. - U/R Nails
Kannulierter Formfräser ø 15,5 mm für Femur MFN. / DNS.- U/R Nägel

1.11906 Tapered Reamer, cannulated ø 13.5 mm for Femoral MFN. / DNS. - U/R Nails
Kannulierter Formfräser ø 13,5 mm für Femur MFN. / DNS.- U/R Nägel



1.11908 Cannulated Reamer ø 9.0 mm
Kannulierter Stufenfräser ø 9,0 mm



1.11910 Green Drill Sleeve ø 8.0 mm
Bohrhülse Grün ø 8,0 mm



1.11911 Silver Drill Sleeve ø 2.1 mm
Bohrhülse Silber ø 2,1 mm



1.11913 Blue Drill Sleeve ø 4.8 mm
Bohrhülse Blau ø 4,8 mm



1.11914 Gold Drill Sleeve ø 4.0 mm
Bohrhülse Gold ø 4,0 mm



1.11915 Black Drill Sleeve ø 3.5 mm
Bohrhülse Schwarz ø 3,5 mm



1.11922 Slide Hammer
Gleithammer



1.11923 Tibial Extractor Bolt
Tibia Extraktionsschraube



1.11966 Femoral and DNS. - Femoral Nail, Extractor Bolt
Femur und DNS.-Femur Nagel, Extraktionsschraube



1.11891 Length Gauge MFN. / DNS.
Längenmesslehre MFN. / DNS.



1.11878 Guide Rod for Cannulated Screws, ø 1,8 mm x 350 mm
Bohrdraht für kannulierte Schrauben, ø 1,8 mm x 350 mm



1.13332 Nail Adapter Bolt for Drill Guide 1.13333 MFN. / DNS.
Nageladaptionsschraube für Zielgerät 1.13333 MFN. / DNS.



1.13333 Universal Proximal Device for Femoral and MFN. / DNS. - Femoral Nails
Universales Proximalzielgerät für Femur und MFN. / DNS.- Femur Nägel



- 1.13335** MFN. / DNS. Twist Drill cannulated \varnothing 4.0 mm, Length 305 mm
MFN. / DNS. Kannulierter Bohrer \varnothing 4,0 mm, Länge 305 mm
-
- 1.13336** MFN. / DNS. Twist Drill cannulated \varnothing 4.8 mm, Length 305 mm
MFN. / DNS. Kannulierter Bohrer \varnothing 4,8 mm, Length 305 mm



- 1.13337** MFN. / DNS. - Reamer \varnothing 6.4 mm
MFN. / DNS. - Fräser \varnothing 6,4 mm

Kunden-Info

„Röntgenunabhängiges -Zielgerät- mit Voreinstellung für distale Verriegelung !“

Einfache und multifunktionelle Anwendung für Femur - und Tibia Verriegelungsnägel.

Hohe Präzision bei distaler Verriegelung. Zeitlich kalkulatorische OP.

Ärzte stehen im Dienste der Medizin, an Ihre eigene Gesundheit denken Sie aber nie.

Denken Sie an Ihre eigene Gesundheit.

Führende Wissenschaftler stellten fest, daß die Strahlenbelastung höher ist, als bei den Kindern und Ingenieuren von TSCHERNOBIL.

Customers Info

„Target Device Independent of X-Rays with pre-adjustment, for distal locking !“

Simple and multifunctional application for Femoral and Tibial Interlocking Nails.

High precision in distal locking. Easily to be calculated operating time.

Surgeons are serving medicine. Mostly they neglect their own health !

Please remember your health.

Leading scientists have discovered that radiation dosage in operating theatres is higher than the dosage received by the children and engineers of Tschernobil.

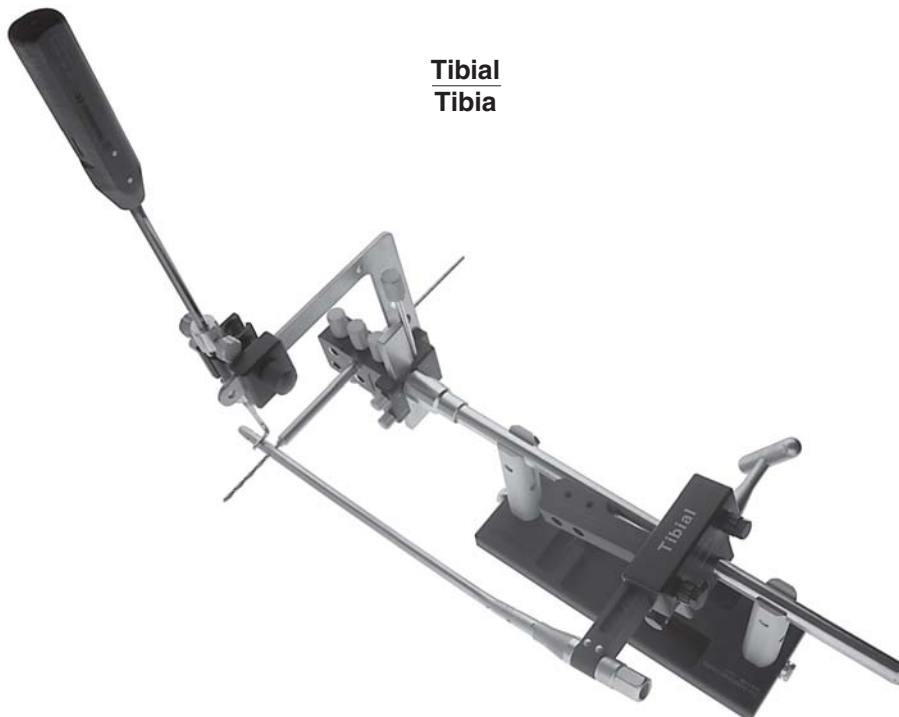
Reduction of the X - Ray exposure
Reduzierung der Röntgenstrahlen

Femoral
Femur

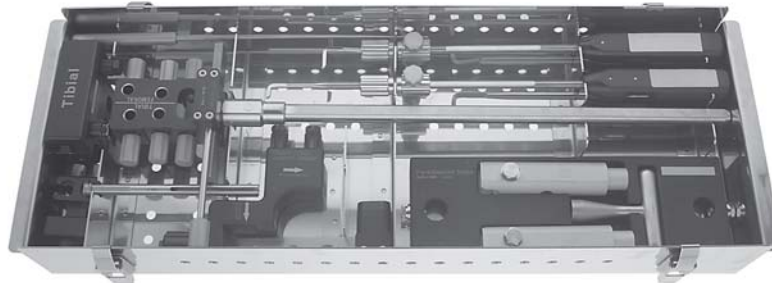


Targeting Device with Pre - Adjustment Device
Zielgerät mit Voreinstellgerät

Tibial
Tibia



Targeting Device with Pre - Adjustment Device
Zielgerät mit Voreinstellgerät



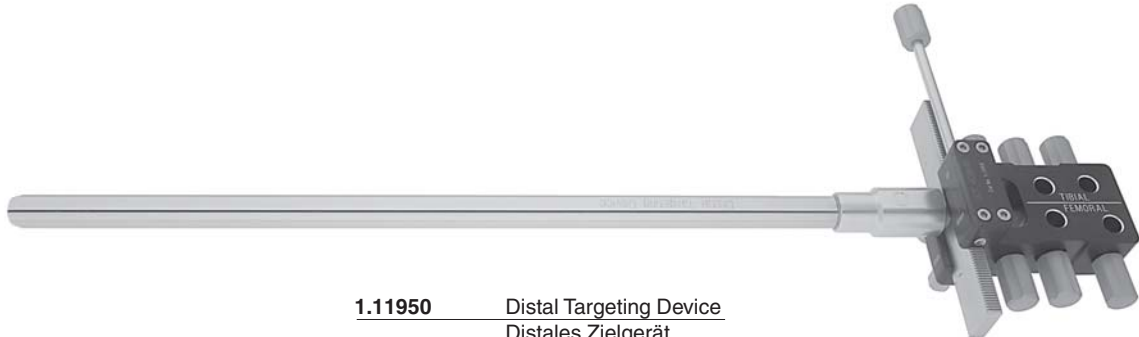
1.11962 Sterilizing Container for Distal Device Equipment (empty)
Sterilisationsbehälter für Distales Zielgerät - System (nicht gefüllt)

1.11962 Sterilizing Container for Distal Device Equipment (empty)

To include:	1.11950	Distal Targeting Device
	1.11951	Outrigger
	1.11956	Wrench SW 14
	1.11960	Pre - Adjustment Device
	1.11930	Tibial Adapter Block
	1.11933	MFN. / DNS. / Femoral Adapter Block
	1.11963	Fixation Hook - 20 mm
	1.11964	Fixation Hook - 15 mm
	1.11965	Hook Impactor Sleeve
	1.11967	Hook Awl for 1.11964 - 15 mm
	1.11968	Hook Awl for 1.11963 - 20 mm
	1.11969	Nail Feeler

1.11962 Sterilisationsbehälter für Distales Zielgerät - System (nicht gefüllt)

Zur Aufnahme von:	1.11950	Distales Zielgerät
	1.11951	Haken - Arm
	1.11956	Schlüssel SW 14
	1.11960	Voreinstellgerät
	1.11930	Tibia - Adapter Block
	1.11933	MFN. / DNS. / Femur Adapter Block
	1.11963	Fixationshaken - 20 mm
	1.11964	Fixationshaken - 15 mm
	1.11965	Hakenführungshülse zur Hakeneinführung
	1.11967	Hakenahle für 1.11964 - 15 mm
	1.11968	Hakenahle für 1.11963 - 20 mm
	1.11969	Nagelfühler - Instrument



1.11950 Distal Targeting Device
Distales Zielgerät



1.11960 Pre - Adjustment Device
Voreinstellgerät



1.11930 Tibial Adapter Block
Tibia Adapter Block



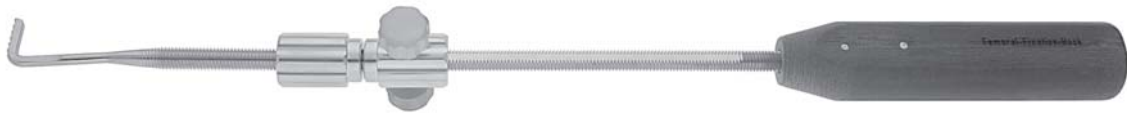
1.11933 Femoral MFN. / DNS. - Adapter
Femur MFN. / DNS. - Adapter



1.11951 Outrigger
Haken - Arm



1.11956 Wrench SW 14
Schlüssel SW 14



1.11963 Fixation Hook - 20 mm
Fixationshaken - 20 mm

1.11964 Fixation Hook - 15 mm
Fixationshaken - 15 mm



1.11965 Hook Impactor Sleeve
Hakenführungshülse zur Hakeneinführung



1.11967 Hook Awl for **1.11964** - 15 mm
Hakenahle für **1.11964** - 15 mm

1.11968 Hook Awl for **1.11963** - 20 mm
Hakenahle für **1.11963** - 20 mm



1.11969 Nail Feeler
Nagelfühler Instrument

Humeral Interlocking Nails Humerus Verriegelungsnagel



Cat. No.	\varnothing mm	Length cm
1.12000	7	18
1.12001	7	20
1.12002	7	22
1.12003	7	24
1.12004	7	26
1.12005	7	28
1.12006	7	30
1.12007	8	18
1.12008	8	20
1.12009	8	22
1.12010	8	24
1.12011	8	26
1.12012	8	28
1.12013	8	30
1.12014	9	18
1.12015	9	20
1.12016	9	22
1.12017	9	24
1.12018	9	26
1.12019	9	28
1.12020	9	30

Locking Screws for Humeral Nails \varnothing 4.0 mm Verriegelungsschrauben \varnothing 4,0 mm



Cat. No.	Length mm
1.12300	10
1.12302	12
1.12304	14
1.12306	16
1.12308	18
1.12310	20
1.12312	22
1.12314	24
1.12316	26
1.12318	28
1.12320	30
1.12322	32
1.12324	35
1.12326	40
1.12328	45
1.12330	50
1.12332	55
1.12334	60

Screw Plug Threaded 1/4" Verschlußschrauben mit 1/4" Gewinde



1.12025

Humeral Interlocking Instrumentation Humerus Instrumentarium

(Only for Humerus - not included in the Set 1.11400)
(Nur für Humerus - nicht integriert in 1.11400)



1.12045 Humeral Proximal Drill Guide
Humerus Proximal Zielgerät



1.12055 Adapter for Nail Driver and Extractor (1.11922)
Adapter für Extraktor (1.11922)



1.12046 Humeral Drill Sleeve ø 6,0 mm short
Humerus Bohrhülse ø 6,0 mm kurz



1.12047 Humeral Drill Sleeve ø 2,7 mm short
Humerus Bohrhülse ø 2,7 mm kurz



1.11864 Drill Bit Dia. 2,7 mm, Length 150 mm
Bohrer ø 2,7 mm, Länge 150 mm



1.12056 Humeral Hex Driver for ø 4,0 mm screws
Humerus Hexagonaler Schraubendreher für 4,0 mm V-Schrauben



1.11908 Cannulated Reamer ø 9,0 mm
Kannulierter Stufenfräser ø 9,0 mm



1.11876 Tip Threaded Guide Pin ø 3,2 mm x 305 mm (recommended)
Bohrdraht mit Gewinde ø 3,2 mm x 305 mm (empfohlen)

1.2040 Nail Guide Wire, ø 2,4 mm, Length 500 mm
Nagel - Führungsdraht ø 2,4 mm, Länge 500 mm



Monachia - Humerus - Nagel
Monachia Humerus Nail Implants

Cat. No.	ø mm	Length cm
1.13400	6	18
1.13402	6	20
1.13404	6	22
1.13406	6	24
1.13408	6	26
1.13410	6	28
1.13412	6	30
1.13414	6	32



1.13416 Monachia Abdeckplatte
Closing-Plate for Fixing the Wires (1.13422)



1.13417 Monachia Unterlagscheibe für Kompressionsmutter (1.13420)
Washer for Compression Nut (1-3420)



1.13418 Monachia Abstützplatte
Osteoporoses Washer



1.13420 Monachia Kompressionsmutter
Compression Sleeve



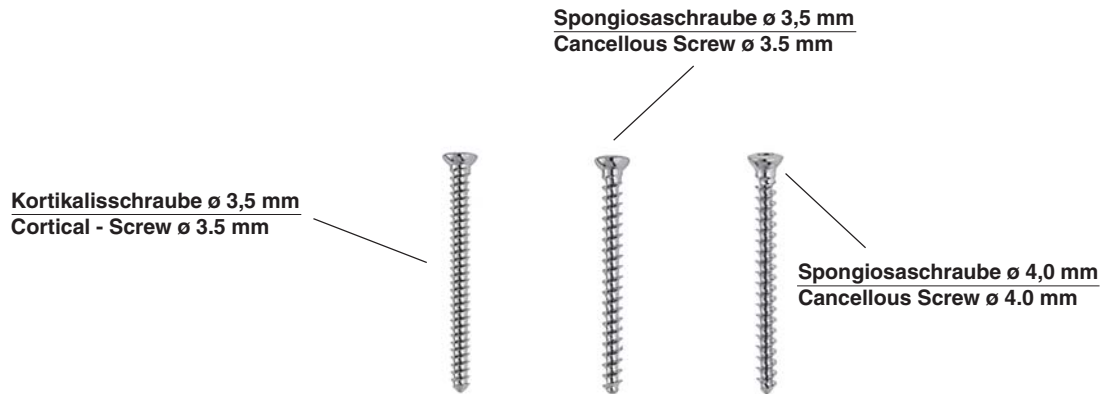
1.13421 Verstärkungsrohr aus Teflon L = 300 mm
Synthetic tube for reinforcement of the I.M. Nail 300 mm



1.13422 Spickdraht ø 1,6 mm x 360 mm
K-Wire for interlocking with Trocar Tip ø 1.6 mm x 360 mm



1.13423 Führungsdraht ø 1,6 mm x 500 mm
Guide Rod ø 1.6 mm x 500 mm



Dia of thread	3.5 mm	3.5 mm	4.0 mm
Pitch	1.25 mm	1.75 mm	1.75 mm
Dia of score	2.4 mm	1.9 mm	1.9 mm
Dia of head	6.0 mm	6.0 mm	6.0 mm
Length Länge	Cat. No.: Kat. Nr.:	Cat. No.: Kat. Nr.:	Cat. No.: Kat. Nr.:
10 mm	4002	4050	41140
12 mm	4004	4052	41142
14 mm	4006	4054	41144
16 mm	4008	4056	41146
18 mm	4010	4058	41148
20 mm	4012	4060	41150
22 mm	4014	4062	41152
24 mm	4016	4064	41154
26 mm	4018	4066	41156
28 mm	4020	4068	41158
30 mm	4022	4070	41160
32 mm	4024	4072	41162
34 mm	4025		
35 mm			41166
36 mm	4026	4074	
38 mm	4027		
40 mm	4028	4076	41168
45 mm	4030	4078	
50 mm	4032	4080	41170
55 mm		4082	41172
60 mm		4084	41174



9142 Schraubendreher für \varnothing 3,5 mm / 4,0 mm Schrauben
Screwdriver for \varnothing 3.5 mm / 4.0 mm Screws



1.11876 Führungsdraht für Stufenfräser mit Trokarspitze und Gewinde \varnothing 3,2 mm x 305 mm
Tip Threaded Guide for the Double Reamer Pin \varnothing 3.2 mm x 305 mm



1.11882 Gabelschlüssel SW 17 / 19
Open End Wrench SW 17 / 19



1.11920 Schlitzhammer mit Schlitzweite 14 mm
Slotted Hammer - width of the slot 14 mm



1.11898 Extraktionsstange
Driver / Extractor Tube



1.11900 Hautschutz
Skin Protector



(recommended)

1.11002	Flexibler Markraumbohrer Flexible Medullary Reamer	6,0 mm 6,0 mm
1.11004	Flexibler Markraumbohrer Flexible Medullary Reamer	6,5 mm 6,5 mm
1.11006	Flexibler Markraumbohrer Flexible Medullary Reamer	7,0 mm 7,0 mm
1.11008	Flexibler Markraumbohrer Flexible Medullary Reamer	7,5 mm 7,5 mm
1.11010	Flexibler Markraumbohrer Flexible Medullary Reamer	8,0 mm 8,0 mm



9074 Gewindeschneider ø 3,5 mm / 1,25 mm Steigung, Cortex
Tap ø 3.5 mm / 1.25 mm Pitch, Cortex



9094 Kupplungsgriff für Gewindeschneider
Tap Handle with Quick Coupling



9014 Knochenbohrer ø 2,0 mm mit AO Schaft
Drill Bit ø 2.0 mm with AO shaft

9016 Knochenbohrer ø 2,5 mm mit AO Schaft
Drill Bit ø 2.5 mm with AO shaft



9172 Schmalere Schraubendreher mit Selbsthaltehülse
Small Hexagonal Screwdriver with Holding Sleeve



1.13424 Einschläger mit Adaptationteil
Supine Driver for the I.M. Nail with Adapter



1.13426 Spickdrahteinschläger
Supine Driver for K-wires ø 1.6 mm (1.13422)



1.13428 Nagelbiegezange
Nail Bending Pliers



1.11908 Stufenfräser ø 9,0 mm, durchbohrt
Cannulated Double Reamer, 9.0 mm



9410 Drahtbiegezange
Wire Bending Pliers



7414 Drahtschneidezange
Wire Cutter

Basisinstrumentensatz für Monachia Humerus System Basic Instrumentation Set for Monachia Humerus System



1.13500 Basis Satz
Basic Set

151013 Container

1.13501 Siebschalen für 1.13500 mit Leisteneinsätzen 2 Stück (leer)
Tray - Set for 1.13500 with inserts 2 pieces (empty)

Listing: Basic Instruments for 1.13500
Liste: Basis Instrumente für 1.13500

9142	<u>Schraubendreher für ø 3,5 mm / 4,0 mm Schrauben</u> Screwdriver for ø 3.5 mm / 4.0 mm screws
1.11876	<u>Führungsdraht mit Trokarspitze und Gewinde ø 3,2 mm x 305 mm</u> Tip threaded Guide Pin ø 3.2 mm x 305 mm
1.11882	<u>Gabelschlüssel SW 17 / 19 mm</u> Open End Wrench SW 17 / 19 mm
1.11920	<u>Schlitzhammer mit Schlitzweite 14 mm</u> Slotted Hammer - width of the slot 14 mm
1.11898	<u>Extraktionsstange</u> Driver / Extractor Tube
1.11900	<u>Hautschutz</u> Skin Protector
9074	<u>Gewindeschneider ø 3,5 mm x 1,25 mm Steigung, Cortex</u> Tap ø 3.5 mm / 1.25 mm pitch, cortex
9094	<u>Kupplungsgriff für Gewindeschneider</u> Tap Handle with quick coupling
9014	<u>Knochenbohrer ø 2,0 mm mit AO Schaft</u> Drill Bit ø 2.0 mm with AO shaft
9016	<u>Knochenbohrer ø 2,5 mm mit AO Schaft</u> Drill Bit ø 2.5 mm with AO shaft
9172	<u>Schmaler Schraubendreher mit Selbsthaltehülse</u> Small Hexagonal Screwdriver with Holding Sleeve
1.13424	<u>Einschläger mit Adaptationsteil</u> Supine Driver with Adapter
1.13426	<u>Spickdrahteinschläger</u> Supine Driver for Wires ø 1.6 mm (1.13422)
1.13428	<u>Nagelbiegezange</u> Nail Bending Pliers
1.11908	<u>Stufenfräser ø 9,0 mm, durchbohrt für 1.11876 Führungsdraht mit Gewinde</u> Cannulated Reamer, 9.0 mm for 1.11876 Tip threaded Guide Pin ø 3.2 mm x 305 mm
9410	<u>Drahtbiegezange</u> Wire Bending Pliers
7414	<u>Drahtschneidezange</u> Wire Cutter
1.13423	<u>Führungsdraht</u> Guide Rod ø 1.6 mm x 500 mm

MATTES

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MEDIZINTECHNIK

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MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



Intramedullary Gliding Nails for children
Intramed Gleitnagel für Kinder

- *Product Description and OR-Technique*
- *Produktbeschreibung und OP-Technik*

Contents:
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Intramedullary Gliding Nails

Diaphyseal fractures of long bones in children and adolescents in the growing age are mostly treated conservatively with plaster of Paris and external splintage. The borderline is there, where retention obviously can not be maintained. Quite often additional anaesthetics were necessary due to post-reduction. In spite of the often long therapeutical process the final result was not satisfactory neither for the child, nor for the parents and therapists.

The treatment with plates and screws or with an external fixateur were reduced to exceptions.

Reasons for it:

- during growth 75% the periosteal healing is predominant
- with plates and screws a rigid anatomical reduction is given but followed by a long time of immobilization, extensive scar and reoperation due to metal removal.
- The treatment with external fixator for open fractures is advantageous and offers with good rigidity the possibility of early dynamization. However the axial positioning can not always be achieved. In addition regularly pin-care visits are necessary and the child always is confronted with the osteosyntheses material.

Demand

In spite of the „healing potential“ in childlike bone the treatment of bone in the growing skeleton the axial anatomical alignment must be looked at with priority.

Is there a reduction necessary then the fracture may not remain in an axial deviation or in a wrong rotational position. Independent from age the aim must be to achieve the optimum position.

Intramedullary osteosyntheses offers an alternative with

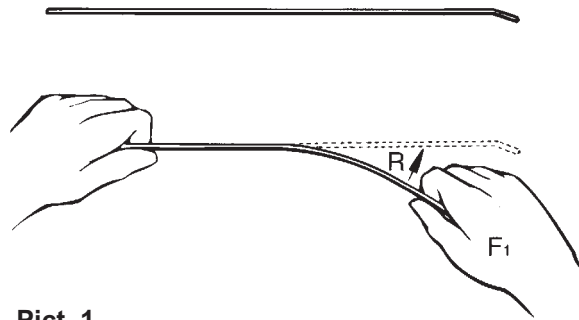
- little additional traumatization
- sufficient axial stability
- optimum healing due to stimulated micro movements
- low complication rate
- early mobilization
- excellent cosmetic result
- outpatient metal removal after 10 to 12 weeks and
- is indicated for patients, in which the conservative therapy has already started, but post reduction is predictable.

The use of about 10.000 intramedullary gliding nails in Germany has led to expand the indications also to adults.

This alternative to the treatment with intramedullary gliding nails results in:

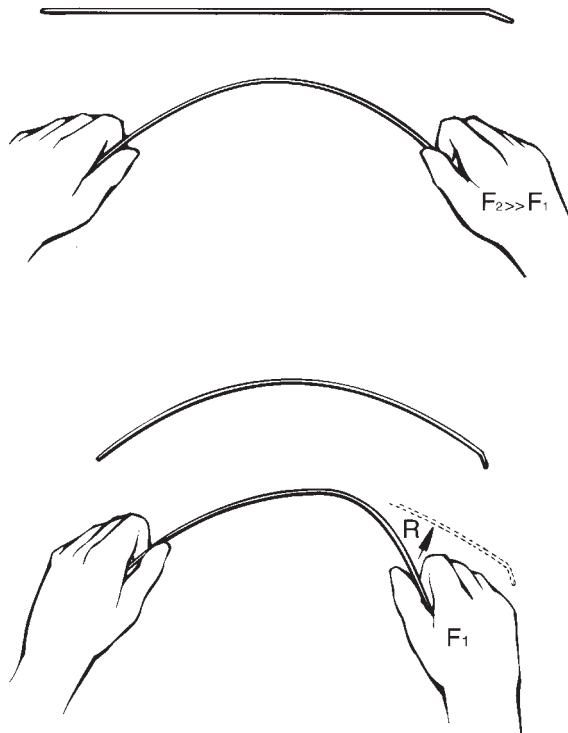
- less invasive treatment
- shorter OR-time
- cost saving procedure
- less X- Ray exposure for patient and therapist
- outpatient metal removal after 6 to 9 months.

The rigidity of the elastic intramedullary gliding nail is adequate to the rigidity of the bone. Incoming forces (F_1), which lead to material breakage in rigid implants, are transformed and bend the implant. The elasticity of the implant and its ability of reversible deformation reset the intramedullary gliding nail into its origin position due to reset forces (R).



Pict. 1

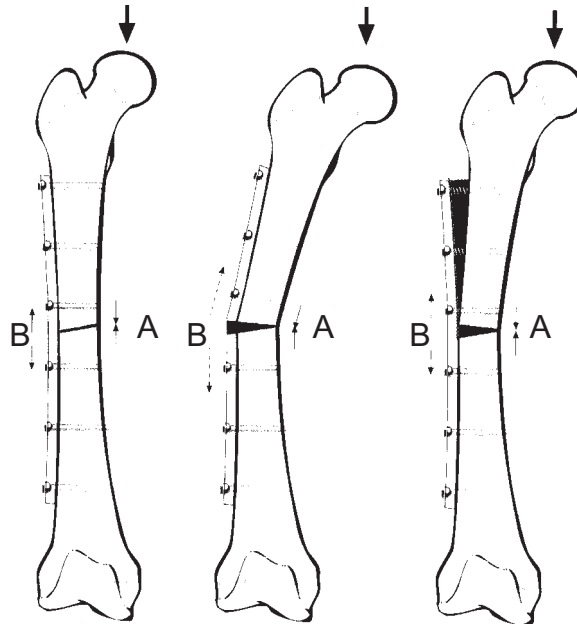
Is the intramedullary gliding nail (**pict. 2**) pre-bent (F_2), arises a new „Zero Point“, that means that the reset forces reset the gliding nail in its „new“ point of origin.



Pict. 2

Osteosyntheses with plates and screws (**pict. 3**) concentrate all biomechanical forces in a one point compression zone (A), so that bending forces on one side induces big tension forces on the opposite one (B).

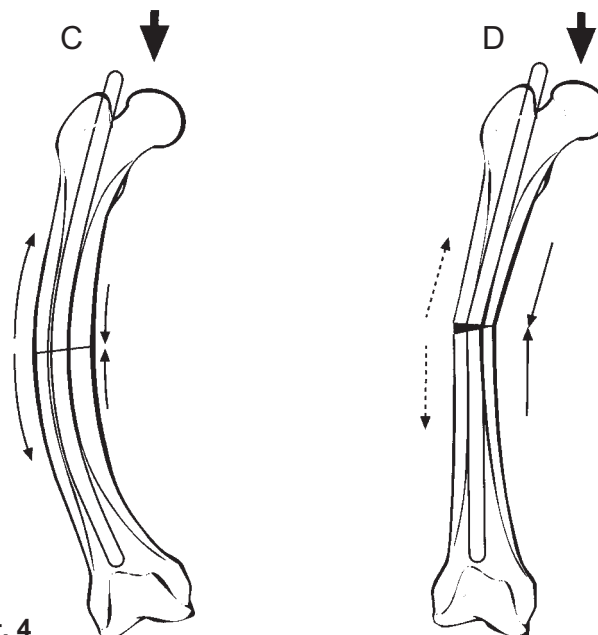
With plates and screws:



Pict. 3

In case of a rigid intramedullary nail (**pict. 4**), which clamps inside the intramedullary canal, changing induced forces may lead to varus deviation of the bone due to implant deforming or may result in nail breakage (D).

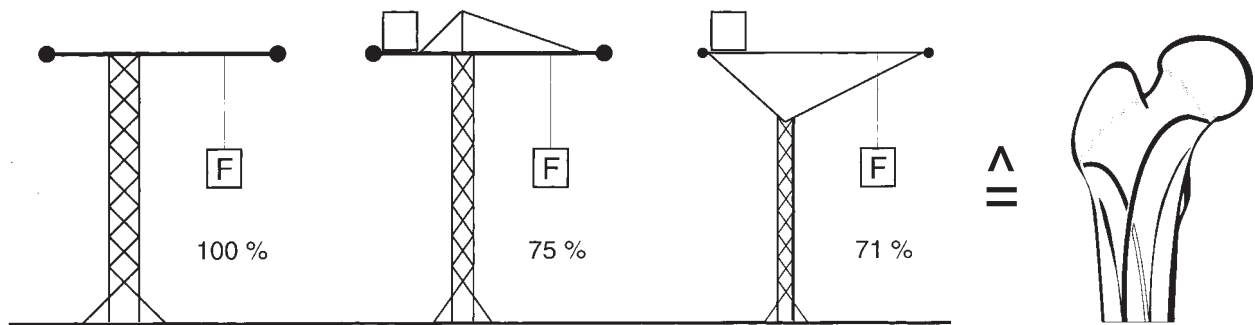
Rigid Nail



Pict. 4

Pict. 5

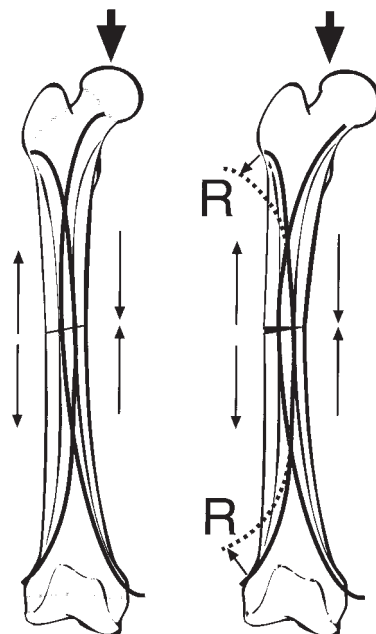
The basic principle are two intramedullary gliding nails in opposite position which form a Y-shaped buttress (A). The induced forces on the implant are reduced at about 30%.



Pict. 5

Pict. 6

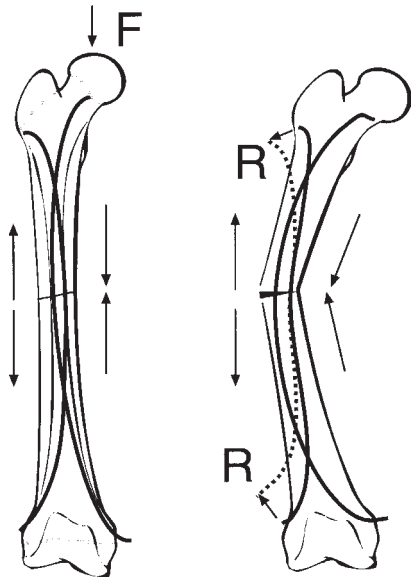
The intramedullary gliding nail may absorb incoming forces, which lead to implant breakage in rigid implants, due to the ability of the reversible deforming.



Pict. 6

Pict. 7

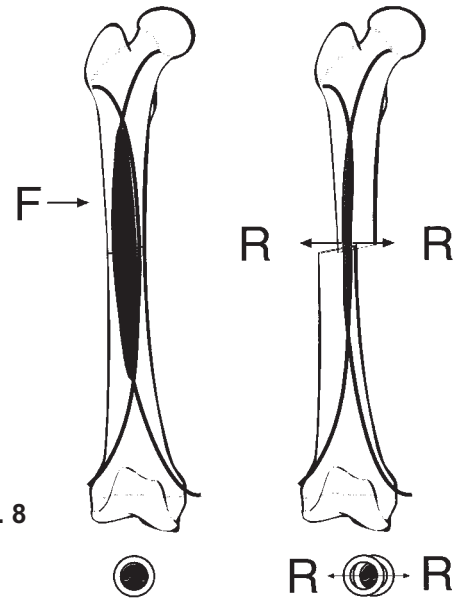
Axial bending forces (F) distract a gliding nail. Its reset-forces (R) correct the axial failure.



Pict. 7

Pict. 8

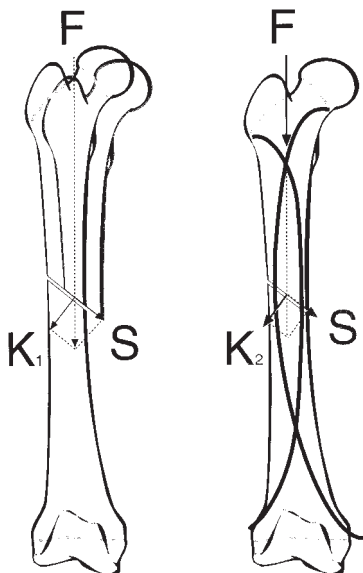
Frontal pushing forces distract both gliding nails. The appropriate reset-forces push them back into its origin position.



Pict. 8

Pict. 9

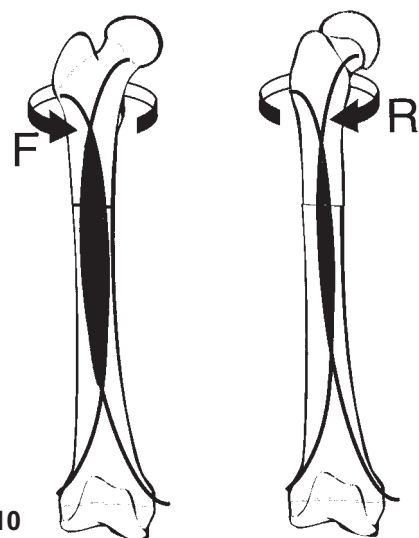
In oblique fractures the axial induced force (F) is split into a pushing- (S) and a compression-component (K). The intramedullary guiding avoids (S) and strengthens (K).



Pict. 9

Pict. 10

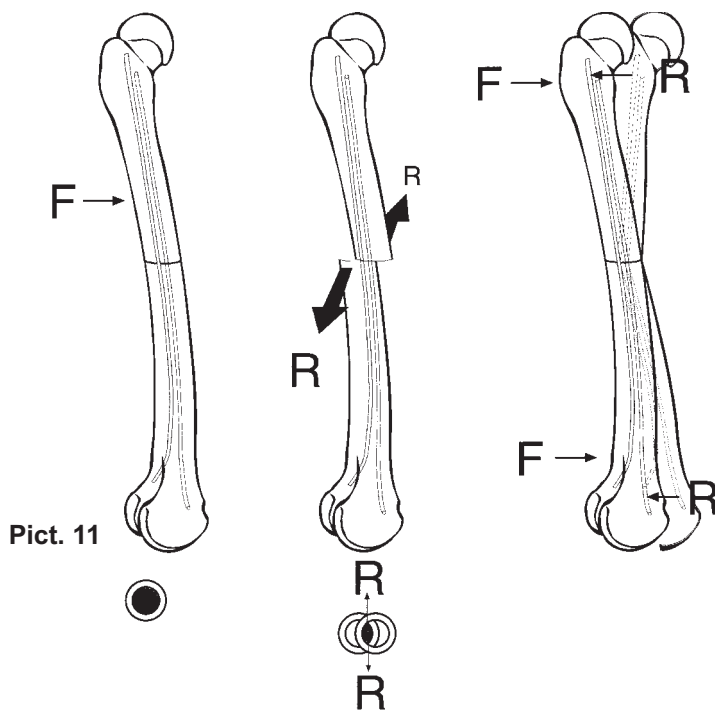
Rotational winding of the gliding nails one around each other built up tension to correct malpositioning.



Pict. 10

Pict. 11

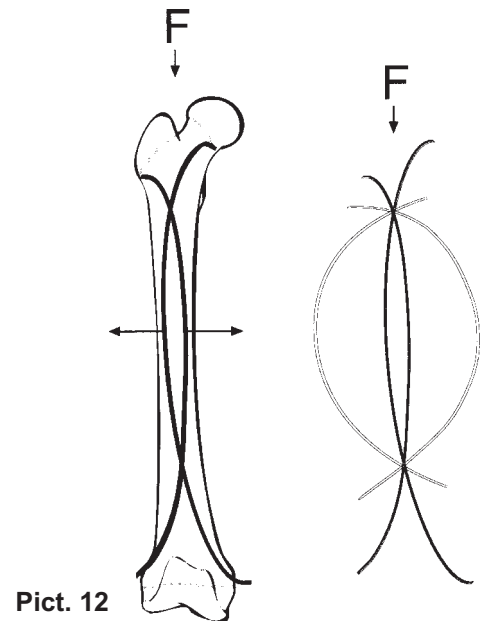
Sagittal pushing forces reduce the contact- area within the intramedullary canal and provoke, due to induced tension, the reset of the fragments. Are there excentric sagittal forces it leads to ante- or recurvation which will be corrected by the elasticity of the implants.



Pict. 11

Pict. 12

Due to the fact that the oval between the two gliding nails cannot be enlarged, axial compression leads to re-inforcement pressure on the gliding nails against the endost.



Pict. 12

Technique:

Determination of the thickness size of the gliding nail

$$\text{Gliding nail size} = \frac{\text{Medullary canal diameter in mid-shaft}}{3}$$

$$\text{Forearm} = \frac{2 \times \text{Medullary canal diameter in mid-shaft}}{3}$$

Entry point:

The entry point for gliding nails must always be outside the joint capsule and care to be taken about the epiphyseal area. A region with little soft tissue coverage and appropriate intramedullary canal is advantageous.

Forearm

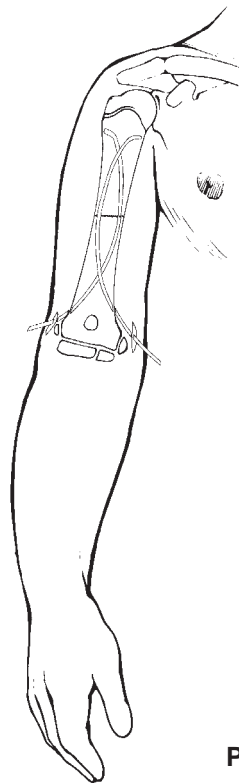
Always one gliding (**pict. 13**) nail is used in a conventional way starting from distal radius or from proximal ulna.



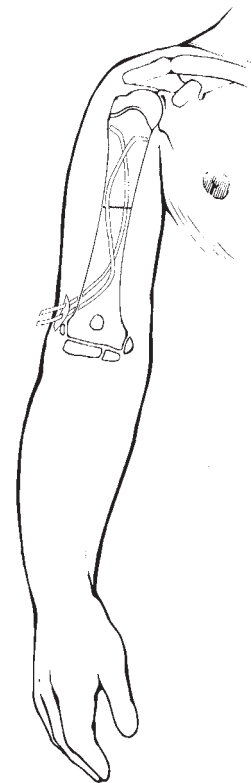
Pict. 13

Humerus

The ascending humeral gliding nails (**pict. 14**) can be performed either from both sides or both nails are inserted from radial (**pict. 15**) approach. In this case There is one incision but two drill holes.



Pict. 14



Pict. 15

Pict. 16

Femur fractures routinely are treated with the both side distal approach.



Pict. 16

Pict. 17

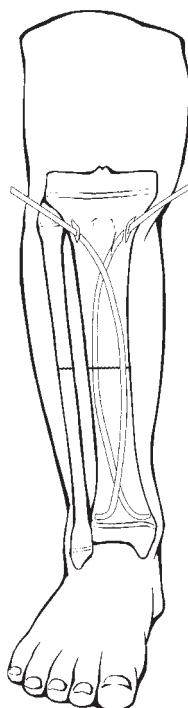
Distal humeral- and femoral fractures in some cases need an ascending treatment. There is one incision but two drill holes.



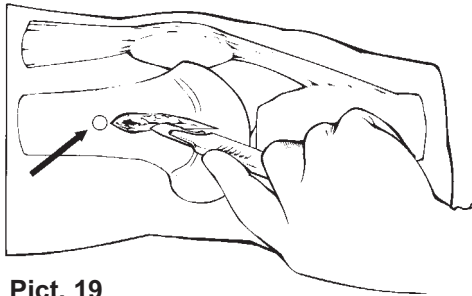
Pict. 17

Pict. 18

Tibia fractures are treated in a descending manner with two incisions at both sides of tuberositas tibiae.



Pict. 18



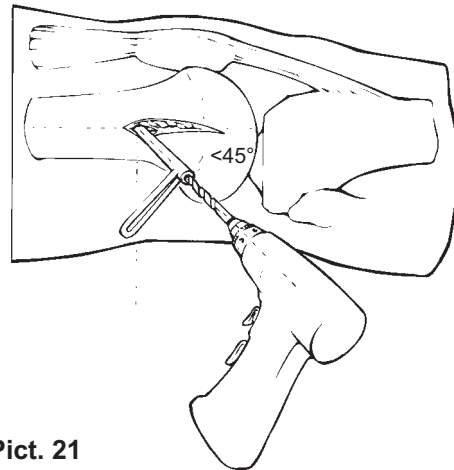
Pict. 19

OP- Technique

Skin incision is made from the planned entrance point in epiphyseal direction (**pict. 19**). A 2 to 3 cm long incision facilitates the following steps.



Pict. 20



Pict. 21

The entrance point is marked with the trokar which has been put into the sleeve to protect soft tissue. The marking is done in a 90° angulation (**pict. 20**) to the bone surface. The bone opening can alternatively done either with the trokar or with a drill (**pict. 21**).



Pict. 22



Pict. 22a



Pict. 23

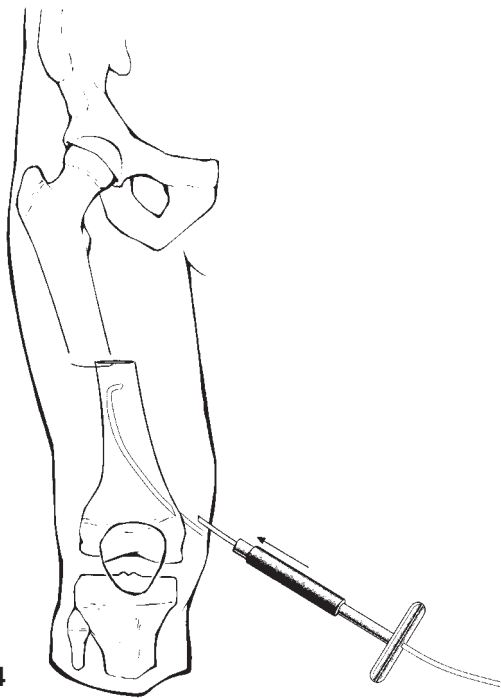
The size of the trokar or drill must be at least 0,5 mm bigger in diameter than the indicated intramedullary nail. The bone perforation is performed in angulation less than 45° (**pict. 22**). After removal of the trokar or drill the tissue protection sleeve is held in position (**pict. 22a**). The gliding nail is then introduced through it. The slot of the sleeve (**pict. 23**) facilitates the introduction of nails with bent tips.

Implantation of intramedullary gliding nail

Is pre-bending of the gliding nail necessary? It is then indicated when the gliding nail in the bone entrance fragment shall early reach the opposite cortical bone, e.g. in those cases when the fragment is relatively short or if the implant sticks on the opposite cortical bone and cannot be moved further on into the medullary canal. Primarily that implant is introduced which leads to the highest reduction effect of the fracture. The gliding nail is introduced through the tissue sleeve into the intramedullary canal. The gliding nail then must be turned in the way that the tip shows in direction to the medullary canal and not to the cortex.

Pict. 24

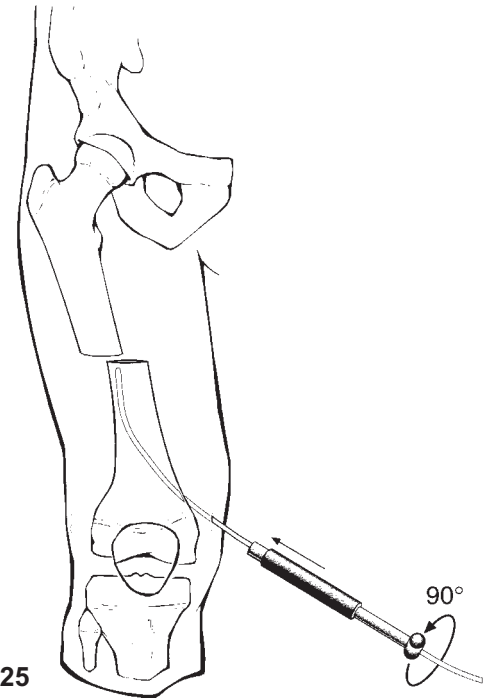
With the T-handle with Jacobs Chuck the gliding nail is shortly fixed and introduced step by step. This facilitates the introduction and avoids unintended bending of the implant.



Pict. 24

Pict. 25

Is there little fragment contact at the fracture side, the tip of the gliding nail can be aligned while twisting the gliding nail.



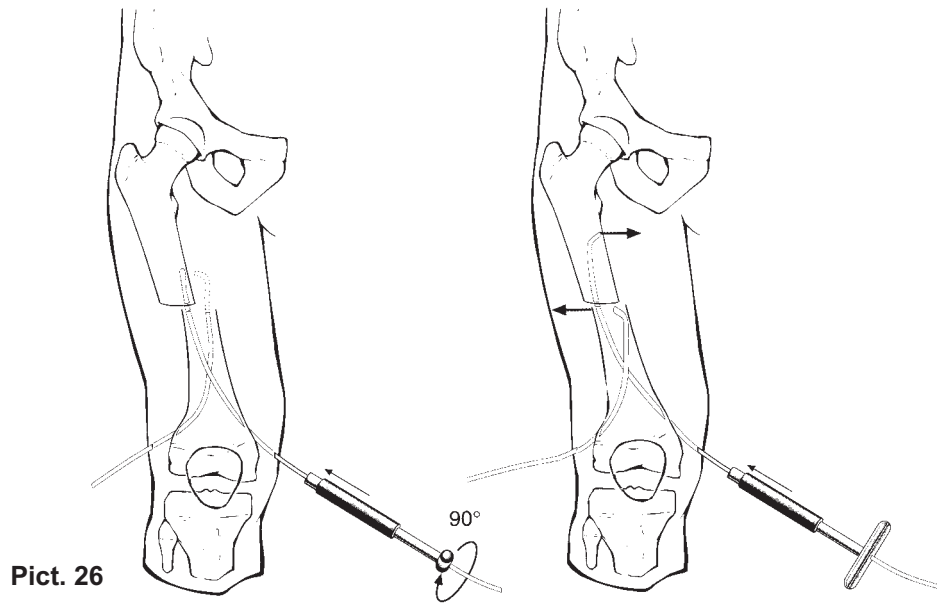
Pict. 25

Tip:

Often it is useful, that prior to the transfer of the first gliding nail from one side of the fracture to the other one that the second gliding nail has been inserted and being pushed onto the borderline of the fracture. There are now two starting points given which can be used for reduction in detail.

Pict. 26

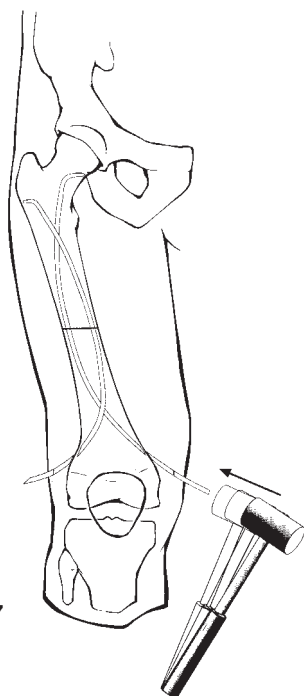
To introduce the second gliding nail in the opposite fragment easily, the first gliding nail can be twisted to correct fragment position.



Pict. 26

Pict. 27

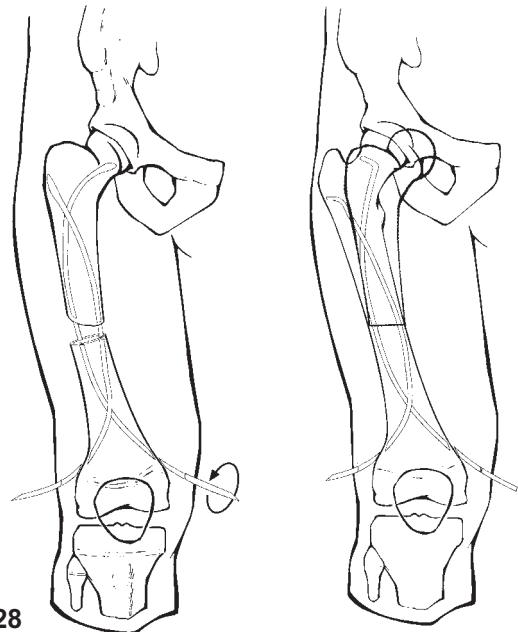
The implant is fixed in the metaphyseal spongiosa of the counter fragment with some soft impacts with the hammer.



Pict. 27

Pict. 28

Slight misalignments in axial position can be corrected by restricted twisting manoeuvres of the gliding nail.



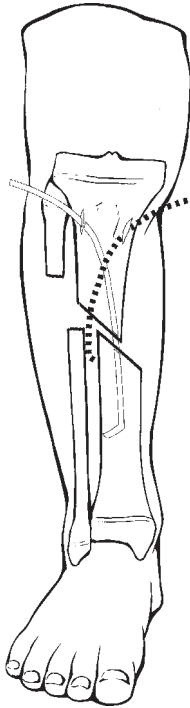
Pict. 28

Tip:

A possible distraction at the fracture line which may occur due to the implantation can be corrected through axial compression. Afterwards the implants are impacted. Finally the gliding nail will be cut subcutaneously with the wire cutter. A protective cap is put onto the sharp end of the gliding nail to prevent soft tissue irritation and nail perforation.

Pict. 29

In oblique fractures that gliding nail is easier to implant which nail tip is 90° to the fracture area.



Pict. 29

Pict. 30

In spiral fractures primarily the implantation at the side with the long cortical bone is recommended.



Pict. 30



Pict. 31



Abb. 32

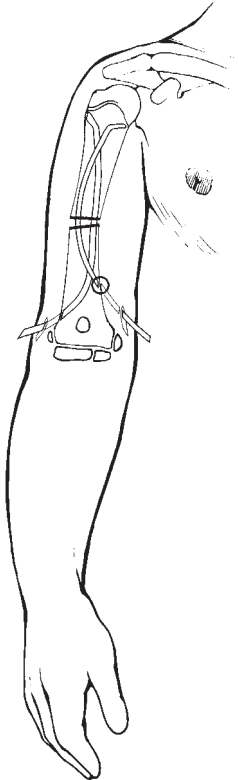
Implant removal

Implant removal can be done in outpatient treatment. The end of the gliding nail is exposed in the conventional way. The protection cap is removed with a forceps (**pict. 31**). The implant is grasped with an adjustable extraction forceps (**pict. 32**), with a longitudinal groove to cover the implant.

Implantation Problems

Pict. 33

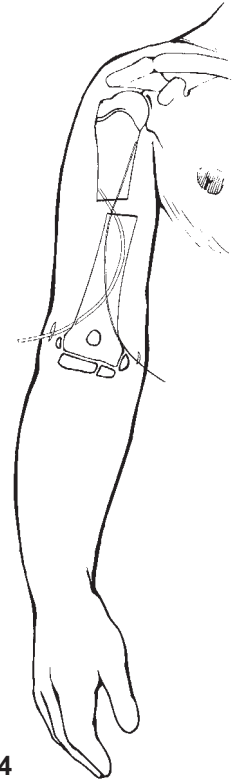
The asymmetrical implantation leads to two tension bows and therefore can induce malposition.



Pict. 33

Pict. 34

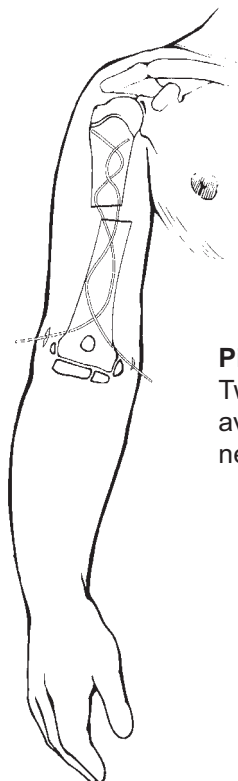
Too short or too thin used implants are not able to fulfil the demands of the elastic-stable treatment with intramedullary gliding nails.



Pict. 34

Pict.35

Twisted implants one around each other avoid the adequate tension fixation and the necessary elasticity.



Pict. 35

MATTES Intramed Gleitschiene

PRODUCT NEWS



Intramed Gleitschiene

Diaphysäre Frakturen an Röhrenknochen bei Kindern und Jugendlichen im Wachstumsalter wird in den meisten Fällen konservativ mit Gips oder Schienen versorgt

Die Grenzen liegen dort, wo eine Retention absehbar nicht aufrechterhalten werden kann. Nicht selten waren deshalb wiederholte Narkosen zur Nachreposition erforderlich. Trotz des oft langen Therapieverlaufs stand am Ende für das Kind, für die Eltern und für die Behandelnden ein unbefriedigendes Resultat.

Die Versorgung mittels Platten-Osteosynthese oder mit Fixateur extern waren auf Ausnahmen beschränkt. Gründe hierfür sind,

- in 75% erfolgt eine überwiegend periostale Heilung im Wachstumsalter,
- bei Platten u. Schrauben ist eine rigide anatomische Reposition zwar gegeben, es erfolgt jedoch eine lange Immobilisationszeit, eine ausgedehnte Narbe u. zwecks Metallentfernung wird eine Zweitoperation notwendig.
- Zwar ist der Fixateur extern vorteilhaft bei offenen Frakturen und bietet bei guter Rigidität die Möglichkeit der frühzeitigen Dynamisierung, wobei jedoch die exakte achsengerechte Stellung nicht immer erreicht wird. Hinzu kommt die regelmäßigen Konsultationen beim Hausarzt zur Pin-Pflege und die ständige Konfrontation des Kindes mit dem Osteosynthesematerial.

Anspruch

Trotz der „Heilungspotenz“ des kindlichen Knochens muß auch bei der Frakturenbehandlung am wachsenden Skelett die achsengerechte anatomische Ausrichtung als vordringliches Ziel gelten. Ist eine Reposition erforderlich, darf die Fraktur nicht in einer Achsenabweichung oder in einem Rotationsfehler verbleiben, sondern es wird unabhängig vom Alter die optimale Stellung angestrebt.

Die Intrameduläre Osteosynthese bietet hier eine Alternative mit

- geringer zusätzlicher Traumatisierung
- ausreichender axialer Stabilität
- optimaler Ausheilung durch stimulierte Microbewegungen
- niedriger Komplikationsrate
- früher Mobilität
- hervorragendem kosmetischen Ergebnis
- ambulanter Implantatentfernung nach 10 bis 12 Wochen und
- indiziert auch bei Patienten mit bereits begonnener konservativer Therapie, bei denen mit Nachrepositionen gerechnet werden muß.

Der Einsatz von ca. 10.000 Schienen p.A. in Deutschland hat die Indikation auf Erwachsene ausgedehnt und es wurde somit eine Alternative zur Versorgung mit Verriegelungsnägeln geschaffen mit:

- weniger Invasiver Versorgung
- kostengünstiger
- weniger X- Ray Belastung
- ambulanter Metallentfernung nach 6 bis 9 Monaten

Die Rigidität der elastischen Markraumschiene ist der Rigidität des Knochens adäquat. Die Elastizität des Implantates (**Abb. 1**) ermöglicht das Abfangen einwirkender Kräfte (F_1), die bei starren Implantaten zum Implantatbruch führen, durch die Fähigkeit zur reversiblen Deformierung, das heißt Rückstellkräfte (R) führen die Schiene in die Ausgangsposition zurück.

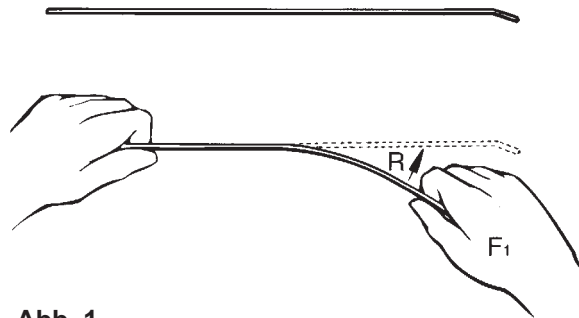


Abb. 1

Wird die Schiene (**Abb. 2**) vorgebogen (F_2), entsteht ein neuer „Nullpunkt“, d.h. Rückstellkräfte führen die Schiene nun in die „Neue“ Ausgangsposition zurück.

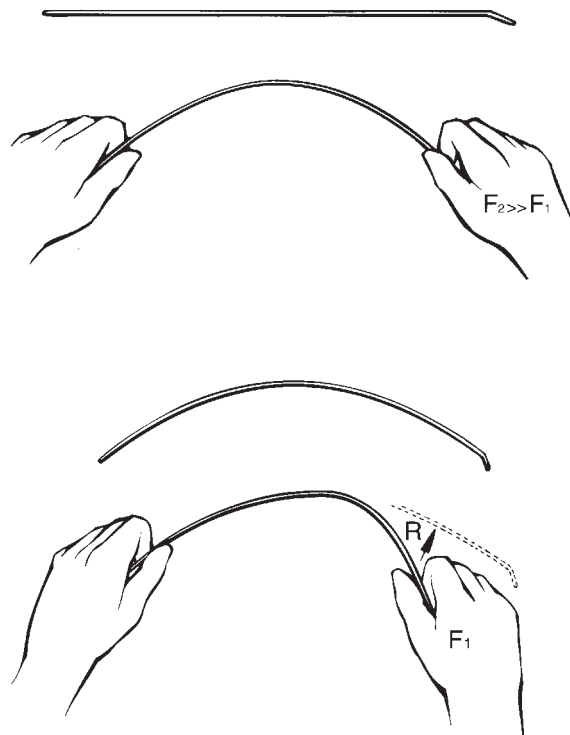


Abb. 2

Die rigide Plattenosteosynthese (**Abb. 3**) konzentriert alle biomechanischen Kräfte in einer punktuellen Kompressionszone (A) was bei Biegebeanspruchungen auf der Gegenseite große Zugspannungen hervorruft (B).

Plattenversorgung:

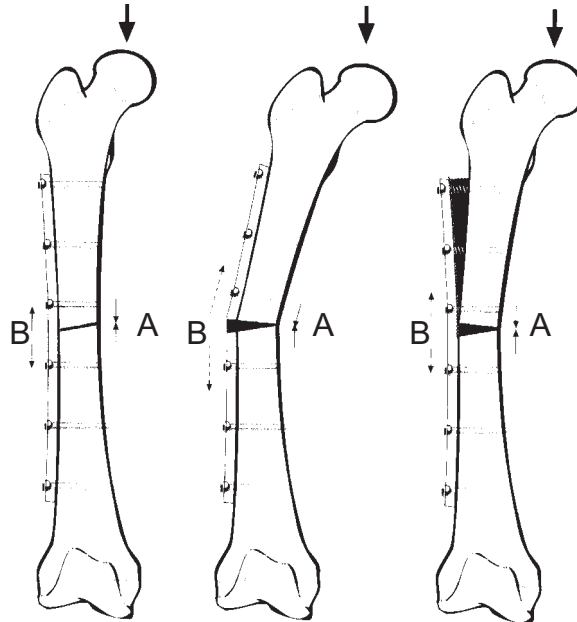


Abb. 3

Bei einem starren Intramedullarem Nagel (**Abb. 4**), der im Markraum verklemt, können die wechselnden auftretenden Kräfte entweder über eine plastische Verformung zur Varisierung Knochens führen (C) oder es resultiert ein Bruch des Nagels (D).

Rigider Nagel

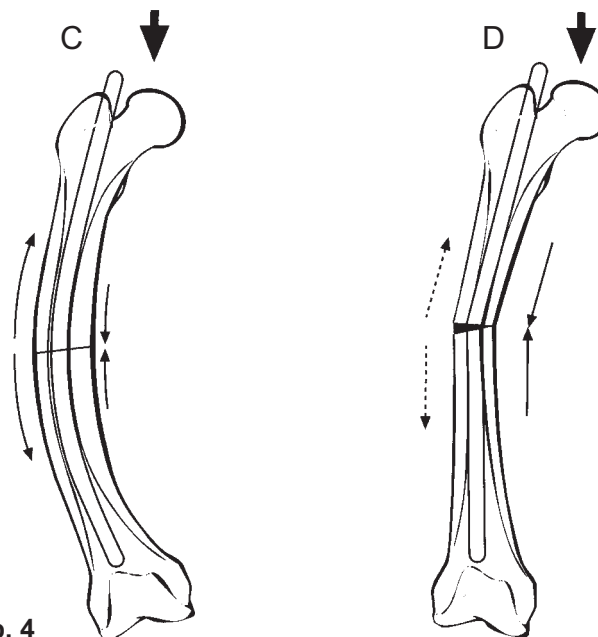


Abb. 4

Abb. 5

Das Grundprinzip ist das zweier gegenläufiger intramedullärer Schienen, wobei die Y-förmige Verstrebung die axial einwirkenden Kräfte auf das Implantat um ca. 30% reduziert:

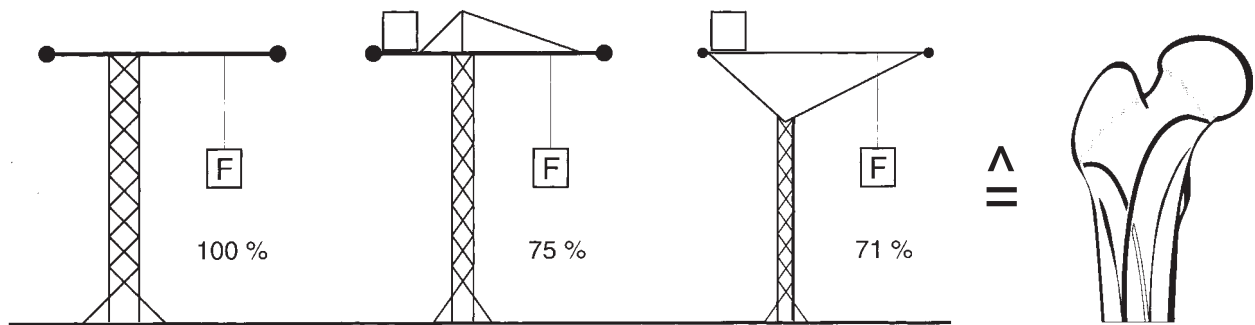


Abb. 5

Abb. 6

Die intramedulläre Schienung kann einwirkende Kräfte, die bei starren Implantaten zum Implantatbruch führen, durch die Fähigkeit zur reversiblen Deformierung abfangen.

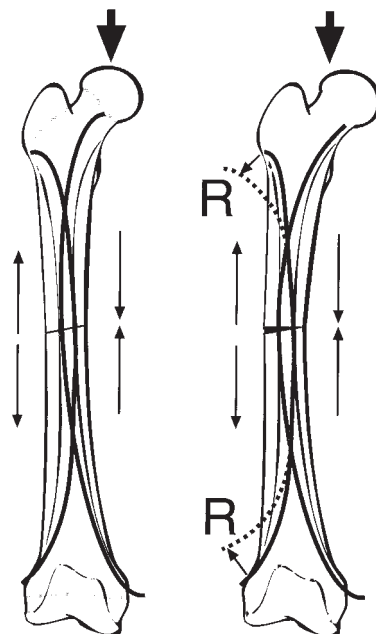


Abb. 6

Abb. 7

Axiale Biegekräfte (F) distrahieren eine Schiene, deren Rückstellkräfte (R) den passageren Achsenfehler wieder korrigieren.

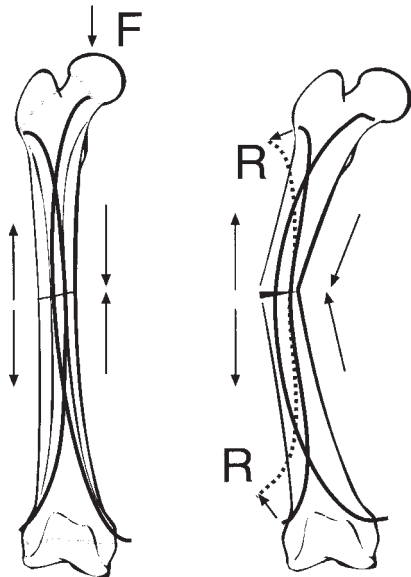


Abb. 7

Abb. 8

Frontale Schubkräfte distrahieren beide Schienen mit dem Aufbau entsprechender Rückstellkräfte.

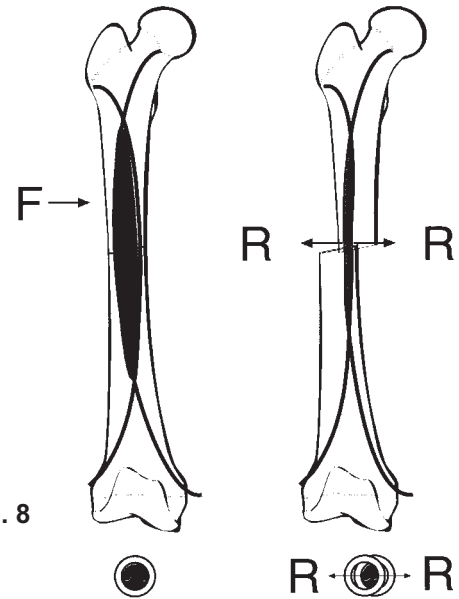


Abb. 8

Abb. 9

Bei Schrägfrakturen teilt sich die axial einwirkende Kraft (F) in eine Schub- (S) u. eine Kompressions-Komponente (K). Die intramedulläre Führung verhindert (S) und verstärkt (K).

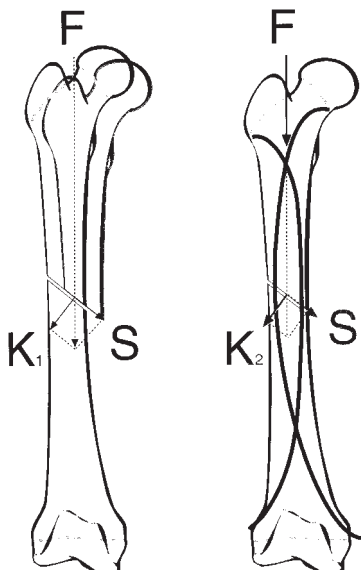


Abb. 9

Abb. 10

Rotationen winden die Schienen umeinander und bauen so die Spannung zur Korrektur der Fehlstellung auf.

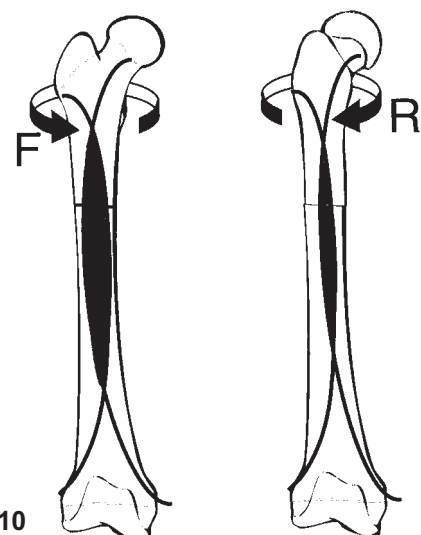


Abb. 10

Abb. 11

Sagittale Schubkräfte engen die Markraum-Kontaktfläche ein u. provozieren über die hier entstehende Spannung die Rückführung der Fragmente. Greifen sagittale Schubkräfte exzentrisch an, kommt es zur passageren Ante- oder Rekurvation; die Elastizität der Implantate führt zur Korrektur.

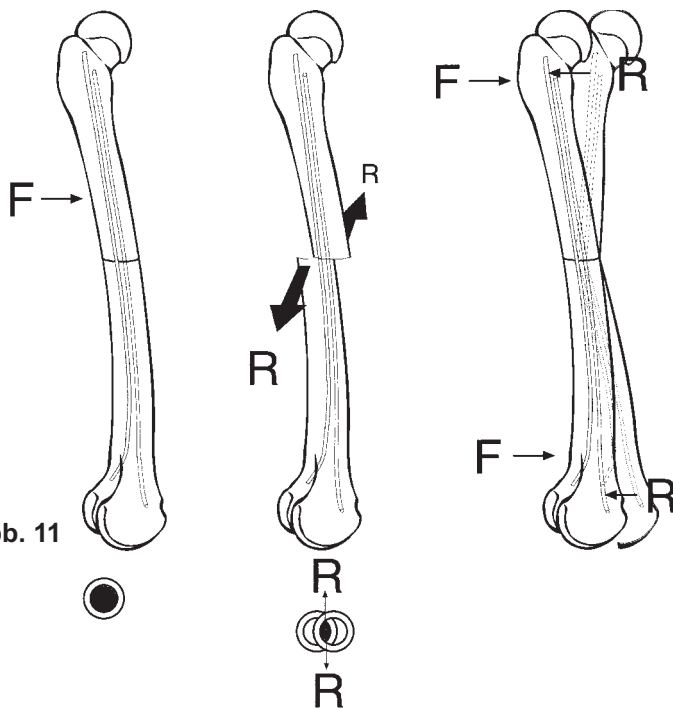


Abb. 11

Abb. 12

Axiale Kompression führt wegen der Unmöglichkeit einer Verbreiterung des Ovals zwischen den Schienen zur verstärkten Anpressung der Schienen an das Endost.

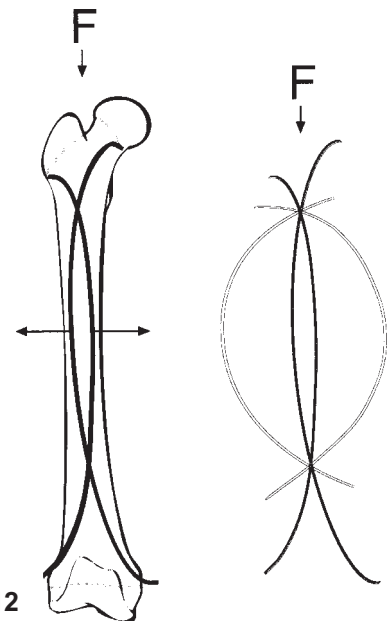


Abb. 12

Technik:

Bestimmen der Schienenstärke

$$\text{Schienenstärke} = \frac{\text{Markraumdurchmesser in Schaftmitte}}{3}$$

$$\text{beim Unterarm} = \frac{2 \times \text{Markraumdurchmesser in Schaftmitte}}{3}$$

Eintrittsstelle

Die Eintrittsstelle für die intramedulläre Schiene muß grundsätzlich außerhalb der Gelenkkapsel liegen und hat die Epiphyse und Epiphysenfuge zu schonen. Vorteilhaft ist eine Region mit geringer Weichteildeckung und geeigneter Markraumweite.

Versorgungsbeispiele:

Am **Unterarm** wird immer nur 1 Schiene (**Abb. 13**) verwendet. Unterarmfrakturen werden standardmäßig vom distalen Radius und von der proximalen Ulna aus versorgt.



Abb. 13

Oberarm

Die ascendierende Oberarmschiene (**Abb. 14**) kann von beiden Seiten oder ausschließlich von radial (**Abb. 15**) aus erfolgen.

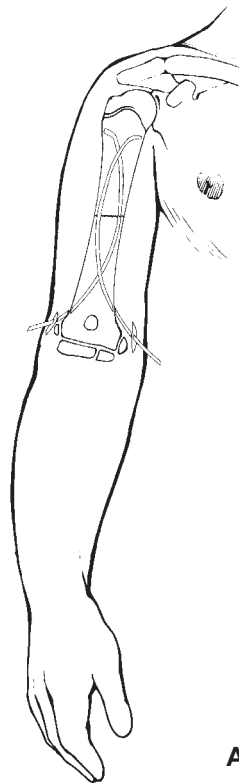


Abb. 14

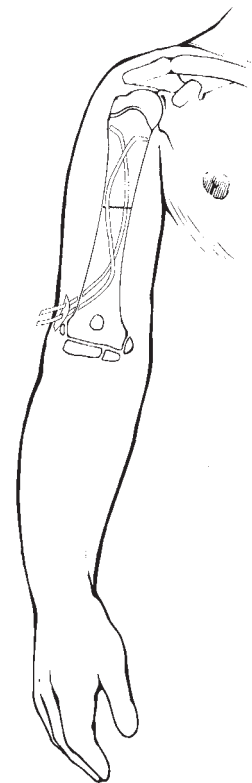


Abb. 15

Abb. 16
Oberschenkelfrakturen werden routinemäßig von distal mit beidseitigem Zugang versorgt.



Abb. 16

Abb. 17
Distale Oberarm- u. Oberschenkelfrakturen erfordern ggf. die absteigende Versorgung über eine Inzision, aber mit zwei Bohrlöchern.



Abb. 17

Abb. 18
Die Tibia wird descendierend über zwei Inzisionen beidseitig der Tuberositas Tibiae versorgt.

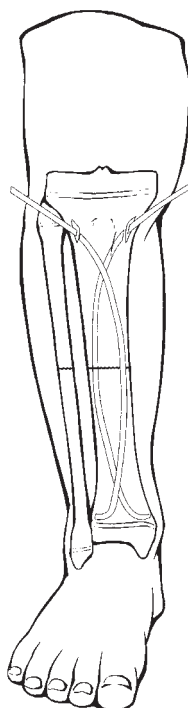


Abb. 18

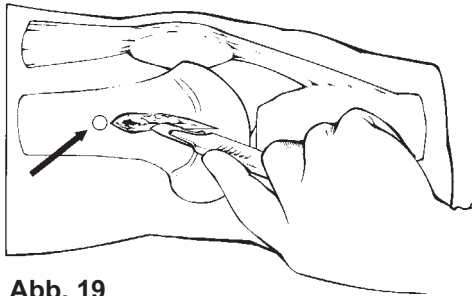


Abb. 19

OP- Technik

Die Hautinzision hat von der geplanten Eintrittsstelle aus nach epiphysär (**Abb 19**) zu gehen. Eine 2-bis 3 cm lange Inzision erleichtert die weiteren Schritte.



Abb. 20

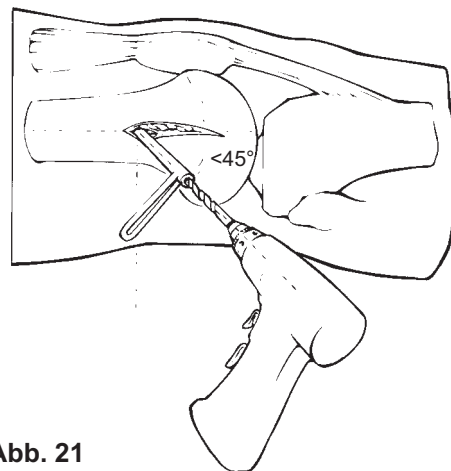


Abb. 21

Die Eintrittsstelle wird mit dem Trocar (**Abb. 20**) durch die Gewebeschutzhülse in 90° zur Knochenoberfläche gekörnt. Die Eröffnung erfolgt alternativ mit dem Trocar oder mit einem Bohrer (**Abb. 21**).



Abb. 22



Abb. 22a



Abb. 23

Der Durchmesser von Trocar und Bohrer muß mindestens 0,5 mm größer sein als der Durchmesser der zu verwendenden Intramedullären Schiene. Die Perforation des Knochens erfolgt in einem Winkel von kleiner als 45° (**Abb. 22**). Nach Entfernen des Trocars oder Bohrers (**Abb. 22a**) bleibt die Gewebeschutzhülse in Position. Durch sie erfolgt das Einbringen der Schiene. Der seitliche Schlitz (**Abb. 23**) an der Gewebeschutzhülse erleichtert das Einführen einer Schiene mit gebogener Spitze.

Implantation der Intramedullären Schienen

Ist ein Vorbiegen des Implantates erforderlich? Angebracht erscheint das Vorbiegen dann, wenn die Schiene im Eingangsfragment frühzeitig die Gegenkortikalis erreichen soll, weil dieses Fragment z.B. relativ kurz ist oder wenn das Implantat nach der Einführung in den Markraum an der gegenseitigen Kortikalis anstößt und sich nicht verschieben lässt. Zunächst wird das Implantat eingebracht, das den größeren Repositionseffekt an der Fraktur erzielt. Die Schiene wird durch die Gewebeschutzhülse in den Markraum eingebracht und die Spitze wird durch Drehen so ausgerichtet, dass sie zum Markraum zeigt.

Abb. 24

Der Handgriff wird kurz eingespannt, um die Schienenführung zu erleichtern und um das Implantat nicht zu verbiegen.

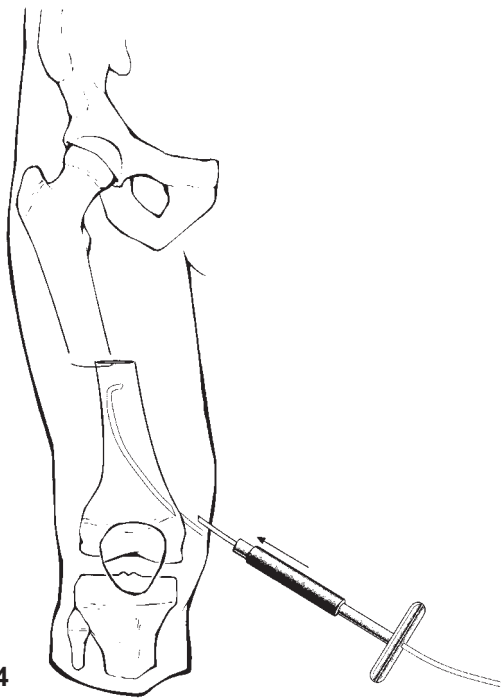


Abb. 24

Abb. 25

Besteht begrenzter Fragmentkontakt an der Fraktur, kann die Schienenspitze durch Drehmanöver entsprechend ausgerichtet werden.

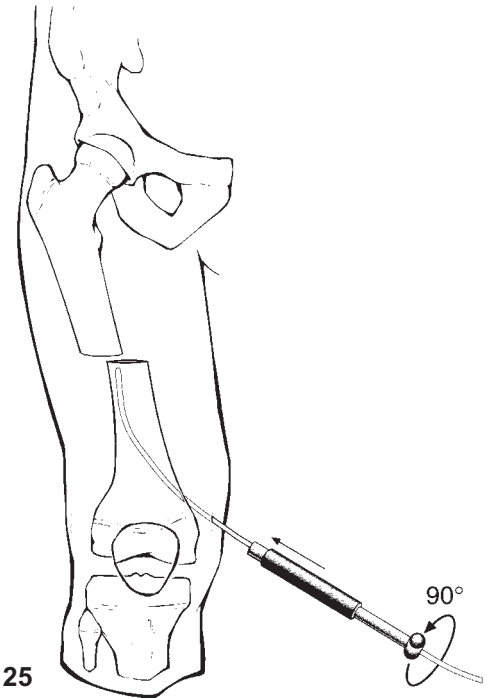


Abb. 25

Hinweis:

Oftmals erweist es sich als günstig, dass bevor die erste Schiene die Fraktur überschreitet, zunächst die zweite Schiene bis zur Fraktur vorgeschoben wird. Es können somit zwei Angriffspunkte zur Feinreposition genutzt werden.

Abb. 26

Um die Einführung der zweiten Schiene in das gegenseitige Fragment zu erleichtern, kann die erste Schiene zur Korrektur der Fragmentposition gedreht werden.

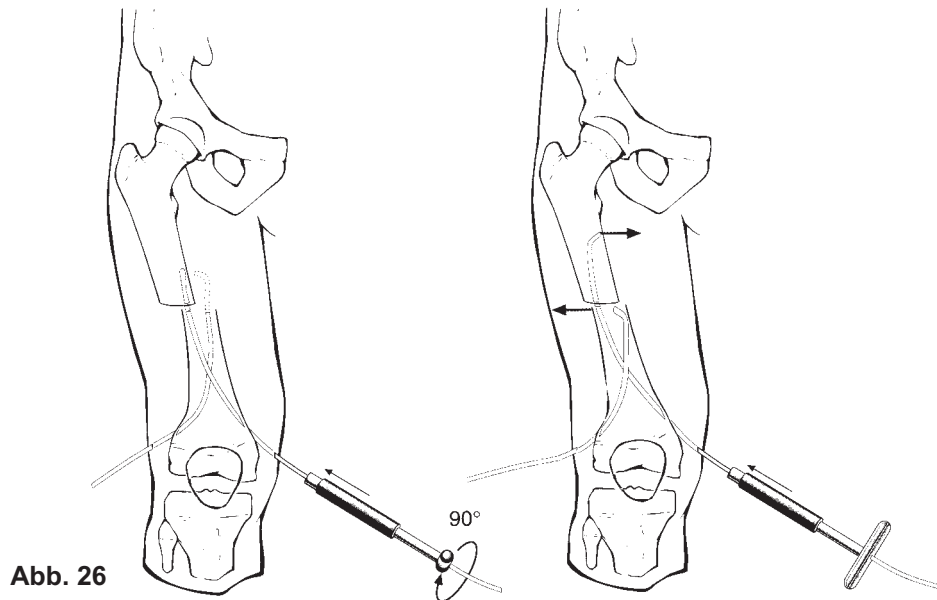


Abb. 27

Die Verankerung der Implantate erfolgt in der festen metaphysären Spongiosa des Gegenfragmentes durch einige Hammerschläge.

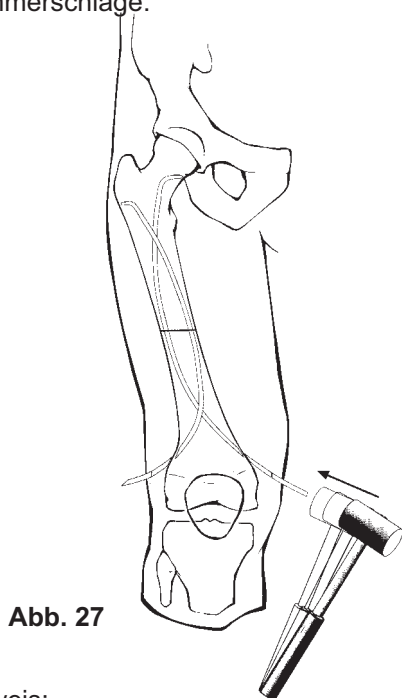
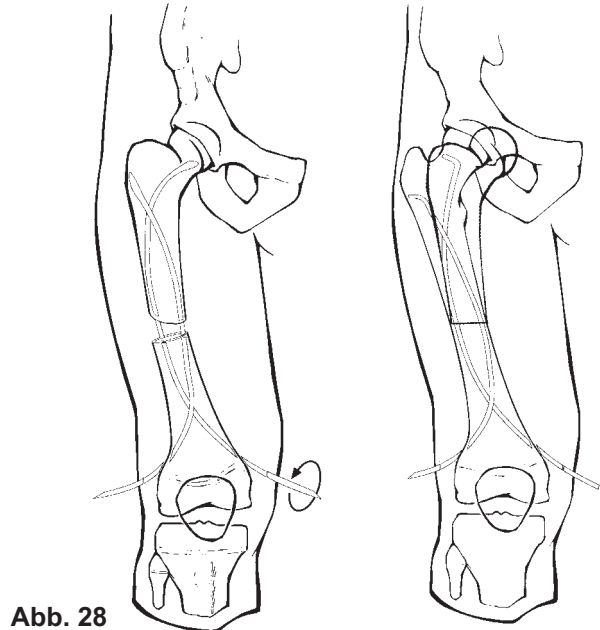


Abb. 28

Verbleibt eine geringe Achsenfehlstellung, kann diese durch begrenzte Drehmanöver einer Schiene korrigiert werden.



Hinweis:

Eine eventuelle durch die Implantation entstandene Distraction an der Fraktur ist durch axiale Kompression zu beheben. Erst danach werden die Implantate mit einigen Hammerschlägen in der Gegenmetaphyse verankert. Zuletzt wird die Schiene mit einem Bolzenschneider gekürzt. Das scharf abgeschnittene Schienenende wird mit einer Kunststoffkappe versehen, um einer subkutanen Reizung und der Perforation des Schienenendes vorzubeugen.

Abb. 29

Bei Schrägfrakturen ist die Schiene, deren Spitze im rechten Winkel auf die Frakturfläche trifft, leichter zu implantieren.

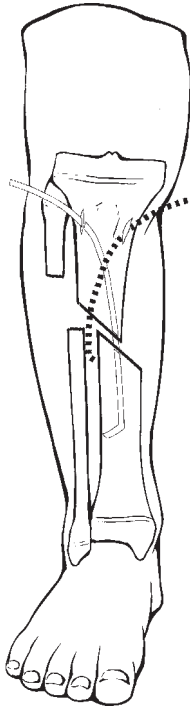


Abb. 29

Abb. 30

Bei Torsionsfrakturen ist primär die Implantation auf der Seite der langen Kortikalis empfehlenswert.

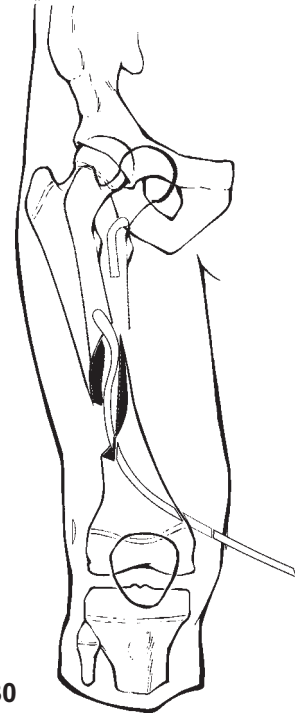


Abb. 30

Abb. 31



Abb. 32



Implantatentfernung

Die Implantatentfernung kann ambulant erfolgen. Das Schienenende wird in üblicher Weise exponiert. Die Schutzkappe wird mit einer Flachzange (**Abb. 31**) abgezogen und das Implantat mit einer Extraktionszange (**Abb. 32**), die mit einer Längsrille versehen ist und somit die Schiene umschließt und arretiert werden kann, entfernt.

Probleme bei der Implantation

Abb. 33

Die asymmetrische Schienenimplantation erzielt zwei unterschiedliche Spannungsbögen u. kann so eine Fehlstellung bedingen.

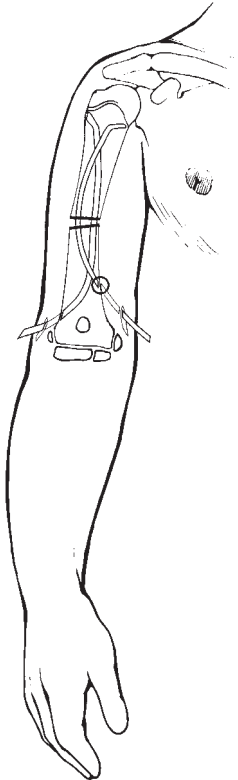


Abb. 33

Abb. 34

Zu kurze oder zu dünne Schienen sind nicht in der Lage, die Anforderungen der elastisch-stabilen Versorgung zu erfüllen.

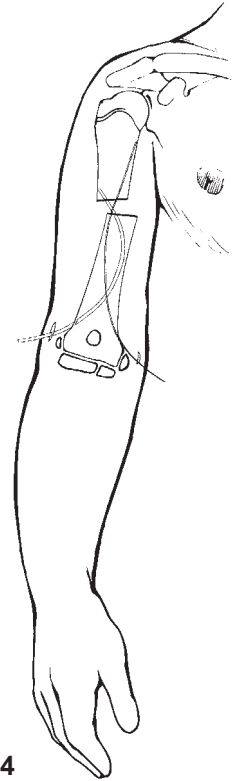


Abb. 34

Abb. 35

Umeinandergewundene Implantate verhindern sowohl die adäquate Verspannung als auch die notwendige Elastizität.

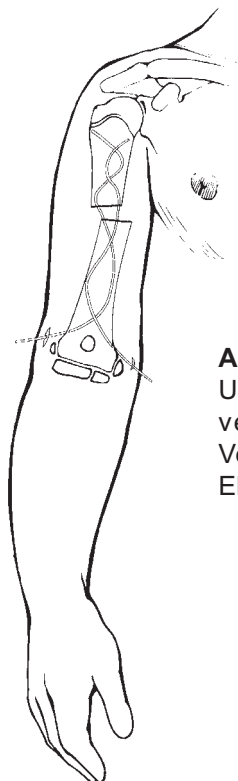


Abb. 35

Intramedullary Gliding Nails for children Gleitnägel für Kinder



Stainless Steel DIN ISO 5832-1		Stainless Steel DIN ISO 5852-1 Titanium-Niob Coated	
15250	1.5 x 150 mm	15270	1.5 x 150 mm
15251	1.5 x 400 mm	15271	1.5 x 400 mm
15252	2.0 x 200 mm	15272	2.0 x 200 mm
15253	2.0 x 400 mm	15273	2.0 x 400 mm
15254	2.5 x 250 mm	15274	2.5 x 250 mm
15255	2.5 x 400 mm	15275	2.5 x 400 mm
15256	3.0 x 300 mm	15276	3.0 x 300 mm
15257	3.0 x 400 mm	15277	3.0 x 400 mm
15258	3.5 x 350 mm	15278	3.5 x 350 mm
15259	3.5 x 400 mm	15279	3.5 x 400 mm

Titanium DIN ISO 5835-3 Titanium 6-4 Vanadium ELI Alloy Forgings	Colour Coding	
15263	2.0 x 450 mm	Green
15264	2.5 x 450 mm	Pink
15265	3.0 x 450 mm	Gold
15266	3.5 x 450 mm	Blue
15267	4.0 x 450 mm	Violet
15268	4.5 x 450 mm	Gray
15269	5.0 x 450 mm	Silver (natural)

Protective Caps available according to diameter of nail
Schutzkappen für Nägel passend zum Durchmesser des Nagels

15198	ø 1.5 mm
15200	ø 2.0 mm
15202	ø 2.5 mm
15204	ø 3.0 mm
15206	ø 3.5 mm
15208	ø 4.0 mm
15210	ø 4.5 mm
15212	ø 5.0 mm

Principle / Prinzip:

2 Gliding Nails produce a 3-point support in an elastic and stable system.
2 Gleitnägel bilden eine 3-Punkt-Unterstützung für ein elastisches und stabiles System.

Trocar with slotted sleeve for implantation of medullary gliding nails

After opening of the medullary canal with trocar, it happens quite often, that the point of entry cannot be found. By using the new trocar, the slotted sleeve remains in situ and avoids unnecessary searching or preparing of soft tissue. Gliding nails with bent tip can easily be introduced through the slot of the sleeve.

Pfriem mit geschlitzter Hülse zur Implantation intramedullärer Schienen

Häufig entsteht nach Eröffnung der Markhöhle mit einem Pfriem das Problem, die Eintrittsstelle wieder zu finden. Bei Verwendung des neuen Pfriems verbleibt die geschlitzte Hülse am vorgebohrten Loch und erspart unnötiges Suchen oder Freipräparieren der Weichteile. Durch die Schlitzung der Gewebeschutzhülse können Schienen mit gebogener Spitze leicht eingeführt werden.



15310 Trocar for \varnothing 3,5 - 5,0 mm Nails
15312 Trocar for \varnothing 1,5 - 3,5 mm Nails



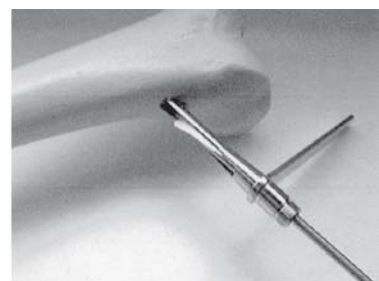
Opening of medullary canal with trocar and sleeve

Eröffnen der Markhöhle mit Pfriem und Hülse



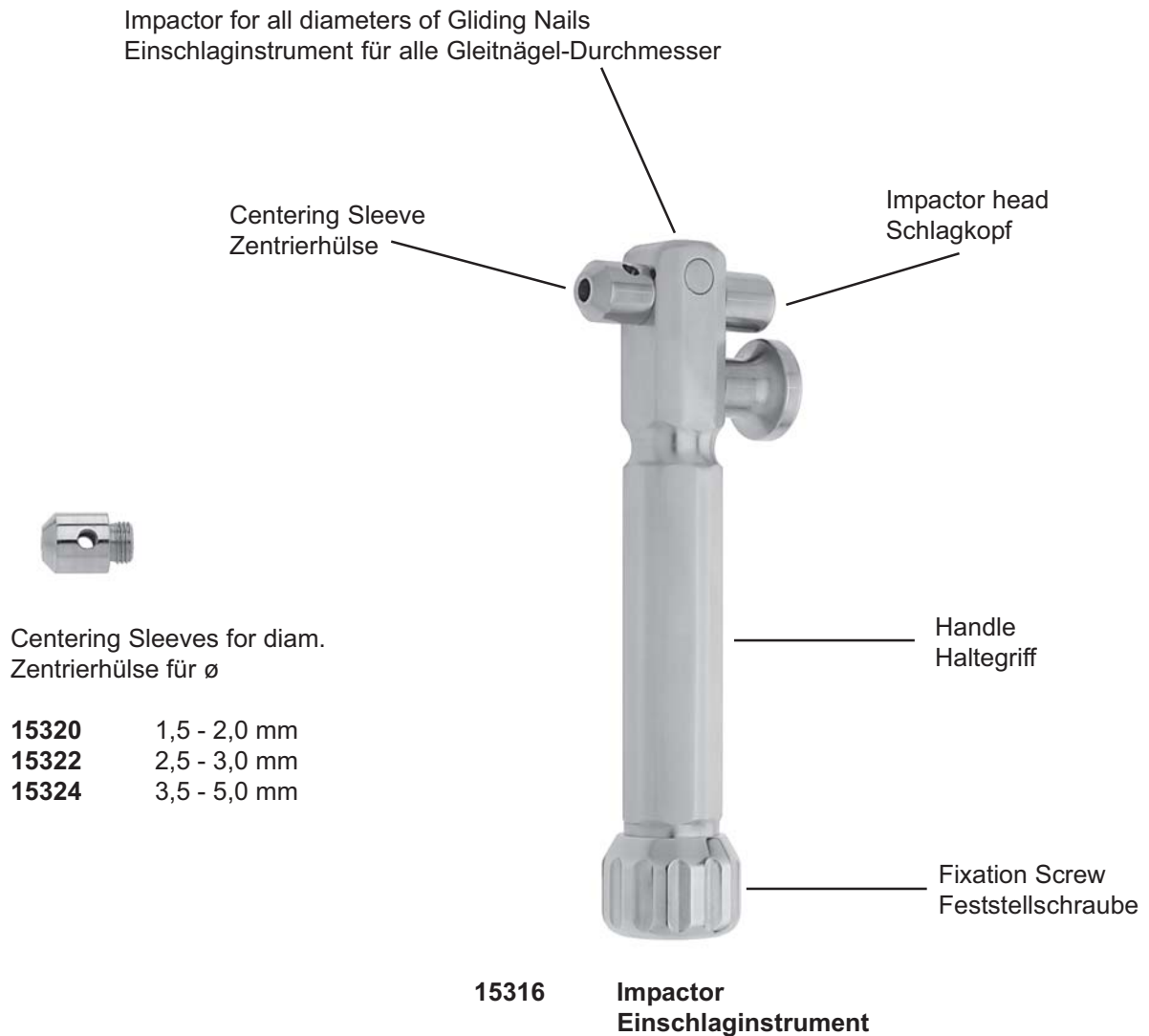
Removal of trocar. Sleeve is held in position

Entfernen des Pfriems - die Hülse wird in der Position gehalten



Introduction of nail through slot of sleeve

Einführen der Schiene durch die geschlitzte Hülse



The new Impactor for „Intramed Gliding Nails“ serves for quick introduction avoiding tiresome manipulating during fixation of implants. Owing to the lateral handle the danger of insuries to the surgeon in case of slipping-through of nails is practically impossible. A new clamping system serves for fixation of nails in the impactor without applying much power.

Der neue Impactor für Intramed-Schienen ermöglicht das schnelle Einbringen von intramedullären Schienen ohne lästiges Hantieren bei der Fixation der Implantate. Durch den seitlichen Griff wird die Verletzungsgefahr für den Chirurgen, beim Durchrutschen der Schienen ausgeschlossen. Die Schienenfixation im Einschlaginstrument ist durch eine neuartige Verklemmung ohne grossen Kraftaufwand möglich.



91450 Pfriem
91452 Perthes, 22,0 cm
Perthes, 16,0 cm



91456 Pfriem
16,0 cm



15330 Extractions Forceps for Intramedullary
Gliding Nails
Extractionszange 22,0 cm für
Intramed-Schienen



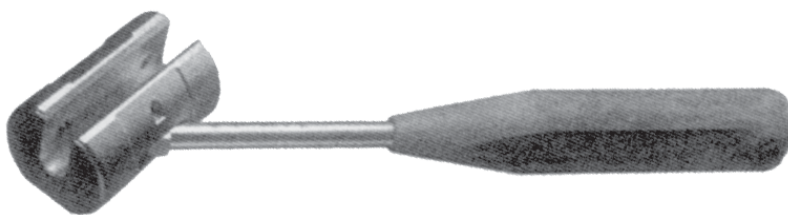
7388 Extraction Pliers for boring wire 130 mm
7390 Extraction Pliers for boring wire 180 mm



9090 T-Handle with Jacobs Chuck
T-Griff mit Jakobsfutter



- 15300** Nail Impactor \varnothing 1,5 - 2,5 mm
Einschläger \varnothing 1,5 - 2,5 mm
- 15302** Nail Impactor \varnothing 2,5 - 3,0 mm
Einschläger \varnothing 2,5 - 3,0 mm
- 15304** Nail Impactor \varnothing 3,5 - 5,0 mm
Einschläger \varnothing 3,5 - 5,0 mm



9701 Slotted Hammer
Schlitzhammer



9702 Bone Hammer / Weight approx: 350 g
Knochenhammer / Gewicht ca 350 gr.



7434 Wire Cutter 220 mm TC
soft wire 3.0 mm
hard wire 2.5 mm

Drahtschneidezange 220 TC
für weichen Draht bis \varnothing 2,5 mm
für harten Draht bis \varnothing 3,0 mm



7452 260 mm
hard wire 3.5 mm

Kopfschneider
für harten Draht
bis \varnothing 3,5 mm



7450 575 mm
hard wire 6.0 mm

Bolzenschneider für
harten Draht bis \varnothing 6,0 mm



580 x 280 x 100 mm

Silver
Silber
151010

Wire Mesh
Aus Drahtgeflecht



153012
540 x 255 x 50 mm

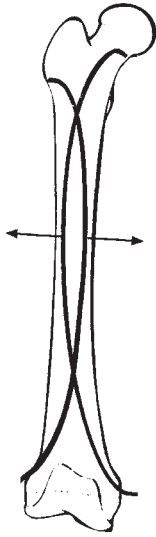
Recommended Instruments

151010	Sterile-Container 580 x 280 x 100 mm
153012	Basket for Instruments 540 x 255 x 50 mm
15310	Trocar for 3,5 - 5,0 mm
15312	Trocar for 1,5 - 3,0 mm
15316	Impactor complete
15300	Impactor for nail 1,5 - 2,0 mm
15302	Impactor for nail 2,5 - 3,0 mm
15304	Impactor for nail 3,5 - 5,0 mm
9701	Slotted Hammer
9702	Hammer 350 gr.
15330	Extraction Forceps 22,0 cm
7434	Wire Cutter for wire \varnothing 2,5 mm
7452	Wire Cutter for wire \varnothing 3,5 mm
7450	Wire Cutter for wire \varnothing 6,0 mm

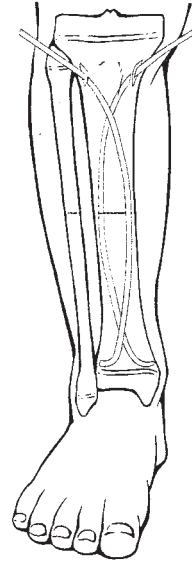
Empfohlene Instrumente

151010	Steril-Container 580 x 280 x 100 mm
153012	Drahtkorb für Instrumente 540 x 255 x 50 mm
15310	Trokar für 3,5 - 5,0 mm
15312	Trokar für 1,5 - 3,0 mm
15316	Einschläger komplett
15300	Einschläger für Nägel 1,5 - 2,0 mm
15302	Einschläger für Nägel 2,5 - 3,0 mm
15304	Einschläger für Nägel 3,5 - 5,0 mm
9701	Schlitzhammer
9702	Hammer 350 gr.
15330	Extraktionszange 22,0 cm
7434	Drahtschneidezange für Draht \varnothing 2,5 mm
7452	Drahtschneidezange für Draht \varnothing 3,5 mm
7450	Drahtschneidezange für Draht \varnothing 6,0 mm

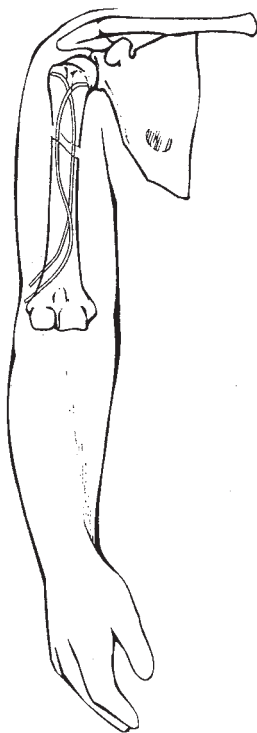
Discription for use / Anwendung



Femur



Tibia

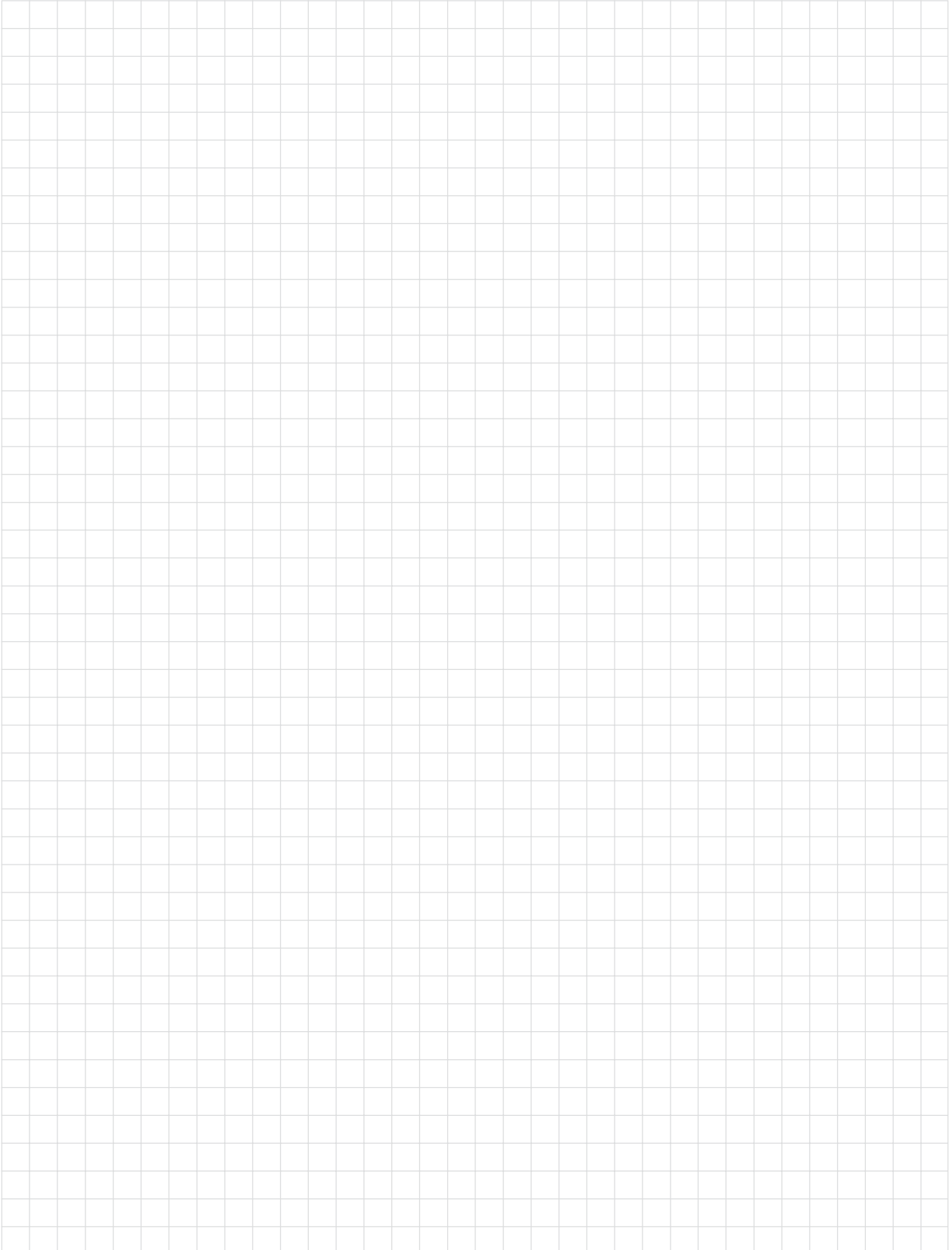


Humerus



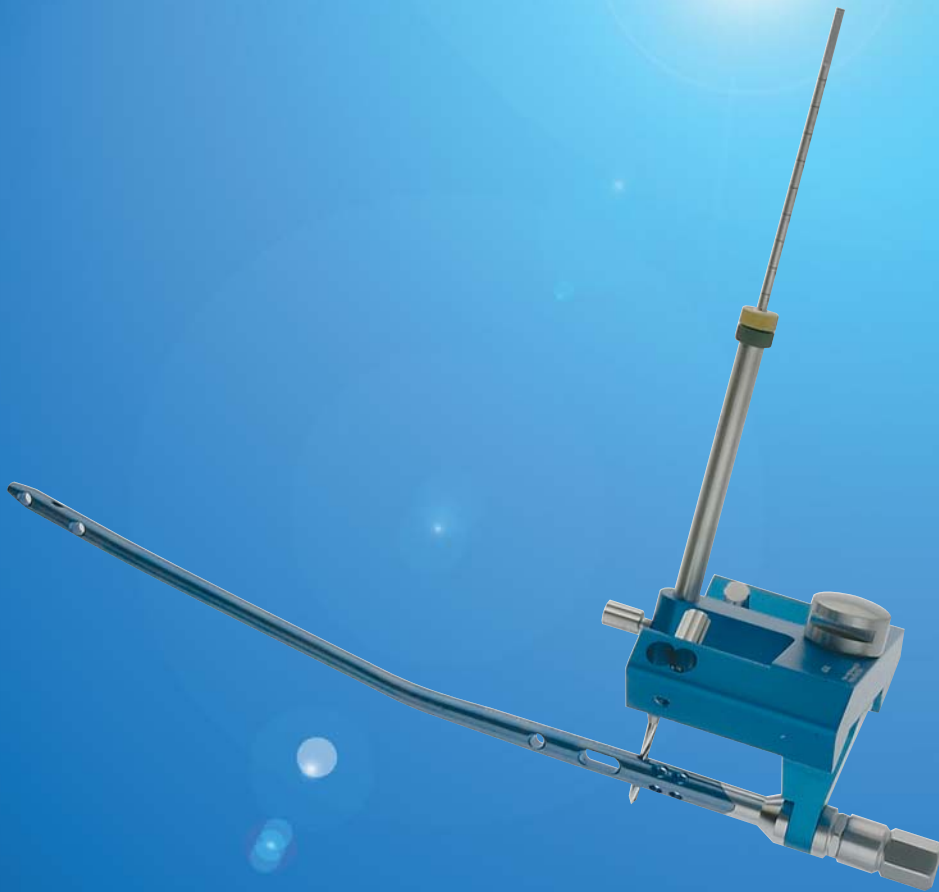
Ulna / Radius

Notice:



MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

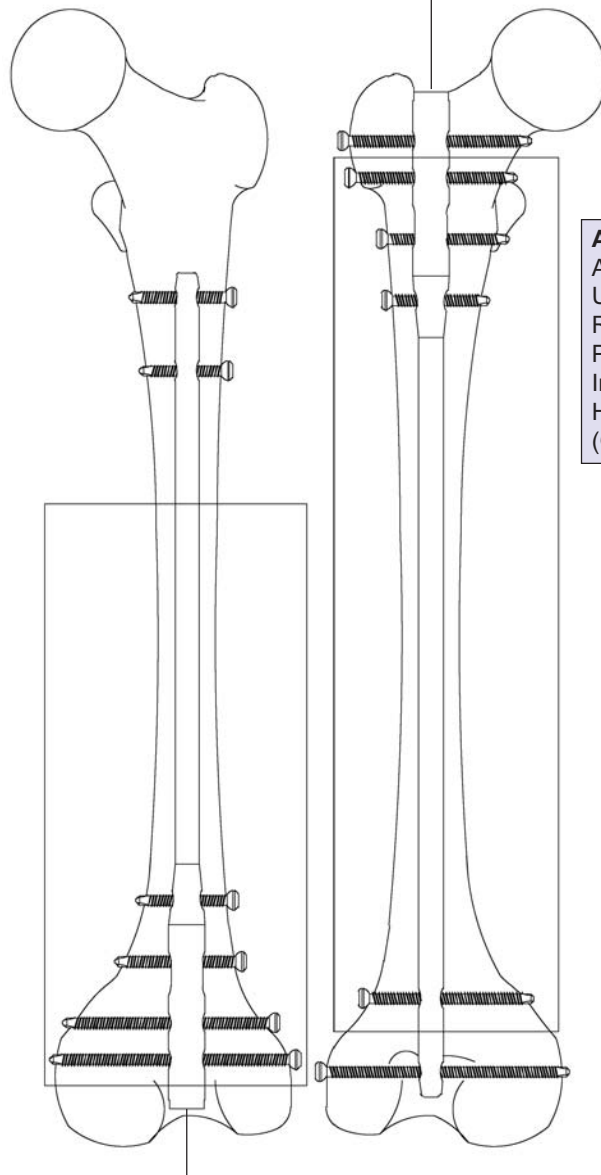


**Titanium Femoral and Tibial
Nailing System**

MATTES Titanium Femoral Nail

Antegrade Indication

- Pertrochanteric fractures
- Intertrochanteric fractures
- High subtrochanteric fractures
- Low subtrochanteric fractures
- Distal shaft fractures



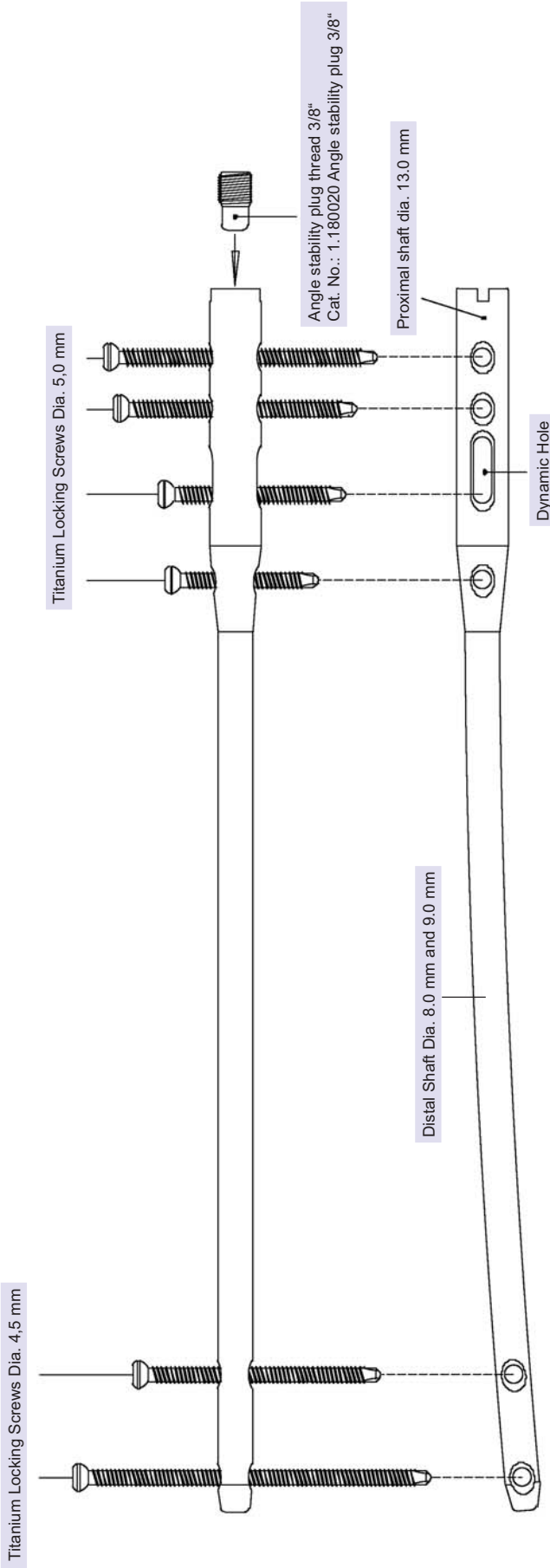
Advantages:

- Ante- and retrograde Indication
- Unreamed insertion
- Rotation stability
- Proximal angle stability
- Intra- and postoperative security insertion
- High economy
- (One nail for left and right)

Retrograde Indication

- Shaft fractures
- Distal shaft fractures
- Condylar fractures

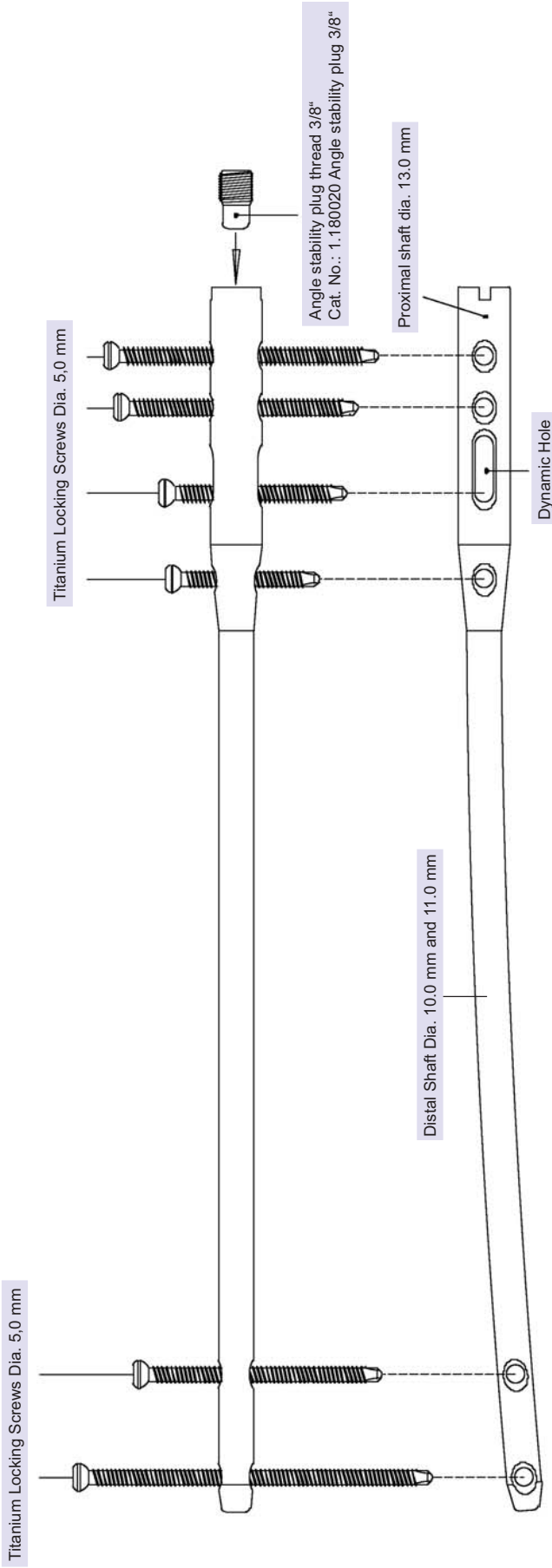
Product Description for $\varnothing 8.0$ / $\varnothing 9.0$ mm Titanium - U/R Solid Femoral Nails



Titanium Locking Screw Implants Dia. 4.5 mm		Titanium Locking Screw Implants Dia. 5.0 mm		Titanium Solid Femoral Nail Implants Dia. 8.0 mm		Titanium Solid Femoral Nail Implants Dia. 9.0 mm		
Cat. No.	Dia.	Length	Cat. No.	Dia.	Length	Cat. No.	Dia.	Length
1.1745025	$\varnothing 4.5$ mm	25 mm	1.1785025	$\varnothing 5.0$ mm	25 mm	1.164280	$\varnothing 8.0$ mm	280 mm
1.1745030	$\varnothing 4.5$ mm	30 mm	1.1785030	$\varnothing 5.0$ mm	30 mm	1.164300	$\varnothing 8.0$ mm	300 mm
1.1745035	$\varnothing 4.5$ mm	35 mm	1.1785035	$\varnothing 5.0$ mm	35 mm	1.164320	$\varnothing 8.0$ mm	320 mm
1.1745040	$\varnothing 4.5$ mm	40 mm	1.1785040	$\varnothing 5.0$ mm	40 mm	1.164340	$\varnothing 8.0$ mm	340 mm
1.1745045	$\varnothing 4.5$ mm	45 mm	1.1785045	$\varnothing 5.0$ mm	45 mm	1.164360	$\varnothing 8.0$ mm	360 mm
1.1745050	$\varnothing 4.5$ mm	50 mm	1.1785050	$\varnothing 5.0$ mm	50 mm	1.164380	$\varnothing 8.0$ mm	380 mm
1.1745055	$\varnothing 4.5$ mm	55 mm	1.1785055	$\varnothing 5.0$ mm	55 mm			
1.1745060	$\varnothing 4.5$ mm	60 mm	1.1785060	$\varnothing 5.0$ mm	60 mm			
1.1745065	$\varnothing 4.5$ mm	65 mm	1.1785065	$\varnothing 5.0$ mm	65 mm			
1.1745070	$\varnothing 4.5$ mm	70 mm	1.1785070	$\varnothing 5.0$ mm	70 mm			
1.1745075	$\varnothing 4.5$ mm	75 mm	1.1785075	$\varnothing 5.0$ mm	75 mm			
1.1745080	$\varnothing 4.5$ mm	80 mm	1.1785080	$\varnothing 5.0$ mm	80 mm			
1.1745085	$\varnothing 4.5$ mm	85 mm	1.1785085	$\varnothing 5.0$ mm	85 mm			
1.1745090	$\varnothing 4.5$ mm	90 mm	1.1785090	$\varnothing 5.0$ mm	90 mm			
1.1745095	$\varnothing 4.5$ mm	95 mm	1.1785095	$\varnothing 5.0$ mm	95 mm			
1.1745100	$\varnothing 4.5$ mm	100 mm	1.1785100	$\varnothing 5.0$ mm	100 mm			

Product Description for $\varnothing 8.0$ / $\varnothing 9.0$ mm Titanium - U/R Solid Femoral Nails
 Material for Titanium Implants: DIN ISO 5832-3 Titanium Alloy Ti-6Al-4V
 according to biocompatibility DIN ISO 10993-1:2003

Product Description for $\varnothing 10.0$ / $\varnothing 11.0$ mm Titanium - U/R Cannulated Femoral Nails



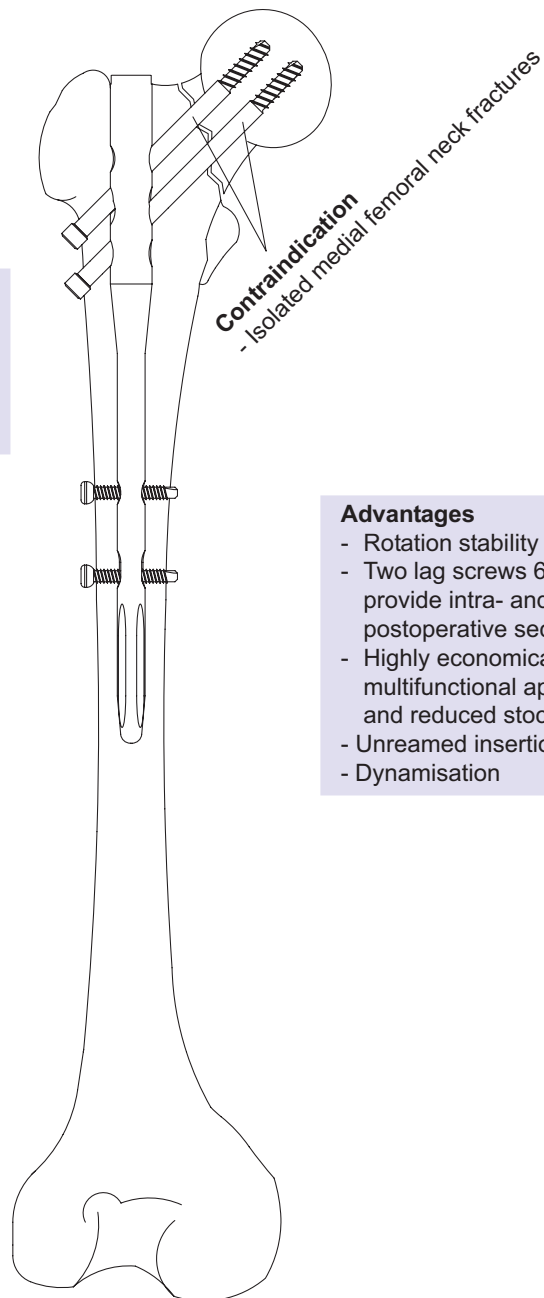
Titanium Locking Screw Implants Dia. 5.0 mm		Titanium Cannulated Femoral Nail Implants Dia. 10.0 mm		Titanium Cannulated Femoral Nail Implants Dia. 11.0 mm		
Cat. No.	Dia.	Length	Cat. No.	Length	Cat. No.	Length
1.1785025	$\varnothing 5.0$ mm	25 mm	1.166300	$\varnothing 10.0$ mm	1.167300	$\varnothing 11.0$ mm
1.1785030	$\varnothing 5.0$ mm	30 mm	1.166320	$\varnothing 10.0$ mm	1.167320	$\varnothing 11.0$ mm
1.1785035	$\varnothing 5.0$ mm	35 mm	1.166340	$\varnothing 10.0$ mm	1.167340	$\varnothing 11.0$ mm
1.1785040	$\varnothing 5.0$ mm	40 mm	1.166360	$\varnothing 10.0$ mm	1.167360	$\varnothing 11.0$ mm
1.1785045	$\varnothing 5.0$ mm	45 mm	1.166380	$\varnothing 10.0$ mm	1.167380	$\varnothing 11.0$ mm
1.1785050	$\varnothing 5.0$ mm	50 mm	1.166400	$\varnothing 10.0$ mm	1.167400	$\varnothing 11.0$ mm
1.1785055	$\varnothing 5.0$ mm	55 mm	1.166420	$\varnothing 10.0$ mm	1.167420	$\varnothing 11.0$ mm
1.1785060	$\varnothing 5.0$ mm	60 mm	1.166440	$\varnothing 10.0$ mm	1.167440	$\varnothing 11.0$ mm
1.1785065	$\varnothing 5.0$ mm	65 mm	1.166460	$\varnothing 10.0$ mm	1.167460	$\varnothing 11.0$ mm
1.1785070	$\varnothing 5.0$ mm	70 mm	1.166480	$\varnothing 10.0$ mm	1.167480	$\varnothing 11.0$ mm
1.1785075	$\varnothing 5.0$ mm	75 mm			1.167500	$\varnothing 11.0$ mm
1.1785080	$\varnothing 5.0$ mm	80 mm				
1.1785085	$\varnothing 5.0$ mm	85 mm				
1.1785090	$\varnothing 5.0$ mm	90 mm				
1.1785095	$\varnothing 5.0$ mm	95 mm				
1.1785100	$\varnothing 5.0$ mm	100 mm				

Product Description for $\varnothing 10.0$ / $\varnothing 11.0$ mm Titanium - U/R Cannulated Femoral Nails
 Material for Titanium Implants: DIN ISO 5832-3 Titanium Alloy Ti-6Al-4V
 according to biocompatibility DIN ISO 10993-1:2003

TREU Titanium D.N.S. Nail

Indication

- Pertrochanteric fractures
- Intertrochanteric fractures
- High subtrochanteric fractures
- Low subtrochanteric fractures
- Proimal shaft fractures



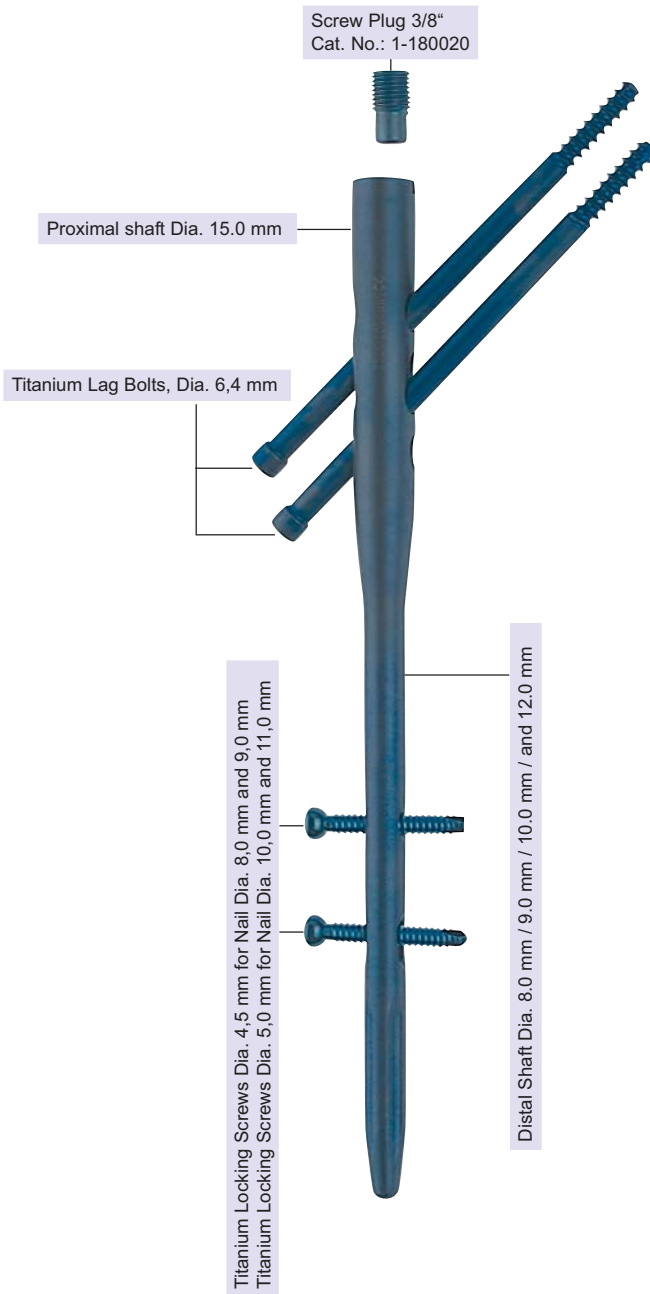
Advantages

- Rotation stability
- Two lag screws 6,4 mm, provide intra- and postoperative security
- Highly economical owing to multifunctional application and reduced stocks
- Unreamed insertion
- Dynamisation

One nail for left and right

Titanium D.N.S. Nail

Product Description for \varnothing 8.0 / \varnothing 9.0 mm / 10.0 mm / 11.0 mm Titanium - U/R Solid DNS Femoral Nails



Titanium - U/R Solid Femoral Nails		
Cat. No.	Dia.	Length
1.2500	\varnothing 8.0 mm	240 mm
1.2501	\varnothing 9.0 mm	240 mm
1.2502	\varnothing 10.0 mm	240 mm
1.2503	\varnothing 11.0 mm	240 mm
1.2504	\varnothing 12.0 mm	240 mm

Titanium cannulated Lag Bolts Dia.6.4 mm		
Cat. No.	Dia.	Length
1.2510	\varnothing 6.4 mm	65 mm
1.2511	\varnothing 6.4 mm	70 mm
1.2512	\varnothing 6.4 mm	75 mm
1.2513	\varnothing 6.4 mm	80 mm
1.2514	\varnothing 6.4 mm	85 mm
1.2515	\varnothing 6.4 mm	90 mm
1.2516	\varnothing 6.4 mm	95 mm
1.2517	\varnothing 6.4 mm	100 mm
1.2518	\varnothing 6.4 mm	105 mm
1.2519	\varnothing 6.4 mm	110 mm
1.2520	\varnothing 6.4 mm	115 mm
1.2521	\varnothing 6.4 mm	120 mm
1.2522	\varnothing 6.4 mm	125 mm
1.2523	\varnothing 6.4 mm	130 mm

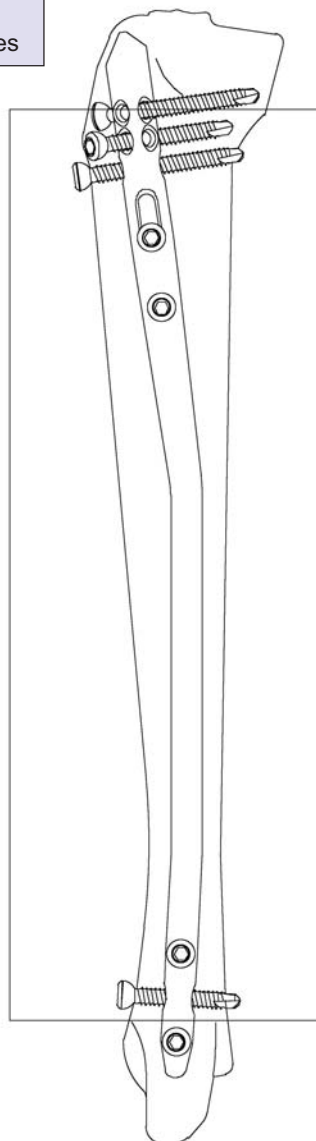
Titanium Locking Screws Implants Dia. 4.5 mm		
Cat. No.	Dia.	Length
1.1745025	\varnothing 4.5 mm	25 mm
1.1745030	\varnothing 4.5 mm	30 mm
1.1745035	\varnothing 4.5 mm	35 mm
1.1745040	\varnothing 4.5 mm	40 mm
1.1745045	\varnothing 4.5 mm	45 mm
1.1745050	\varnothing 4.5 mm	50 mm
1.1745055	\varnothing 4.5 mm	55 mm

Titanium Locking Screws Implants Dia. 5.0 mm		
Cat. No.	Dia.	Length
1.1785025	\varnothing 5.0 mm	25 mm
1.1785030	\varnothing 5.0 mm	30 mm
1.1785035	\varnothing 5.0 mm	35 mm
1.1785040	\varnothing 5.0 mm	40 mm
1.1785045	\varnothing 5.0 mm	45 mm
1.1785050	\varnothing 5.0 mm	50 mm
1.1785055	\varnothing 5.0 mm	55 mm

MATTES Titanium Tibial Nail

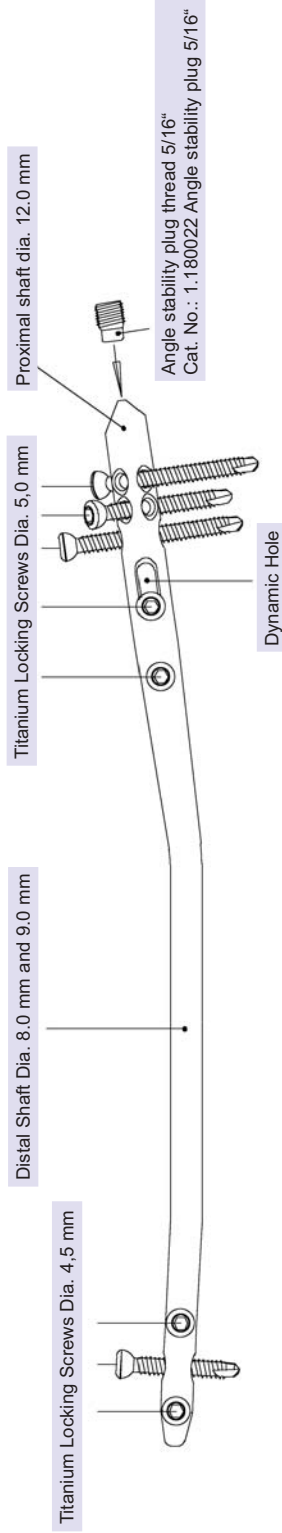
Indication

- Proximal fractures
- Shaft fractures
- Distal shaft fractures

**Advantages:**

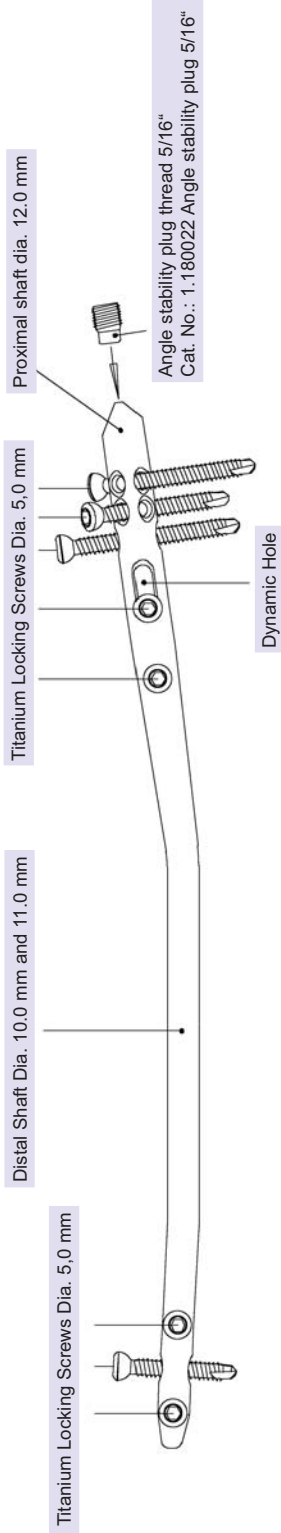
- Unreamed insertion
- Rotation stability
- Proximal angle stability
- Intra- and postoperative security insertion
- Dynamisation
- High economy

Product Description for ø 8.0 / ø 9.0 mm Titanium - U/R Solid Tibial Nails



Titanium Locking Screw Implants Dia. 4.5 mm		Titanium Locking Screw Implants Dia. 5.0 mm		Titanium Solid Tibial Nail Implants Dia. 8.0 mm		Titanium Solid Tibial Nail Implants Dia. 9.0 mm	
Cat. No.	Dia.	Length	Cat. No.	Dia.	Length	Cat. No.	Length
1.1745025	ø 4.5 mm	25 mm	1.1785025	ø 5.0 mm	25 mm	1.175255	ø 9.0 mm
1.1745030	ø 4.5 mm	30 mm	1.1785030	ø 5.0 mm	30 mm	1.175270	ø 9.0 mm
1.1745035	ø 4.5 mm	35 mm	1.1785035	ø 5.0 mm	35 mm	1.175285	ø 9.0 mm
1.1745040	ø 4.5 mm	40 mm	1.1785040	ø 5.0 mm	40 mm	1.175300	ø 9.0 mm
1.1745045	ø 4.5 mm	45 mm	1.1785045	ø 5.0 mm	45 mm	1.175315	ø 9.0 mm
1.1745050	ø 4.5 mm	50 mm	1.1785050	ø 5.0 mm	50 mm	1.175330	ø 9.0 mm
1.1745055	ø 4.5 mm	55 mm	1.1785055	ø 5.0 mm	55 mm	1.175345	ø 9.0 mm
1.1745060	ø 4.5 mm	60 mm	1.1785060	ø 5.0 mm	60 mm	1.175360	ø 9.0 mm
1.1745065	ø 4.5 mm	65 mm	1.1785065	ø 5.0 mm	65 mm	1.175380	ø 9.0 mm
1.1745070	ø 4.5 mm	70 mm	1.1785070	ø 5.0 mm	70 mm	1.175400	ø 9.0 mm
1.1745075	ø 4.5 mm	75 mm	1.1785075	ø 5.0 mm	75 mm	1.175420	ø 9.0 mm
1.1745080	ø 4.5 mm	80 mm	1.1785080	ø 5.0 mm	80 mm		
1.1745085	ø 4.5 mm	85 mm	1.1785085	ø 5.0 mm	85 mm		
1.1745090	ø 4.5 mm	90 mm	1.1785090	ø 5.0 mm	90 mm		
1.1745095	ø 4.5 mm	95 mm	1.1785095	ø 5.0 mm	95 mm		
1.1745100	ø 4.5 mm	100 mm	1.1785100	ø 5.0 mm	100 mm		
Product Description for ø 8.0 / 9.0 mm Titanium - U/R Solid Tibial Nails Material for Titanium Implants: DIN ISO 5832-3 Titanium Alloy Ti-6Al-4V according to biocompatibility DIN ISO 10993-1:2003							

Product Description for \varnothing 10.0 / \varnothing 11.0 mm Titanium - U/R Cannulated Tibial Nails



Titanium Locking Screw Implants Dia. 5.0 mm		Titanium Cannulated Tibial Nail Implants Dia. 10.0 mm		Titanium Cannulated Tibial Nail Implants Dia. 11.0 mm	
Cat. No.	Dia.	Length	Cat. No.	Dia.	Length
1.1785025	\varnothing 5.0 mm	25 mm	1.176255	\varnothing 10.0 mm	255 mm
1.1785030	\varnothing 5.0 mm	30 mm	1.176270	\varnothing 10.0 mm	270 mm
1.1785035	\varnothing 5.0 mm	35 mm	1.176285	\varnothing 10.0 mm	285 mm
1.1785040	\varnothing 5.0 mm	40 mm	1.176300	\varnothing 10.0 mm	300 mm
1.1785045	\varnothing 5.0 mm	45 mm	1.176315	\varnothing 10.0 mm	315 mm
1.1785050	\varnothing 5.0 mm	50 mm	1.176330	\varnothing 10.0 mm	330 mm
1.1785055	\varnothing 5.0 mm	55 mm	1.176345	\varnothing 10.0 mm	345 mm
1.1785060	\varnothing 5.0 mm	60 mm	1.176360	\varnothing 10.0 mm	360 mm
1.1785065	\varnothing 5.0 mm	65 mm	1.176380	\varnothing 10.0 mm	380 mm
1.1785070	\varnothing 5.0 mm	70 mm	1.176400	\varnothing 10.0 mm	400 mm
1.1785075	\varnothing 5.0 mm	75 mm	1.176420	\varnothing 10.0 mm	420 mm
1.1785080	\varnothing 5.0 mm	80 mm	1.177440	\varnothing 11.0 mm	440 mm
1.1785085	\varnothing 5.0 mm	85 mm			
1.1785090	\varnothing 5.0 mm	90 mm			
1.1785095	\varnothing 5.0 mm	95 mm			
1.1785100	\varnothing 5.0 mm	100 mm			

Titanium Locking Screw Implants Dia. 5.0 mm		Titanium Cannulated Tibial Nail Implants Dia. 10.0 mm		Titanium Cannulated Tibial Nail Implants Dia. 11.0 mm	
Cat. No.	Dia.	Length	Cat. No.	Dia.	Length
1.1785025	\varnothing 5.0 mm	25 mm	1.177255	\varnothing 11.0 mm	255 mm
1.1785030	\varnothing 5.0 mm	30 mm	1.177270	\varnothing 11.0 mm	270 mm
1.1785035	\varnothing 5.0 mm	35 mm	1.177285	\varnothing 11.0 mm	285 mm
1.1785040	\varnothing 5.0 mm	40 mm	1.177300	\varnothing 11.0 mm	300 mm
1.1785045	\varnothing 5.0 mm	45 mm	1.177315	\varnothing 11.0 mm	315 mm
1.1785050	\varnothing 5.0 mm	50 mm	1.177330	\varnothing 11.0 mm	330 mm
1.1785055	\varnothing 5.0 mm	55 mm	1.177345	\varnothing 11.0 mm	345 mm
1.1785060	\varnothing 5.0 mm	60 mm	1.177360	\varnothing 11.0 mm	360 mm
1.1785065	\varnothing 5.0 mm	65 mm	1.177380	\varnothing 11.0 mm	380 mm
1.1785070	\varnothing 5.0 mm	70 mm	1.177400	\varnothing 11.0 mm	400 mm
1.1785075	\varnothing 5.0 mm	75 mm	1.177420	\varnothing 11.0 mm	420 mm
1.1785080	\varnothing 5.0 mm	80 mm	1.177440	\varnothing 11.0 mm	440 mm
1.1785085	\varnothing 5.0 mm	85 mm			
1.1785090	\varnothing 5.0 mm	90 mm			
1.1785095	\varnothing 5.0 mm	95 mm			
1.1785100	\varnothing 5.0 mm	100 mm			

<p>Product Description for \varnothing 10.0 / 11.0 mm Titanium - U/R Cannulated Tibial Nails Material for Titanium Implants: DIN ISO 5832-3 Titanium Alloy Ti-6Al-4V according to biocompatibility DIN ISO 10993-1:2003</p>					
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Listing: 1.18400 Titanium Locking Screw and Plug Set (Titanium Screws and Plugs in Mat. DIN ISO 5832-3)

1.18410 Tray for Titanium Locking Screw and Plug Set (Steel) GRAPHIC CASE

Cat.: No	Dia. 4.5 mm Locking Screws	Pcs.:
1.1745025	Length 25 mm, Titanium	4
1.1745030	Length 30 mm, Titanium	4
1.1745035	Length 35 mm, Titanium	4
1.1745040	Length 40 mm, Titanium	4
1.1745045	Length 45 mm, Titanium	4
1.1745050	Length 50 mm, Titanium	4
1.1745055	Length 55 mm, Titanium	4
1.1745060	Length 60 mm, Titanium	4
1.1745065	Length 65 mm, Titanium	4
1.1745070	Length 70 mm, Titanium	4
1.1745075	Length 75 mm, Titanium	4
1.1745080	Length 80 mm, Titanium	4
1.1745085	Length 85 mm, Titanium	4
1.1745090	Length 90 mm, Titanium	4
1.1745095	Length 95 mm, Titanium	4
1.1745100	Length 100 mm, Titanium	4

Cat.: No	Dia. 5.0 mm Locking Screws	Pcs.:
1.1785025	Length 25 mm, Titanium	4
1.1785030	Length 30 mm, Titanium	4
1.1785035	Length 35 mm, Titanium	4
1.1785040	Length 40 mm, Titanium	4
1.1785045	Length 45 mm, Titanium	4
1.1785050	Length 50 mm, Titanium	4
1.1785055	Length 55 mm, Titanium	4
1.1785060	Length 60 mm, Titanium	4
1.1785065	Length 65 mm, Titanium	4
1.1785070	Length 70 mm, Titanium	4
1.1785075	Length 75 mm, Titanium	4
1.1785080	Length 80 mm, Titanium	4
1.1785085	Length 85 mm, Titanium	4
1.1785090	Length 90 mm, Titanium	4
1.1785095	Length 95 mm, Titanium	4
1.1785100	Length 100 mm, Titanium	4

Cat.: No		Pcs.:
1.180020	Titanium Femoral Screw Plug 3/18"	4
1.180022	Titanium Femoral Screw Plug 5/16"	4
4184	Screw Forceps	1



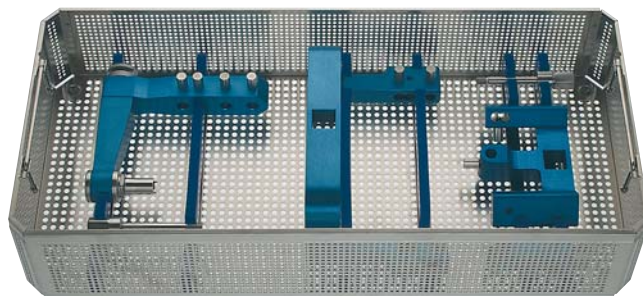
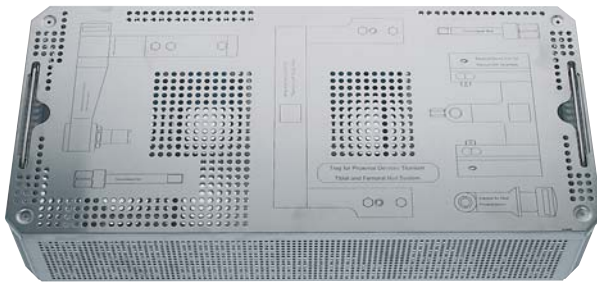
1.18410 Tray for Titanium Screw and Plug Set



Recommended Sterilization for 1.18400 (are not included in the Set):
Cat. No.: 152164 Container 310 x 190 x 130 mm, Lid and Bottom perforated

Listing: 1.14000 Set for proximal Devices Titanium Tibial and Femoral Nail System

1.14001	Tray for Proximal Devices, Titanium Tibial and Femoral Nail System	1 pcs.
1.33330	Proximal Device for Titanium U/R Femoral Nails	1 pcs.
1.13332	Femoral Adapter Bolt	1 pcs.
1.18960	Proximal Device for Titanium U/R Tibial Nails	1 pcs.



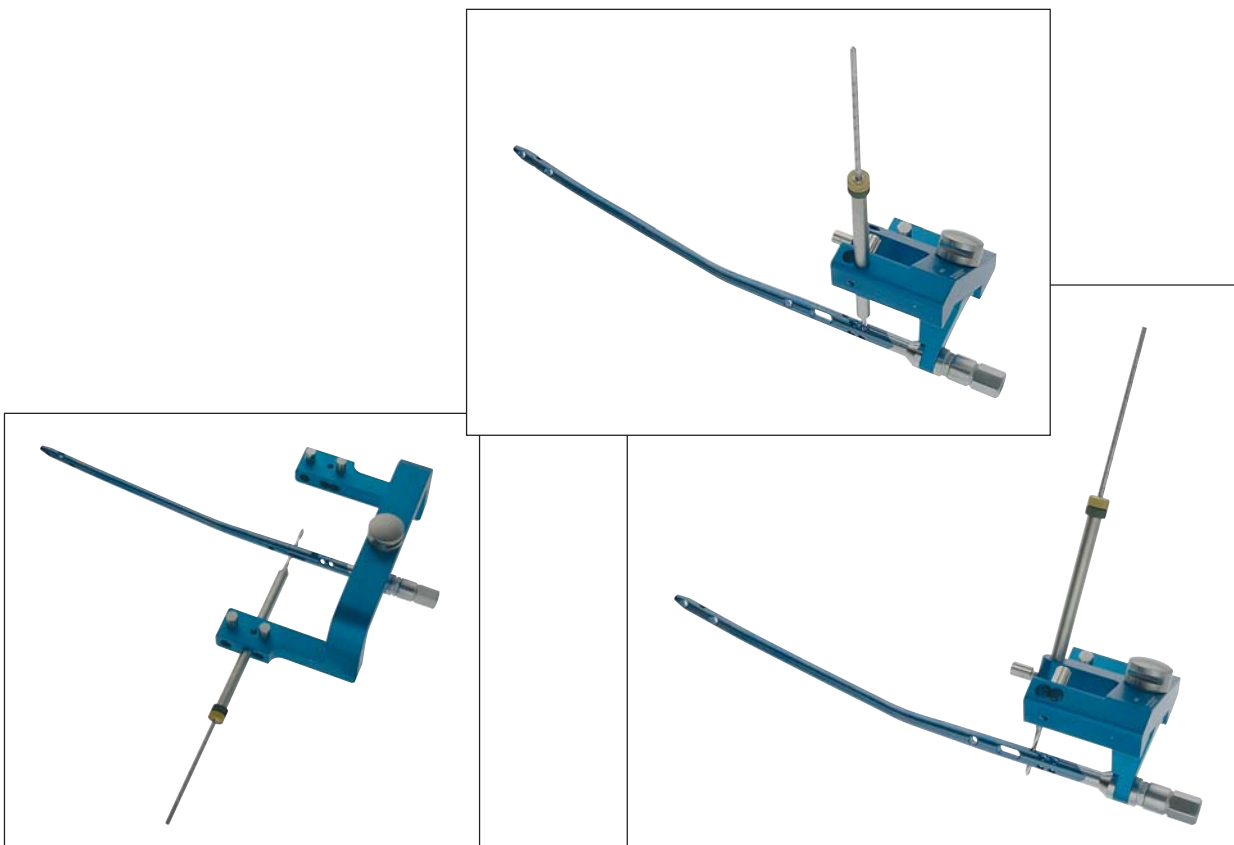
Recommended Sterilization Container for Set 1.14000
(Are not include in the Set):
Cat. No.: 151010 Sterilization Container

1.18960 Proximal Device for Titanium U/R Tibial Nails

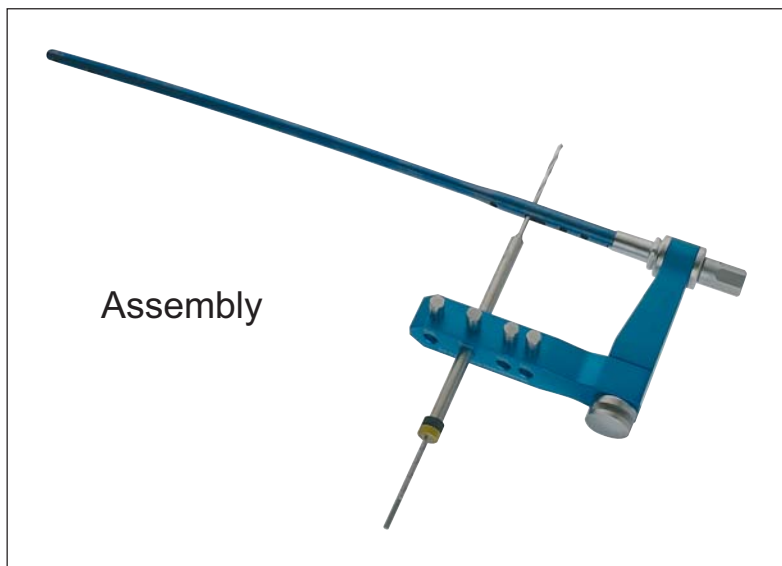
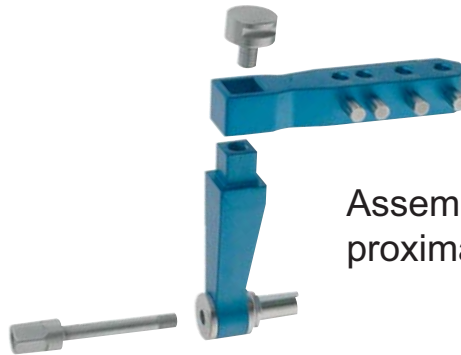
Assembly components for Tibial proximal Device



Assembly's



1.33330 Proximal Device for Titanium U/R Femoral Nails



1.19300 Tibial Adapter Block for Titanium U/R Tibial Nails



151013 Container
Sterilbehälter

1.11928 Flexible Reamer Set Trays (2 pieces), empty
Siebschalen für flexible Markraumböhrer (nicht gefüllt)



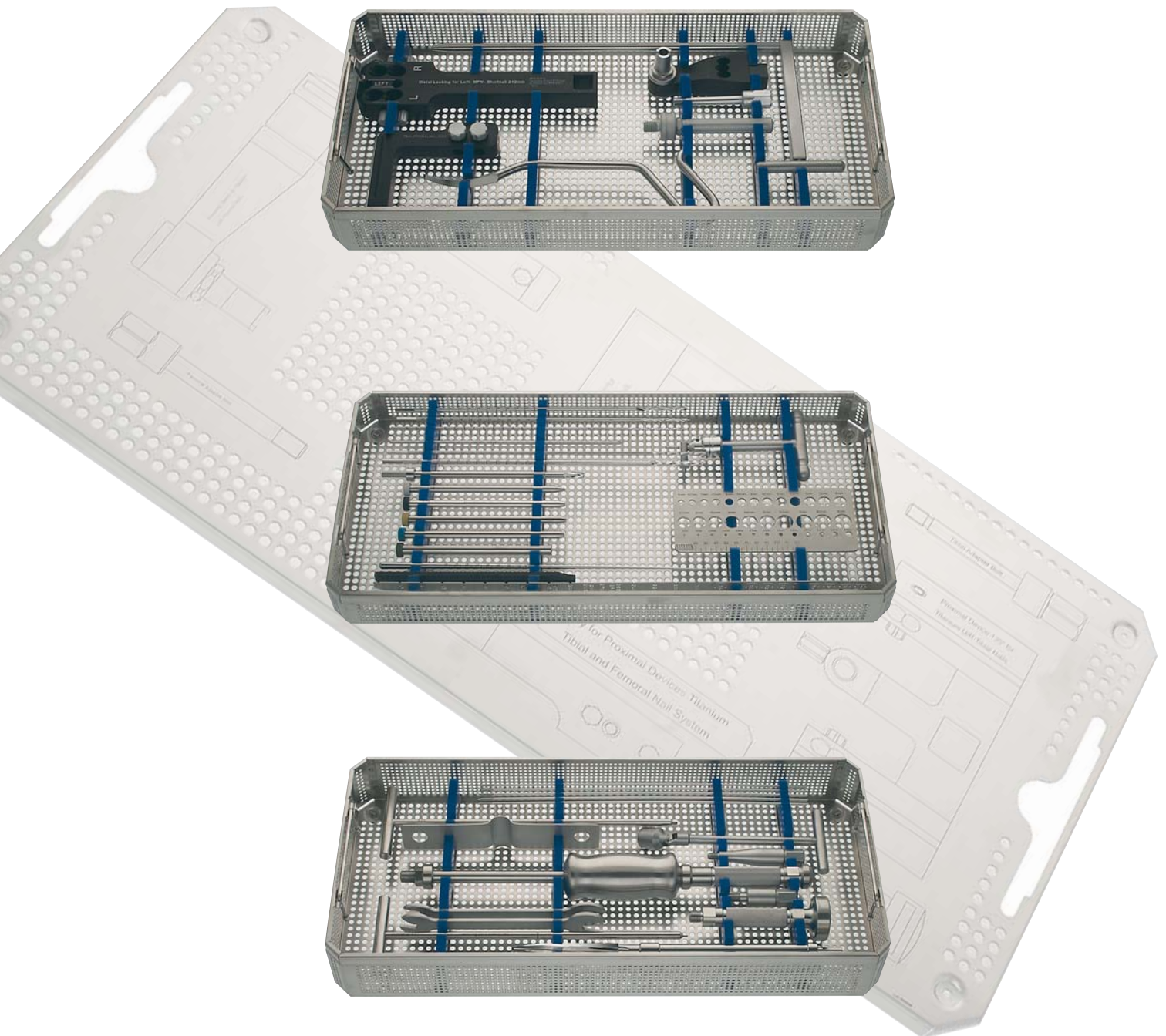
1.11927 Complete Flexible Medullary Reamer Set
Flexibler Markraumböhrer Satz, komplett

Cat. No.:	Description	Diameter
11002	Flexible Medullary Reamer	6,0 mm
11004	Flexible Medullary Reamer	6,5 mm
11006	Flexible Medullary Reamer	7,0 mm
11008	Flexible Medullary Reamer	7,5 mm
11010	Flexible Medullary Reamer	8,0 mm
11012	Flexible Medullary Reamer	8,5 mm
11014	Flexible Medullary Reamer	9,0 mm
11016	Flexible Medullary Reamer	9,5 mm
11018	Flexible Medullary Reamer	10,0 mm
11020	Flexible Medullary Reamer	10,5 mm
11022	Flexible Medullary Reamer	11,0 mm
11024	Flexible Medullary Reamer	11,5 mm
11026	Flexible Medullary Reamer	12,0 mm
11028	Flexible Medullary Reamer	12,5 mm
11030	Flexible Medullary Reamer	13,0 mm
11032	Flexible Medullary Reamer	13,5 mm
11034	Flexible Medullary Reamer	14,0 mm
11036	Flexible Medullary Reamer	14,5 mm
11038	Flexible Medullary Reamer	15,0 mm
11040	Flexible Medullary Reamer	15,5 mm
11042	Flexible Medullary Reamer	16,0 mm
11044	Flexible Medullary Reamer	16,5 mm
11046	Flexible Medullary Reamer	17,0 mm

Art. Nr.:	Beschreibung	Durchmesser
11002	Flexibler Markraumböhrer	6,0 mm
11004	Flexibler Markraumböhrer	6,5 mm
11006	Flexibler Markraumböhrer	7,0 mm
11008	Flexibler Markraumböhrer	7,5 mm
11010	Flexibler Markraumböhrer	8,0 mm
11012	Flexibler Markraumböhrer	8,5 mm
11014	Flexibler Markraumböhrer	9,0 mm
11016	Flexibler Markraumböhrer	9,5 mm
11018	Flexibler Markraumböhrer	10,0 mm
11020	Flexibler Markraumböhrer	10,5 mm
11022	Flexibler Markraumböhrer	11,0 mm
11024	Flexibler Markraumböhrer	11,5 mm
11026	Flexibler Markraumböhrer	12,0 mm
11028	Flexibler Markraumböhrer	12,5 mm
11030	Flexibler Markraumböhrer	13,0 mm
11032	Flexibler Markraumböhrer	13,5 mm
11034	Flexibler Markraumböhrer	14,0 mm
11036	Flexibler Markraumböhrer	14,5 mm
11038	Flexibler Markraumböhrer	15,0 mm
11040	Flexibler Markraumböhrer	15,5 mm
11042	Flexibler Markraumböhrer	16,0 mm
11044	Flexibler Markraumböhrer	16,5 mm
11046	Flexibler Markraumböhrer	17,0 mm

**1.11400 BASIC INSTRUMENTATION SET FOR INTERLOCKING NAIL SYSTEM
BASIS INSTRUMENTARIUMSATZ FÜR VERRIEGELUNGS-NAGELSYSTEM**

**1.11401 Tray - Set for 1.11400 (3 pieces) Graphic Case
Siebschaleneinsatz für 1.11400 (3 Stück)**



Listing: Basic Instruments for 1.11400
Liste: Basis Instrumente für 1.11400

1.11850	Universal Socket Wrench	1.11850	Kardanschlüssel SW 17
1.11849	Hex Driver (non cannulated) for 4.5 mm and 5.0 mm V - Screws	1.11849	Hexagonaler Schraubendreher (nicht kannuliert) für 4,5 mm und 5,0 mm V - Schrauben
1.11851	Hex Driver (cannulated) for 6.4 mm Solid and Cannulated Locking Bolts	1.11851	Hexagonaler Schraubendreher (kannuliert) für 6,4 mm, - kannulierte 6,4 mm V - Bolzen
1.11854	Medullary Exchange Tube	1.11854	Wechsel Tube
1.11856	Internal Fracture Alignment Device	1.11856	Internes Ausrichtungsinstrument
1.11858	Depth Gauge	1.11858	Tiefenmesser
1.11869	Twist Drill, \varnothing 3.5 mm, Length 305 mm	1.11869	Kalibrierter Bohrer, \varnothing 3,5 mm, Länge 305 mm
1.11870	Twist Drill, \varnothing 4.0 mm, Length 305 mm	1.11870	Kalibrierter Bohrer, \varnothing 4,0 mm, Länge 305 mm
1.11871	Twist Drill, \varnothing 4.8 mm, Length 305 mm	1.11871	Kalibrierter Bohrer, \varnothing 4,8 mm, Länge 305 mm
1.11875	Trocar \varnothing 4.0 mm x 240 mm	1.11875	Trokar \varnothing 4,0 mm x 240 mm
1.11878	Guide Rod for Cannulated Screws, \varnothing 1,8 mm x 350 mm (10 pieces)	1.11878	Bohrdraht für kannulierte Schrauben, \varnothing 1,8 mm x 350 mm (10 Stück)
1.11882	Open End Wrench SW 17 / 14 (2 pieces)	1.11882	Gabelschlüssel SW 17 / 14 (2 Stück)
1.11888	Reamer / Nail and Screw Template	1.11888	Fräser / Bohrer / Nagel und Schraubenschablone
1.11890	Nail Length Gauge	1.11890	Nagel - Längenmeßlehre
1.11892	Supine Driver	1.11892	Einschläger
9090	Handle with Jakobs Chuck	9090	Handstück mit Jakobsfutter
1.11896	Tibial Proximal Device	1.11896	Proximal Tibia - Zielgerät
1.11900	Skin Protector	1.11900	Hautschutz
1.11901	Tapered Reamer, cannulated \varnothing 15.5 mm for Femoral MFN. (DNS.) - Nails	1.11901	Kannulierter Formfräser \varnothing 15,5 mm für Femur MFN. (DNS.) - Nägel
1.11902	Curved Awl	1.11902	Gebogene Öffnungssahle
1.11906	Tapered Reamer, cannulated \varnothing 13.5 mm for Femoral / DNS. - U/R Nails	1.11906	Kannulierter Formfräser \varnothing 13,5 mm für Femur / DNS. - U/R Nägel
1.11910	Green Drill Sleeve \varnothing 8.0 mm	1.11910	Bohrhülse Grün \varnothing 8,0 mm
1.11911	Silver Drill Sleeve \varnothing 2.1 mm	1.11911	Bohrhülse Silber \varnothing 2,1 mm
1.11913	Blue Drill Sleeve \varnothing 4.8 mm	1.11913	Bohrhülse Blau \varnothing 4,8 mm
1.11914	Gold Drill Sleeve \varnothing 4.0 mm	1.11914	Bohrhülse Gold \varnothing 4,0 mm
1.11915	Black Drill Sleeve \varnothing 3.5 mm	1.11915	Bohrhülse Schwarz \varnothing 3,5 mm
1.11922	Slide Hammer	1.11922	Gleithammer
1.11923	Tibial Extractor Bolt	1.11923	Tibia Extraktionsschraube
1.11966	Femoral and DNS. / MFN. - Femoral Nail, Extractor Bolt	1.11966	Femur und DNS. / MFN. - Femur Nagel, Extraktionsschraube
1.11891	Length Gauge DNS. / MFN.	1.11891	Längenmeßlehre DNS. / MFN.
1.13332	Nail Adapter Bolt for Drill Guide 1.13333 DNS.	1.13332	Nageladaptionsschraube für Zielgerät 1.13333
1.13333	Universal Proximal Device for Femoral and DNS. / MFN. - Femoral Nails	1.13333	Universales Proximalzielgerät für Femur und DNS. / MFN. - Femur Nägel
1.13335	Twist Drill Cannulated \varnothing 4.0 mm, Length 305 mm	1.13335	Kannulierter Bohrer \varnothing 4,0 mm, Länge 305 mm
1.13336	Twist Drill Cannulated \varnothing 4.8 mm, Length 305 mm	1.13336	Kannulierter Bohrer \varnothing 4,8 mm, Length 305 mm
1.13337	DNS. / MFN. - Reamer \varnothing 6.4 mm - Proximal	1.13337	DNS. / MFN. - Fräser \varnothing 6,4 mm - Proximal

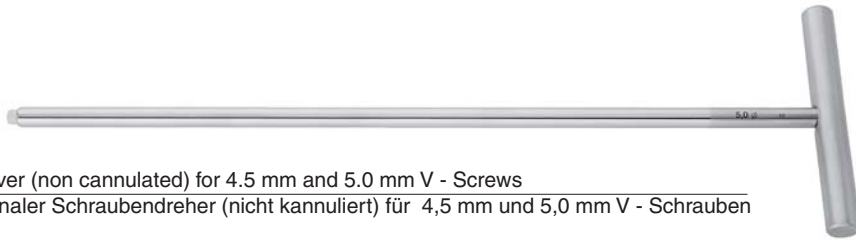


151026 Container for 1.11400
 Sterilbehälter für 1.11400

(recommended)



1.11850 Universal Socket Wrench
Kardanschlüssel SW 17



1.11849 Hex Driver (non cannulated) for 4.5 mm and 5.0 mm V - Screws
Hexagonaler Schraubendreher (nicht kannuliert) für 4,5 mm und 5,0 mm V - Schrauben

1.11851 Hex Driver (cannulated) for 6.4 mm Solid and Cannulated Locking Bolts
Hexagonaler Schraubendreher (kannuliert) für 6,4 mm, - kannulierte 6,4 mm V - Bolzen

1.11852 Hex Driver (cannulated) for 5.0 mm cannulated Locking Screws
Hexagonaler Schraubendreher (kannuliert) für kannulierte 5,0 mm Schrauben



1.11854 Medullary Exchange Tube
Wechsel Tube



1.11856 Internal Fracture Alignment Device
Internes Ausrichtungsinstrument



1.11858 Depth Gauge
Tiefenmesser



Drill Bits Cannulated hole \varnothing 2.1 mm Length 150 mm (recommended)
Kannulierter Bohrer Bohrung \varnothing 2,1 mm Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11861	3,5
1.11862	4,0
1.11863	4,8



Drill Bits Length 150 mm (recommended)
Bohrer Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11864	2,7
1.11865	3,5
1.11866	4,0
1.11867	4,8



Twist Drills Length 305 mm
Kalibrierter Bohrer Länge 305 mm

Cat. No.	\varnothing mm
1.11869	3,5
1.11870	4,0
1.11871	4,8



1.11875 Trocar \varnothing 4.0 mm x 240 mm
 Trokar \varnothing 4,0 mm x 240 mm



1.11876 Tip Threaded Guide Pin \varnothing 3.2 mm x 305 mm (recommended)
 Bohrdraht mit Gewinde \varnothing 3,2 mm x 305 mm (empfohlen)



1.11878 Guide Rod for Cannulated Screws, \varnothing 1,8 mm x 350 mm
 Bohrdraht für kannulierte Schrauben, \varnothing 1,8 mm x 350 mm

Guide Rods with Spade Tip are only for Flexible Medullary Reamers Führungsdrähte

1.11872 Guide Rod for IM Nail, \varnothing 2,4 mm, Length 900 mm
Führungsdraht \varnothing 2,4 mm, Länge 900 mm

1.11873 Guide Rod for IM Nail, \varnothing 3,0 mm, Length 900 mm
Führungsdraht \varnothing 3,0 mm, Länge 900 mm

1.11874 Guide Rod for Reamer, \varnothing 2,0 mm, Length 900 mm with \varnothing 3,0 mm Spade Tip
Führungsdraht mit Olive \varnothing 2,0 mm, Länge 900 mm

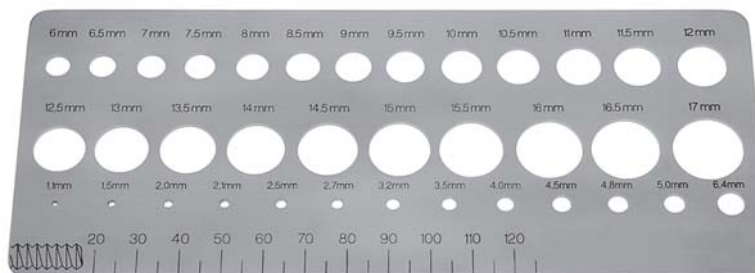
1.11879 Guide Rod for Reamer, \varnothing 3,0 mm, Length 900 mm with \varnothing 4,0 mm Spade Tip
Führungsdraht mit Olive \varnothing 3,0 mm, Länge 900 mm

1.11880 Guide Rod, \varnothing 3,0 mm, Length 900 mm with curved Tip
Führungsdraht gebogen \varnothing 3,0 mm, Länge 900 mm

1.11883 Guide Rod, \varnothing 2,4 mm, Length 900 mm with curved Tip
Führungsdraht gebogen \varnothing 2,4 mm, Länge 900 mm



1.11882 Open End Wrench SW 17 / 14
Gabelschlüssel SW 17 / 14



1.11888 Reamer / Nail and Screw Template
Fräser / Bohrer / Nagel und Schraubenschablone



1.11890 Nail Length Gauge
Nagel - Längenmeßlehre



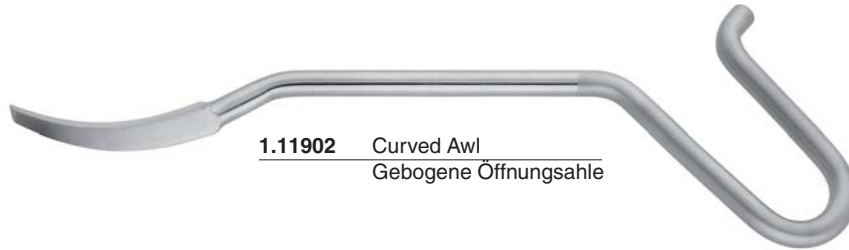
1.11892 Supine Driver
Einschläger



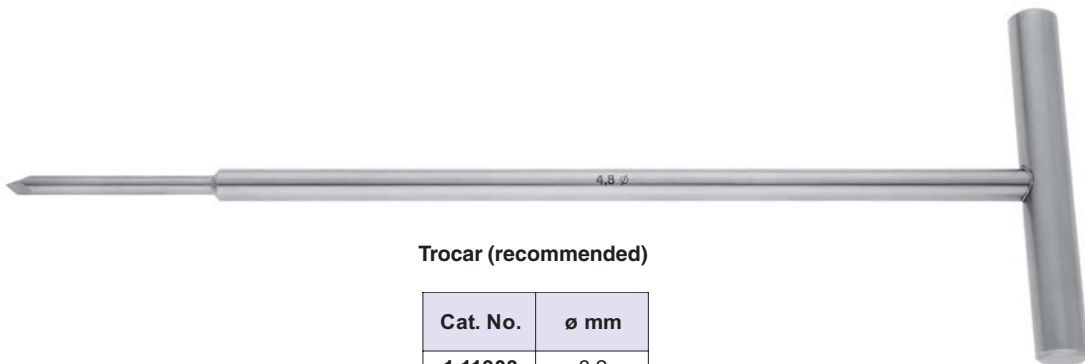
9090 Handle with Jakobs Chuck
Handstück mit Jakobsfutter



1.11900 Skin Protector
Hautschutz



1.11902 Curved Awl
Gebogene Öffnungsahe



Trocar (recommended)

Cat. No.	ø mm
1.11903	3,2
1.11904	4,0
1.11905	4,8
1.11907	8,0



1.11906 Tapered Reamer, cannulated ø 13.5 mm for Femoral MFN. / DNS. - U/R Nails
Kannulierter Formfräser ø 13,5 mm für Femur MFN. / DNS.- U/R Nägel



1.11878 Guide Rod for Cannulated Screws, ø 1,8 mm x 350 mm
Bohrdraht für kannulierte Schrauben, ø 1,8 mm x 350 mm



1.13332 Nail Adapter Bolt for Drill Guide 1.13333 MFN. / DNS.
Nageladaptionsschraube für Zielgerät 1.13333 MFN. / DNS.



1.11910 Green Drill Sleeve \varnothing 8.0 mm
Bohrhülse Grün \varnothing 8,0 mm



1.11911 Silver Drill Sleeve \varnothing 2.1 mm
Bohrhülse Silber \varnothing 2,1 mm



1.11913 Blue Drill Sleeve \varnothing 4.8 mm
Bohrhülse Blau \varnothing 4,8 mm



1.11914 Gold Drill Sleeve \varnothing 4.0 mm
Bohrhülse Gold \varnothing 4,0 mm



1.11915 Black Drill Sleeve \varnothing 3.5 mm
Bohrhülse Schwarz \varnothing 3,5 mm



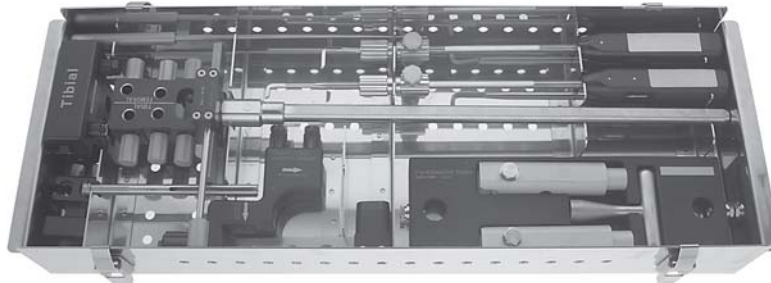
1.11922 Slide Hammer
Gleithammer



1.11923 Tibial Extractor Bolt
Tibia Extraktionsschraube



1.11966 Femoral and DNS. - Femoral Nail, Extractor Bolt
Femur und DNS.-Femur Nagel, Extraktionsschraube



1.11980 INSTRUMENT SET FOR DISTAL DEVICE EQUIPMENT

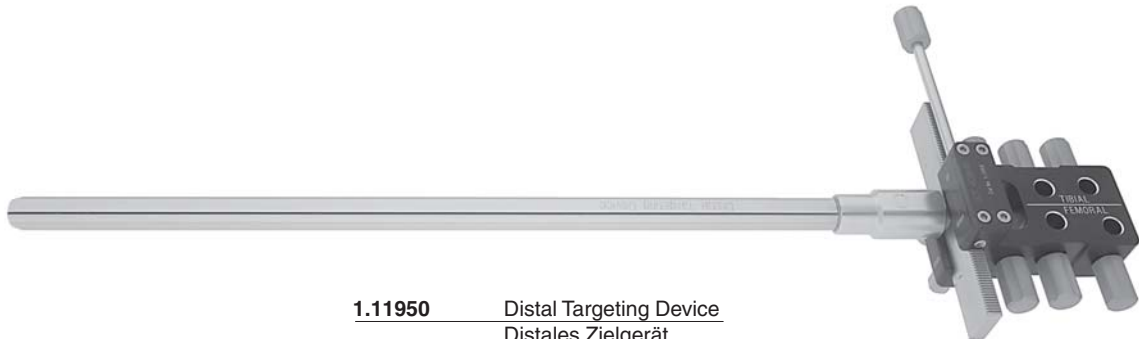
SET LISTING:

1.11962	Tray for Distal Device Equipment (Steel Tray include Lid)	
1.11950	Distal Targeting Device	1 pcs.
1.11951	Outrigger	1 pcs.
1.11956	Wrench, hexagonal 14 mm	1 pcs.
1.11960	Pre - Adjustment Device	1 pcs.
1.11930	Tibial Adapter Block	1 pcs.
1.11933	Femoral Adapter Block	1 pcs.
1.11963	Fixation Hook - 20 mm	1 pcs.
1.11964	Fixation Hook - 15 mm	1 pcs.
1.11965	Silver Drill Sleeve 8 mm	1 pcs.
1.11967	Hook Awl - 15 mm for 1.11964	1 pcs.
1.11968	Hook Awl - 20 mm for 1.11963	1 pcs.

1.11980 INSTRUMENTENSATZ FÜR DISTALES ZIELGERÄT MIT ZUBEHÖR

SATZLISTE:

1.11962	Sieb für distales Zielgerät mit Zubehör (Stahlsieb mit Deckel)	
1.11950	Distales Zielgerät	1 Stück
1.11951	Haken - Arm	1 Stück
1.11956	Schlüssel SW 14	1 Stück
1.11960	Voreinstellgerät	1 Stück
1.11930	Tibia Adapter Block	1 Stück
1.11933	MFN. / DNS. / Femur Adapter Block	1 Stück
1.11963	Fixationshaken - 20 mm	1 Stück
1.11964	Fixationshaken - 15 mm	1 Stück
1.11965	Bohrhülse Siver 8 mm	1 Stück
1.11967	Hakenahle - 15 mm für 1.11964	1 Stück
1.11968	Hakenahle - 20 mm für 1.11963	1 Stück



1.11950 Distal Targeting Device
Distales Zielgerät



1.11960 Pre - Adjustment Device
Voreinstellgerät



1.11930 Tibial Adapter Block
Tibia Adapter Block



1.11933 Femoral MFN. / DNS. - Adapter
Femur MFN. / DNS. - Adapter



1.11951 Outrigger
Haken - Arm



1.11956 Wrench, hexagonal 14 mm
Schlüssel 14 mm



1.11963 Fixation Hook - 20 mm
Fixationshaken - 20 mm
1.11964 Fixation Hook - 15 mm
Fixationshaken - 15 mm



1.11965 Silver Drill Sleeve 8 mm
Bohrhülse Silber 8 mm



1.11967 Hook Awl for 1.11964 - 15 mm
Hakenahle für 1.11964 - 15 mm
1.11968 Hook Awl for 1.11963 - 20 mm
Hakenahle für 1.11963 - 20 mm

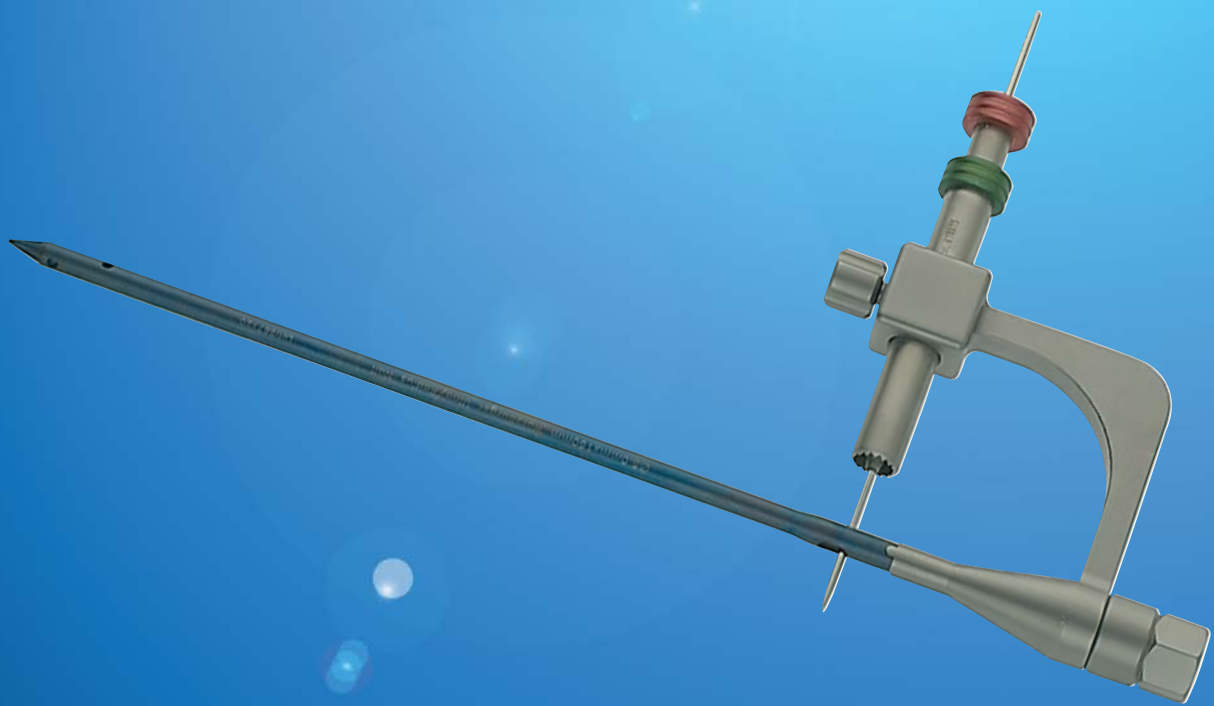
MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

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MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



**WÜRZBURGER
ULNA/RADIUS-NAGEL
ULNA/RADIUS-NAIL**

WÜRZBURGER ULNA/RADIUS-NAGEL ULNA/RADIUS-NAIL

Aus der Operationstechnik von:
The surgical technique of:

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Chirurgische Universitätsklinik,
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Tel.: ++49 (0) 93120137010

ANMERKUNG:

Die hier beschriebene Operationstechnik wird von dem Autor für die Behandlung unkomplizierter Eingriffe vorgeschlagen. Letztendlich ist die Versorgung vorzuziehen, die den Bedürfnissen des jeweiligen Patienten am besten entspricht.

REMARK

The surgical technique described here is proposed by the Author for use in uncomplicated interventions. In the final analysis, the form of treatment best suited to the requirements of individual patient should be chosen.

Die Verriegelungsnagelung von Unterarmfrakturen mit dem Würzburger-Ulna/Radius-Nagel Interlocking Nailing of Forearm Fractures with the Würzburger Ulna/Radius Nail

Zusammenfassung

Operationsziel

Übungsstabile Osteosynthese von Ulna und/oder Radius mit einem soliden, durch Schrauben proximal und distal verriegelten Marknagel in grundsätzlich aufgebohrter Technik.

Indikationen

Geschlossene und offene Frakturen des zweiten bis vierten Schaftsechstels des Radius und des zweiten bis fünften Schaftsechstels der Ulna einschließlich Refrakturen nach Plattenosteosynthese. Verfahrenswechsel nach primärem Einsatz des Fixateur externe. Pathologische Frakturen.

Kontraindikationen

Akute und chronische Osteomyelitis der Unterarmknochen. Offene Wachstumsfugen.

Operationstechnik

Anatomiegerechtes individuelles Vorbiegen des Nagels. Zugang Ulna: Olekranonspitze. Zugang Radius: unmittelbar radial des Tuberculum dorsale durch das zweite Strecksehnenfach. Eröffnen des Markraums und Erweiterung des Markraumzugangs. Auffräsen der Markhöhle mit Handfräsen. Möglichst geschlossene Reposition. Einbringen des Nagels mit aufgesetzter Bohrführung möglichst ohne Hammer. Verriegelung an der Nagelbasis über die Bohrführung, an der Nagelspitze in Freihandtechnik.

Weiterbehandlung

Keine zusätzliche Ruhigstellung erforderlich. Sofortiger Beginn mit aktiven und passiven Bewegungs- und Kräftigungsübungen unter Einschluss der Unterarmumwendung. Röntgenkontrollen postoperativ, nach 6, 12 und 18 Wochen. Implantatentfernung frühestens nach 18 Monaten.

Summary

Objective

Stable osteosynthesis of ulna and/or radius with a solid intramedullary nail, always inserted after reaming and locked proximally and distally by screws.

Indications

Closed and open fractures of the second to the fourth sixth of the radius and the second to the fifth sixth of the ulna. Refractures after plate osteosynthesis. Continuation of treatment after primary stabilization by an external fixator. Pathologic fractures.

Contraindications

Acute and chronic osteomyelitis of the forearm bones. Open growth plates.

Surgical Technique

Pre-bending of the nail to adapt the shape of bones. Ulnar approach through the tip of the olecranon. Radial approach directly radial to Lister's tubercle through the second extensor tendon compartment. Opening of the medullary cavity and manual reaming of the medullary cavity. Closed reduction, if possible. Insertion of the nail without hammering, if possible. Locking at base of the nail with the help of an aiming device and at nail tip by freehand technique.

Ergebnisse

Im Rahmen einer prospektiven Studie wurden von Juni 1997 bis Dezember 2000 40 Ulna-Radius Nägel bei 33 Unterarmen von 32 Patienten (16–84 Jahre) implantiert. Bei zehn Unterarmen wurde nur der Radius, bei 16 lediglich die Ulna und bei sieben beide Unterarmknochen genagelt. Bei 31 Unterarmen handelte es sich um frische Frakturen (darunter eine Refraktur nach Plattenentfernung), bei je einem um die Korrektur einer in Fehlstellung heilenden Radiusfraktur sowie um eine pathologische Fraktur. Derzeit sind 28 Frakturen an 24 Unterarmen verheilt. An Komplikationen traten bisher eine Pseudarthrose, zwei verzögerte Bruchheilungen, ein vollständiger und ein unvollständiger Brückenkallus, jedoch keine Infektion auf. Nach 13 Materialentfernungen wurde bisher keine Refraktur beobachtet. Die klinischen Ergebnisse sind mit einem mittleren DASH-Score von 11,3 und einer überwiegend guten und sehr guten Funktion ermutigend.

Schlüsselwörter

Verriegelungsnagelung · Radius · Ulna · Unterarm

Vorbemerkungen

Im Gegensatz zu Frakturen der langen Röhrenknochen Humerus, Femur und Tibia wurde das überlegene biomechanische Prinzip der Verriegelungsnagelung bei der Versorgung von Unterarmfrakturen bisher nicht angewendet. Die Gründe dafür liegen in den anatomischen Besonderheiten der Unterarmknochen mit ihrer komplexen Wechselwirkung, der mangelnden Stabilität der alleinigen intramedullären Schienung durch Metallstifte (z.B. Rush-Pins), die keine Sicherung gegenüber Torsionskräften gewährleisten, und den guten Ergebnissen, die mit der als Standard geltenden Plattenosteosynthese zu erzielen sind. Die Bündelnagelung ist mit ihrer elastischen Verklebung in der Markhöhle bei eingeschränktem Indikationsspektrum als einziges intramedulläres Implantat in geübten Händen in der Lage, gute Ergebnisse zu erzielen [7]. Der Anfang der 90er Jahre eingeführte „TrueFlex“-Nagel mit sternförmigem Querschnitt zur Erzielung einer besseren Torsionsfestigkeit hat sich in der Praxis noch nicht ausreichend bewährt [8, 9]. Der von Lefèvre (Straßburg) 1990 beschriebene Verriegelungsnagel, der sich durch einen voluminösen Bügel an seinem Ende auszeichnet, eignet sich nur für die Ulna [3].

Nachteile der Plattenosteosynthese sind u.a. Narbenbildung, der besonders am proximalen Radius

Results

In a prospective study, 40 Ulna Radius locking nails have been implanted between June 1997 and December 2000 in 33 forearms of 32 patients (16–84 years). The radius alone was nailed in ten, the ulna alone in 16, and both bones in seven forearms. 31 fractures were fresh (including one refracture after plate removal). One malunited radial fracture had to be corrected, and one fracture was pathologic. At present, 28 fractures in 24 forearms have consolidated. Complications occurred in form of one pseudarthrosis, two delayed unions, one complete and one incomplete synostosis, but no infection. After 13 implant removals, we did not observe any refracture. The clinical results, with a mean DASH score of 11.3, corresponding to good and excellent function, are encouraging.

Key Words

Ulna and radius fracture · Interlocking nailing Würzburger nail

Introductory Remarks

Contrary to fractures of long bones such as humerus, femur and tibia, interlocking nailing of forearm fractures has not been used in the past in spite of its biomechanical advantages. Anatomic peculiarities of the forearm bones and their complex interaction, the inadequate torsional stability of simple intramedullary rodding such as Rush pins, as well as the good results obtained with internal plate fixation may be reasons for the absent interest in interlocking nailing. Elastic bundle nailing allows a wedging in the medullary cavity and leads to good results in the hand of experienced surgeons, although the spectrum of indications is limited [7]. The True Flex nail introduced in the early 90s is characterized by an improved torsional stability thanks to its star-shaped cross section; however, clinical results are still outstanding [8, 9]. In 1990, Lefèvre introduced a locking nail that has a large handle at its proximal end, limiting its use to the ulna [3].

The disadvantages of internal fixation with plates include scar formation, an approach to the proximal radius known for its complications, the repeatedly described refracture rate after plate removal varies between 4.3% and 22% [1–3, 5, 6, 10, 13, 14], as well as an incidence of nonunion between 1.5% and 10.3% [5, 11].

komplikationsträchtige Zugang, die häufig beschriebene hohe Refrakturrate von 4,3–22% nach Plattenentfernung [1–3, 5, 6, 10, 13, 14] sowie eine Pseudarthrose rate von 1,5–10,3% [5, 11]. Die Wiederlangung einer unbeeinträchtigten Umwendlbewegung erfordert eine exakte Wiederherstellung der Geometrie des Unterarms hinsichtlich Rotation, Länge, Angulation und Radiusbogen [11, 12, 15–18]. Diese Anforderungen können in idealer Weise durch die Plattenosteosynthese [15], inzwischen aber auch durch den Würzburger-Nagel erreicht werden, der den anatomischen Krümmungsverhältnissen individuell angepasst wird.

Der Würzburger-Ulna/Radius-Nagel besteht aus einer Titanlegierung (DIN ISO 5832-3), hat einen Durchmesser von 4 oder 5 mm und ist in Längen von 180 mm, 190 mm, 200 mm, 210 mm, 220 mm, 230 mm, 240 mm, 250 mm, 260 mm verfügbar. Die „Nagelbasis“ ist zur Aufnahme der Bohrführung, die mit einem Verbindungsbolzen rotationssicher festgeschraubt wird, über 2 cm Länge auf einen Durchmesser von 6 mm verdickt; die „Nagelspitze“ verjüngt sich über eine Strecke von 1 cm konisch und weist vier längs verlaufende Riefen auf, die der zusätzlichen Rotationsicherung dienen. Zur Verriegelung ist an der Basis eine Bohrung von 2,7 mm Durchmesser angebracht; hier erfolgt die Verriegelung durch eine 2,7 mm Schraube mit durchgehendem Gewinde; an der Spitze finden sich zwei senkrecht aufeinander stehende Bohrungen von 1,9 mm Durchmesser, die durch eine Schraube mit 1,9 mm Kerndurchmesser und unikortikalem 2,7 mm Gewinde verriegelt werden. Präoperativ muss der Nagel durch Vorbiegen an die individuelle Knochenform angepasst werden.

Operationsprinzip und -ziel

Übungsstabile Osteosynthese von offenen und geschlossenen Frakturen des zweiten bis fünften Schaftsechstels der Ulna und/oder des zweiten bis vierten Schaftsechstels des Radius mit einem soliden, durch jeweils eine Schraube proximal und distal verriegelten Marknagel in grundsätzlich aufgebohrter Technik nach geschlossener oder offener Reposition. Die Ulna wird von proximal, der Radius von distal genagelt. Rasche Wiederherstellung der Funktionsfähigkeit des verletzten Unterarms. Sichere knöcherne Durchbauung.

Restoration of a complete range of pro- and supination requires an exact reconstruction of the geometry (rotation, length, angulation, and radial bow) of the forearm bones [11, 12, 15–18]. These requirements are ideally met by a plate fixation [15], but also by the Würzburger nail that can be adapted to the anatomy of the bone.

The Würzburger nail is made from Titanium Alloy (DIN ISO 5832-3), it has a diameter of 4 or 5 mm and a length of 180 mm, 190 mm, 200 mm, 210 mm, 220 mm, 230 mm, 240 mm, 250 mm, 260 mm. The driving end of the nail(base) is mounted on a drill guide for insertion of locking screw. A connecting bolt inserted between both prevents any rotation. The base of the nail has a diameter of 6 mm over a distance of 2 cm. The tip of the nail is reduced conically over a distance of 1 cm and has four longitudinal ridges that assure additional rotational stability. For locking, at the base a 2.5 mm hole is present for insertion of a 2.7 mm fully threaded, self-tapping screw. At the tip of the nail two 1.9 mm holes perpendicular to each other are made for insertion of a screw having a 1.9 mm core diameter and a unicortical 2.7 mm thread for locking. Preoperatively, the nail has to be adapted to the individual shape of the bone by pre-bending.

Surgical Principles and Objective

Internal fixation of open and closed fractures between the second and fifth sixth of the ulna and /or between the second and fourth sixth of the radius with a solid nail allowing sufficient stability for exercises. After closed or open reduction and obligatory reaming, fixation is achieved with an intramedullary nail, locked proximally and distally with one screw each. Approach to the ulna for nail insertion from proximal and to the radius from distal. Speedy restoration of function. Reliable bony union.

Vorteile

- Anatomische Rekonstruktion der Unterarmknochen durch individuelle Anpassung der Würzburger-Nägel in idealer Weise möglich
- Ausreichende Stabilität gegen Torsion, Distraction und Verkürzung durch klassische Verriegelungstechnik mit zwei quer durch beide Kortikales und den Nagel eingebrachte Schrauben.
- Keine Denudierung der Fragmente und keine Eröffnung des Frakturhämatoms durch minimal invasive Technik, sofern die geschlossene Reposition gelingt.
- Übungsstabile Versorgung.
- Nageltypische Frakturheilung mit reduziertem Refrakturrisiko nach Implantatentfernung.

Nachteile

- Operationstechnisch aufwendiges, filigranes Verfahren.
- Verhältnismäßig flache Lernkurve; dadurch anfangs-verlängerte Operations- und Durchleuchtungszeiten.
 - Bei sehr kleinen Patienten ist eine Nagelung nicht möglich, da der kürzeste verfügbare Nagel für kurze Unterarme zu lang ist.

Indikationen

- Geschlossene oder offene Frakturen jedweden Typs im zweiten bis vierten Schaftsechstel des Radius und/oder im zweiten bis fünften Schaftsechstel der Ulna (Abbildung 1) einschließlich Refrakturen. Pathologische Frakturen in diesem Bereich.
- Alle Altersgruppen nach Schluss der Epiphysenfugen.
- Denkbare Indikationen sind auch Radiushalsfrakturen, bei denen der abgekippte Radiuskopf durch die Nagelspitze angehoben und gestützt werden kann.

Kontraindikationen

- Osteitis.
- Offene Wachstumsfugen.
 - Frakturen mit längs gerichteten Frakturausläufern im distalen Radiuschaft bis in die Radiusmetaphyse hinein, da hier die Hebelkräfte beim Einbringen des Nagels zu verstärkter Dislokation führen.

Patientenaufklärung

- Alternative Behandlungsverfahren (konservative Therapie bei alleiniger Ulnafraktur, Plattenosteosynthese).

Advantages

- Anatomic reconstruction of the forearm bones in an optimal position thanks to the Würzburger nail's adaptation to the individual shape.
- Adequate resistance to torsion, distraction, and shortening through classic locking technique using two bicortical screws inserted through the nail.
- No periosteal stripping and no opening of hematoma through minimal invasive technique, on the condition that closed reduction is successful.
- Fixation sufficiently stable for exercises.
- Fracture healing typical of intramedullary rodding with a reduced risk of refracture after implant removal.

Disadvantages

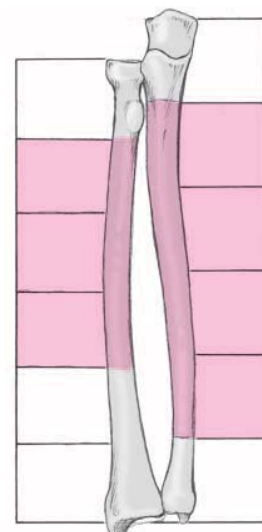
- Technique requires meticulous surgical skills.
- Relatively long learning curve prolonging initially the operating time and exposure to radiation.
- Small stature precludes use of this nail, as the shortest available nail is too long for short forearm bones.

Indications

- Closed and open fractures of the second to the fourth sixth of the radius shaft and/or the second to the fifth sixth of the ulna shaft (Figure 1).
- Refractures after plate osteosynthesis.
- Pathologic fractures.

Abbildung 1
Nagelbarer Bereich von Radius und Ulna: zweites bis viertes Radiusechstel, zweites bis fünftes Ulnasechstel.

Figure 1
Closed or open fractures between the second and fourth sixth of the radius and second to fifth sixth of ulna can be treated with the nail.



- Allgemeine Operationsrisiken.
- Weichteil- und Knocheninfektionen.
- Nervenläsionen (Nervus ulnaris, Nervus interosseus dorsalis, Ramus superficialis nervi radialis).
- Läsion der Sehnen der Musculi extensores carpi radialis longus et brevis sowie des Musculus extensor pollicis longus.
- Bildung eines Brückenkallus zwischen Radius und Ulna mit dadurch bedingter Blockade der Umwendbewegung des Unterarms
- Störung der Knochenheilung; Korrekturingriff bei Komplikationen.
- Zweiteingriff zur Implantatentfernung.

Operationsvorbereitung

- Röntgenaufnahmen des verletzten Unterarms mit angrenzenden Gelenken in zwei Ebenen.
- Röntgenaufnahmen des unverletzten Unterarms mit angrenzenden Gelenken in den zwei Standardebenen mit einem Film-Fokus-Abstand von 1 m.
- Vorbiegen der Nagelschablone anhand der Röntgenaufnahmen der unverletzten Seite am besten am Vortag der Operation (Abbildung 2).

- Above-listed fractures in all age groups after closure of the growth plates.
- Possible indications include radial neck fractures in which the tilted radial head can be reduced and supported with the tip of the nail.
- Continuation of treatment after primary stabilization by an external fixator.

Contraindications:

- Acute and chronic osteomyelitis of the forearm bones.
- Open growth plates.
- Acutely oblique fractures at the distal radial shaft reaching in the metaphysis, as the leverage necessary for introduction of the nail may increase the displacement. Patient Information
- Discuss alternative methods of treatment (conservative, therapy in case of isolated ulna fracture, plate fixation).
- Usual surgical risks.

Abbildung 2

Die biegbare Nagelschablone wird anhand von Röntgenbildern (exakt anteroposterior und seitlich) des unverletzten Unterarms vorgebogen, die zu diesem Zweck seitenverkehrt aufgehängt werden müssen. Das dem Nullpunkt entsprechende Ende der Schablone (erkennbar an der Längenmarkierung) wird über die vorgesehene Position der Nagelspitze auf dem Röntgenbild gehalten, und die Schablone wird nun zunächst in einer der beiden Röntgenebenen entsprechend dem Verlauf des Markraums gebogen. Dabei dient die auf der Nagelschablone angebrachte Beschriftung „Do not implant“ als Markierung z.B. für die der Dorsalseite des Arms entsprechende Seite der Schablone. In der zweiten Röntgenebene wird entsprechend vorgegangen; dabei muss die Schablone in ihrer Achse um 90° gedreht werden. In der Frontalebene werden der Radiusnagel in der Regel eine dem Radiusbogen entsprechende radiallykonvexe und der Ulnanagel eine leicht S-förmige Krümmung erhalten, während beide Nägel in der Sagittalebene eine geringe dorsalkonvexe Krümmung haben. Müssen Radius und Ulna versorgt werden, sollten die Schablonen entsprechend gekennzeichnet werden (z.B. auf der Sterilisationsverpackung).

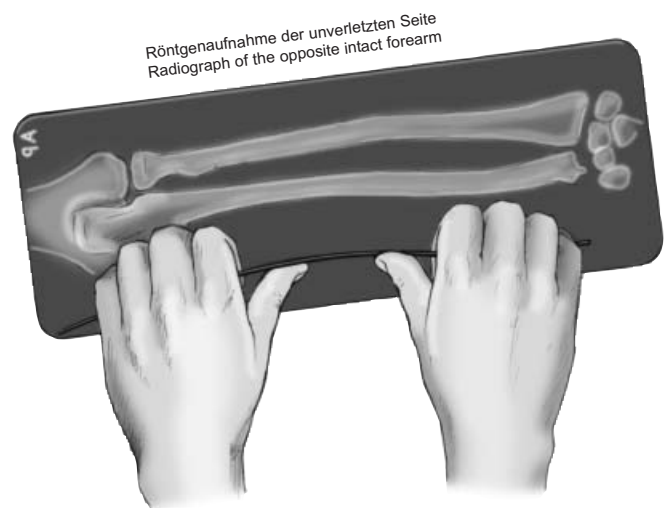


Figure 2

The malleable nail template is bent in both planes using the reversed film of the opposite, uninjured forearm bone to match the contour of the canal. The zero point of the template (visible on the length markings) is held over the anticipated position of the nailtip on the radiograph, and the template is first bent based on one radiograph. The inscription "Do not implant" can serve for orientation and can correspond to the posterior aspect of the forearm. Identical procedure for the bending in the second plane, however, the template has to be turned around its longitudinal axis by 90°. In general, the radial nail has a bow in the frontal plane corresponding to the radial convexity whereas the ulnar nail has a lazy S-shape. In the sagittal plane, both nails have a small, dorsally convex curvature. If both bones are to be nailed, the templates must be clearly marked "ulna" or "radius" on the outside of the package to be sterilized.

- Bestimmung der erforderlichen Nagellänge (Abbildung 3).
- Bestimmung des erforderlichen Nageldurchmessers: Die Weite der Markhöhle kann am Röntgenbild direkt abgemessen werden. Der Vergrößerungseffekt ist vernachlässigbar, da der Markraum aufgefräst wird.
- Sterilisieren der Schablone (reicht die Zeit bei dringlichen Operationen für eine ordnungsgemäße Sterilisierung nicht aus, kann die unsterile Schablone in einem sterilen durchsichtigen Plastikbeutelverpackt werden).
- Rasur des Unterarms einschließlich Hand- und Ellenbogengelenk bei starkem Haarwuchs unmittelbar präoperativ.

Instrumentarium und Implantate

- Spezielles Instrumentarium für den Würzburger-Ulna/Radius-Nagel ; Abbildungen 5 und 7).
- Marknagel (Durchmesser 4 oder 5 mm; Länge 180 mm, 190 mm, 200 mm, 210 mm, 220 mm, 230 mm, 240 mm, 250 mm, 260 mm; Abbildung 4).
- Verriegelungsschrauben, 2,7 mm, selbstschneidend, für die Verriegelung an der Nagelbasis (Abbildung 6)
- Verriegelungsschrauben, 2,7 mm, unikortikal selbstschneidend (Kerndurchmesser 1,9 mm), für die Verriegelung an der Nagelspitze (Abbildung 6).
- Bohrmaschine mit Schnellspannbohrfutter für Kirschner-Drähte, Jakobs-Futter und röntgendurchlässigem Winkelgetriebe.

Anästhesie und Lagerung

- Allgemein- oder Regionalanästhesie.
- Rückenlage.
- Lagerung des Unterarms auf einem Handtisch: Zur Nagelung des Radius liegt der Arm gestreckt, zur

- Soft tissue and bone infection.
- Injury to nerves (ulnar, posterior interosseous, and superficial branch of radial nerve).
- Injury to tendons of extensor carpi radialis longus and brevis as well as to extensor pollicis longus.
- Formation of a synostosis between radius and ulna, blocking pro- and supination.
- Delayed union or nonunion necessitating a revision.
- Second intervention for implant removal.

Preoperative Work Up

- Radiographs in two planes of the injured and not injured forearms with the neighboring joints, film-tube distance: 1 m.
- Pre-bending of the nail template based on radiographs of the intact bone, preferably on the day before surgery (Figure 2).
- Determination of the necessary nail length (Figure 3).
- Determination of the required nail diameter: the width of the medullary canal can be directly measured on the radiographs. The magnifying effect is negligible, as the canal will be reamed.
- Sterilization of the template (if there is not enough time to do so, the non sterile template can be placed in a sterile transparent plastic bag).
- Shaving of the forearm including wrist and elbow in instances of hypertrichosis immediately before surgery.

Surgical Instruments and Implants

- Special set for Würzburger ulna/radius nailing , (Figures 5 and 7).
- Intramedullary nail (diameter 4 or 5 mm; length 180 mm, 190 mm, 200 mm, 210 mm, 220 mm, 230 mm, 240 mm, 250 mm, 260 mm; Figure 4).
- Locking screws, 2.7 mm, self-tapping, for use at the base of the nail (Figure 6).



Abbildung 3

Bestimmung der erforderlichen Nagellänge am Beispiel der Ulna. Wird das dem Nullpunkt der auf der Nagelschablone aufgedruckten Längenskala entsprechende Ende der Schablone über die geplante Position der Nagelspitze gelegt, kann die erforderliche Nagellänge von der Skala abgelesen werden.

Figure 3

Determination of the necessary length of the nail using the ulna as an example. The zero point of the template is placed over the intended position of the nail tip and the necessary nail length can be read on the scale of the template.

Abbildung 4
Würzburger-Ulna/Radius-Nagel.

Figure 4
Würzburger-ulna/radius nail.



Abbildung 5
Nagel mit Bohrführung, Verbindungsbolzen und Einschläger. Der Bolzen sollte beim Einschrauben in die Nagelbasis nicht mit dem Maulschlüssel, sondern nur mit der Hand angezogen werden, da sich sonst die Aufnahme der Bohrführung verziehen kann und die Bohrführung nicht mehr exakt auf die Bohrung im Nagel zielt.

Figure 5
Nail with drill guide for insertion of locking screw, connecting bolt and driver/extractor. The bolt should not be tightened with a wrench but by hand during screwing into the base of the nail to avoid deformation of the base of the nail, as this could lead to loss of the exact direction of drilling.



Abbildung 6
Verriegelungsschrauben. 1: Verriegelungsschraube, selbstschneidend, 2,7 mm, 2: Verriegelungsschraube, unikortikal (selbstschneidend), 2,7 mm (Kerndurchmesser 1,9 mm). 3: Verschlusschraube für Kompression

Figure 6
Locking screws. 1: self-tapping locking screw, 2.7 mm, 2: unicortical, self-tapping locking screw, 2.7 mm (core diameter 1.9 mm). 3: Screw Plug for Compression

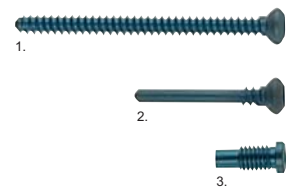


Abbildung 7
Spezielles Instrumentarium. 1: Biegbare Nagelschablone, 2: Handfräse (3,0/3,5/4,0/4,5/5,0/6,0 mm), 3: Nagelbiegeinstrument, 4: Schraubendreher mit Handgriff und Schraubenhalteaufsatz, 5: Gleithammer, 6: Schraubenlängenmesslehre, 7: Bohrhülse (türkis), 8,0 mm, zur Aufnahme von pinkfarbener Bohrhülse und Schraubenhalteaufsatz, 8: Bohrhülse (pink), 6,0 mm, zur Führung des Bohrdrahts, 9: Handbohrhülse, 8,0 mm, zur Aufnahme der röntgendurchlässigen Bohrhülse, 10: Bohrhülse röntgendurchlässig (bernsteinfarben), 6,0 mm, zur Verriegelung an der Nagelspitze, 11: kanulierte Fräse, 6,0 mm.

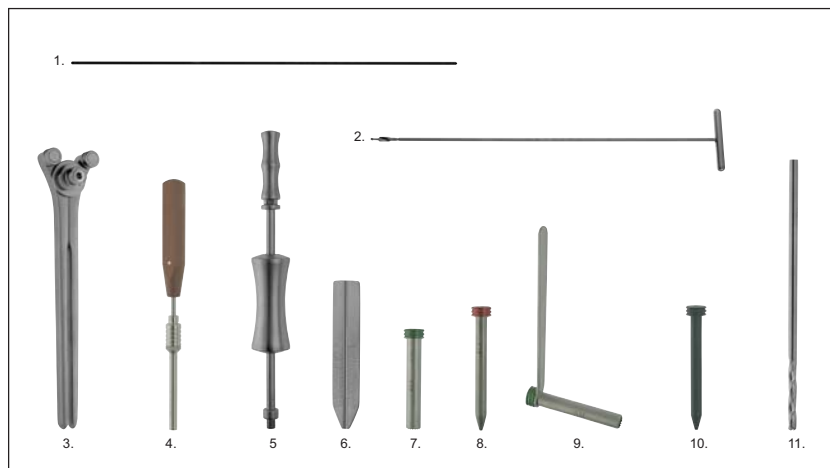


Figure 7
Special instruments. 1: pliable nail template, 2: T-handle reamer (3.0/3.5/4.0/4.5/5.0/6.0 mm), 3: nail bender, 4: screw driver with handle and screw holder, 5: slide hammer, 6: gauge to measure screw length, 7: screw sleeve (turquoise), 8 mm, to receive pink-colored drill sleeve and screw holder, 8: drill sleeve (pink) to guide trocar pin, 9: drill sleeve, 8 mm, to guide radiolucent drill guide, 10: radiolucent drill guide (amber-colored), 6 mm, for locking at nail tip, 11: cannulated reamer, 6 mm

Nagelung der Ulna, falls im Ellenbogengelenk 90° gebeugt (Abbildungen 8a und 8b).

- Manschette für Blutsperre am Oberarm angelegt; wird aber nur bei Bedarf (offene Reposition) aufgepumpt.
- Bildwandler von fußwärts (Abbildungen 8a und 8b).

- Locking screws, 2.7 mm, unicortical, self-tapping (core diameter 1.9 mm), for use at the nail tip (Figure 6).

- Drill with automatic chuck for Kirschner wires, Jacob's chuck and radiolucent angular drive. Anesthesia and Positioning

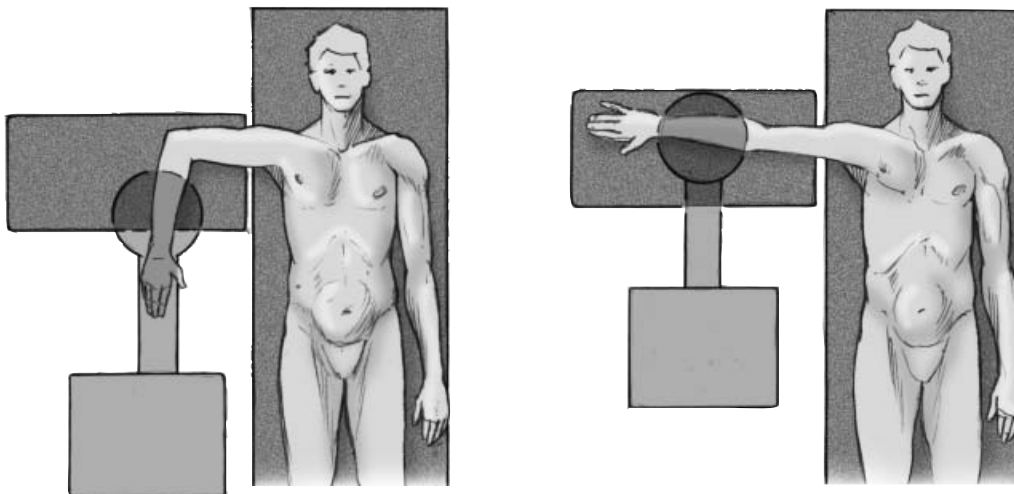
- General or regional anesthesia

- Supine.

- Positioning of forearm on arm table: for the nailing of the ulna the arm is bent at the elbow at 90° (Figure 8a), for the nailing of the radius the arm is extended (Figure 8b).

- Tourniquet at upper arm, only to be inflated if necessary (open reduction).

- Image intensifier coming in from the foot end (Figures 8a and 8b).



Abbildungen 8a und 8b
Rückenlagerung des Patienten, verletzter Arm auf Handtisch. a) Lagerung für die Nagelung der Ulna. b) Lagerung für die Nagelung des Radius.

Figures 8a and 8b
Supine positioning of the patient, injured arm on arm table. a) Positioning for nailing of ulna. b) Positioning for nailing of radius.

Operationstechnik
Abbildungen 9 bis 16

Surgical Technique
Figures 9 to 16

Abbildung 9

Biegen des Nagels. Der Würzburger-Nagel wird anhand der sterilisierten Schablone bei Operationsbeginn mit dem Nagelbiegeinstrument gemäß den individuellen anatomischen Verhältnissen des Patienten möglichst genau nachgeformt. Dabei ist darauf zu achten, dass die Achse des Verriegelungslochs an der Nagelbasis immer parallel zur Frontalebene liegt. Die aufgeschraubte Bohrführung (Führungsbügel) erleichtert dabei die Orientierung. Der Nagel darf nicht geknickt werden.

Figure 9

Using the sterile template, the Würzburger nail is bent with the nail bender. Care has to be taken that the axis of the locking hole at the base of the nail is always parallel to the frontal plane of the forearm. The screwed-on drill guide facilitates orientation. Avoid sharp bending of the nail.

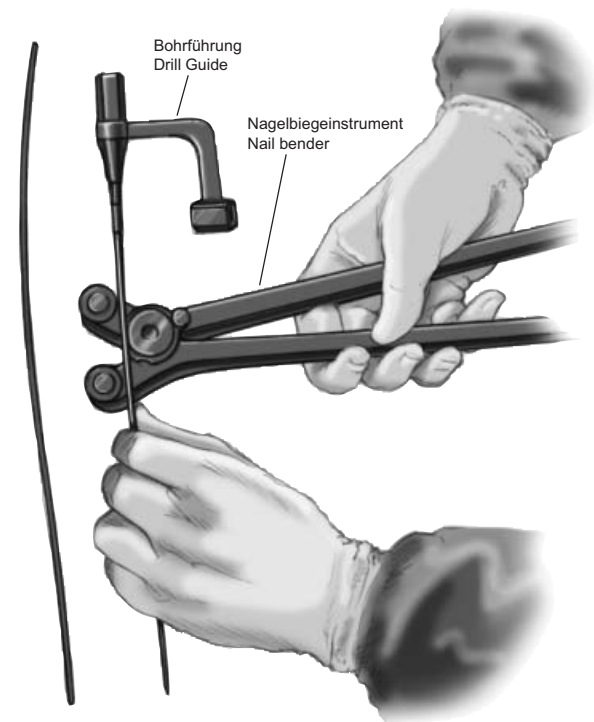
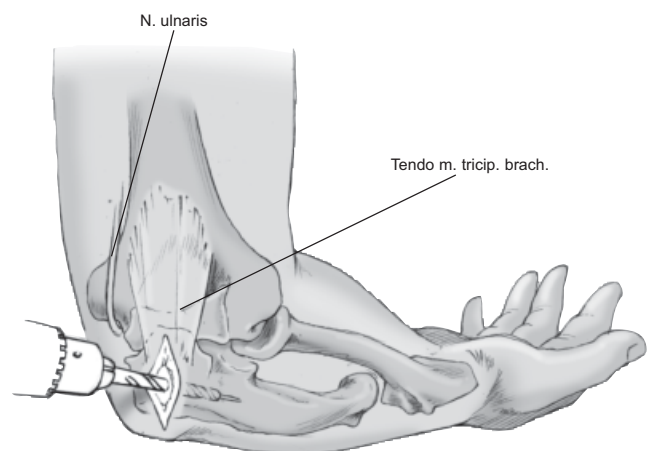


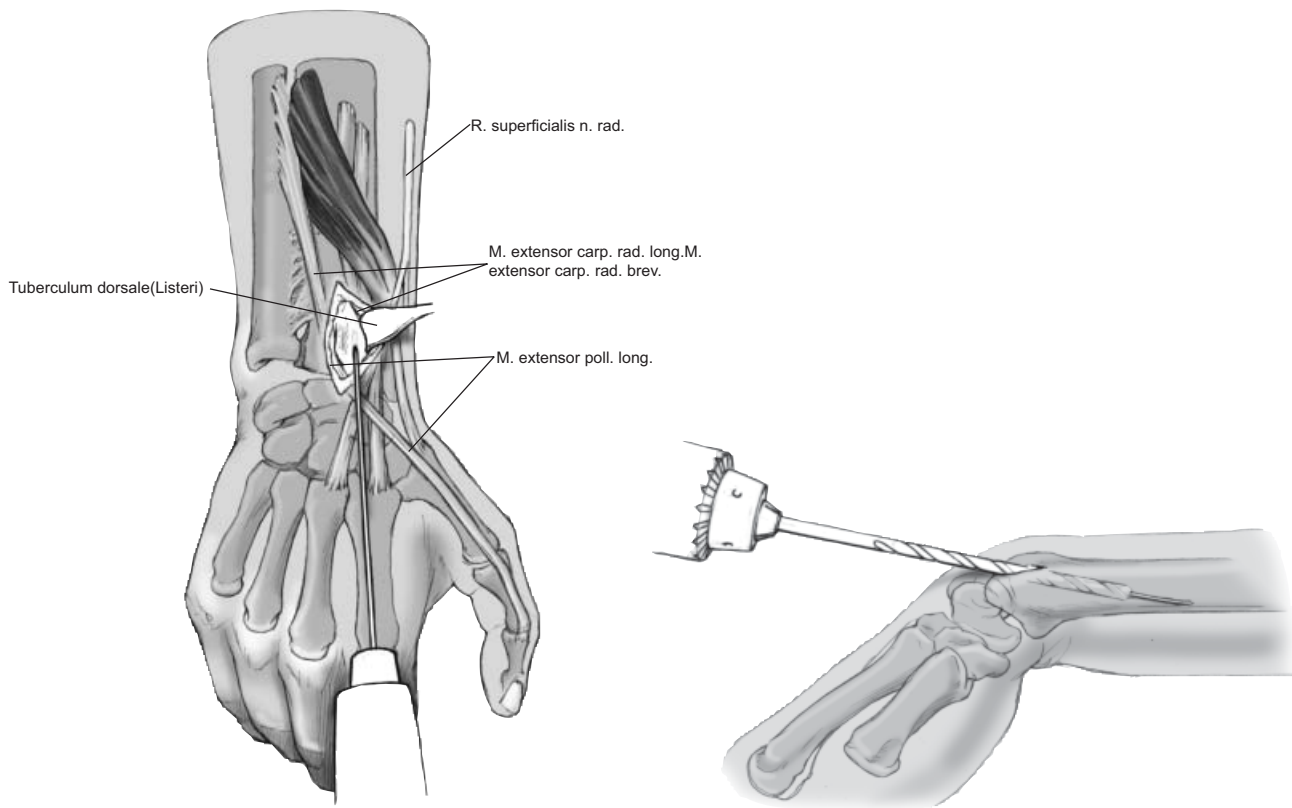
Abbildung 10

Zugang für die Nagelung der Ulna. 1,5 cm langer Hautschnitt in Längsrichtung von der Olekranonspitze nach distal. Längsspaltung von subkutanen Weichteilen und Ausläufern der Trizepssehne. Parallel zur dorsal tastbaren Kante der Ulna wird der 1,9 mm Bohrdrat unter Bildwandlerkontrolle in die Markhöhle vorgebohrt. Dabei ist darauf zu achten, dass der Bohrdrat nicht medial an der Ulna abrutscht und den Nervus ulnaris im Sulcus nervi ulnaris tangiert. Anschließend wird der Bohrdrat mit der kanülierten 6,0 mm Fräse auf eine Strecke von etwa 3 cm überbohrt; eine Kerbe auf der Fräse zeigt die Länge des verdickten Nagelbasisteils an.

Figure 10

Approach for nailing of the ulna. 1.5 cm long longitudinal skin incision from the tip of the olecranon in a distal direction. Longitudinal splitting of the subcutaneous tissues and of the end of the triceps tendon. Parallel to the posterior border of the ulna, a 1.9 mm trocar pin is drilled into the medullary canal under image intensification. Care has to be taken that the wire does not slip over the ulna medially and touch the ulnar nerve in its groove. Overdrilling over the guide wire with a 6 mm cannulated reamer over a distance of 3 cm. A groove on the reamer corresponds to the length of the thickened part of the nail base.





Abbildungen 11a und 11b
Zugang für die Nagelung des Radius.

a) 3 cm langer Längsschnitt unmittelbar radial des Tuberculum dorsale (Tuberculum Listeri), in Höhe des Handgelenkspalts beginnend. Stumpfes Auseinanderdrängen des Subkutangewebes, um den Ramus superficialis nervi radialis nicht zu gefährden. Nun wird der proximale Anteil des zweiten Strecksehnenfachs unter Spaltung des Retinaculum extensorum 1–2 mm radial des Tuberculum dorsale in Längsrichtung eröffnet. Die Sehnen der Musculi extensores carpi radialis longus et brevis werden mit einem kleinen Langenbeck-Haken nach radial gehalten. 0,5–1 cm von der Gelenkfläche entfernt wird nun im Bett der radialen Handgelenkstrecker der 1,9 mm Bohrdrat in einem flachen Winkel in die Markhöhle vorgebohrt, damit er nicht auf der palmaren Kortikalis aufläuft.
b) Anschließend wird der Bohrdrat mit der kanülierten 6,0 mm Fräse analog zur Ulna überbohrt. Nach dem Auffräsen wird der Bohrdrat entfernt.

1a and 11b
Approach for nailing of the radius.

a) 3 cm longitudinal skin incision immediately radial to Lister's tubercle starting at the level of the wrist joint. Blunt separation of the subcutaneous tissues to spare the superficial branch of the radial nerve. Opening of the proximal part of the second extensor department through longitudinal splitting of the extensor retinaculum 1–2 mm radial to Lister's tubercle. Radial retraction with a small Langenbeck retractor of the tendons of extensor carpi radialis longus and brevis. 0.5–1 cm proximal to the joint surface, the 1.9 mm trocar pin is inserted into the second compartment and advanced into the medullary canal at a low angle to prevent engaging the palmar cortex.
b) Overdrilling of the trocar pin with the 6 mm cannulated reamer. After reaming, the trocar pin is removed.



Abbildung 12

Reposition und Auffräsen der Markhöhle. Die Reposition der Fraktur wird geschlossen versucht. Bei Unterarmfrakturen wird mit dem Knochen begonnen, der sich leichter geschlossen reponieren lässt. Gelingt eine geschlossene Reposition nicht, kann über einen limitierten offenen Zugang unter Freilegung der Fraktur oder perkutan über Stichinzisionen mit einer Repositionszange mit Spitzen reponiert werden. Ein manuelles Auffräsen der Markhöhle ist – außer bei durchgehend sehr weiter Markhöhle – generell angeraten. Es empfiehlt sich, bei 3 oder 3,5 mm beginnend, in Stufen von 0,5 mm zunehmend bis zu einem 0,5–1 mm über dem vorgesehenen Nageldurchmesser liegenden Maß aufzufräsen. Kann das Repositionsergebnis während des Wechsels der Fräsen nicht gehalten werden, muss beim Einsatz der nächstgrößeren Fräse erneut reponiert werden.

Figure 12

Attempt at closed reduction of the fracture. We suggest to start with the bone that can be reduced the easiest. If closed reduction does not succeed, limited open reduction and exposure of the fracture or a percutaneous stab incision and reduction can be done with a reduction forceps with pointed tips. A manual reaming of the medullary canal is recommended except in instances of a wide canal. It is advised to start with a 3- or 3.5 mm reamer and increase the size by 0.5 mm increments, until a reaming has been reached which exceeds the diameter of the planned nail by 0.5–1 mm. If the reduction is lost during the change of the reamer, the reduction must be repeated during the insertion of the next bigger sized reamer.

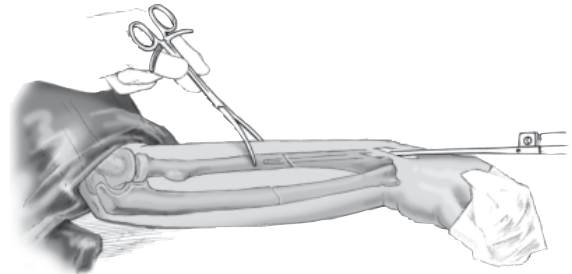


Abbildung 13

Der individuell vorgebogene Nagel wird manuell in korrekter Rotation eingeführt (evtl. muss bei diesem Operationsschritt erneut reponiert werden). Zur Insertion des Nagels in die Ulna wird das Ellenbogengelenk gebeugt gehalten, der Radiusnagel wird bei gebeugtem Handgelenk eingebracht. Nach Passieren der Fraktur kann der Nagel mit dem Handballen oder mit sanften Hammerschlägen auf den Einschläger platziert werden. Die endgültige Nagelposition ist erreicht, wenn die Nagelbasis am Radius nicht mehr über den Boden des Strecksehnenfachbodens hervorragt, um die Sehnen der radialen Handgelenkstreckere nicht zu kompromittieren. An der Ulna muss die Nagelbasis vollständig bündig mit der Kortikalis des Olekranons abschließen. Um einen Torsionsfehler zu vermeiden, wird vor der anschließenden Verriegelung die Unterarmumwendung überprüft.

Figure 13

The pre-bend nail is introduced manually in the proper rotation. It is sometimes necessary to repeat the reduction during this maneuver. For insertion of the ulna nail the elbow is bent, for insertion of the radius nail the wrist is flexed. It is important to retract the tendon of the extensor pollicis longus to avoid tendon injury. Once the nail tip has passed the fracture site, the nail can be advanced with the ball of the hand or with light hammer blows on the driver. The final position of the radius nail has been reached when the base of the nail is flush with the floor of the second extensor compartment, thus not to compromise the gliding of the wrist extensors. At the ulna, the base of the nail must be flush with the cortex of the olecranon. Before locking, pro- and supination are tested to exclude any rotational malalignment.

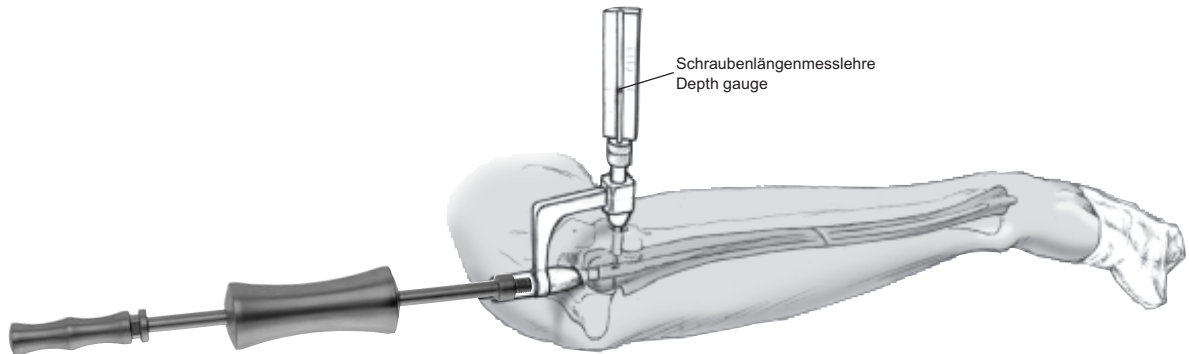
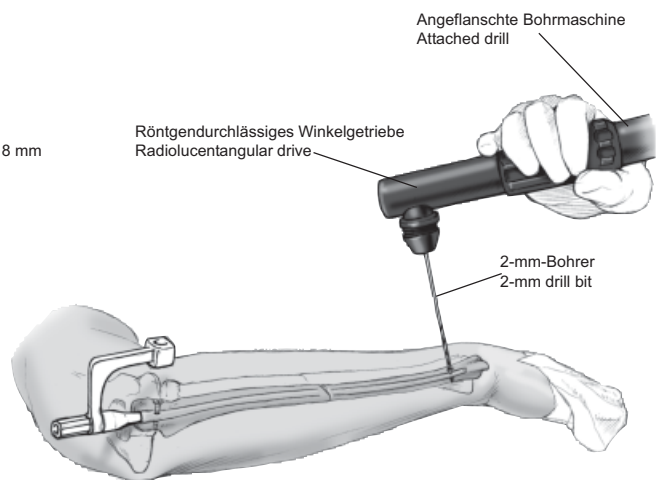
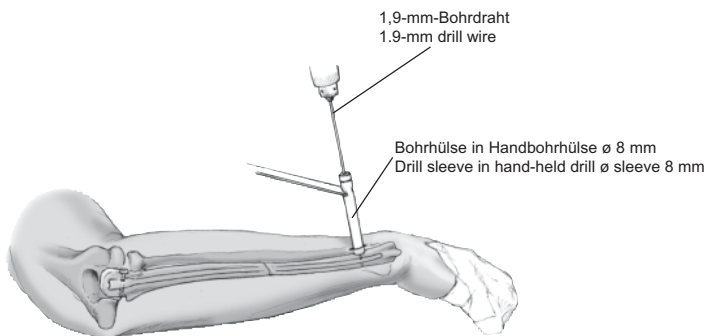


Abbildung 14

Die Verriegelung an der Nagelbasis erfolgt sowohl für den Radius als auch für die Ulna von radial. Durch die Öffnung der Bohrführung werden die türkis- und die pinkfarbene Bohrhülse eingesetzt. Die Insertionsstelle wird markiert und die Haut an dieser Stelle inzidiert. Die Bohrhülsen werden nach stumpfem Spreizen des Gewebes bis auf den Knochen vorgeschoben. Dann wird mit dem 1,9 mm Bohrdraht durch beide Kortikales und den Nagel gebohrt. Wenn die Bohrdrahtspitze mit der Gegenkortikalis fluchtet, wird mit Hilfe der Schraubenlängenmesslehre, die auf die pinkfarbene Bohrhülse aufgesetzt wird, die erforderliche Schraubenslänge bestimmt. Danach werden Bohrdraht und pinkfarbene Bohrhülse entfernt. Die ausgewählte selbstschneidende 2,7 mm Schraube wird mit dem Schraubenhalter am Schraubendreher befestigt und durch die türkisfarbene Bohrhülse eingedreht, bis der Schraubenkopf der Kortikalis anliegt.

Figure 14

Locking of the radius as well as of the ulna at the base of the nail is done from the radial side. Through the opening of the drill guide serving as an aiming device, the turquoise screw sleeve and the pink drill sleeve are inserted. The insertion site is marked on the skin and the skin incised. Blunt spreading of soft tissue and advancement of the sleeves to bone. The 1.9 mm trocar pin is now driven through both cortices and the hole of the nail. Once the wire has just passed the opposite cortex, the appropriate screw length is determined with the gauge to measure screw length mounted on the pink drill sleeve. Removal of trocar pin and pink drill sleeve. The chosen self-tapping 2.7 mm screw is attached to the screw holder of the screw driver and inserted through the turquoise drill sleeve, until the screw head is in intimate contact with the cortex.



Abbildungen 15a und 15b

Vor der Verriegelung an der Nagelspitze, für die eine Verriegelungsschraube ausreicht, wird das Ausmaß der Unterarmumwendung nochmals überprüft. Eines der beiden Verriegelungslöcher wird mit Hilfe des Bildwandlers kreisrund eingestellt. Am Radius ist dies meist das parallel zur Bohrführung verlaufende Loch, das von radial in Neutralposition des Unterarms bei gestrecktem Ellenbogengelenk verriegelt werden kann. An der Ulna kann je nach Beweglichkeit des Arms im Schultergelenk bei gestrecktem und innenrotiertem Arm das zur Bohrführung parallele Loch entweder von dorsal oder in maximaler Pronation des Unterarms von ulnar für die Verriegelung verwendet werden. a) Nach Anlegen einer Stichinzision über dem Verriegelungsloch und stumpfem Spreizen des Gewebes bis auf den Knochen wird die bernsteinfarbene röntgendurchlässige Bohrhülse in der Handbohrhülse durch den Hautschnitt bis auf den Knochen vorgeschoben, zum Strahlengang parallel ausgerichtet und fest gegen den Knochen gehalten. Dann wird mit dem 1,9 mm Bohrdraht durch beide Kortikales und das Verriegelungsloch im Nagel gebohrt. Die erforderliche Schraubenlänge wird mit der Schraubenlängenmesslehre an der bernsteinfarbenen Bohrhülse bestimmt. Anschließend werden Bohrdraht und Bohrhülse entfernt und die ausgewählte selbstschneidende unikortikale Schraube mit dem Schraubendreher mit Schraubenhalter durch die Handbohrhülse, die immer noch parallel zum Strahlengang gehalten werden muss, eingeschraubt. Auch hierbei ist darauf zu achten, dass die Handbohrhülse möglichst vertikal gehalten wird. Um ein Ausreißen des Gewindes in der Kortikalis zu vermeiden, darf die Schraube nur so weit eingedreht werden, bis beim Auflaufen des Schraubengewindes auf den Nagel eine geringe Widerstandszunahme spürbar wird. b) Alternativ kann bei der Verriegelung an der Nagelspitze das Schraubenloch mit dem röntgendurchlässigen Winkelgetriebe und einem 2,0 mm Bohrer gebohrt werden. Die Verwendung des Schraubenhalters ist dann nicht nötig. Die

Figures 15a and 15b

For locking at the tip of the nail, one screw is sufficient. Testing of pro- and supination before locking. One of the holes in the nail must show under image intensification as being perfectly circular. For the radius, the hole parallel to the drill guide at the base of the nail is chosen. It is reached from the radial side with the forearm in neutral rotation and the elbow in extension. For the ulna, depending on the mobility of the shoulder, the arm is extended and internally rotated until one of the holes at the nail tip shows, or locking occurs from posterior in maximal pronation of the forearm. a) Stab incision over the locking hole, blunt separation of the tissues down to bone and insertion of the amber-colored radiolucent drill sleeve placed into the drill sleeve with handle. The sleeves must be parallel to the beam of the image intensifier and pressed against the bone. The trocar pin is now driven through both cortices and the hole in the nail. The appropriate screw length is determined with the gauge mounted on the amber-colored drill sleeve. Trocar pin and sleeve are now removed, and the chosen, self-tapping unicortical screw held by the screw holder of the screw driver is advanced through the drill sleeve with handle, always parallel to the beam. It is important that the drill sleeve with handle is held as vertical as possible. To avoid stripping of the screw in the cortex, the insertion must be terminated when the threads of the screw come in contact with the nail felt by a slight increase in resistance. b) Alternatively, locking at the tip of the nail can be achieved with a radiolucent angular drive and a 2 mm drill bit. In this instance, the use of the screw holder is not necessary. The required length of the screw is determined with a depth gauge from the small-fragment set.

Abbildung 16
Wundverschluss. Das Retinaculum extensorum wird über dem zweiten Strecksehnenfach vernäht, und die Wunden werden verschlossen.

Figure 16
Wound closure. The retinaculum over the second extensor compartment and the wounds are closed.



Besonderheiten

- Vorbereitung der Schablone: Die Beschriftung auf der biegbaren Schablone sollte als Orientierungshilfe genutzt werden, um deren Krümmung korrekt auf den Nagel übertragen zu können
- Bohrführung nicht mit dem Maulschlüssel anziehen.
- Es hat sich als zweckmäßig erwiesen, die Bohrführung bereits vor dem Biegen des Nagels anzuschrauben, um die Orientierung der späteren Nagelposition im Knochen zu erleichtern.
- Die Verriegelung, die grundsätzlich wie bei den bekannten Verriegelungsnägeln erfolgt, erfordert wegen der Kleinheit des Implantats ein besonderes Maß an Gefühl und Erfahrung. Die Verriegelung an der Nagelspitze mit der vom Hersteller vorgesehenen röntgendurchlässigen Bohrhülse ist wenig praktikabel. Außerdem befinden sich die Hände des Operateurs nahe dem Strahlengang. Die Verwendung des röntgendurchlässigen Winkelgetriebes kann diesen Nachteilen abhelfen.

Postoperative Behandlung

- Steriler Pflasterverband, elastische Wickelung des Arms.
- Überprüfung der Funktion der intraoperativ gefährdeten Nerven (s.u.) nach Abklingen der Anästhesie.

Special Considerations

- Preparation of the template: inscriptions on the malleable template should serve for orientation to obtain correct planes of bending for transfer on the nail.
- The bolt connecting the nail with the drill guide should not be tightened with a wrench.
- It is recommended to attach the drill guide to the nail before bending the nail. This facilitates the orientation of the later placement of the nail in the bone.
- Locking of the nail although identical with other lock nailing techniques, demands a particular care and experience because of the smallness of the implant. Locking at the tip of the nail with the radiolucent sleeve that is supplied by the manufacturer is not easy to do. Moreover, the surgeon's hands are very close to the beam of radiation. The use of a radiolucent angular drive avoids these problems.

Postoperative Management

- Sterile elastoplast dressing, arm wrapped in an elastic bandage.
- As soon as the patient is able to respond, checking of the nerves which could have been damaged during surgery.
- No need for additional immobilization. Immediate start of active and passive motion and strengthening

- Keine zusätzliche Ruhigstellung erforderlich.
- Sofortiger Beginn mit aktiven und passiven Bewegungs- und Kräftigungsübungen unter Einschluss der Unterarmumwendbewegung, jedoch nicht gegen Widerstand.
- Entfernung der Wundfäden am 10. postoperativen Tag.
- Röntgenkontrollen postoperativ, nach 6, 12 und 18 Wochen.
- Implantatentfernung frühestens nach 18 Monaten.
- Die Materialentfernung ist fakultativ. Da die Insertionsstellen an anatomisch exakt definierten Stellen liegen, lassen sich die versenkten Nagelenden ohne Schwierigkeiten auffinden. Erforderliche Instrumente sind der Verbindungsbolzen für die Bohrführung, der Einschläger sowie der Schlitzhammer aus dem Würzburger-Instrumentarium (Abbildungen 5 und 7).

Fehler, Gefahren, Komplikationen

- Ausreißen des Gewindes der Verriegelungsschraube an der Nagelspitze: Das kurze Gewinde der unikortikalen Schraube zur Verriegelung an der Nagelspitze ist mit 4,5 mm verhältnismäßig lang. Dies führt dazu, dass besonders bei dünner Kortikalis und kortikalisnaher Lage des Nagels das Gewinde bereits auf dem Nagel aufläuft, bevor der Schraubenkopf der Kortikalis anliegt. Deswegen ist es erforderlich, die Verriegelungsschraube an der Nagelspitze sehr gefühlvoll anzuziehen. Reißt die Schraube trotzdem aus, kann das zweite Verriegelungsloch an der Nagelspitze verwendet werden.
- Überstehen des Verriegelungsschraubenkopfs um bis zu 5 mm über die Kortikalis: Dies hat in der bisherigen Praxis noch nicht zu Problemen geführt, könnte aber in Ausnahmefällen Weichteilirritationen verursachen, die sich durch frühzeitige Entfernung der Schraube beheben lassen.
- Nervenläsionen: Beim Zugang zum Markraum am Olekranon und bei der proximalen Verriegelung an der Ulna kann trotz radialem Zugang der Nervus ulnaris verletzt werden. Bei der proximalen Verriegelung am Radius ist eine Läsion des Nervus interosseus dorsalis, beim Zugang zum Markraum und bei der Verriegelung am distalen Radius eine Läsion des Ramus superficialis nervi radialis möglich.
- Sehnenläsionen am distalen Radius sind bei exakter Präparation des Zugangswegs auszuschließen. Wird die Basis des Radiusnagels jedoch nicht mindestens bis auf das Niveau des Bodens des zweiten Strecksehnenfachs versenkt, kann die Nagelbasis an den radia

exercises including pro- and supination, but not against resistance.

- Pulling of stitches on day 10. Radiographs postoperatively and after 6, 12, and 18 weeks.
- Implant removal not before 18 months.
- Implant removal optional. Since the sites of insertion are situated on anatomically exactly defined sites, the finding of the buried nail ends is easy. The locking screws are easily located due to the overlying scars and are removed through stab incisions. Instruments needed: screw driver, connecting bolt, driver/extractor, and slotted hammer from the Würzburger set (Figures 5 and 7).

Errors, Hazards, Complications

- Stripping of the threads of the locking bolt at the tip of the nail: the length of the threaded portion of the unicortical locking screw measuring 4.5 mm is relatively long. This can cause a contact of the threads with the nail, before the screw head comes in contact with the cortex, particularly in instances of thin cortices and a nail lying close to the cortex. It is therefore important to tighten the locking screw very carefully to avoid stripping of the threads in the cortex resulting in a loss of power. If stripping happens, the second locking hole should be used.
- A locking screw head that stays proud of the cortex by 5 mm may exceptionally cause irritation of the soft tissues. In our experience, this has not created any problems but could exceptionally lead to soft tissue irritation. Early removal of screw will settle it.
- Injuries to nerves are possible intraoperative complications: lesion of the ulnar nerve could occur during the approach to the medullary canal at the olecranon and during proximal locking of the ulna in spite of the radial approach. The posterior interosseous nerve can be damaged during proximal locking of the radius, where as injury to the superficial branch of the radial nerve can occur during opening of the medullary canal and distal locking of the radius.
- Injury to tendon at the level of the distal radius can not occur as long as the dissection is done properly. If the base of the radius nail has not been buried into the floor of the second extensor compartment, the radial wrist extensors may be exposed to fraying. The tendon of the extensor pollicis longus can be injured during nail insertion, if the tendon is not retracted correctly. A surgical revision and suture are indicated for primary or secondary tendon injury

len Handgelenkstrecker scheuern. Die Sehne des Musculus extensor pollicis longus kann verletzt werden, wenn sie bei der Nagelinsertion nicht sicher beiseite gehalten wird. Bei primärer oder sekundärer Verletzung der Sehne chirurgische Revision und Naht.

- Insgesamt beansprucht das Verriegelungsinstrumentarium wegen seiner Kleinheit im Gegensatz zu den Nagelsystemen für die großen Röhrenknochen eine verlängerte Lernkurve, kann aber mit zunehmender Erfahrung sicher gehandhabt werden.

Ergebnisse

Wir haben in einer prospektiven Studie die prinzipielle Eignung des Würzburger-Ulna/Radius-Nagels als Osteosynthesystem für Unterarmfrakturen (Radius, Ulna oder beide) untersucht. Hinsichtlich der grundsätzlichen Begrenzungen der Indikation zur Nagelung ergaben sich dabei in der Praxis keine weiteren Einschränkungen. Gerade auch Mehretagenfrakturen, die in günstigen Fällen sogar geschlossen reponierbar sind, lassen sich mit dem Nagel versorgen. Im Zeitraum von Juni 1997 bis Dezember 2000 wurden 40 Würzburger-Nägel bei 33 Unterarmen von 32 Patienten (23 Männer, neun Frauen; Alter 16–84 Jahre, Mittelwert 36,7 Jahre) implantiert. 31 Unterarme wiesen frische Frakturen auf (darunter eine Refraktur nach Plattenentfernung, Abbildung 17), ein Unterarm zeigte eine pathologische Fraktur und ein Unterarm eine in Fehlstellung verheilende Fraktur nach Implantation eines intramedullären Kirschner-Drahts.

- The learning curve of this technique is longer than that of the other locking nail systems because of the small size of the instruments, but can be mastered safely with increasing experience.

Results

In a prospective study, we investigated the suitability of the Würzburger ulna/radius nail for internal fixation of forearm fractures (ulna, radius, or both bones). Besides the limitation of indications listed, we could not detect further restrictions for its use. In particular, segmental fractures could be internally fixed with the nail, often after closed reduction.

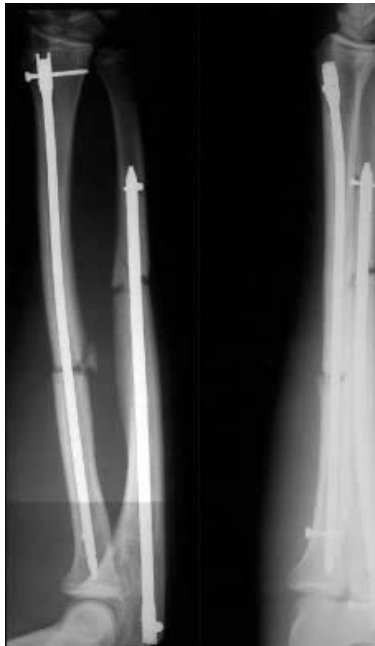
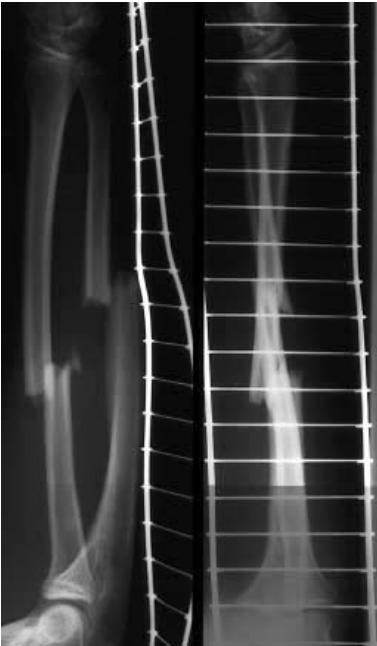
Between June 1997 and December 2000, we used 40 Würzburger nails in 33 forearms of 32 patients (23 men, nine women; 16–84 years old, average age 36.7 years). In 31 forearms, the fractures were fresh, including one refracture after plate removal (Figure 17), one forearm showed a pathologic fracture, and one a malunited fracture after treatment with an intramedullary Kirschner wire.

In December 2000, the insertion of 29 nails in 24 patients (25 forearms) was done for > 6 (7–42) months. One 69 year old female patient died of multiple injuries; one patient could not be traced after transfer to another hospital. We could follow up the healing progress of the remaining 22 patients (27 forearm bones in 23 forearms) either personally (23 bones) or through assessments of radiographs sent from the treating physicians (four bones). 25 fractures had

Abbildungen 17a und 17b)
Refraktur der Ulna 2 Monate nach Plattenentfernung (25 Monate nach Plattenosteosynthese): Rarefizierung der Knochenstruktur. b) Gutes knöchernes Remodeling 2 Jahre nach Nagelung und Anlagerung eines kortikospongiosen Spans.

Figures 17a and 17b)
Radiograph taken after refracture of the ulna, 2 months after plate removal (25 months after open reduction and fixation) shows marked osteopenia. b) Impressive bony remodeling 2 years after nailing and apposition of a cortico-cancellous bone graft.





Abbildungen 18a bis 18e
Typischer Heilungsverlauf einer mit Ulna-Radius Nägeln stabilisierten Unterarmfraktur.

- a) Fraktursituation (AO 22-B3.2).
- b) Unmittelbar nach Nagelung (geschlossene Reposition) verbliebene Lücke von 2 mm in den Frakturspalten.
- c) 3 Monate nach Nagelung bereits deutliche Kallusüberbrückung der verbliebenen Frakturspalten.
- d) 1 Jahr nach Nagelung kräftige Strukturierung der ehemaligen Frakturzone.
- e) Zustand nach Materialentfernung 18 Monate nach Nagelung.

Figures 18a to 18e
Typical course of healing of a forearm fracture stabilized with Ulna radius locking nails.

- a) Original fracture (AO 22-B3.2).
- b) Radiograph taken immediately after closed reduction and nailing shows fracture gaps of 2 mm.
- c) State after 3 months: plainly recognizable callus bridging the fracture gaps.
- d) 1 year after nailing: sound remodeling of the fracture site.
- e) State after implant removal, 18 months postoperatively.

Die Implantation von 29 Nägeln bei 24 Patienten mit 25 betroffenen Unterarmen lag im Dezember 2000 bereits > 6 (7–42) Monate zurück. Eine 69-jährige Patientin ist an den Folgen des erlittenen Polytraumas verstorben; ein Patient war nach Verlegung in ein auswärtiges Krankenhaus nicht mehr auffindbar. Der Heilverlauf der verbliebenen 22 Patienten mit 27 operierten Unterarmknochen an 23 Unterarmen konnte persönlich (23 Knochen) oder dank Übermittlung der bei den weiterbehandelnden Ärzten angefertigten Röntgenaufnahmen (vier Knochen) verfolgt werden. 25 Frakturen wiesen eine problemlose Heilung mit meist kräftiger Kallusbildung innerhalb 3–6 Monaten auf (Abbildungen 18a bis 18e). Die Implantation des Nagels gelang bei 24 von 40 Frakturen nach geschlossener Reposition, 14 Frakturen mussten offen durch Freilegung des Frakturspalts reponiert werden, und in zwei Fällen wurde perkutan mit einer fraktur nah eingesetzten Repositionszange mit Spitzen reponiert. Bei 37 Knochen wurde die Markhöhle aufgefräst, bei drei Knochen konnte der Nagel wegen durchgehend weiter Markhöhle ohne Auffräsen eingebracht werden. Die Operationszeiten, bezogen auf die einzelnen Knochen, lagen bei 67 (27–150) min, die entsprechenden Durchleuchtungszeiten bei 4,4 (1,4–14,9) min. Dabei resultierten Operationszeiten > 60 min und Durchleuchtungszeiten > 5 min aus dem Versuch, eine offene Reposition nach Möglichkeit zu vermeiden. Die Dauer der Knochenheilung zeigte keine signifikanten Unterschiede zwischen isolierten Frakturen von Radius und Ulna, Frakturen beider Knochen oder Galeazzi-Frakturen.

Zwei isolierte Ulnafrakturen in Schaftmitte wiesen eine verzögerte Heilung mit knöcherner Konsolidierung nach 11,6 bzw. 10,2 Monaten auf. Im einen der beiden Fälle handelte es sich um eine Refraktur im Anschluss an eine Materialentfernung nach Plattenosteosynthese mit erheblich reduzierter Knochenstruktur (Abbildung 17), im anderen zeigten sich bereits 3 Monate nach Nagelung Osteolysen um die Nagelspitze, die als Zeichen mangelnder Stabilität gedeutet wurden. Ein Patient mit offener Radiusfraktur im vierten Schaftsechstel entwickelte eine Pseudarthrose bei von Anfang an bestehender Dehiszenz von ca. 3 mm im Frakturspalt, die nach Kompressionsplattenosteosynthese ausheilte. Der Patient hatte vermutlich das Implantat durch Aufnahme seiner Arbeit als Metzger 8 Wochen nach Osteosynthese überbeansprucht. Ein Brückenkallus bildete sich in zwei Fällen (Ulnafraktur am Übergang vom fünften zum sechsten Schaftsechstel bei Polytrauma; Galeazzi-Fraktur mit Schädel-Hirn-Trauma) und wurde nach Konsolidierung der Fraktur

healed uneventfully with a marked callus formation between 3 and 6 months (Figures 18a to 18e). An insertion of the nail after closed reduction was possible in 24 out of 40 fractures, 14 needed an open reduction, and in two patients a percutaneous approach using a pointed bone forceps was successful. Reaming of the medullary canal was done in 37 bones, and in three the medullary canal was large enough to insert the nail without reaming. The duration of surgery calculated as it relates to the individual bone amounted to 67 (27–150) min and the corresponding duration of fluoroscopy to 4.4 (1.4–14.9) min. Prolonged operating time > 60 min and duration of fluoroscopy > 5 min were due to our attempt to avoid an open reduction. No significant difference in respect to time for consolidation was found between isolated fractures of radius and ulna, fractures of both bones, or Galeazzi fractures.

A union of two isolated midshaft ulna fractures was delayed by 11.6 and 10.2 months, respectively, after nailing. One of these patients had suffered the refracture after plate removal, and the other showed an osteolysis around the tip of the nail already 3 months postoperatively, interpreted as a sign of inadequate stability. One patient with an open radius shaft fracture in the fourth sixth developed a nonunion, probably due to a persisting fracture gap of roughly 3 mm. The fracture healed after compression plating. We believe that this patient resuming his occupation as a butcher 8 weeks postoperatively overloaded the internal fixation. Formation of a synostosis was seen twice (ulnar shaft fracture between the fifth and sixth sixth in a polytrauma patient; Galeazzi fracture in a patient with head trauma). Following consolidation of the fractures, early implant removal and resection of the synostosis were done 5.8 and 13.3 months, respectively, after nailing. Both patients remain with a limited pro-and supination. The five open fractures did not develop an infection. No injuries to nerves or tendons were observed.

In the meantime, 13 nails were removed after bony consolidation at a mean of 16.8 (5.8–29.1) months, and the patients have been followed since for an average of 16.8 (1–25) months. Neither complications during nor refractures after implant removal occurred. The functional outcome was assessed using the DASH questionnaire [4] in all 23 patients with 24 fore-arm fractures after an average of 19 (5.6–37.5) months; the point score varied between 0 and 63 points. 19 fore-arms reached between 0 and 19 points and, thus, an excellent result. The poorer outcome (=20 points) was seen in the two patients with synostosis, in one patient with rheumatoid arthritis already presenting preoperatively with a limited function, one patient with severe additional injuries to the same arm, and the patient with nailing for refracture.

im Rahmen einer vorgezogenen Materialentfernung (5,8 bzw. 13,3 Monate postoperativ) reseziert. In beiden Fällen verblieb jedoch eine Einschränkung der Unterarmumwendlbewegung. Infektionen wurden selbst nach fünf offenen Frakturen nicht beobachtet; auch Nerven- oder Sehnenläsionen traten nicht auf. 13 Nägel wurden mittlerweile nach knöcherner Heilung entfernt. Die Materialentfernungen erfolgten durchschnittlich 16,8 (5,8–29,1) Monate nach Nagelung und liegen inzwischen 1–25 (im Mittel 16,8) Monate zurück. Komplikationen bei oder Refrakturen nach Materialentfernung traten bisher nicht auf. Das funktionelle Ergebnis wurde mit dem DASH-Fragebogen [4] bei allen 23 Patienten für 24 Unterarme durchschnittlich 19 (5,6–37,5) Monate nach Versorgung der Fraktur ermittelt. Es ergaben sich Werte zwischen 0 und 63 Punkten, wobei 19 Unterarme 0–19 Punkte und somit ein sehr gutes Ergebnis erreichten. Die schlechteren Ergebnisse (=20 Punkte) verteilten sich auf die beiden Patienten mit Brückenkallus, einen Patienten mit rheumatoider Arthritis und bereits präoperativ eingeschränkter Funktion, eine Patientin mit erheblichen Begleitverletzungen an dem selben Arm sowie die Patientin mit Nagelung nach Refraktur.

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Korrespondenzanschrift – Address for Correspondence

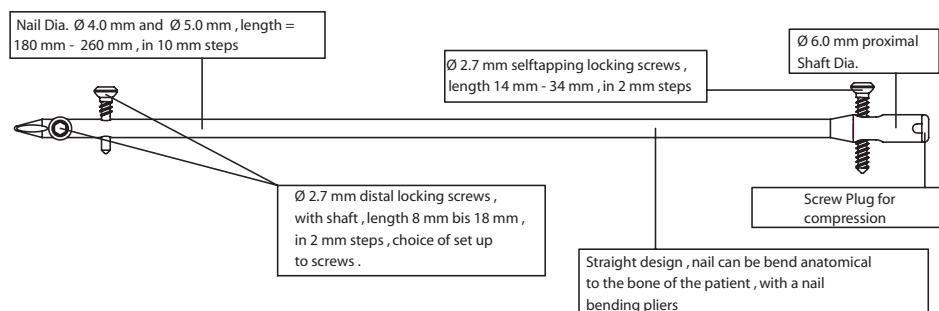
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TITAN Ulna / Radius Nail Implants: Titan DIN ISO 5832-3



Titanium Ulna / Radius Nails Dia. 4.0 mm		
Cat. No.	Dia.	Length
1.3601	ø 4.0 mm	180 mm
1.3602	ø 4.0 mm	190 mm
1.3603	ø 4.0 mm	200 mm
1.3604	ø 4.0 mm	210 mm
1.3605	ø 4.0 mm	220 mm
1.3606	ø 4.0 mm	230 mm
1.3607	ø 4.0 mm	240 mm
1.3608	ø 4.0 mm	250 mm
1.3609	ø 4.0 mm	260 mm
Titanium Ulna / Radius Nails Dia. 5.0 mm		
Cat. No.	Dia.	Length
1.3611	ø 5.0 mm	180 mm
1.3612	ø 5.0 mm	190 mm
1.3613	ø 5.0 mm	200 mm
1.3614	ø 5.0 mm	210 mm
1.3615	ø 5.0 mm	220 mm
1.3616	ø 5.0 mm	230 mm
1.3617	ø 5.0 mm	240 mm
1.3618	ø 5.0 mm	250 mm
1.3619	ø 5.0 mm	260 mm

Product Description



TITAN Ulna / Radius Proximal Screw Implants: Titan DIN ISO 5832-3

Titan Proximal Locking Screws Dia. 2.7 mm for Ulna Radius Nail System		
Cat. No.	Dia.	Length
1.3650	ø 2,7 mm	14 mm
1.3651	ø 2,7 mm	16 mm
1.3652	ø 2,7 mm	18 mm
1.3653	ø 2,7 mm	20 mm
1.3654	ø 2,7 mm	22 mm
1.3655	ø 2,7 mm	24 mm
1.3656	ø 2,7 mm	26 mm
1.3657	ø 2,7 mm	28 mm
1.3658	ø 2,7 mm	30 mm
1.3659	ø 2,7 mm	32 mm
1.3660	ø 2,7 mm	34 mm



TITAN Ulna / Radius Distal Screw Implants: Titan DIN ISO 5832-3

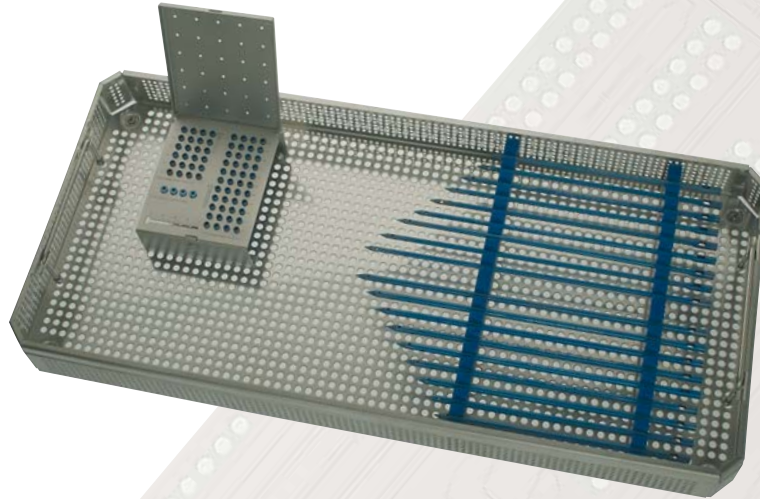
Titan Distal Locking Screws Dia. 2.7 mm / Unicortical Dia. 1.9 mm for Ulna Radius Nail System		
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1.3671	ø 2,7 mm / 1,9 mm	10 mm
1.3672	ø 2,7 mm / 1,9 mm	12 mm
1.3673	ø 2,7 mm / 1,9 mm	14 mm
1.3674	ø 2,7 mm / 1,9 mm	16 mm
1.3675	ø 2,7 mm / 1,9 mm	18 mm



1.3680
1.3681

Screw Plug for Compression
Screw Plug, standard without compression

Cat.No.1.3752 Implant Set for Ulna / Radius Nail System



SET LISTING

1.3752 Implant Set for Ulna / Radius Nail System:
1.3750 Tray (empty) for Implant Set Ulna / Radius Nail System -1- Pcs.

Titanium Ulna / Radius Nails Dia. 4.0 mm			
Cat. No.	Dia.	Length	Pcs.:
1.3601	ø 4.0 mm	180 mm	-1-
1.3602	ø 4.0 mm	190 mm	-1-
1.3603	ø 4.0 mm	200 mm	-1-
1.3604	ø 4.0 mm	210 mm	-1-
1.3605	ø 4.0 mm	220 mm	-1-
1.3606	ø 4.0 mm	230 mm	-1-
1.3607	ø 4.0 mm	240 mm	-1-
1.3608	ø 4.0 mm	250 mm	-1-
1.3609	ø 4.0 mm	260 mm	-1-
Titanium Ulna / Radius Nails Dia. 5.0 mm			
Cat. No.	Dia.	Length	Pec.
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1.3612	ø 5.0 mm	190 mm	-1-
1.3613	ø 5.0 mm	200 mm	-1-
1.3614	ø 5.0 mm	210 mm	-1-
1.3615	ø 5.0 mm	220 mm	-1-
1.3616	ø 5.0 mm	230 mm	-1-
1.3617	ø 5.0 mm	240 mm	-1-
1.3618	ø 5.0 mm	250 mm	-1-
1.3619	ø 5.0 mm	260 mm	-1-

Titan Proximal Locking Screws Dia. 2.7 mm for Ulna Radius Nail System			
Cat. No.	Dia.	Length	Pec.
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1.3651	2,7 mm	16 mm	-4-
1.3652	2,7 mm	18 mm	-4-
1.3653	2,7 mm	20 mm	-4-
1.3654	2,7 mm	22 mm	-4-
1.3655	2,7 mm	24 mm	-4-
1.3656	2,7 mm	26 mm	-4-
1.3657	2,7 mm	28 mm	-4-
1.3658	2,7 mm	30 mm	-4-
1.3659	2,7 mm	32 mm	-4-
1.3660	2,7 mm	34 mm	-4-
Titan Distal Locking Screws Dia. 2.7 mm for Ulna Radius Nail System			
Cat. No.	Dia.	Length	Pec.
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1.3671	ø 2,7 mm / 1,9 mm	10 mm	-4-
1.3672	ø 2,7 mm / 1,9 mm	12 mm	-4-
1.3673	ø 2,7 mm / 1,9 mm	14 mm	-4-
1.3674	ø 2,7 mm / 1,9 mm	16 mm	-4-
1.3675	ø 2,7 mm / 1,9 mm	18 mm	-4-
1.3680	Screw Plug for Compression		-4-



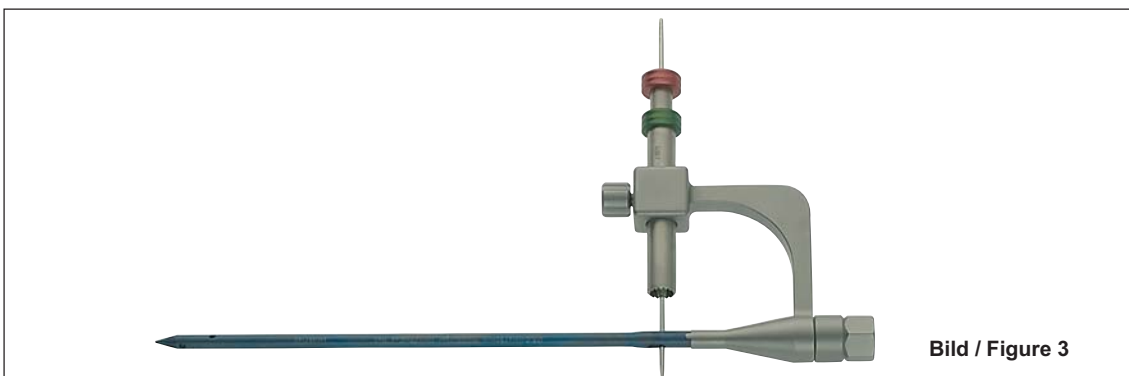
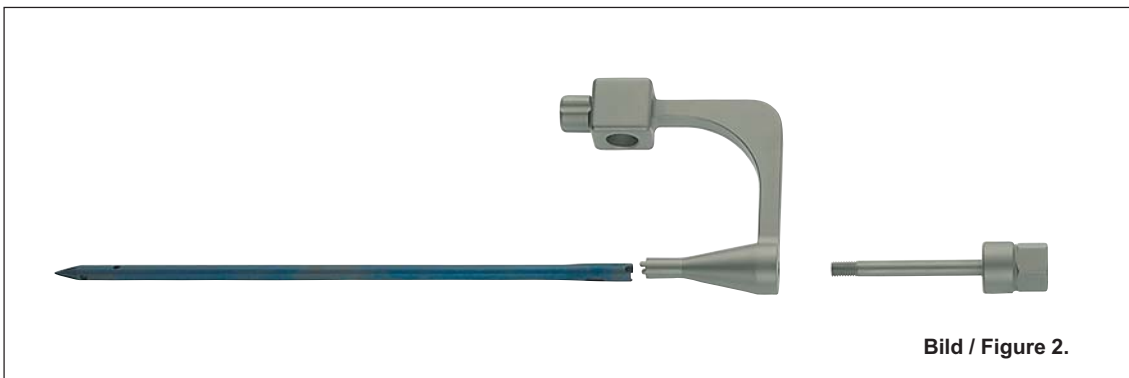
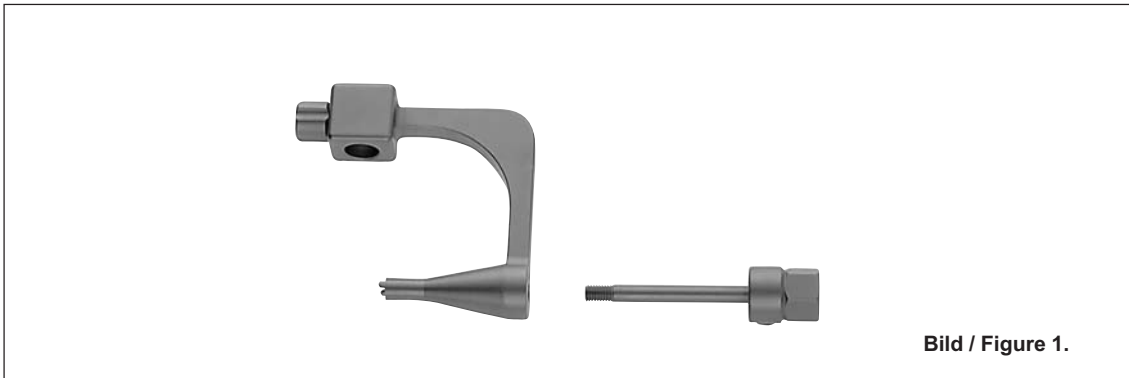
Recommended Sterilization Container
(Are not included in the Set):

151010 Sterilization Container

Montage für Proximales Zielgerät mit Ulna / Radius Verriegelungsnagel

Bildbeschreibung der Anwendung Bild 1. / 2. / 3. :

Figure Discription for use Fig. 1. / 2. / 3. :



Bemerkung für Nagelextraktion:

Für Nagelextraktion, zuerst die Verriegelungsschrauben und Kompressionsschraube entfernen, anschließend Adaptionsschraube von Zielgerät direkt (ohne Zielbügel) in das proximale Nagelgewinde einschrauben, danach Gleithammer mit Adaptionsschraube verbinden und den Nagel entfernen!

Note for Nail extraction:

For nail extraction, first remove the locking screws and the compression screw, for the next step you connect the adapter bolt from the targeting device (without the target device) with the proximal nail thread, also as well you connect the sliding hammer with the adapter bolt to remove the nail.

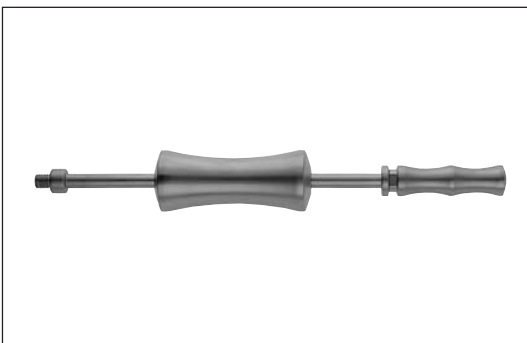
Instruments for Ulna / Radius Nail System:



1.3700 Proximal Targeting Device including Adapter Bolt



1.3702 Green Drill Sleeve 8.0 mm



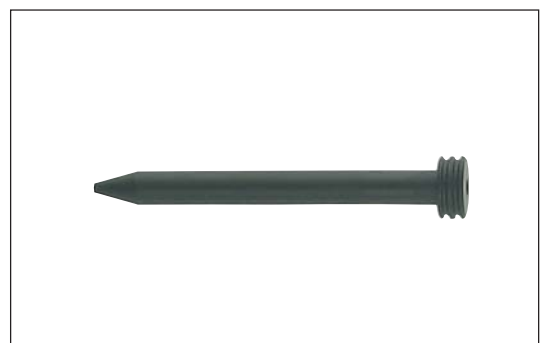
1.3701 Slide Hammer



1.3703 Pink Drill Sleeve Dia. 1.9 mm

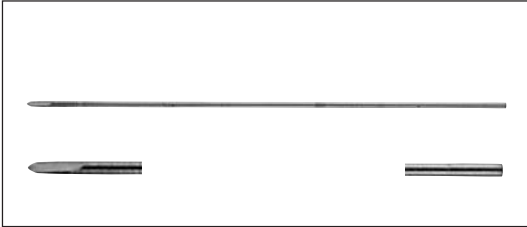


1.3705 Distal Drill Sleeve Dia. 8.0 mm



1.3704 Radiolucent Drill Sleeve Dia. 1.9 mm

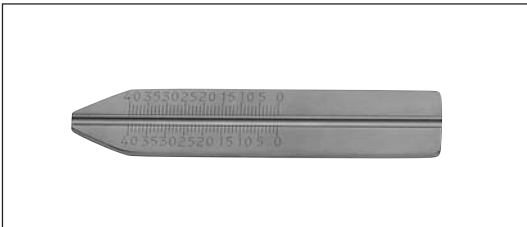
Instruments for Ulna / Radius Nail System:



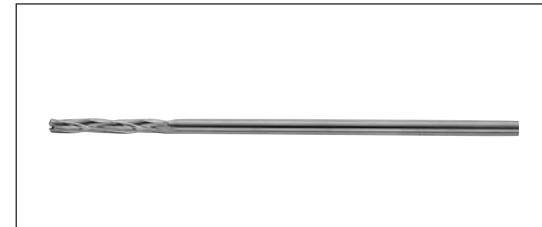
1.3706 Drill Wire Dia. 1.9 mm x Length 140 mm



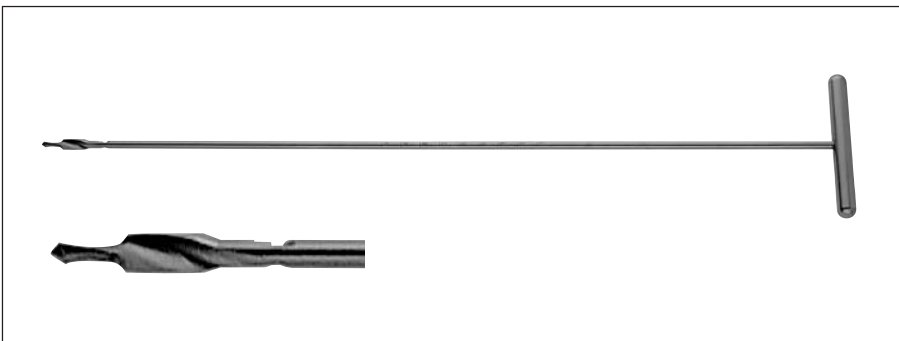
1.3707 Bending Nail Template



1.3708 Screw Length Gauge

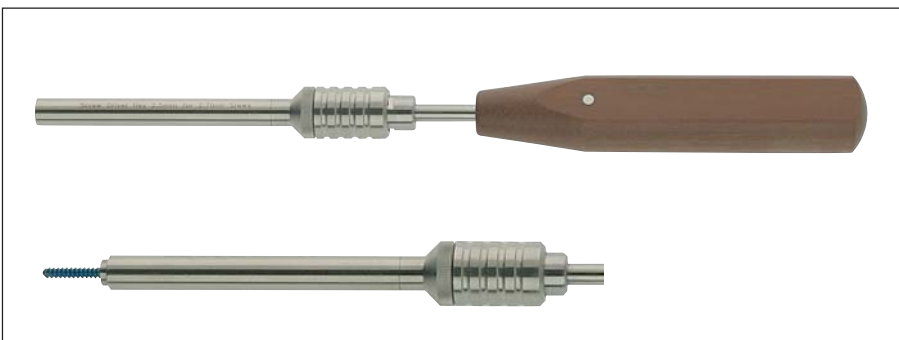


1.3709 Cannulated Reamer
Dia. 6.0 mm x Length 150 mm

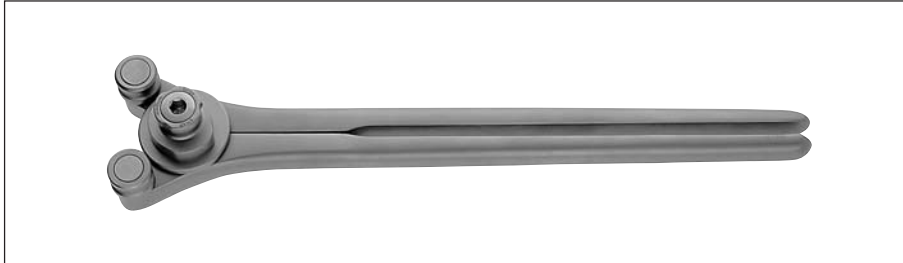
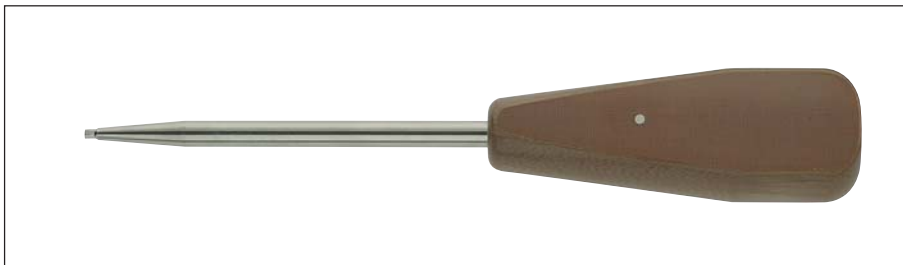
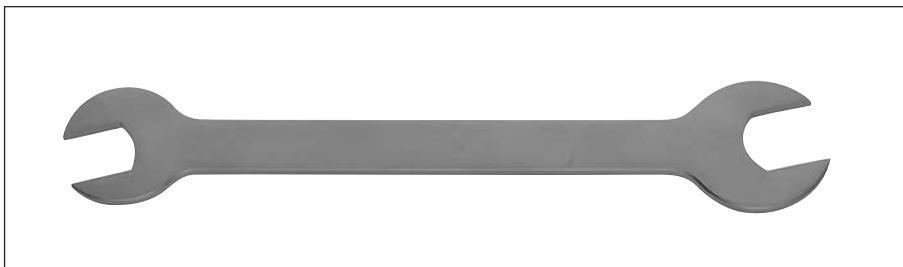
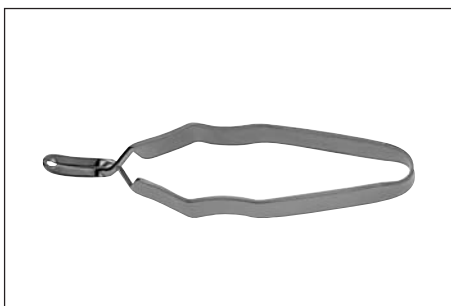
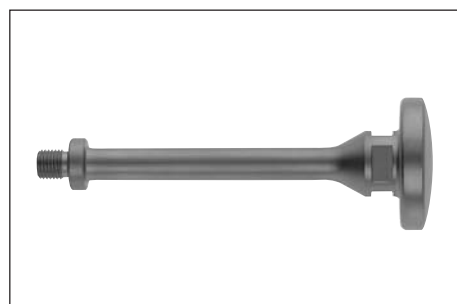


Reamer with T-Handle

1.3710	Dia. 3.0 mm
1.3711	Dia. 3.5 mm
1.3712	Dia. 4.0 mm
1.3713	Dia. 4.5 mm
1.3714	Dia. 5.0 mm
1.3715	Dia. 6.0 mm



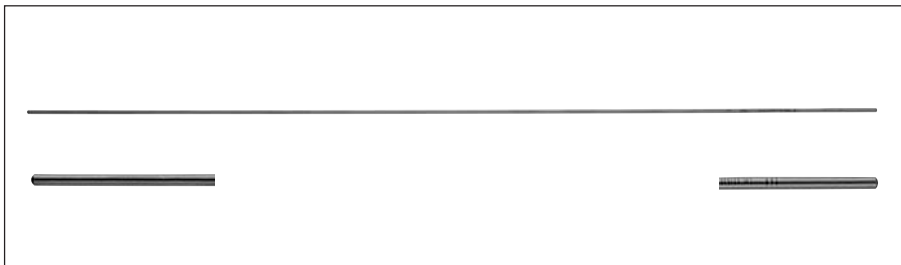
5120 Screw Driver Hexagonal 2.5 mm
with Selfholding Sleeve

Instruments for Ulna / Radius Nail System:**1.3717** Nail and Rod Bending Instrument**9142** Screw Driver Hexagonal 2.5 mm**1.11882** Open End Wrench 17/14 mm**4184** Screw Forceps**1.3718** Supine Driver for Ulna / Radius Nail

Instruments for Ulna / Radius Nail System:



9014 Drill Bit AO shaft Dia. 2.0 mm
Recommended Instrument, is not included in the Set **1.3760**



1.2040 Guide Wire Dia. 2.4 mm x Length 500 mm

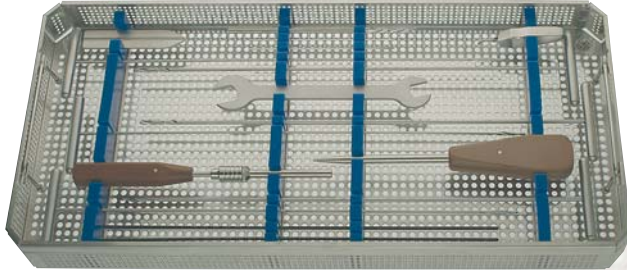


1.11956 T-Wrench within Hexagonal 14 mm
Recommended Instrument, is not included in the set **1.3760**



15310 Trocar 5.0 mm
15312 Trocar 3.5 mm
Recommended Instrument, is not included in the Set **1.3760**

Instrument Set for Ulna / Radius Nail System



Recommended Sterilization Container
(Are not included in the Set):

151013 Sterilization Container



SET LISTING

1.3760 Instrument Set for Ulna / Radius Nail System

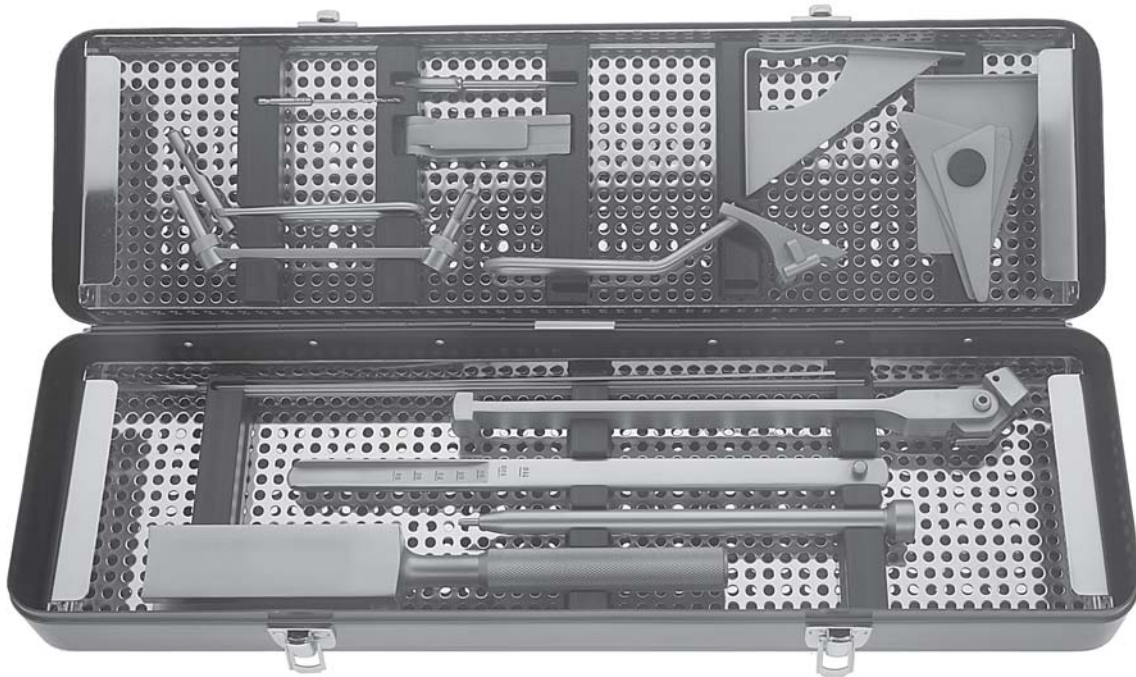
Cat. No.	Description	Pcs.:
1.3755	Tray Set (2 Trays empty) Tray 1. / Tray 2. for Instrument Set	-1-
1.3700	Prox. Targeting Device, include Adapter Bolt	-1-
1.3701	Slide Hammer	-1-
1.3702	Green Drill Sleeve Dia. 8.0 mm	-1-
1.3703	Pink Drill Sleeve Dia. 1.9 mm	-1-
1.3704	Radiolucent Drill Sleeve Dia. 1.9 mm	-1-
1.3705	Distal Drill Sleeve Dia. 8.0mm	-1-
1.3706	Drill Wire Dia. 1.9 mm x Length 140 mm	-2-
1.3707	Bending Nail Template	-2-
1.3709	Cannulated Reamer Dia. 6.0 mm x Length 15 mm	-1-
1.3710	Reamer with T-Handle Dia. 3.0 mm	-1-
1.3711	Reamer with T-Handle Dia. 3.5 mm	-1-
1.3712	Reamer with T-Handle Dia. 4.0 mm	-1-
1.3713	Reamer with T-Handle Dia. 4.5 mm	-1-
1.3714	Reamer with T-Handle Dia. 5.0 mm	-1-
1.3715	Reamer with T-Handle Dia. 6.0 mm	-1-
1.3716	Screw Driver Hexagonal 2.5 mm with Selfholding Sleeve	-1-
1.3717	Nail and Rod Bending Instrument	-1-
1.11882	Open End Wrench 17 / 14 mm	-1-
1.2040	Guide Wire Dia. 2.4 mm x Length 500 mm	-1-
9142	Screw Driver Hexagonal 2.5 mm	-1-
4184	Screw Forceps	-1-

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

Mattes-Instrumente GmbH
Haldenstrasse 27 · D-78532 Tuttlingen
Tel.: 07461 - 3643 · Fax: 07461 - 77399
e-mail: jens.mattes@mattes-medizintechnik.com
Internet: www.mattes-medizintechnik.com

Instrument Set for Angled Plates



M 02000 Instrument Set for Angled Plates

M 01110 Aluminium Case red

M 02010 Upper Tray

M 02020 Lower Tray

- 9294** Triple Drill Guide, fixed angle 130°
- 9264** Drill Guide round hole plates, long
- 9300** Reamer with end for quick coupling
- 9296** Chisel Guide, adjustable angle
- 9308** Seating Chisel
- 9306** Inserter-Extractor
- 9304** Slotted Hammer
- 9298** Impactor
- 9314** Triangular Positioning Plate 80°/70°/30°
- 9312** Triangular Positioning Plate 100°/60°/20°
- 9310** Quadrangular Positioning Plate 110°/90°/90°/70°
- 9302** Condylar Plate Guide
- 9290** Neutral and Load Hip Drill Guide, long
- 7127** Kirschner Wire \varnothing 2.0 mm, 310 mm long, 10 pieces

- 9014** Drill Bit \varnothing 2.0 mm
- 9316** Triangular Positioning Plates 90°/50°/40°

Instruments for Angled Blade Plates



9294 Triple Drill Guide with fixed angle 130°



9264 Drill Guide round hole plates, long



9300 Reamer with end for quick coupling



9296 Chisel Guide adjustable angle



9306 Inserter Extractor



9308 Seating Chisel



9304 Slotted Hammer

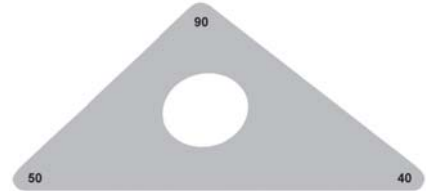


9298 Impactor

Instruments for Angled Blade Plates



9314 Triangular Positioning Plate 80°/70°/30°



9316 Triangular Positioning Plate 90°/50°/40°



9312 Triangular Positioning Plate 100°/60°/20°



9310 Quadrangular Positioning Plate 110°/90°/90°/70°



9302 Condylar Plate Guide

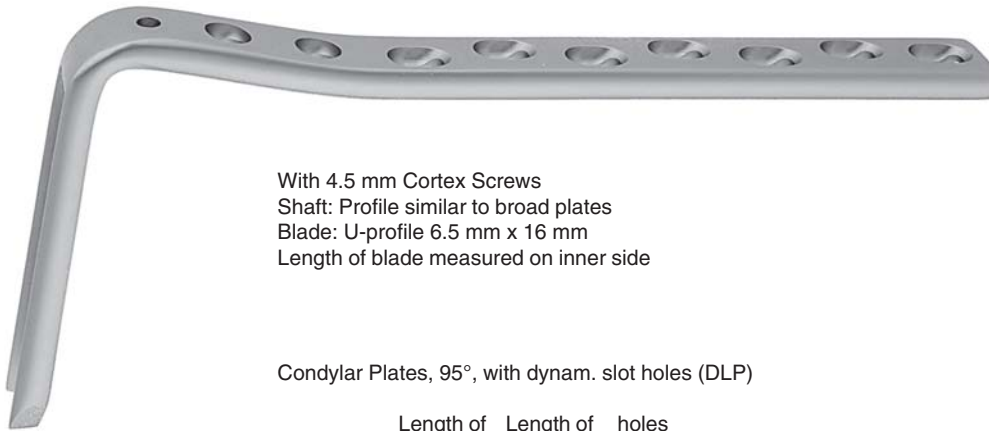


9290 Neutral and Load Hip Drill Guide, long



Femoral Neck Plates, 130°
With one round hole
For a 4.5 mm Cortex Screw

	Blade Length
2100	70 mm
2102	75 mm
2104	80 mm
2106	85 mm
2108	90 mm
2110	95 mm
2112	100 mm
2114	105 mm
2116	110 mm

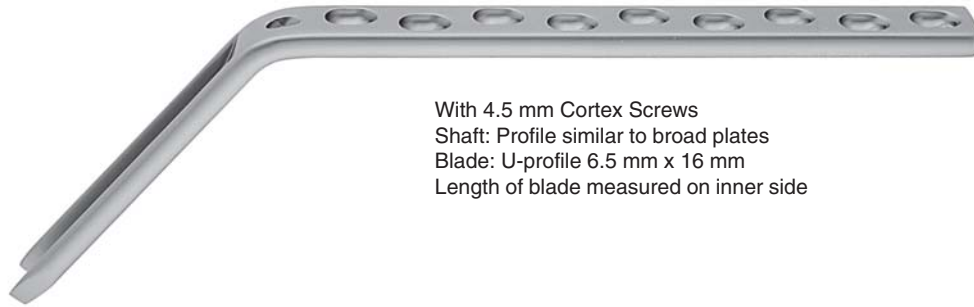


With 4.5 mm Cortex Screws
Shaft: Profile similar to broad plates
Blade: U-profile 6.5 mm x 16 mm
Length of blade measured on inner side

Condylar Plates, 95°, with dynam. slot holes (DLP)

	Length of blades	Length of plates	holes
2120	50 mm	92	5
2122	60 mm	92	5
2124	70 mm	92	5
2126	80 mm	92	5
2128	50 mm	124	7
2130	60 mm	124	7
2132	70 mm	124	7
2134	80 mm	124	7
2136	50 mm	156	9
2138	60 mm	156	9
2140	70 mm	156	9
2142	80 mm	156	9
2144	50 mm	204	12
2146	60 mm	204	12
2148	70 mm	204	12
2150	80 mm	204	12

Angled Blade Plates for Pertrochanteric Fractures

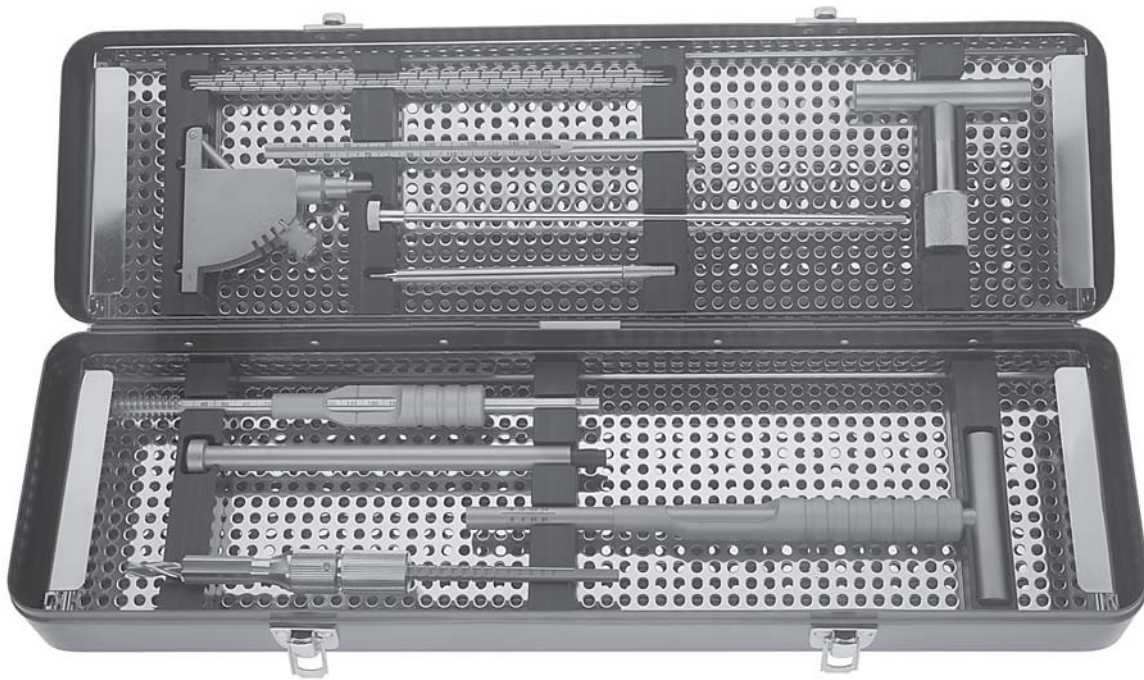


With 4.5 mm Cortex Screws
 Shaft: Profile similar to broad plates
 Blade: U-profile 6.5 mm x 16 mm
 Length of blade measured on inner side

Angled Blade Plate, 130°, dynamic slot holes (DLP)

	Length of blades	Length of plates	holes
2160	50 mm	75	4
2162	60 mm	75	4
2164	70 mm	75	4
2166	75 mm	75	4
2168	80 mm	75	4
2170	85 mm	75	4
2172	90 mm	75	4
2174	95 mm	75	4
2176	100 mm	75	4
2178	105 mm	75	4
2180	50 mm	104	6
2182	60 mm	104	6
2184	70 mm	104	6
2186	80 mm	104	6
2188	90 mm	104	6
2190	70 mm	152	9
2192	80 mm	152	9
2194	90 mm	152	9
2196	70 mm	200	12
2198	80 mm	200	12
2200	90 mm	200	12

Instrument Set for Dynamic Hip Screw



M 02300 Instrument Set for Dynamic Hip Screw

M 01110 Aluminium Case Red

M 02310 Upper Tray

M 02320 Lower Tray

2300	Guide Pin \varnothing 2.5 mm length 230 (10 units)
2302	Drill Guide
2304	Measuring Gauge
2306	Triple Reamer, complete
2308	Tap
2310	Guide Sleeve
2312	Guide Sleeve, long
2314	Guide Shaft for Insertion of Coupling Screws
2316	Coupling Screw
2317	Guide Shaft (2 units)
2318	Wrench
2320	Impactor
2322	Handle



2300 Calibrated Threaded Guide Pin
ø 2.5 mm 230 mm length, 10 mm Thread



2302 Drill Guide adjustable
to 135°/140°/145°/150°



2304 Measuring Gauge



2306 Triple Reamer complete



2308 Tap



2310 Guide Sleeve, short, for tapping



2312 Guide Sleeve, long, for screwing in of the lag screws



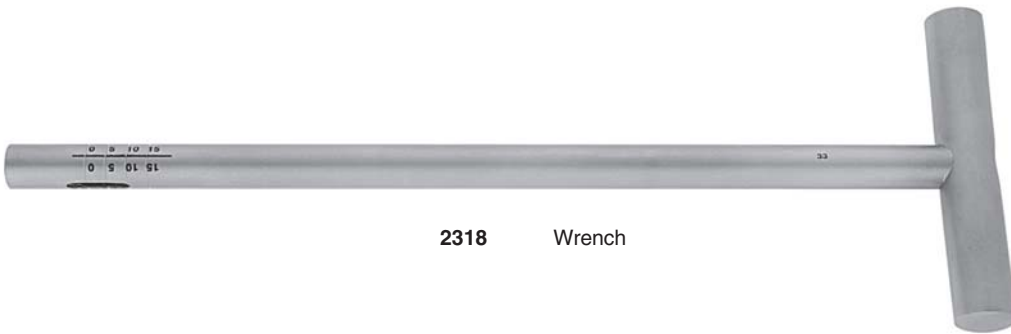
2314 Guide Shaft for Insertion of Coupling Screws



2316 Coupling Screw for Femoral Dynamic Hip Screw



2317 Guide Shaft



2318 Wrench



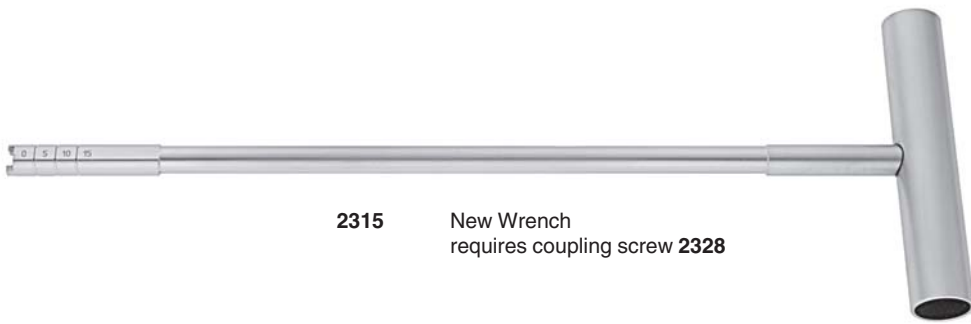
2320 Impactor



2322 Handle



2313 New Guide Sleeve



2315 New Wrench
requires coupling screw **2328**



2328 New Coupling Screws

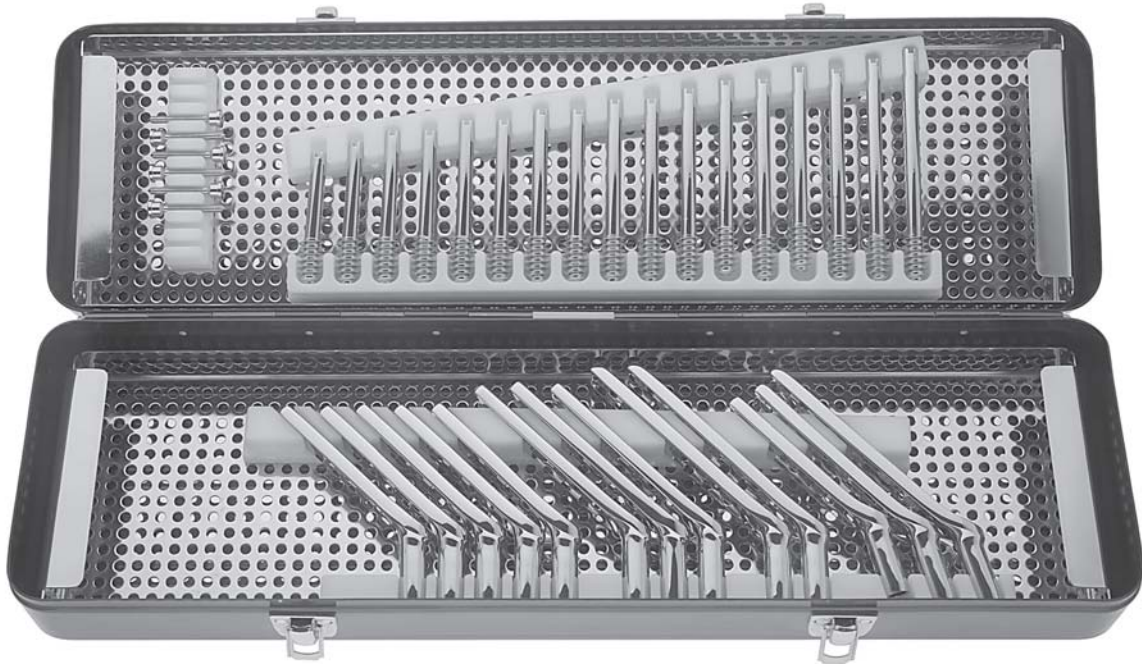


2319 New Impactor



2332 Drill Guide, adjustable to 135°/140°/145°/150° for three guide wires

Dynamic Hip Screw Standard Implant Set



M 02400 Dynamic Hip Screw Standard Implant Set

M 01110 Aluminium Case Red

M 02410 Upper Tray

M 02420 Lower Tray

Lag Screws

2406- 1 ea: 65 , 70 , 105, 110 and 115 mm

2426 2 ea: 75, 80, 85, 90, 95 and 100 mm

2440 Compression Screw, 6 pieces

Plates - 135°

2352 5 ea: with 4 holes

2354 3 ea: with 5 holes

2356 2 ea:with 6 holes

Plates - 150°

2382- 1 ea: with 4, 5 and 6 holes

2386

Hip Screw Plates with self compression holes

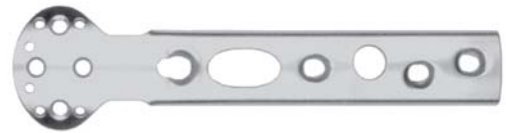


Plates only

Holes	2	4	5	6	8	10	12	14	16
125°		2334	2336	2338					
130°		2340	2342	2344					
135°	2350	2352	2354	2356	2358	2360	2362	2364	2366
140°		2368	2370	2372					
145°		2374	2376	2378					
150°	2380	2382	2384	2386	2388	2390	2392		



Holes	Barrel 25 mm		
	4	5	6
135°	2394	2396	2398



2399 Trochanter Plates

Dynamic Lag Screws, thread length 22 mm



Length	50 mm	55 mm	60 mm	65 mm	70 mm	75 mm	80 mm	85 mm	90 mm	95 mm
	2400	2402	2404	2406	2408	2410	2412	2414	2416	2418
	100 mm	105 mm	110 mm	115 mm	120 mm	125 mm	130 mm	135 mm	140 mm	145 mm
	2420	2422	2424	2426	2428	2430	2432	2434	2436	2438



2440 Compression Screw



Dynamic Condylar Plates
Plates - 95°, Barrel Length 25 mm

2450	6	100 mm
2452	8	130 mm
2454	10	163 mm
2456	12	198 mm
2458	14	225 mm
2460	16	260 mm
2462	18	306 mm
2464	20	338 mm
2466	22	370 mm



Dynamic Condylar Screw

2400	50 mm
2402	55 mm
2404	60 mm
2406	65 mm
2408	70 mm
2410	75 mm
2412	80 mm
2414	85 mm



Drill Guide

2470	135°
2472	140°
2474	145°
2476	150°



2488 Triple Reamer complete

Smith Peterson Nails



Cannulated to accept a 2.4 mm guide wire

12.7 mm									
60 mm	65 mm	70 mm	75 mm	80 mm	85 mm	90 mm	95 mm	100 mm	105 mm
2500	2501	2502	2503	2504	2505	2506	2507	2508	2509
110 mm	115 mm	120 mm	125 mm	130 mm	135 mm	140 mm	145 mm	150 mm	
2510	2511	2512	2513	2514	2515	2516	2517	2518	

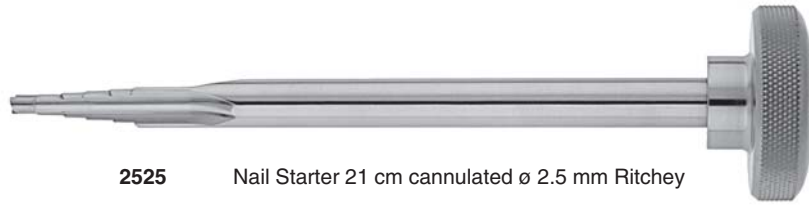
Mc. Laughlin Plates - including components (2520)



3	5	7	12 holes
2521	2522	2523	2524



2520 Components



2525 Nail Starter 21 cm cannulated ø 2.5 mm Ritchey



2526 Nail Starter



2527 Impactor-Extractor Lloyd



2528 Impactor-Extractor



2529 Nail Driver

Standard Jewett Nail Heavy Duty 135° angle



3 holes 90 mm Plate length

Nail length

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm	121 mm
2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540

5 holes 130 mm Plate length

Nail length

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm	121 mm
2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551

7 holes 165 mm Plate length

Nail length

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm	121 mm
2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562

10 holes 220 mm Plate length

Nail length

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm	121 mm
2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573

12 holes 260 mm Plate length

Nail length

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm	121 mm
2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584



2528 T - Wrench for Pins



2588 Impactor-Extractor



2526 Nail Starter

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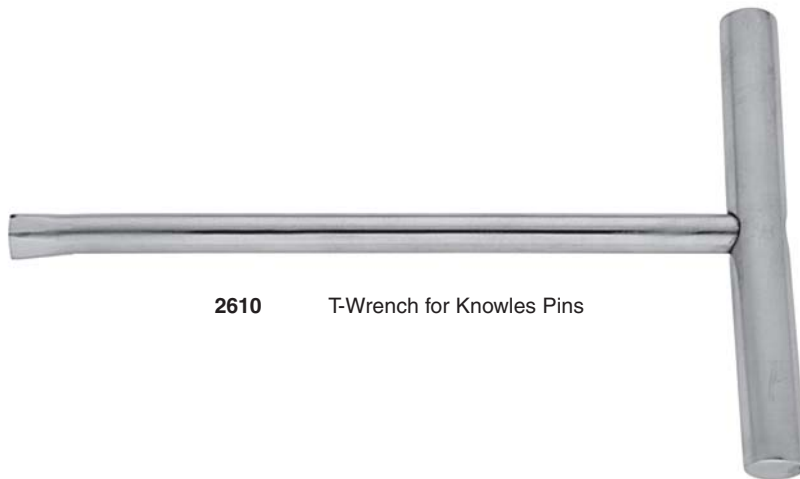
Knowles Pins, Overall Length: 178 mm Threaded Length: 32 mm



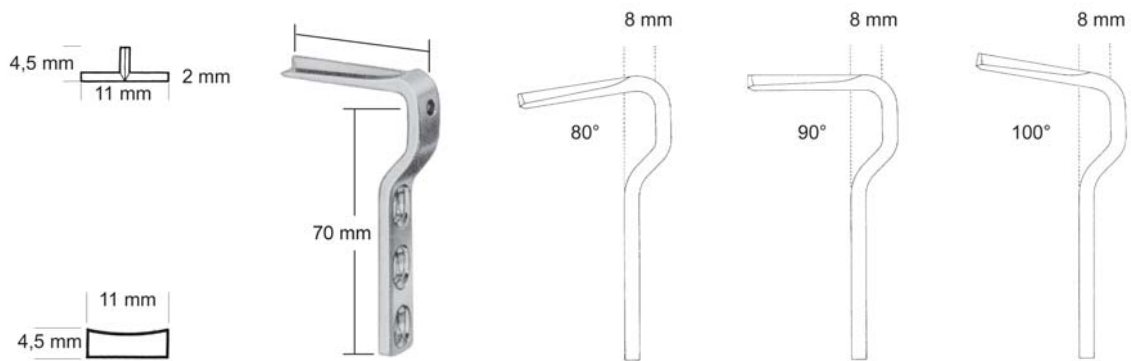
4.8 mm \varnothing

57 mm	63 mm	70 mm	76 mm	82 mm	89 mm	95 mm	102 mm	108 mm	114 mm
2590	2591	2592	2593	2594	2595	2596	2597	2598	2599

121 mm	127 mm	133 mm	140 mm	146 mm	152 mm
2600	2601	2602	2603	2604	2605



2610 T-Wrench for Knowles Pins

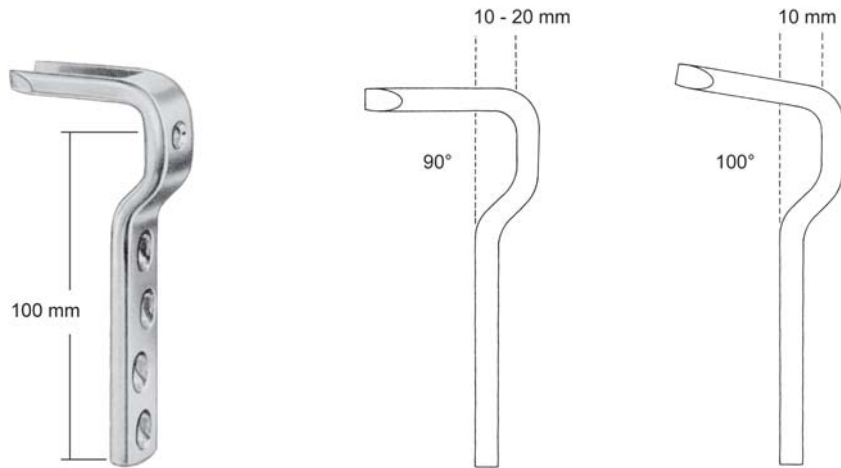


Length of Blade	Bogentiefe	80°	90°	100°
35 mm	8 mm	2222	2226	2230
45 mm	8 mm	2224	2228	2232



Length of Blade	Bogentiefe	90°
25 mm	7 mm	2236
32 mm	7 mm	2238
25 mm	12 mm	2240
32 mm	12 mm	2242

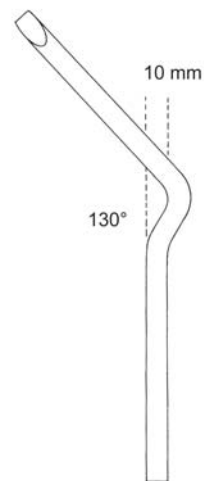
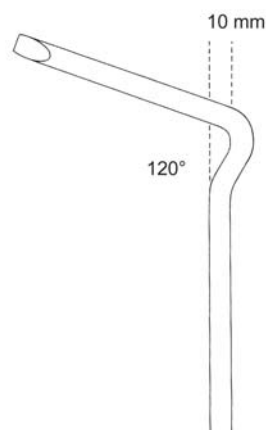
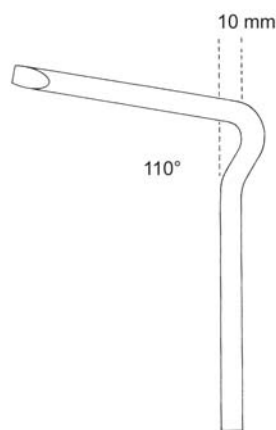
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Length of Blade	Bogentiefe	90°	100°
40 mm	10 mm	2244	
50 mm	15 mm	2245	
60 mm	15 mm	2246	
60 mm	20 mm	2247	
60 mm	10 mm		2249



Length of Blade	Bogentiefe	90°
40 mm	10 mm	2250
50 mm	10 mm	2252
40 mm	15 mm	2254
50 mm	15 mm	2256



Length of Blade	110°	120°	130°
65 mm	2266	2260	2272
70 mm			2273
75 mm	2268	2262	2274
80 mm			2275
85 mm	2270	2264	2276
90 mm			2277
95 mm			2278
100 mm			2279
105 mm			2280
110 mm			2281

***E.T.S. INTRAMEDULLARY
HIP SCREW SYSTEM***

***E.T.S.
HÜFTKOMPRESSIIONSNAGEL***



The E.T.S. Nail

Introduction and Surgical Technique

In 1940 Küntscher developed the Y-nail for fracture treatment of the trochanteric region, and despite its efficiency, the technique had been neglected for decades. After satisfactory experience with intramedullary treatment methods, it was the mid-eighties when Küntscher's technique was modified in Strasbourg by Taglang, Grosse and Kempf and reintroduced to surgery as the Gamma-nail.

Although the new nail has proven useful, a few problems have become evident. Namely, the nail, which was originally straight, was modified giving it a 10° valgus so that the implant could be easily introduced through the tip of the greater trochanter. This rather strong valgus may burst the shaft, particularly when larger diameters are inadequately reamed. Also, problems occasionally occur with the gliding mechanism of the hip screw, when screws either glide imperfectly or not at all. Additionally, the distal nail end is critical, as it has shown to be a region of great stress caused by the strong rigidity of the implant and by the round holes.

Therefore, several years of experience with this implant have prompted use to introduce the following modifications:

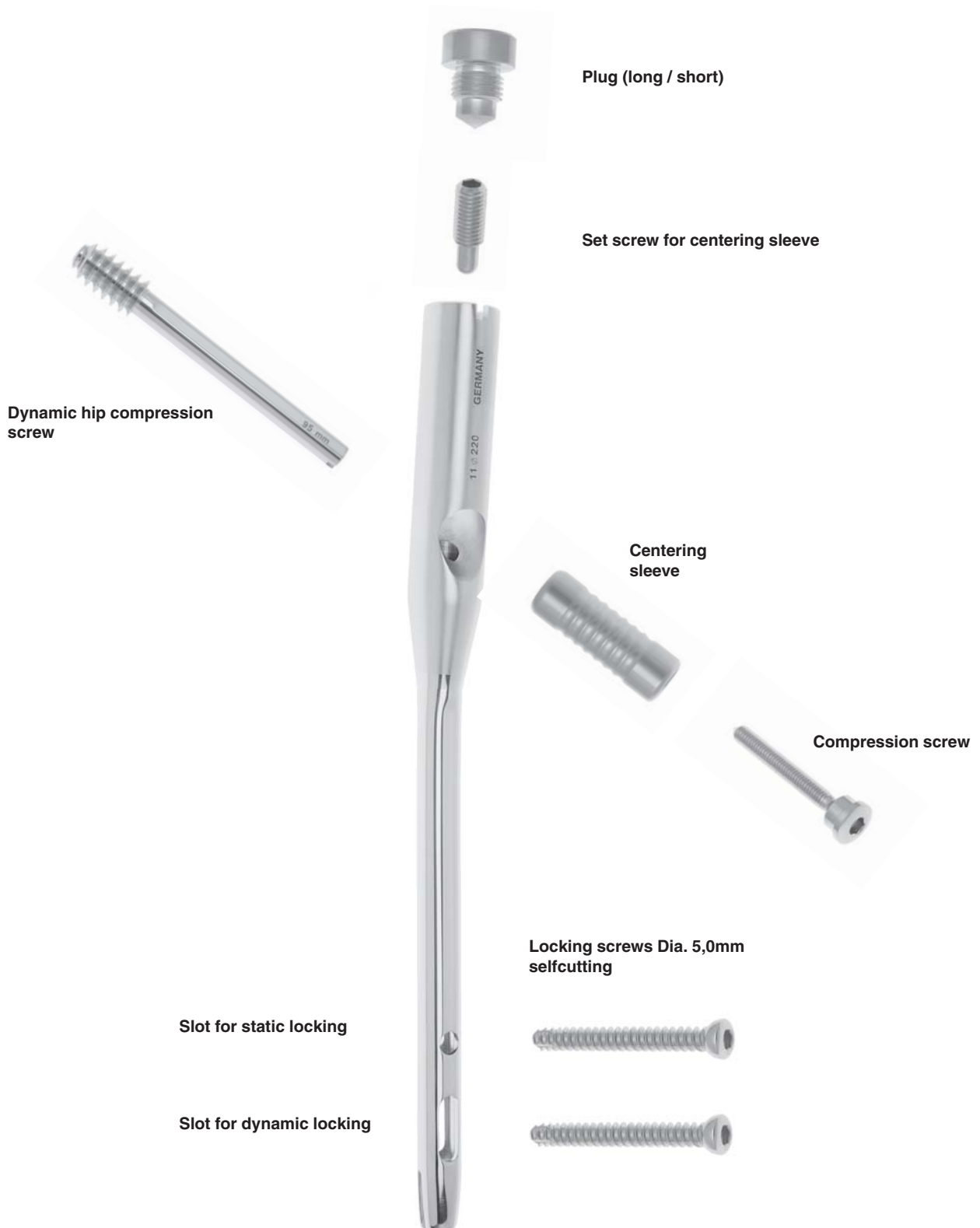
1. The angulation of the trochanteric nail, desirable as far as surgical technique is concerned, was reduced to 6° in order to minimize the risk of bursting the shaft.
2. The dynamic compression screw, which has proven its worth elsewhere, will be used as the screw for the femoral neck.
3. To reduce stress at the tip of the nail:
 - Incorporated slots at the nail end to ensure a smooth transition from the rigid implant to the less rigid bone.
 - Design the distal interlocking hole in a longitudinal oval shape.

These modifications embody the E.T.S. nail and allow adjustment of the interlocking according to the requirements of bone and fracture type.

Stable fractures do not need interlocking. Depending on the degree of instability and osteoporosis, a screw is either inserted through just the oval hole (dynamic interlocking) or through both holes (static interlocking). Should static interlocking have not affected a consolidation after a period of four to six weeks, dynamizing by removing the screw from the round hole should be considered.

The inventors / initiators of this E.T.S. nail are convinced that they have made a substantial contribution toward improving the treatment of proximal femoral fractures. They hope that the nail will be successfully applied and they welcome your critical feedback.

Pre - Operative Planning E.T.S. Compression Nail



Pre - Operative Planning

Surgery requires an ap-X-ray (as well as lateral) of the proximal femur. It is recommended that the images are taken pre-op or, if pain prevents at that stage, that they are taken immediately prior to surgery. In cases of unusually pronounced femur curvature, the intramedullary implant cannot be applied. Templates are available in order to determine nail diameter and length of the hip screw.

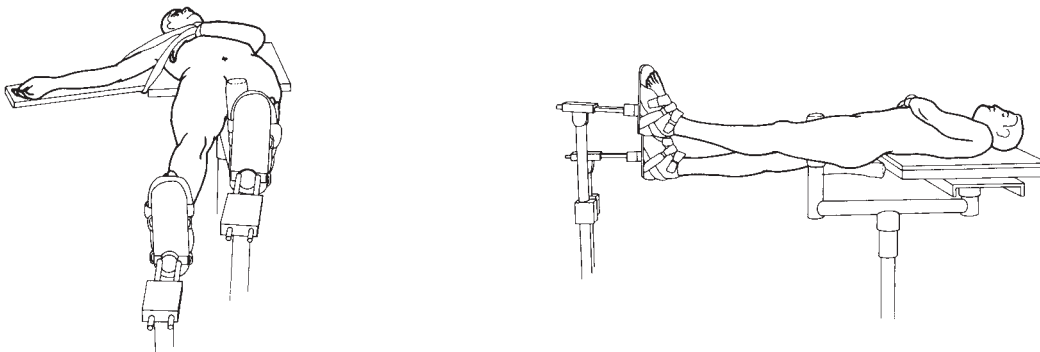
Positioning

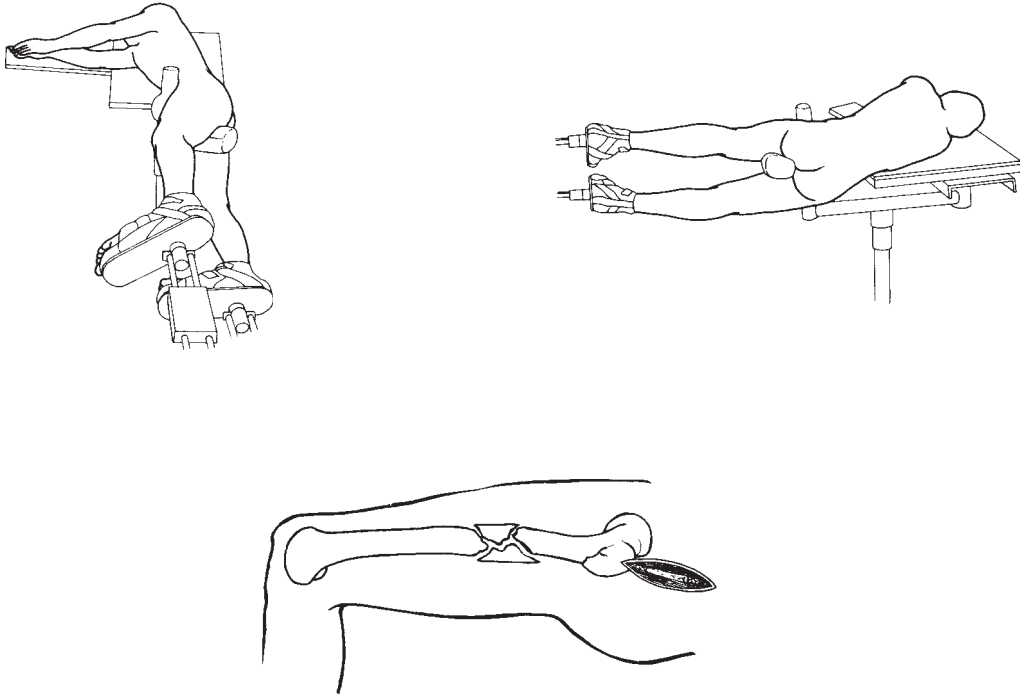
Positioning is the same as with intramedullary nailing of the femur. The patient is positioned supine on the fracture table. A traction device through the tibial tuberosity or the femoral condyle is advisable.

The pelvis must be in a horizontal position. The arm of the affected side is to be fixed in front of the body. The affected femur is to be adducted and the upper body positioned toward the opposite side so that the trochanter region is easily accessible. Correct positioning is most important with obese patients. The unaffected leg is to be abducted and bent in such a way that image intensifier may be shifted between the legs for axial pictures: (Fig. 1).

Surgery can also be performed on a translucent table. In that case, the unaffected leg is to be kept sterile by a surgical stocking and must be lifted for axial imaging.

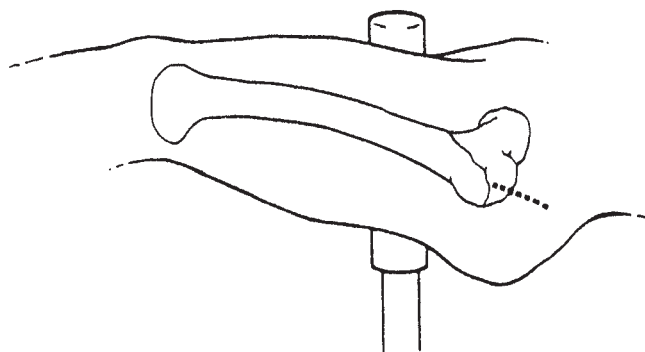
Prior to surgery, the fracture is to be reduced in case of pertrochanteric fractures by means of rotation and traction. Excessive traction should be avoided. It is important to position the shaft fragment immediately lateral to the femoral neck fragment. If closed reduction is impossible, open reduction will be necessary.





Approach

As with intramedullary nailing, an incision of five to eight centimeters from the tip of the trochanter in proximal direction must be made. The fascia must be split accordingly. The wound is spread by a self - holding retractor, then the medial gluteus muscle is split parallel to the fibers and the tip of the trochanter is finally approached.





1.
Open the medullary cavity at the tip or in its medial vicinity with an awl.



2.
Introduce the guide wire using the T - handle, widening the proximal medullary cavity.



3.
Either using the tapered reamer (18 mm \varnothing) or using a machine drill for harder bones.



4.
Introduce the corresponding E.T.S. nail using the targeting device.



5. Determine the anteversion by placing a K - wire on the ventral side of the femoral neck using the targeting device for the external guide.



6. Make preliminary indentation of the lateral cortex through a separate incision.



7. Introduce the guide wire for the screw using the drill sleeve.

Measure screw length.

MATTES



8.
Prepare the hole for the hip screw using an adjustable reamer.



9.
For cases with harder bone, tap the thread.



10.
Insert the hip screw together with the centering sleeve using the insertion device.



11.
The hip screw is inserted.



12.
Insert the centering sleeve with the sleeve impactor.



13.
Introduce the set screw in order to fix the centering sleeve.



14.
Apply a compression screw if necessary.

Distal Interlocking



15.
Make indentation of the lateral cortex.



16.
Drill over the sleeve with the dia. 4.0 mm. Twist Drill for the core from the 5.0 mm locking screw.



17.
Meassury the length of the screw.



18.
Insert the self - tapping 5.0 mm cortical screw.

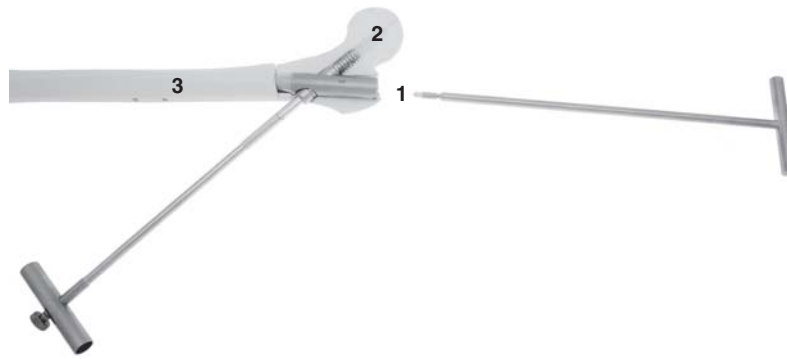
Without picture

19.
Static interlocking
Introduce a second screw into the proximal round hole (following the procedures described above).



20.
Close the proximal nail end using a plug (long or short).

Removal of the E.T.S. Nail



- 1.) Remove the set screw in order to prepare the centering sleeve.
- 2.) Remove the hip screw together with the centering sleeve.
- 3.) Remove the distal interlocking screws.



Extract the E.T.S. nail using the adapter bolt, extractor tube and slotted hammer.



**E.T.S. / H.T.S.
Operations-
anleitung**

OPERATIONSANLEITUNG

Der E.T.S. - Nagel

Küntscher hatte 1940 den Y - Nagel zur Behandlung von Frakturen im Trochanter - Bereich entwickelt. Dieses leistungsfähige Verfahren wurde über Jahrzehnte verkannt. Erst Mitte der 80iger Jahre wurde nach den guten Erfahrungen mit den intramedullären Behandlungstechniken das Prinzip von Taglang, Grosse und Kempf in Straßburg wieder aufgegriffen und in der Modifikation des Gamma - Nagels in die Klinik eingeführt. Obwohl es sich grundsätzlich bewährt hat, wurden jedoch einige Probleme offenbar. Der Nagel, ursprünglich gerade, ist mit einer 10° Valgusabwinkelung versehen, so daß das Implantat leicht über die Trochanter Spitze einzuführen ist. Die starke Valgisierung kann zur Sprengung der Markhöhle führen, besonders wenn bei größeren Nageldurchmessern nicht ausreichend aufgebohrt worden ist. Probleme treten in dem Gleitmechanismus der Schenkelhalsschraube auf, indem die Schrauben bisweilen nur unzureichend oder gar nicht gleiten.

Kritisch ist auch das distale Nagelende, an dem es wegen der Rundlöcher und der hohen Rigidität des Implantates zu einer Streßkonzentration kommt. Diese löst häufig Schmerzen aus und hat wiederholt zu Spontanfrakturen geführt.

Jahrelange Erfahrungen mit diesem Implantat veranlaßten uns zu folgenden Modifikationen:

1. Die Valgisierung des Marknagels, die aus operationstechnischen Gründen wünschenswert ist, wurde auf 6° vermindert, um das Risiko der Schaftsprengung zu vermindern.
2. Als Schenkelhalsschraube wird die anderweitig bewährte dynamische Hüftschraube verwendet.
3. Die Streßkonzentration an der Nagelspitze wurde durch zwei Änderungen reduziert.
 - Durch Schlitz am Nagelende verläuft der Übergang vom rigiden Implantat zum weniger rigiden Knochen kontinuierlicher.
 - Das distale Verriegelungsloch ist längsoval angelegt.

Damit kann man die Verriegelung den Erfordernissen aus Knochen und Frakturform anpassen.

Stabile Frakturen benötigen keine Verriegelung. Je nach Instabilität und Grad der Osteoporose belegt man nur das ovale Loch (dynamische Verriegelung) oder beide Löcher mit einer Schraube (statische Verriegelung). Sollte bei statischer Verriegelung nach 4 - 6 Wochen kein Durchbau eingetreten sein, kommt die Dynamisierung in Betracht, indem die Schraube aus dem Rundloch entfernt wird.

Die Initiatoren des E.T.S. - Nagels sind überzeugt, einen wichtigen Beitrag zur Verbesserung der Versorgung von proximalen Femurfrakturen geleistet zu haben.

Sie wünschen Erfolg bei der Anwendung und sind für Anregungen dankbar.

OPERATIONSTECHNIK E.T.S. - KOMPRESSIIONSNAGEL

Schraube für:
- Dynamische Hüftschaubenplatte
- E.T.S. - Kompressionsnagel



Verschlusschraube hoch oder flach



Klemmschraube für Gleithülse



Gleithülse



Kompressionsschraube für:
- Hüftschaubenplatte
- E.T.S. - Nagel

Loch für statische Verriegelung

Loch für dynamische Verriegelung

Verriegelungsschrauben, \varnothing 5,0 mm,
selbstschneidend



PRÄOPERATIVE PLANUNG

Zur Operation muß neben der AP - Aufnahme auch eine Seitenaufnahme der proximalen Femurhälfte vorliegen. Diese kann präoperativ oder, sofern das schmerzbedingt nicht möglich ist, zu Beginn der Operation angefertigt werden. Bei ungewöhnlich starker Verkrümmung des Femur kann das intramedulläre Implantat nicht angewandt werden. Es sind Planungsschablonen erhältlich, mit denen Durchmesser des Nagels sowie Länge der Gleitschraube präoperativ festgelegt werden können.

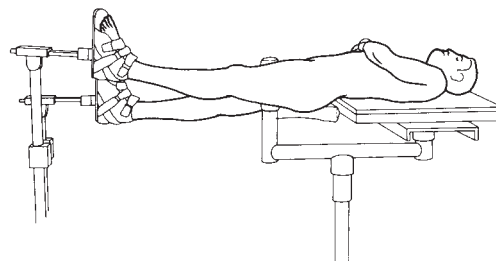
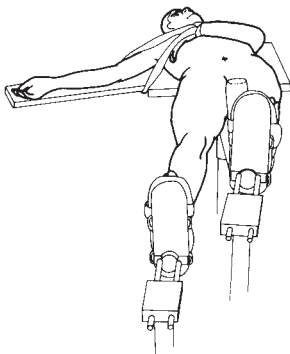
LAGERUNG

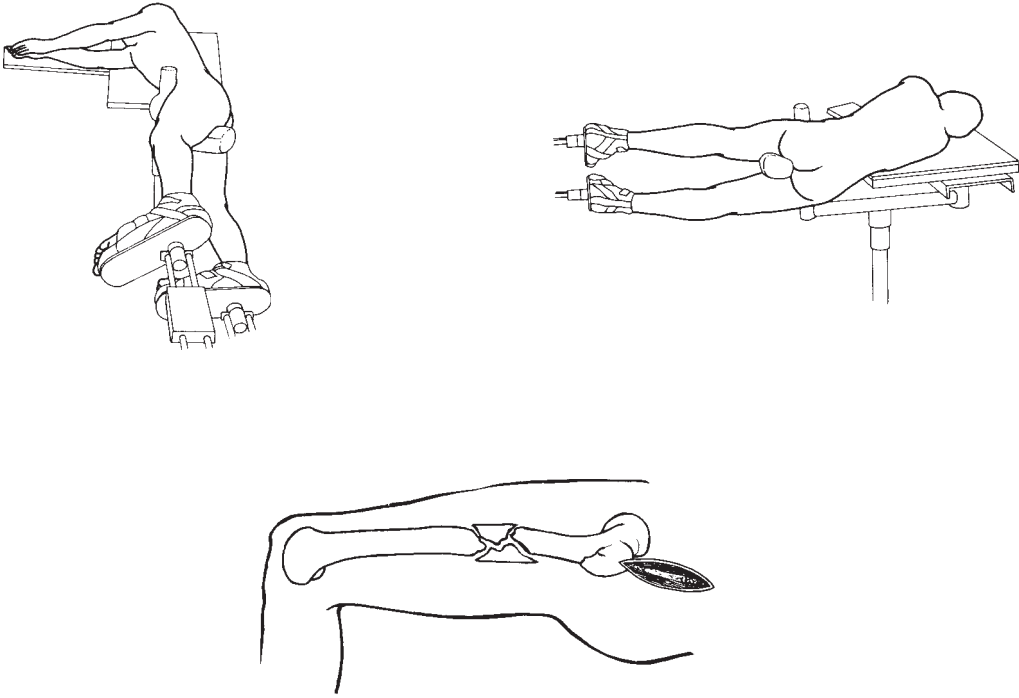
Die Lagerung ist gleich wie bei Marknagelungen des Oberschenkelknochens:
Der Patient liegt auf dem Rücken auf dem Extensionstisch, dabei ist eine Extension durch die Femurkondylen hilfreich.

Das Becken muß horizontal liegen. Der Arm der betroffenen Seite wird vor dem Körper fixiert. Der betroffene Oberschenkel wird adduziert und der Oberkörper zur Gegenseite gelagert, damit der Trochanterbereich optimal zugänglich wird. Die korrekte Lagerung ist bei adipösen Patienten besonders wichtig. Das unverletzte Bein wird in Abduktion und Beugung so gelagert, daß der Bildwandler zur axialen Aufnahme zwischen die Beine geschwenkt werden kann (Abb.).

Die Operation kann auch auf dem Unfalltisch vorgenommen werden. Dazu wird auch das unverletzte Bein mit Stockinette steril abgedeckt und zur Durchführung der axialen Aufnahme jeweils kurzfristig angehoben.

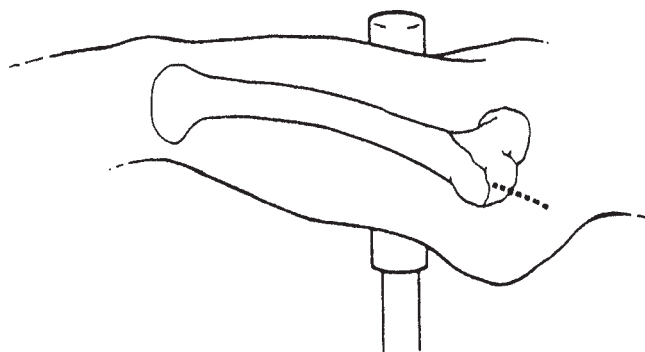
Vor Beginn der Operation wird die Fraktur reponiert, d.h. pertrochantäre Frakturen durch Rotation und Traktion. Übermäßiger Zug am Extensionstisch ist zu vermeiden. Es ist wichtig, das Schaftfragment unmittelbar lateral des Schenkelhalsfragmentes zu positionieren. Wenn eine geschlossene Reposition nicht möglich ist, wird nachfolgend offen operiert.





ZUGANG

Wie bei der Femurmarknagelung verläuft der Hautschnitt von der Trochanterspitze 5 - 8 cm nach oben (Abb.). Die Faszie wird in entsprechender Länge gespalten. Ein selbsthaltender Wundspreizer hält die Wundränder auseinander, dann wird der Glutaeus medius entlang der Fasern gespalten und auf die Trochanterspitze eingegangen.





1.
Eröffnen der Markhöhle mit dem Pfriem an der Trochanterspitze oder unmittelbar medial davor.



2.
Einbringen des Führungsspießes mit dem T - Handgriff.



3.
Aufweiten der proximalen Markhöhle mit der Formreibahle \varnothing 18 mm, bei hartem Knochen maschinell.



4.
Einbringen des passenden E.T.S. - Nagels mit zugehörigem Zielbügel.



5. Zur Bestimmung der Anteversion wird über die aufzusetzende Zieleinrichtung ein Spickdraht auf die Ventralseite des Schenkelhalses gelegt.



6. Ankörnen der lateralen Corticalis über eine gesonderte Inzision.



7. Einbringen des Führungsdrahtes für die Schenkelhalsschraube mit Hilfe der Bohrbüchse.

Messen der Schraubenlänge.



8.
Bohren des Kanals für die Schenkelhalsschraube mit längenverstellbarem Bohrer über vorgesehene Bohrbüchse.



9.
Bei hartem Knochen Vorschneiden des Gewindes.



10.
Eindrehen der Schenkelhalsschraube mit der Gleithülse mit Hilfe der Eindrehvorrichtung.



11.
Eindrehen der Schenkelhalsschraube, die die laterale Corticalis nach außen leicht überragen sollte.



12.
Einschieben der Gleithülse mit speziellem Stößel bis zum Anschlag am Zielgerät.



13.
Eindrehen der Verriegelungsschraube für die Gleithülse.



14.
Sofern gewünscht, kann eine Kompressions-
schraube angebracht werden.

Distale Verriegelung



15.
Ankönnen der lateralen Corticalis.



16.
Bohrung mit dem \varnothing 4,0 mm Bohrer durch die
Bohrbüchse.



17.
Längenmessung der benötigten Schraube.



18.
Eindrehen der selbstschneidenden 5,0 mm
Corticalisschraube.

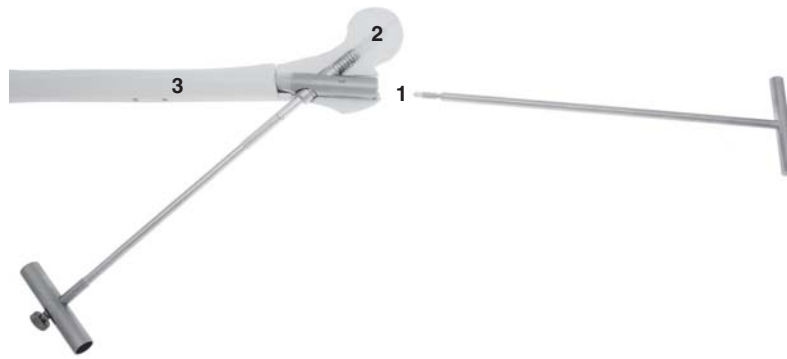
Ohne Bild

19.
Sofern eine statische Verriegelung erwünscht
ist, erfolgt in gleicher Technik das Einbringen
einer zweiten Schraube im proximal gelegenen
Rundloch.



20.
Verschließen des proximalen Nagelendes mit
einer Verschlussschraube hoch oder flach.

E.T.S. - Nagelentfernung



- 1.) Entfernung des proximalen Verriegelungsbolzens für die Gleithülse.
- 2.) Entfernung der Schenkelhalsschraube mit der Gleithülse.
- 3.) Entfernung der distalen Verriegelungsschrauben, sofern noch vorhanden.



Ausschlagen des E.T.S. / H.T.S. - Nagels mit Adaptionsschraube, Extraktionsstange und Schlitzhammer.



**E.T.S. / H.T.S.
Implants and
instruments**

**E.T.S. / H.T.S.
Implantate und
Instrumentarium**

E.T.S / H.T.S - Hip nails E.T.S. / H.T.S. - Hüftnagel



Cat. No. Kat. Nr.	ø mm	Length mm Länge mm	Angle Winkel	left / right links / rechts	Name
020820	10	220	125°		E.T.S.
020822	10	220	130°		E.T.S.
020824	10	220	135°		E.T.S.
020830	11	220	125°		E.T.S.
020832	11	220	130°		E.T.S.
020834	11	220	135°		E.T.S.
020840	12	220	125°		E.T.S.
020842	12	220	130°		E.T.S.
020844	12	220	135°		E.T.S.
020850	13	220	125°		E.T.S.
020852	13	220	130°		E.T.S.
020854	13	220	135°		E.T.S.
020860	14	220	125°		E.T.S.
020862	14	220	130°		E.T.S.
020864	14	220	135°		E.T.S.
020916	10	340	125°	left / links	H.T.S.
020918	10	340	125°	right / rechts	H.T.S.
020920	10	340	130°	left / links	H.T.S.
020922	10	340	130°	right / rechts	H.T.S.
020924	10	340	135°	left / links	H.T.S.
020926	10	340	135°	right / rechts	H.T.S.
020928	10	360	125°	left / links	H.T.S.
020930	10	360	125°	right / rechts	H.T.S.
020932	10	360	130°	left / links	H.T.S.
020934	10	360	130°	right / rechts	H.T.S.
020936	10	360	135°	left / links	H.T.S.
020938	10	360	135°	right / rechts	H.T.S.
020940	10	380	125°	left / links	H.T.S.
020942	10	380	125°	right / rechts	H.T.S.
020944	10	380	130°	left / links	H.T.S.
020946	10	380	130°	right / rechts	H.T.S.
020948	10	380	135°	left / links	H.T.S.
020950	10	380	135°	right / rechts	H.T.S.
020952	10	400	125°	left / links	H.T.S.
020954	10	400	125°	right / rechts	H.T.S.
020956	10	400	130°	left / links	H.T.S.
020958	10	400	130°	right / rechts	H.T.S.
020960	10	400	135°	left / links	H.T.S.
020962	10	400	135°	right / rechts	H.T.S.
020964	10	420	125°	left / links	H.T.S.
020966	10	420	125°	right / rechts	H.T.S.
020968	10	420	130°	left / links	H.T.S.
020970	10	420	130°	right / rechts	H.T.S.
020972	10	420	135°	left / links	H.T.S.
020974	10	420	135°	right / rechts	H.T.S.



021220
E.T.S. - Head Bolt (long)
E.T.S. - Verschlußschraube,
hoch



021222
E.T.S. - Head Bolt (Short)
E.T.S. - Verschlußschraube,
flach



021224
E.T.S. - Set Screw
E.T.S. - Klemmschraube
für Gleithülse



021226
E.T.S. - Centering Sleeve
E.T.S. - Gleithülse



Dynamic Compression Screws
thread length 22 mm
Schraube für Hüftschraubenplatte

Cat. No.	Length mm
2408	70
2410	75
2412	80
2414	85
2416	90
2418	95
2420	100
2422	105
2424	110
2426	115
2428	120
2430	125
2432	130



2440
Compression Screw
Kompressionsschraube



E.T.S. - Locking Screws 5.0 mm
Diameter for Distal Holes
E.T.S. - Distale Verriegelungsschraube,
ø 5,0 mm mit Selbstanschnitt

Cat. No.	Length mm
1.11782	30
1.11783	35
1.11784	40
1.11785	45
1.11786	50
1.11787	55
1.11788	60



021228 E.T.S. - Targeting Device 125° blue
E.T.S. - 125° Zielaufsatz blau



021230 E.T.S. - Targeting Device 130° red
E.T.S. - 130° Zielaufsatz rot



021232 E.T.S. - Targeting Device 135° green
E.T.S. - 135° Zielaufsatz grün



**Stabilizer
Stabilisator**



**Connecting Bolt for Targeting Device
Befestigungsschraube für Zielaufsätze**



**Nail - Adapter Bolt
Nagel - Adaptionsschraube**

021236

**E.T.S. - Stabilizer for Targeting Device (blue 125°, red 130°, green 135°) with bolts
E.T.S. - Stabilisator für Zielgerät mit Adaptionsschraube (3 teilig)**



021238 E.T.S. - Drill Sleeve ø 2,5 mm silver
E.T.S. - Bohrhülse ø 2,5 mm silber



021240 E.T.S. - Drill Sleeve ø 7,5 mm black
E.T.S. - Bohrhülse ø 7,5 mm schwarz



021242 E.T.S. - Drill Sleeve ø 8,0 mm green
E.T.S. - Bohrhülse ø 8,0 mm grün



021243 E.T.S. - Drill Sleeve ø 9,4 mm gold
E.T.S. - Bohrhülse ø 9,4 mm gold



021244 **E.T.S. - Drill Sleeve ø 13,0 mm blue**
E.T.S. - Bohrhülse ø 13,0 mm blau



1.11910 **Drill Sleeve ø 8,0 mm green, long for distal**
E.T.S. - Bohrbüchse für distal ø 8,0 mm grün



1.11914 **Drill Sleeve ø 4,0 mm gold for distal**
E.T.S. - Bohrbüchse für distal ø 4,0 mm gelb



021248 E.T.S. - Sleeve Reamer ø 12,75 mm
E.T.S. - Gleithülsenfräser ø 12,75 mm



021250 E.T.S. - Tap for Hip Compression Screw
E.T.S. - Gewindeschneider für Hüftkompressionsschraube



021252 E.T.S. - Reamer for Hip Compression Screw
E.T.S. - Vorbohrer für Hüftkompressionsschraube



021254 E.T.S. - Coupling Screw for insertion of Dynamic Hip Screw
E.T.S. - Kuplungsschraube für Hüftkompressionsschraube



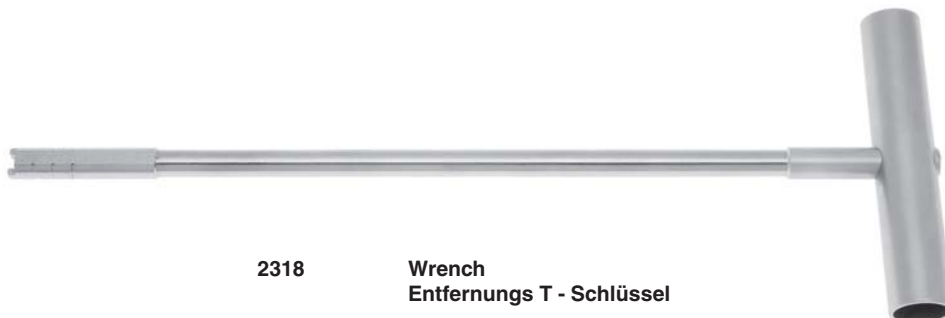
021256 E.T.S. - Guide Shaft for coupling
E.T.S. - Führungsschaft für Kuplungsschraube



021258 E.T.S. - Wrench for insertion of Dynamic Hip Screw
E.T.S. - Schraubendreher für Hüftkompressionsschraube



2316 Coupling Screw for Femoral Dynamic Hip Screw
Verbindungsschraube zu Entfernungs T - Schlüssel



2318 Wrench
Entfernungs T - Schlüssel



021260 E.T.S. - Guide Pin, \varnothing 2,5 mm, length 330 mm
E.T.S. - Führungsdraht \varnothing 2,5 mm Länge 330 mm



021262 E.T.S. - Sleeve Impactor for Centering Sleeve Insertion
E.T.S. - Hülseneintreiber für Zentrierhülse



021264 E.T.S. - Nail Extractor Bolt
E.T.S. - Ausziehbolzen für Nagel



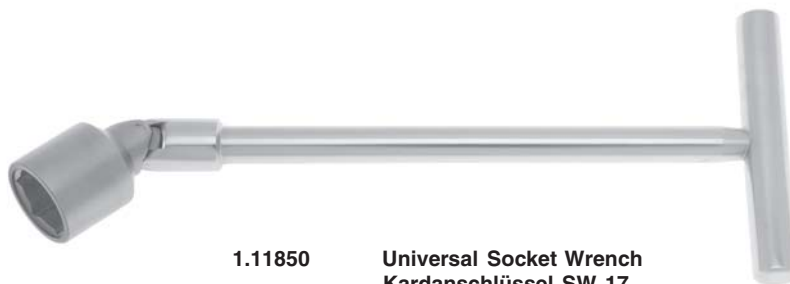
021266 E.T.S. - Screw Length Gauge
E.T.S. - Schraubenmesslehre für Schraubenlängenbestimmung



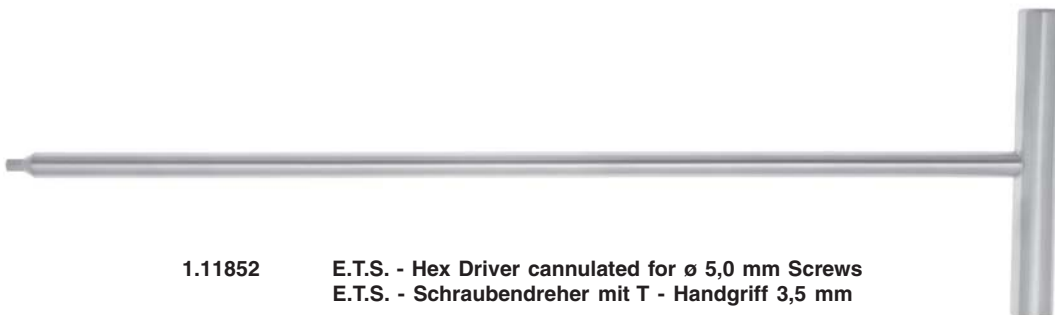
021270 E.T.S. - Tapered Reamer Cannulated
E.T.S. - Konische Reibahle



021272 E.T.S. - Targeting Device for External Guide ø 2,5 mm
E.T.S. Zielaufsatz AnteverSIONSSicherung



1.11850 Universal Socket Wrench
Kardanschlüssel SW 17



1.11852 E.T.S. - Hex Driver cannulated for ø 5,0 mm Screws
E.T.S. - Schraubendreher mit T - Handgriff 3,5 mm



1.11858 E.T.S. - Screw Length Gauge
E.T.S. - Schraubenmessgerät



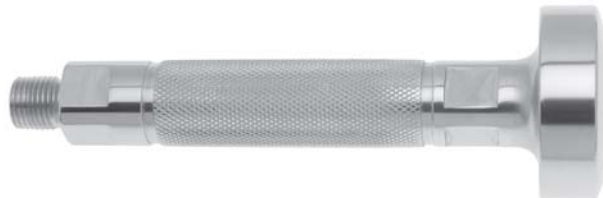
1.11870 E.T.S. - Twist Drill ø 4,0 mm, length 305 mm
E.T.S. - Bohrer ø 4,0 mm



1.11873 Guide Rod for IM Nail ø 3,0 mm, length 900 mm
Führungsdraht ø 3,0 mm Länge 900 mm



1.11882 Open End Wrench SW 17 / 14
Gabelschlüssel SW 17 / 14



1.11892 E.T.S. - Supine Drive
E.T.S. - Einschläger



1.11898 E.T.S. - Driver / Extractor Tube
E.T.S. - Extraktionsstange für Schlitzhammer



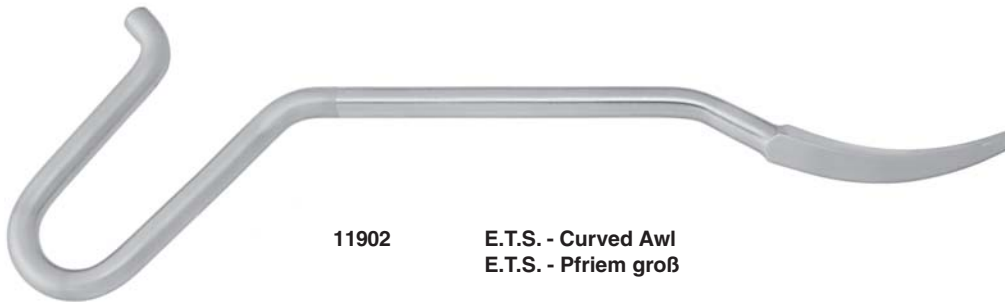
1.11900 E.T.S. - Skin Protector
E.T.S. - Gewebeschutzblech



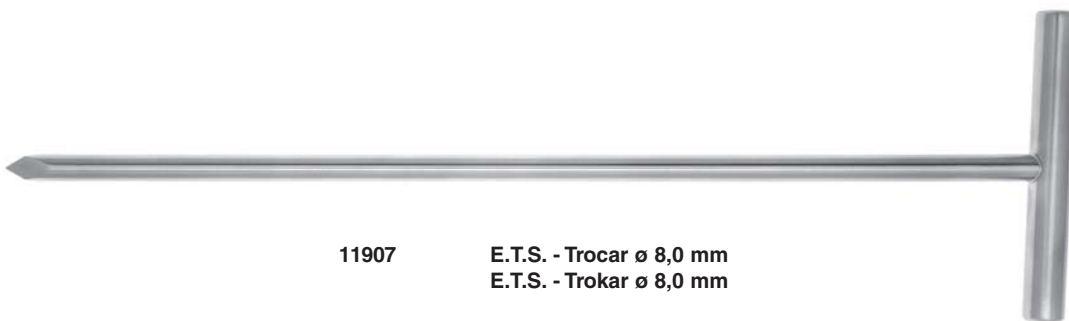
9090 E.T.S. - Reamer Guide Rod Holder (Jakobs Chuck)
E.T.S. - T - Griff mit Jakobsfutter



2322 E.T.S. - Holder
E.T.S. - T - Griff



11902 E.T.S. - Curved Awl
E.T.S. - Pfriem groß



11907 E.T.S. - Trocar \varnothing 8,0 mm
E.T.S. - Trokar \varnothing 8,0 mm



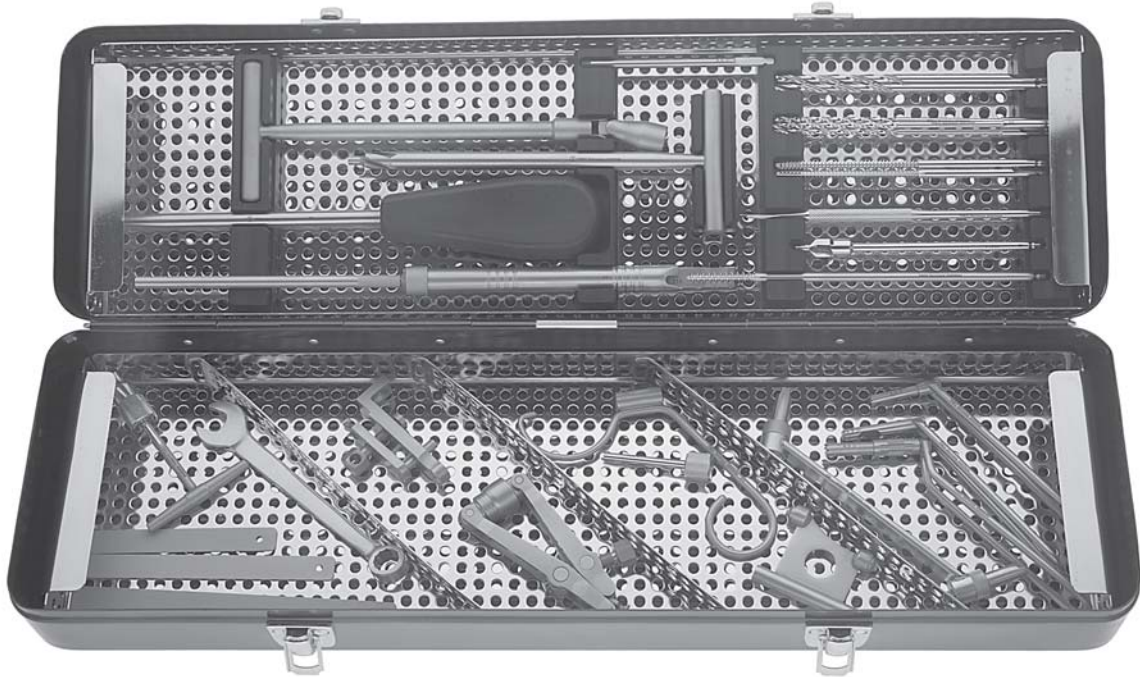
11920 E.T.S. - Slotted Hammer - width of the slot 14 mm
E.T.S. - Schlitzhammer



021300 Basic Instrumentation Set Dynamic Hip Compression Nail System

Cat. No.:	Description	Pieces	Kat. Nr.	Beschreibung	Stück
021228	E.T.S. - Targeting Device 125° blue	1	021228	E.T.S. - Zielaufsatz 125° blau	1
021230	E.T.S. - Targeting Device 130° red	1	021230	E.T.S. - Zielaufsatz 130° rot	1
021232	E.T.S. - Targeting Device 135° green	1	021232	E.T.S. - Zielaufsatz 135° grün	1
021236	E.T.S. - Stabilizer for Targeting Device with bolts	1	021236	E.T.S. - Stabilisator für Zielgerät mit Adaptionsschraube (3 teilig)	1
021238	E.T.S. - Drill Sleeve dia. 2,5 mm silver	1	021238	E.T.S. - Bohrhülse ø 2,5 mm silber	1
021240	E.T.S. - Drill Sleeve dia. 7,5 mm black	1	021240	E.T.S. - Bohrhülse ø 7,5 mm schwarz	1
021242	E.T.S. - Drill Sleeve dia. 8,0 mm green	1	021242	E.T.S. - Bohrhülse ø 8,0 mm grün	1
021243	E.T.S. - Drill Sleeve dia. 9,4 mm gold	1	021243	E.T.S. - Bohrhülse ø 9,4 mm gold	1
021244	E.T.S. - Drill Sleeve dia. 13,0 mm blue	1	021244	E.T.S. - Bohrhülse ø 13,0 mm blau	1
11910	E.T.S. - Drill Sleeve dia. 8,0 mm green (distal)	1	11910	E.T.S. - Bohrhülse für distal ø 8,0 mm grün	1
11914	E.T.S. - Drill Sleeve dia. 4,0 mm gold (distal)	1	11914	E.T.S. - Bohrhülse für distal ø 4,0 mm gelb	1
021248	E.T.S. - Sleeve Reamer dia. 12,75 mm	1	021248	E.T.S. - Gleithülsefräser ø 12,75 mm	1
021250	E.T.S. - Tap for Hip Compression Screw	1	021250	E.T.S. - Gewindeschneider für Hüftkompressionsplatte	1
021252	E.T.S. - Reamer for Hip Compression Screw	1	021252	E.T.S. - Vorbohrer für Hüftkompressionsschraube	1
021254	E.T.S. - Coupling Screw for insertion of Dynamic Hip Screw	1	021254	E.T.S. - Kupplungsschraube für Hüftkompressionsschraube	1
021256	E.T.S. - Guide Shaft for coupling	1	021256	E.T.S. - Führungsschaft für Kupplungsschraube	1
021258	E.T.S. - Wrench for insertion of Dynamic Hip Screw	1	021258	E.T.S. - Schraubendreher für Hüftkompressionsschraube	1
2316	E.T.S. - Coupling Screw for femoral Dynamic Hip Screw	1	2316	E.T.S. - Verbindungsschraube zu Entfernungs T - Schlüssel	1
2318	Wrench	1	2318	Entfernungs T - Schlüssel	1
021260	E.T.S. - Guide Pin dia. 2,5 mm length 330 mm	2	021260	E.T.S. - Führungsdraht ø 2,5 mm Länge 330 mm	2
021262	E.T.S. - Sleeve Impactor for Centering Sleeve insertion	1	021262	E.T.S. - Hülseintreiber für Zentrierhülse	1
021264	E.T.S. - Nail Extractor Bolt	1	021264	E.T.S. - Ausziehbolzen für Nagel	1
021266	E.T.S. - Screw Length Gauge	1	021266	E.T.S. - Schraubenmesslehre für Schraubenlängenbestimmung	1
021270	E.T.S. - Tapered Reamer cannulated	1	021270	E.T.S. - Konische Reibahle	1
021272	E.T.S. - Targeting Device for External Guide dia. 2,5 mm	1	021272	E.T.S. - Zielaufsatz Anteversionssicherung	1
11850	E.T.S. - Universal Socket Wrench	1	11850	E.T.S. - Kardanschlüssel SW 17	1
11852	E.T.S. - Hex Driver cannulated for dia. 5,0 mm Screws	1	11852	E.T.S. - Schraubendreher mit T - Handgriff 3,5 mm	1
11858	E.T.S. - Screw Length Gauge	1	11858	E.T.S. - Schraubenmessgerät	1
11870	E.T.S. - Twist Drill dia. 4,0 mm, length 305 mm	1	11870	E.T.S. - Bohrer ø 4,0 mm	1
11882	E.T.S. - Open End Wrench SW 17 / 19	1	11882	E.T.S. - Gabelschlüssel SW 17 / 14	1
11892	E.T.S. - Supine Driver	1	11892	E.T.S. - Einschläger	1
11898	E.T.S. - Driver / Extractor Tube	1	11898	E.T.S. - Extraktionsstange für Schlitzhammer	1
11900	E.T.S. - Skin Protector	1	11900	E.T.S. - Gewebeschutzblech	1
11902	E.T.S. - Curved Awl	1	11902	E.T.S. - Pfriem, groß	1
11907	E.T.S. - Trocar dia. 8,0 mm	1	11907	E.T.S. - Trokar ø 8,0 mm	1
11920	E.T.S. - Slotted Hammer, width of the slot 14 mm	1	11920	E.T.S. - Schlitzhammer	1
2322	E.T.S. - Holder	1	2322	E.T.S. - T - Griff	1

Basic Instrument Set for Screws and Plates



M 03000 Basic Instrument Set for Screws and Plates

for 4.5 mm and 6.5 mm diameter screws

M 01110 Aluminium Case Red

M 03010 Upper Tray

M 04020 Lower Case

9020	Drill Bit, \varnothing 3.2 mm, with end to fit quick coupling of small air drill	3 ea.
9026	Drill Bit, \varnothing 4.5 mm, with end to fit quick coupling of small air drill	2 ea.
9104	Malleolar Countersink, \varnothing 3.2 mm tip, for malleolar screws	
9092	Tap Handle for \varnothing 4.5 mm and \varnothing 6.5 mm taps and Countersink	
9078	Tap, \varnothing 4.5 mm	2 ea.
9079	Tap, \varnothing 6.5 mm	
9256	Tap Sleeve, \varnothing 3.5 mm (also for use as \varnothing 3.2 mm drill guide)	
9280	Insert Drill Sleeve, 4.5 mm / 3.2 mm, 58 mm length	
9260	Tap Sleeve, \varnothing 4.5 mm (also for use as \varnothing 4.5 mm drill guide)	
9258	Pointed Drill Guide	
9144	Hexagonal Screwdriver, width across flats 3.5 mm	
9176	Hexagonal Screwdriver for quick coupling, width across flats 3.5 mm	
9114	Depth Gauge for 4.5 mm and 6.5 mm screws	
9116	Sharp Hook	
9430	Drill Sleeve for tension device	
9262	Drill Sleeve for plates, 40 mm length, for round-hole plates	
9436	Tension Device, 8 mm span	
9440	Articulated Tension Device with gauge, 20 mm span	
9432	Socket Wrench, width across flats 11 mm	
9438	Combination Wrench, width across flats 11 mm	
9272	Neutral and Load Drill Guide, \varnothing 4.5 mm	
3070	Bending Template, 5 holes	
3071	Bending Template, 7 holes	
3072	Bending Template, 9 holes	
9106	Countersink \varnothing 4.5 mm	

Standard Contents:

Instruments for 4.5 mm Cortex and 6.5 mm Cancellous Bone Screws



- 9020** Drill Bits with end to fit quick coupling \varnothing 3.2 mm
- 9026** Drill Bits with end to fit quick coupling \varnothing 4.5 mm



- 9079** Tap, \varnothing 6.5 mm



- 9078** Tap, \varnothing 4.5 mm



- 9256** Tap Sleeve, \varnothing 3.5 mm
also for use as \varnothing 3.2 mm Drill Guide



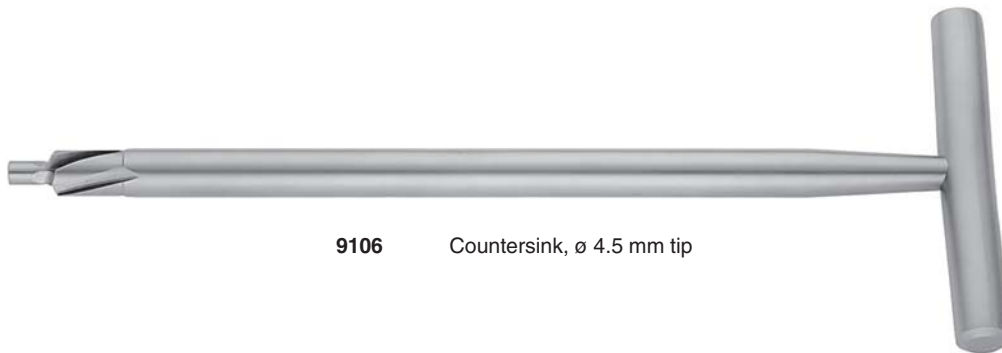
- 9260** Tap Sleeve \varnothing 4.5 mm



- 9262** Drill Sleeve for Round Hole Plates



9092 Tap Handle



9106 Countersink, \varnothing 4.5 mm tip



9272 Neutral and Load Drill Guide \varnothing 3.2 mm



9280 Insert Drill Sleeve 4.5 mm / 3.2 mm
for 3.2 mm \varnothing Drill Bit



9258 Pointed Drill Guide



9432 Socket Wrench, width across flats 11 mm



9104 Malleolar Countersink



9144 Hexagonal Screwdriver,
width across flats 3.5 mm



9176 Hexagonal Screwdriver for quick coupling width across flats 3.5 mm



9430 Drill Sleeve for Tension Device



9438 Combination Wrench width across flats 11 mm



9114 Depth Gauge for 4.5 mm and 6.5 mm ø screws



9116 Sharp Hook



4184 Screw Forceps



3070 Bending Template 5 holes
3071 Bending Template 7 holes
3072 Bending Template 9 holes



9436 8 mm screw-type
Compression Device



9440 Articulated Tension Device with Indicator, span 20 mm
May also be used for distraction of standard and small plates



9416 Bending Iron for Standard Plates beak opening 4 and 6 mm



9442 Pin Wrench for Tension Device and Distractor



9420 Bending Device to bend straight and angled plates

Screw Set



- M 03060** Screw Set
- M 01110** Aluminium Case Red
- M 03070** Tray (aluminium)
- M 03080** Tray (plastic)

	4.5 mm Cortex Screws	pieces
3200-3250	14 mm 7 units: 16 / 18 / 20 / 22 / 24 / 26 / 28 mm, 8 units each: 30 mm, 16 units: 32 / 34 / 36 / 38 / 40 / 44 mm 12 units each: 42 / 46 / 48 / 52 / 56 mm, 6 units each: 60 mm, 5 units: 64 / 70 mm, 4 units each	194
	4.5 mm Malleolar Screws	
3352-3370	25 / 30 / 35 / 40 / 45 / 50 / 55 / 60 mm, 2 units each 65 / 70 mm, 3 units each	22
	6.5 mm Cancellous Bone Screws, 16 mm thread length	
3382-3414	30 / 35 / 40 / 45 / 50 / 55 / 60, 2 units each 65 / 70 / 75 / 80 / 85 / 90 / 95 / 100 / 105 / 110 mm, 3 units each:	44
	6.5 mm Cancellous Bone Screws, 32 mm thread length	
3436-3454	45 / 50 / 55 / 60 mm, 4 units each: 65 / 70 / 80 / 90 mm, 3 units each	28
	6.5 mm Cancellous Bone Screws, fully threaded	
3480	25 mm, 6 units	6
3482-3486	30 / 35 / 40 mm, 4 units each:	12
4184	Screw Forceps	1
3522	Washer for 6.5 mm Cancellous Bone Screw	6

Bone Screws

Large Screws with large hexagonal flats 3.5 mm



Washers
3520 11 mm
3522 13 mm

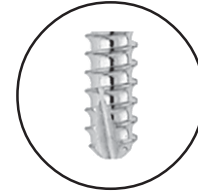


SW 8 mm
3524
 Nut for 4.5 mm
 Cortex Screws



Dia of thread	4.5 mm	4.5 mm	4.5 mm	6.5 mm	6.5 mm	6.5 mm
Dia of core	3.0 mm	3.1 mm	3.0 mm	3.0 mm	3.0 mm	3.0 mm
Dia of shaft		4.5 mm	3.0 mm	4.5 mm	4.5 mm	
Dia of head	8.0 mm	8.0 mm	8.0 mm	8.0 mm	8.0 mm	8.0 mm
Length						
14 mm	3200					
16 mm	3202					
18 mm	3204					
20 mm	3206		3350			
22 mm	3208	3280				
24 mm	3210	3282				
25 mm			3352			3480
26 mm	3212	3284				
28 mm	3214	3286				
30 mm	3216	3288	3354	3382		3482
32 mm	3218	3290				
34 mm	3220	3292				
35 mm			3356	3384		3484
36 mm	3222	3294				
38 mm	3224	3296				
40 mm	3226	3298	3358	3386	3434	3486
42 mm	3228	3300				
44 mm	3230	3302				
45 mm			3360	3388	3436	3488
46 mm	3232	3304				
48 mm	3234	3306				
50 mm	3236	3308	3362	3390	3438	3490
52 mm	3238	3310				
54 mm	3240	3312				
55 mm			3364	3392	3440	3492
56 mm	3242	3314				
58 mm	3244	3316				
60 mm	3246	3318	3366	3394	3442	3494
65 mm	3248	3320	3368	3396	3444	3496
70 mm	3250	3322	3370	3398	3446	3498
75 mm	3254	3324	3371	3400	3448	3500
80 mm	3260	3326	3372	3402	3450	3502
85 mm	3262	3328		3404	3452	3504
90 mm	3264	3330		3406	3454	3506
95 mm	3266	3332		3408	3456	3508
100 mm	3268	3334		3410	3458	3510
105 mm	3269	3336		3412	3460	3512
110 mm	3270	3338		3414	3462	3514
115 mm	3271			3415	3464	3516
120 mm	3272			3416	3466	3518

Bone Screws, self tapping



self cutting screws, tapping not needed

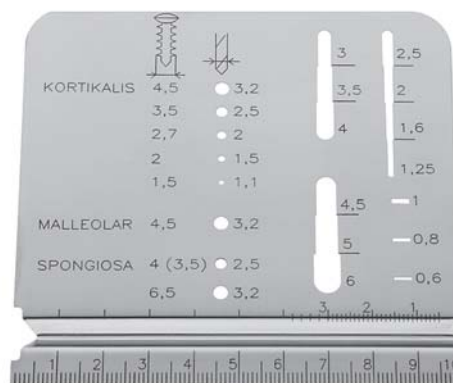
Dia of thread	4.5 mm	4.5 mm
Dia of core	3.0 mm	
Dia of shaft		4.5 mm
Dia of head	8.0 mm	8.0 mm
Length		
14 mm	31200	
16 mm	31202	
18 mm	31204	
20 mm	31206	
22 mm	31208	31280
24 mm	31210	31282
25 mm		
26 mm	31212	31284
28 mm	31214	31286
30 mm	31216	31288
32 mm	31218	31290
34 mm	31220	31292
35 mm		
36 mm	31222	31294
38 mm	31224	31296
40 mm	31226	31298
42 mm	31228	31300
44 mm	31230	31302
45 mm		
46 mm	31232	31304
48 mm	31234	31306
50 mm	31236	31308
52 mm	31238	31310
54 mm	31240	31312
55 mm		
56 mm	31242	31314
58 mm	31244	31316
60 mm	31246	31318
65 mm	31248	31320
70 mm	31250	31322
75 mm	31252	31324
80 mm	31254	31326
85 mm	31256	31328
90 mm	31258	31330
95 mm	31260	31332
100 mm	31262	31334
105 mm	31264	31336
110 mm	31266	31338



M 03210 Alu Case (without racks)



- M 03100** Rack for \varnothing 1.5 mm screws
- M 03110** Rack for \varnothing 2.0 mm screws
- M 03120** Rack for \varnothing 2.7 mm screws
- M 03130** Rack for \varnothing 3.5 mm 1.25 pitch screws
- M 03140** Rack for \varnothing 3.5 mm 1.75 pitch screws
- M 03150** Rack for \varnothing 4.0 mm screws (half threaded)
- M 03160** Rack for \varnothing 4.0 mm screws (full threaded)
- M 03170** Rack for \varnothing 4.5 mm screws



3530 Measuring Gauge for Screws

Plate Set



M 03200 Plate Set Broad and Narrow Compression Plates

for 4.5 mm and 6.5 mm diameter screws

M 03210 Aluminium Case

M 03220 Trays for plates (3)

3674- 3680	Semi-tubular Plates 2 ea: with 4, 5 and 6 holes 1 ea: with 7 holes	7 units
3604- 3620	Narrow Dynamic Compression Plates 2 ea: with 4, 5, 7, 8 and 9 holes 4 ea: with 6 holes 1 ea: with 10 and 12 holes	16 units
3640- 3656	Broad Dynamic Compression Plates 2 ea: with 6, 7 and 8 holes 1 ea: with 9, 10, 12 and 14 holes	10 units
3692- 3694	Spoon Plates 1 ea: with 5 and 6 holes in shaft	2 units
3702- 3708 3714 3720 3722	T-Plates 1 ea: with 4, 6 and 8 holes in shaft T-Buttress Plate, 4 holes in shaft L-Buttress Plate, 4 holes in shaft, angled left L-Buttress Plate, 4 holes in shaft, angled right	3 units
4184	Screw Forceps	

Narrow Compression Plates



Profile: 12 x 3.8 mm
Distance between holes: 16 and 25 mm

	Length	Holes		Length	Holes
3600	39 mm	2	3616	167 mm	10
3602	55 mm	3	3618	183 mm	11
3604	71 mm	4	3620	199 mm	12
3606	87 mm	5	3622	215 mm	13
3608	103 mm	6	3624	231 mm	14
3610	119 mm	7	3626	247 mm	15
3612	135 mm	8	3628	263 mm	16
3614	151 mm	9			

Broad Compression Plates



Profile: 16 x 4.8 mm
Distance between holes: 16 and 25 mm

	Length	Holes		Length	Holes
3640	103 mm	6	3654	215 mm	13
3642	119 mm	7	3656	231 mm	14
3644	135 mm	8	3658	247 mm	15
3646	151 mm	9	3660	263 mm	16
3648	167 mm	10	3662	279 mm	17
3650	183 mm	11	3664	295 mm	18
3652	199 mm	12			

Semi-Tubular Plates



Profile: 12 x 1 mm
Distance between holes: 16 and 26 mm

	Length	Holes		Length	Holes
3670	39 mm	2	3680	119 mm	7
3672	55 mm	3	3682	135 mm	8
3674	71 mm	4	3684	151 mm	9
3676	87 mm	5	3686	167 mm	10
3678	103 mm	6	3688	183 mm	11
			3690	199 mm	12



Spoon-Plates
 Shaft with V-profile for fixation
 edge of tibia on frontal

3692 Shaft with 5 holes, 100 mm long
3694 Shaft with 6 holes, 120 mm long



T-Plates

3700 Shaft with 3 holes, 68 mm long
3702 Shaft with 4 holes, 84 mm long
3704 Shaft with 5 holes, 100 mm long
3706 Shaft with 6 holes, 116 mm long
3708 Shaft with 8 holes, 148 mm long



T-Buttress

3714 4 holes
3716 5 holes
3718 6 holes



T-Buttress

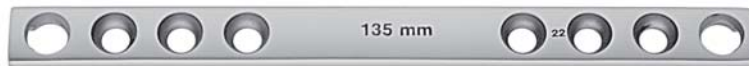
3720 4 holes left
3722 4 holes right
3724 6 holes left
3726 6 holes right
3728 8 holes left
3730 8 holes right

Straight Plates



Broad Lengthening Plates with 8 holes

	Amount of lengthening	Length
3750	30 mm	135 mm
3752	40 mm	145 mm
3754	50 mm	155 mm
3756	60 mm	165 mm



Narrow Lengthening Plates with 8 holes

	Amount of lengthening	Length
3760	30 mm	135 mm
3762	40 mm	145 mm
3764	50 mm	155 mm
3766	60 mm	165 mm
3768	70 mm	175 mm
3770	80 mm	185 mm



Broad Lengthening Plates with 10 holes

	Amount of lengthening	Length
3772	50 mm	179 mm
3774	60 mm	189 mm
3776	70 mm	199 mm
3778	80 mm	209 mm
3779	90 mm	219 mm
3780	100 mm	229 mm
3782	110 mm	239 mm
3784	120 mm	249 mm

Special Plates



Plates for Distal Femur

For use with 4.5 mm Cortex Screws

Condylar Buttress Plates

Primary Indication: As a buttress for femoral condyles with multiple fragments

3800	158 mm	7 left
3802	158 mm	7 right
3804	190 mm	9 left
3806	190 mm	9 right
3808	221 mm	11 left
3810	221 mm	11 right
3812	253 mm	13 left
3814	253 mm	13 right
3816	285 mm	15 left
3818	285 mm	15 right



Cobra Head Plates

Primary Indication: Hip Arthrodesis

	Length	Holes in shaft
3820	170 mm	8
3822	186 mm	9
3824	202 mm	10
3826	218 mm	11

Lateral Tibia Plate



3830	5 Holes	right
3831	5 Holes	left
3832	7 Holes	right
3833	7 Holes	left
3834	9 Holes	right
3835	9 Holes	left
3836	11 Holes	right
3837	11 Holes	left
3838	13 Holes	right
3839	13 Holes	left

Anatomical Bone Plates



Distal Tibia Plate
width of shaft: 16 mm
width of head: 22 mm

3850	122 mm	7 right
3852	122 mm	7 left
3854	158 mm	9 right
3856	158 mm	9 left
3858	194 mm	11 right
3860	194 mm	11 left
3862	230 mm	13 right
3866	230 mm	13 left



Proximal Tibia Plates
width of shaft: 16 mm
width of head: 22 mm

3870	122 mm	7 right
3872	122 mm	7 left
3874	158 mm	9 right
3876	158 mm	9 left
3878	194 mm	11 right
3880	194 mm	11 left
3882	230 mm	13 right
3884	230 mm	13 left

Anatomical Bone Plates



Distal Femur Plate
width of shaft: 16 mm
width of head: 22 mm

3886	122 mm	7 right
3888	122 mm	7 left
3890	158 mm	9 right
3892	158 mm	9 left
3894	194 mm	11 right
3896	194 mm	11 left
3898	230 mm	13 right
3900	230 mm	13 left



Distal Tibia Plates for Fibulae
width of shaft: 16 mm
width of head: 22 mm

3902	122 mm	7 right
3904	122 mm	7 left
3906	158 mm	9 right
3908	158 mm	9 left
3910	194 mm	11 right
3912	194 mm	11 left
3914	230 mm	13 right
3916	230 mm	13 left

Kerboul Plates



Tibia Plates
(Left and Right Plates)

3930	81 mm	7 right
3932	81 mm	7 left
3934	101 mm	9 right
3936	101 mm	9 left
3938	121 mm	11 right
3940	121 mm	11 left



Radius Plates

3944	2 Holes
3946	3 Holes
3948	4 Holes



Proximal Humerus Plates
Screw to be used: \varnothing 3.5 mm and 6.5 mm

3960	3 Holes	84 mm
3962	5 Holes	124 mm
3964	8 Holes	183 mm



Humeral Epicondylar Plates
(Left and Right Plates)
Screw to be used: \varnothing 3.5 mm and 4.0 mm

3968	100 mm	7 right
3970	100 mm	7 left
3972	140 mm	9 right
3974	140 mm	9 left
3976	160 mm	11 right
3978	160 mm	11 left
3980	160 mm	13 right
3982	160 mm	13 left

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Bone Screws

Large Screws with large hexagonal flats 3.5 mm



Washers
35200 11 mm
3522 13 mm



SW 8 mm
35240
 Nut for 4.5 mm
 Cortex Screws



Dia of thread	4.5 mm	4.5 mm	4.5 mm	6.5 mm	6.5 mm	6.5 mm
Dia of core	3.0 mm	3.1 mm	3.0 mm	3.0 mm	3.0 mm	3.0 mm
Dia of shaft		4.5 mm	3.0 mm	4.5 mm	4.5 mm	
Dia of head	8.0 mm	8.0 mm	8.0 mm	8.0 mm	8.0 mm	8.0 mm
Length						
14 mm	320000					
16 mm	320200					
18 mm	320400					
20 mm	320600		335000			
22 mm	320800	328000				
24 mm	321000	328200				
25 mm			335200			348000
26 mm	321200	328400				
28 mm	321400	328600				
30 mm	321600	328800	335400	338200		348200
32 mm	321800	329000				
34 mm	322000	329200				
35 mm			335600	338400		348400
36 mm	322200	329400				
38 mm	322400	329600				
40 mm	322600	329800	335800	338600	343400	348600
42 mm	322800	330000				
44 mm	323000	330200				
45 mm			336000	338800	343600	348800
46 mm	323200	330400				
48 mm	323400	330600				
50 mm	323600	330800	336200	339000	343800	349000
52 mm	323800	331000				
54 mm	324000	331200				
55 mm			336400	339200	344000	349200
56 mm	324200	331400				
58 mm	324400	331600				
60 mm	324600	331800	336600	339400	344200	349400
65 mm	324800	332000	336800	339600	344400	349600
70 mm	325000	332200	337000	339800	344600	349800
75 mm	325400	332400	337100	340000	344800	350000
80 mm	326000	332600	337200	340200	345000	350200
85 mm	326200	332800		340400	345200	350400
90 mm	326400	333000		340600	345400	350600
95 mm	326600	333200		340800	345600	350800
100 mm	326800	333400		341000	345800	351000
105 mm	326900	333600		341200	346000	351200
110 mm	327000	333800		341400	346200	351400
115 mm	327100			341500	346400	351600
120 mm	327200			341600	346600	351800

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Spoon-Plates
 Shaft with V-profile for fixation
 edge of tibia on frontal
36920 Shaft with 5 holes, 100 mm long
36940 Shaft with 6 holes, 120 mm long



T-Plates
37000 Shaft with 3 holes, 68 mm long
37020 Shaft with 4 holes, 84 mm long
37040 Shaft with 5 holes, 100 mm long
37060 Shaft with 6 holes, 116 mm long
37080 Shaft with 8 holes, 148 mm long



T-Buttress
37140 4 holes
37160 5 holes
37180 6 holes



T-Buttress
37200 4 holes left
37220 4 holes right
37240 6 holes left
37260 6 holes right
37280 8 holes left
37300 8 holes right

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



**Angle-stable plate for the proximal humerus
Winkelstabile Proximale Oberarmplatte**

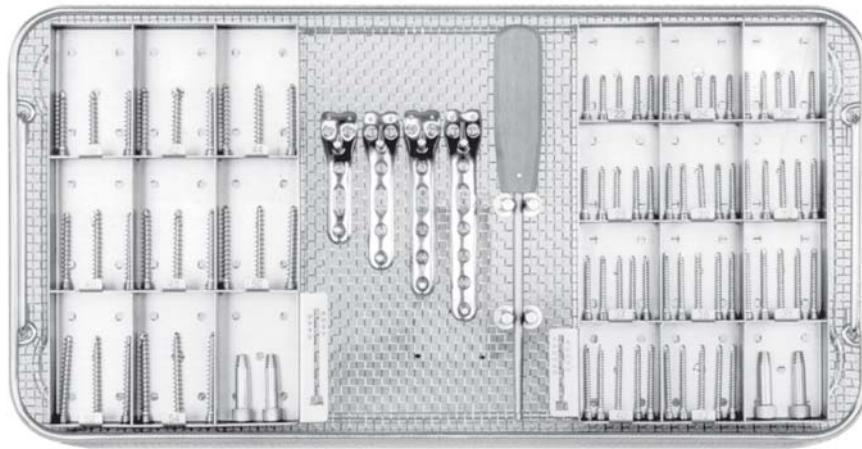
- *Product Description and OR-Technique***
- *Produktbeschreibung und OP-Technik***

Advantages

- High stability of the replaced head fragments.
- no displacement of the cancellous screws.
- no impinging of the acromiion, because hidden screw heads.
- 2 mm length-difference of the cancellous screw.
- simply handling with drill hole guide for exact 90° - angulation of the cancellous screws avoid extensive exposure and soft tissue dissection.

Vorteile

- Keine Sekundärabkippung der/des Kopffragment(s).
- keine Schraubenauslockerung mitimplantatbedingten Beschwerden.
- kein subacromales Impingement, da versenkte Schraubenköpfe.
- Spongiosaschrauben in 2 mm - Längensprung.
- einfache Handhabung durch Bohrhülse.



M 326 Set complete
Set komplett

INSTRUMENTS INSTRUMENTE		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
Screwdriver hex. 2,5 mm Schraubendreher hex. 2,5 mm	9144	1
Drill Sleeve Bohrbüchsen	9081	2
Drill \varnothing 3.2 mm AO shaft Spiralbohrer \varnothing 3,2 mm AO Schaft	9020	1
Kirschner Wire \varnothing 1.8 mm Kirschner Draht	7262	5
Depth Gauge Schrauben-Längenmesslehre	9114	1
Basket Sieb	153075	1

IMPLANTS Stainless Steel IMPLANTATE Stainless Steel		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
Plate, 5 holes Platte, 5 Loch	31000	2
Plate, 6 holes Platte, 6 Loch	31002	2
Plate, 7 holes Platte, 7 Loch	31004	2
Plate, 8 holes Platte, 8 Loch	31006	2



Angle-stable plate for the proximal humerus Winkelstabile Proximale Oberarmplatte

Stainless Steel		
Description Beschreibung	Cat. No. Art. Nr.	Length Länge
Plate, 5 holes Platte, 5 Loch	31000	73,5
Plate, 6 holes Platte, 6 Loch	31002	89,5
Plate, 7 holes Platte, 7 Loch	31004	105,5
Plate, 8 holes Platte, 8 Loch	31006	121,5



Stainless Steel	
Screws \varnothing 6.0 mm (for humeral locking) Schrauben \varnothing 6,0 mm (für Humeruskopfverschraubung)	
Description Beschreibung	Cat. No. Art. Nr.
40 mm Length / Länge	31040
42 mm Length / Länge	31042
44 mm Length / Länge	31044
46 mm Length / Länge	31046
48 mm Length / Länge	31048
50 mm Length / Länge	31050
52 mm Length / Länge	31052
54 mm Length / Länge	31054
56 mm Length / Länge	31056

Stainless Steel	
Screws \varnothing 4.5 mm (for humeral locking) Schrauben \varnothing 6,0 mm (für Schaftverschraubung)	
Description Beschreibung	Cat. No. Art. Nr.
22 mm Length / Länge	31080
24 mm Length / Länge	31082
26 mm Length / Länge	31084
28 mm Length / Länge	31086
30 mm Length / Länge	31088
32 mm Length / Länge	31090
34 mm Length / Länge	31092
36 mm Length / Länge	31094
38 mm Length / Länge	31096
40 mm Length / Länge	31098
42 mm Length / Länge	31100





9144 for Hexagonal Head 3.5 mm, 20 cm length
Schraubendreher Kopf 3,5 mm, 20 cm Länge



7262 Kirschner wire \varnothing 1.8 mm, 150 mm long
Kirschnerdraht \varnothing 1,8 mm, 150 lang



9114 Depth Gauge for Large Screws
Tiefenmesser für lange Schrauben



9081 Drill guide (with connection for plate thread)
Bohrbüchse



4184 Screw Forceps
Schraubenpinzette



9020 Drill AO shaft \varnothing 3.2 mm, 145 mm long
Bohrer mit AO Schaft \varnothing 3,2 mm, 145 mm lang

1. Introduction

A safe implant anchoring in the osteoporotic bone and the risk of an avascular necrosis of the humeral head are essential problems of treatment proximal humerus fractures.

Minimal osteosyntheses only lead to conditional exercise-stable relations and require an initial immobilization or restricted therapeutic exercises as an after-treatment.

The osteosynthesis with the conventional upper arm T-plate of 4.5 mm has never met the stability expectations and does not seldom lead to necroses of the humeral head in case of an extensive opening of the fracture zone and a fragment manipulation.

The function after a primary replacement of the humerus head in older patients is in general strongly limited, whereas a stable fixation and healing of the tubercula in that fracture situation is problematic.

According to studies, the reconstruction of multiple fragment fractures at a stable osteosynthesis is considered superior to the prosthetic replacement regarding its functional results.

By an angle-stable screwing anchorage in the plate bearing, by a limited compression effect and a diverging screw insertion, a high primary stability is achieved with the angle-stable proximal upper arm plate, which enables an early functional treatment immediately after the operation.

As a fast orientation for the daily routine, implants and operation techniques are described now.

1. Einleitung

Sichere Implantatverankerung im osteoporotischen Knochen und das Risiko der avaskulären Humerkopfnekrose sind die wesentlichen Probleme bei der Versorgung proximaler Humerusfrakturen.

Minimalosteosynthesen führen nur zu bedingt übungstabilen Verhältnissen und bedürfen einer initialen Ruhigstellung bzw. einer zurückhaltenden krankengymnastischen Nachbehandlung. Die Rehabilitation ist dadurch verzögert.

Die Osteosynthese mit der herkömmlichen 4,5-AO-T-Platte hat die Stabilitätserwartungen nie erfüllt und führt bei extensiver Frakturfreilegung und Fragmentmanipulation nicht selten zu Humerkopfnekrosen.

Die Funktion nach primären Humerkopfersatz bei älteren Patienten ist in der Regel stark eingeschränkt, wobei die sichere Fixierung und Einheilung der Tuberkula in der Fraktionsituation problematisch sind.

Nach Studienlage ist die Rekonstruktion von Mehrfragmentfrakturen bei stabiler Osteosynthese dem prothetischen Ersatz in den funktionellen Ergebnissen überlegen.

Durch winkelstabile Schraubenverankerung im Plattenlager, limitierten Kompressionseffekt und divergierenden Schraubenverlauf wird bei der Winkelstabilen Proximalen Oberarm Platte eine hohe primäre Stabilität erreicht, die unmittelbar postoperativ eine frühfunktionelle Nachbehandlung ermöglicht.

Im Folgenden werden Implantat und Operationstechnik zur schnellen Orientierung im Operationsalltag vorgestellt.



2. Indications

- dislocated and instable proximal humerus fractures
 - 2-, 3- and 4 fragment fractures
 - reconstructable calotte fractures
 - pathological fractures
- Pseudarthroses
- Osteotomies

2. Indikationen

- dislozierte und instabile proximale Humerusfrakturen
 - 2., 3. und 4-Fragmentfrakturen
 - rekonstruierbare Kalottenfrakturen
 - pathologische Frakturen
- Pseudarthrosen
- Osteotomien

3. Positioning

- „Beach chair“ position
- Supine position with slightly elevated trunk on the edge of OR table
- An antero-posterior X-ray also in the axial course of ray has to be possible

3. Lagerung

- „Beach chair“ - Lagerung
- Rückenlagerung mit leicht erhöhtem Oberkörper am Rande der Operationstisches
- Die Durchleuchtung im a.p.- und im axialen Strahlengang muss möglich sein



Supine position on the edge of the OR table
Rückenlagerung am Rande des OP-Tisches

Picture 1
Abb.



Picture 2
Abb.

4. Operation Techniques

Deltoid - pectoral access

The proximal humerus is illustrated by a blunt mobilization of the deltoid muscle with an abducted arm of 70°. The fascia clavipectoralis is not opened in addition.

The reduction of the subcapital fracture is indirectly carried out with the arm abducted at 60° - 70° and with the elbow joint flexed at 90° by an axial traction and pressure contrary to the dislocation directions.

The reduction position achieved is maintained by a 2nd assistant until the plate is safely fixed (picture 2).

A wrong position of the upper arm head in 3-fragment fractures can be compensated by rotation and, if necessary, by help of a Kirschner wire functioning as a joy-stick

Dislocated tubercula are reduced and, if necessary, temporarily fixed by a Kirschner wire.

4. Operationstechnik

Deltoideo - pectoraler Zugang

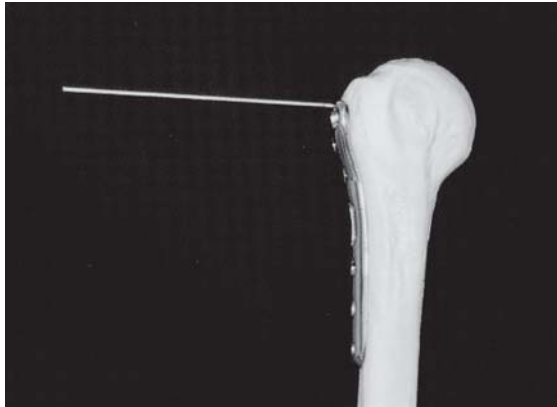
Der proximale Humerus wird durch stumpfe Mobilisierung des M. deltoideus bei 70° abduziertem Arm dargestellt. Die Fascia clavipectoralis wird nicht zusätzlich eröffnet.

Die Reposition der subcapitalen Fraktur erfolgt indirekt bei 60° - 70° abduziertem Arm und im Ellenbogengelenk 90° gebeugten Arm durch axialen Zug und Druck entgegen den Dislokationsrichtungen.

Das Repositionsergebnis wird bis zur sicheren Plattenfixierung durch den 2. Assistenten gehalten (Abb. 2)

Ein Drehfehler des Oberarmkopfes bei 3-Fragmentfrakturen wird durch Rotation und ggf. mit Hilfe eines Kirschner Drahtes als Joystick ausgeglichen.

Dislozierte Tuberkula werden reponiert und ggf. mit Kirschner Drähten temporär fixiert.



Picture 3 + 4
Abb.

Angle-stable proximal humerus plate with target wire fixed to an artificial bone.

Winkelstabile Proximale Oberarm-Platte mit Zieldraht am Kunstknochen fixiert.

The angle-stable proximale humerus plate is placed at the humerus head and shaft and it is fixed with an 1.8 mm Kirschner target wire over the hole at the cranial plate end.

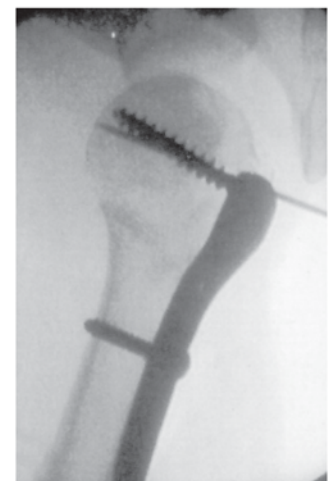
The target wire should be placed into the rotary centre from the humerus head under x-ray control.

Afterwards a 4.5 mm corticalis screw is inserted into the gliding hole at the plate shaft.

Die winkelstabile Proximale Oberarmplatte wird lateral am Humeruskopf und -schaft angelegt und mit einem 1,8 mm Kirschner Zieldraht über das Loch am cranialen Plattende fixiert.

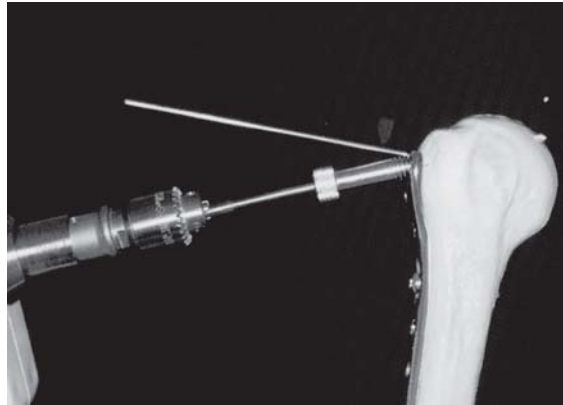
Unter Bildwandlerkontrolle soll der Zieldraht im Drehzentrum des Humeruskopfes liegen.

Anschliessend wird das Gleitloch am langen Plattenschenkel mit einer 4,5 mm Kortikalisschraube besetzt.



Picture 5, 6, 7
Abb.

Position of the target wire through the rotary centre of the humerus head
Verlauf des Zieldrahtes durch das Drehzentrum des Humeruskopfes



Picture 8 + 9
Abb.

Drilling process with the angle-stable, turned-in target drill sleeve at the model and in situ.

Bohrvorgang mit der winkelstabil eingedrehten Zielbohrbuchse am Modell und in situ.



All other holes are drilled through the target drill sleeve which is angle-stably screwed in

The length of the drill channel is determined either with the special measuring meter above the turned in target drill sleeve or with the Depth Gauge after removing the target drill sleeve.

6.0 mm cancellous screws are inserted into the humerus head and 4.5 mm corticalis screws into shaft.

The greater tubercle fragment is situated either safely under the transverse plate shaft or is fixed by strong, not resorbable tension banding sutures.

The lesser tubercle is also fixed separately.

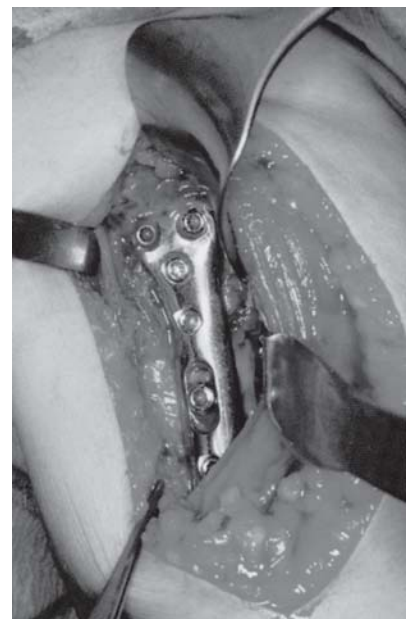
Alle übrigen Schraubenlöcher werden über die winkelstabil eingeschraubte Zielbohrbuchse gebohrt.

Die Bohrkanallänge wird entweder mit dem Spezial-Längenmesser über die eingedrehte Ziel-Bohrbuchse oder nach Entfernen der Zielbohrbuchse mit dem Längenmesslehre ermittelt.

In den Humeruskopf werden 6,0 mm Spongiosaschrauben und am Schaft 4,5 mm Kortikalisschrauben eingedreht.

Das Tuberkulum majus Fragment liegt entweder sicher unter dem queren Plattenschenkel oder wird z.B. mit kräftigen, nicht-resorbierbaren Zuggurtungsnahten fixiert.

Das Tuberkulum minus wird ebenfalls gesondert fixiert.



Picture 10
Abb.

Angle-stable proximal humerus plate in situ after finishing the osteosynthesis.

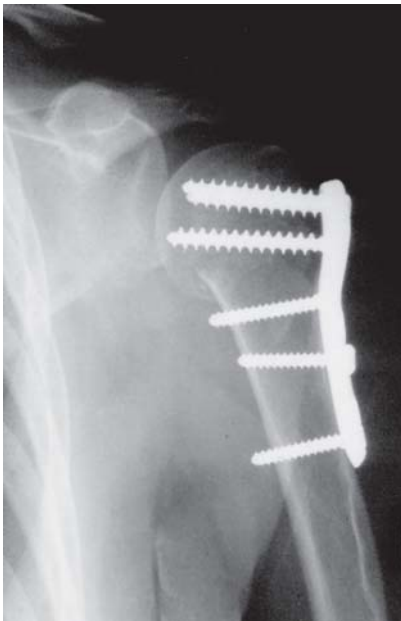
Winkelstabile Proximale Oberarm-Platte in situ nach Abschluss der Osteosynthese.

5. After-Treatment

Depending on the secure fixation of the tubercle you may usually start with active and passive therapeutic exercises on the first day after the operation without restrictions in movement. An immobilization is not required.

5. Nachbehandlung

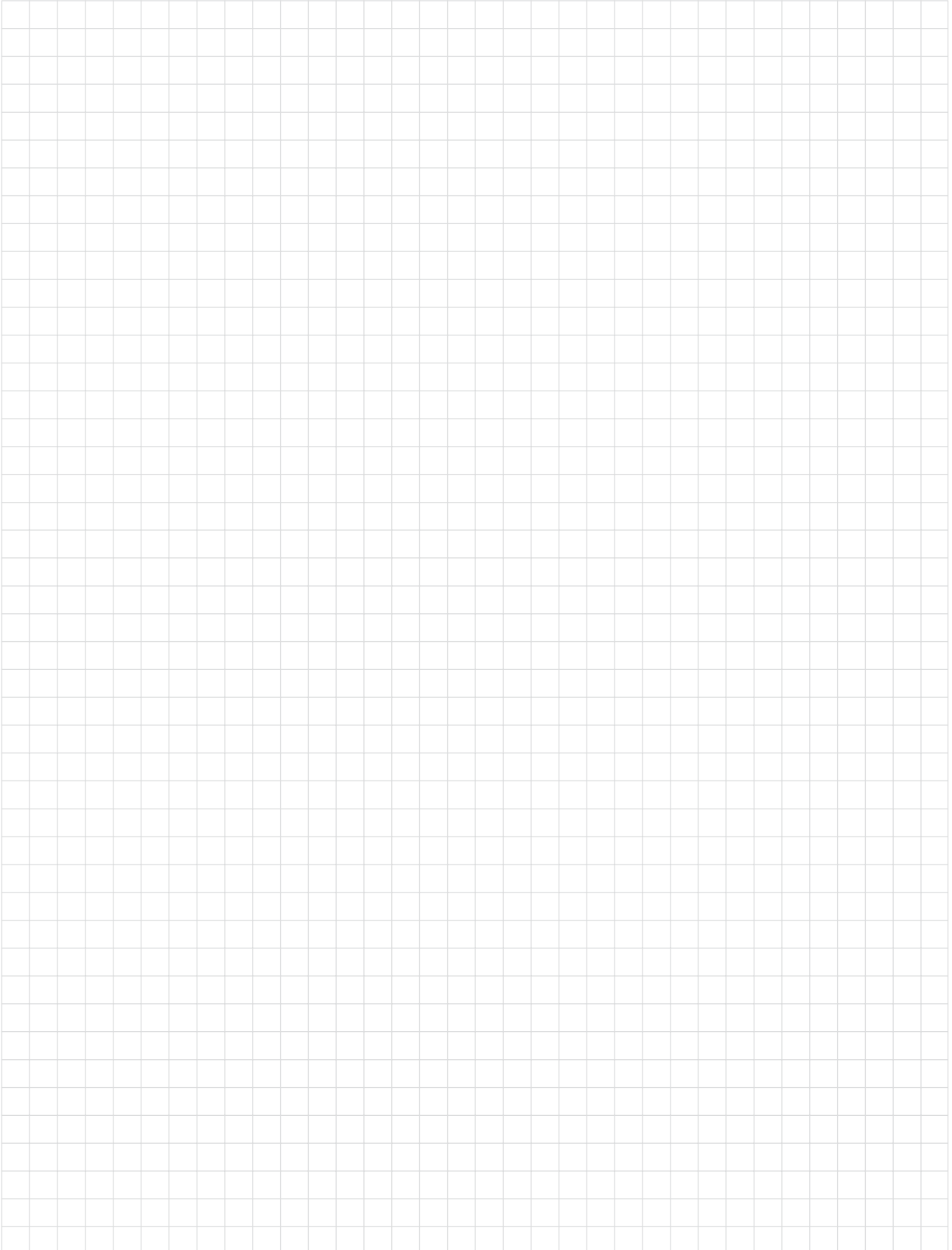
In Abhängigkeit von der sicheren Fixierung der Tuberkula kann in der Regel am ersten postoperativen Tag die aktive und passive krankengymnastische Beübung ohne Einschränkung des Bewegungsausmaßes begonnen werden. Eine Ruhigstellung ist nicht erforderlich.



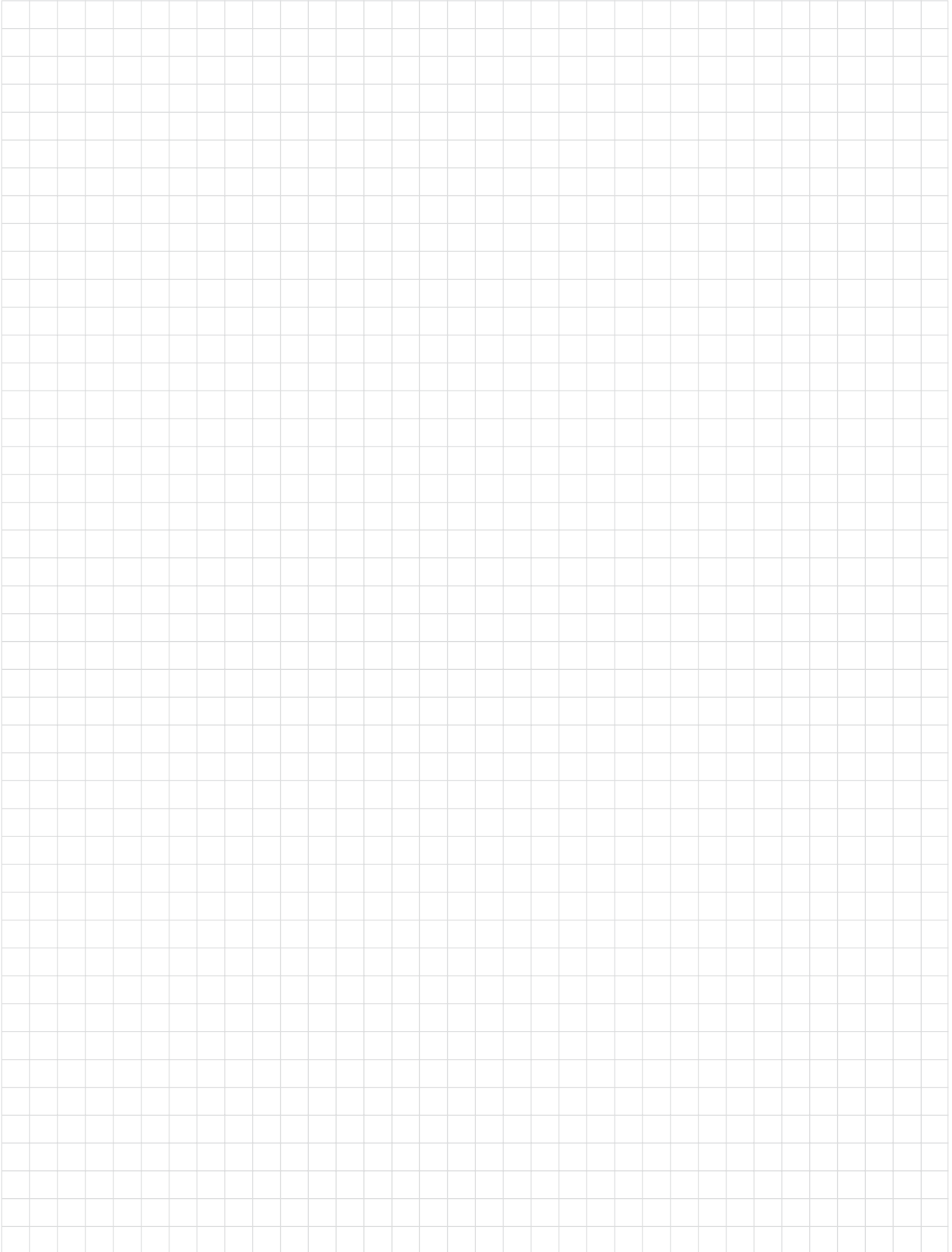
X-ray check
Röntgenkontrolle



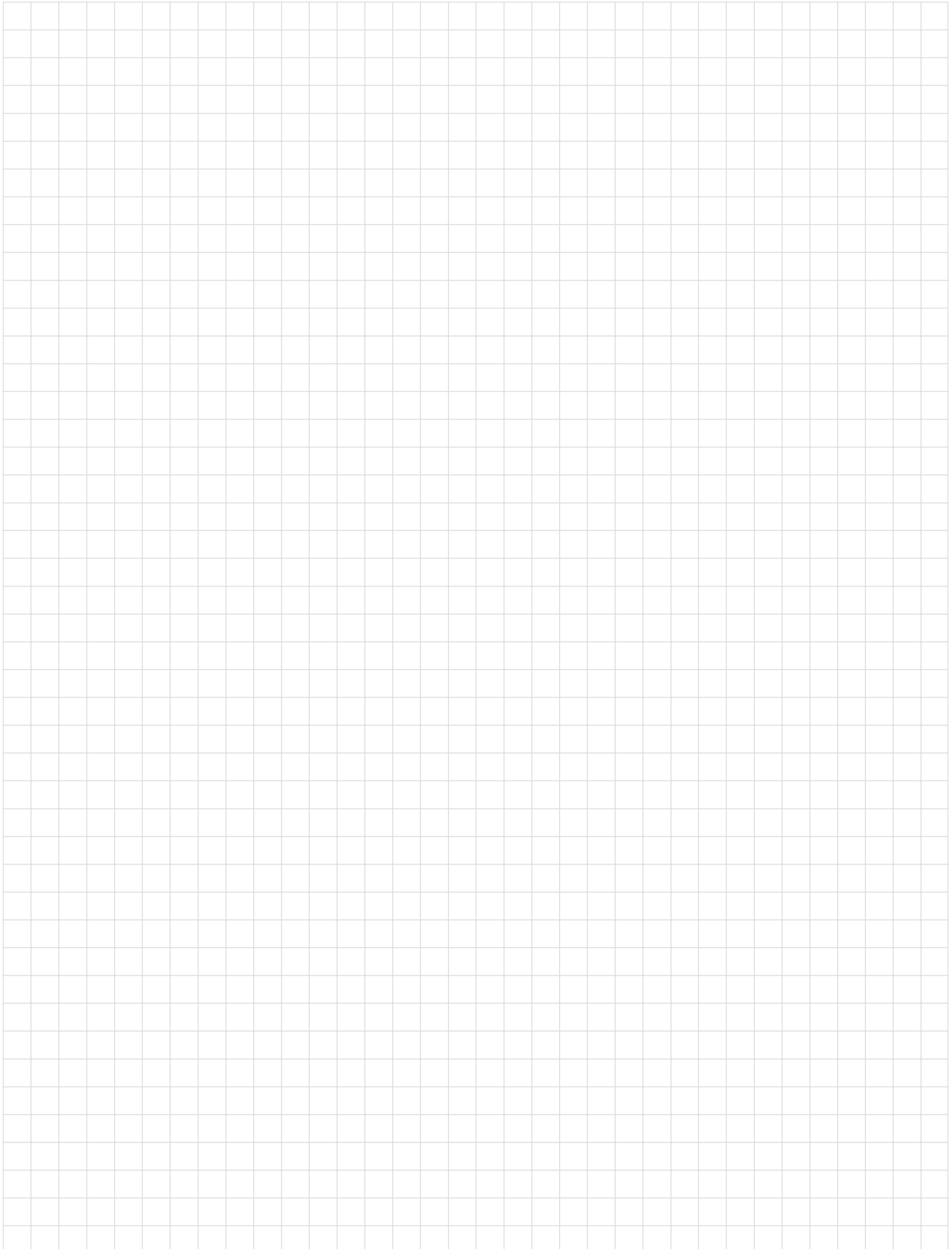
Notice:



Notice:



Notice:





- M 04000** Small Fragment Instrument and Implant Set
- M 01110** Aluminium Case Red
- M 04010** Upper Tray
- M 04020** Lower Tray

- 9016** Drill Bit, 2.5 mm \varnothing 2 units (for Cortex screws)
- 9022** Drill Bit, 3.5 mm \varnothing 2 units (for Cortex screws)
- 9102** Small Countersink
- 9074** Cortical Tap, 3.5 / 1.25 mm \varnothing with quick coupling end 2 units (for Cortex screws)
- 9075** Cancellous Tap, 3.5 mm \varnothing with quick coupling end 2 units (for Cancellous screws)
- 9094** Handle with quick coupling
- 9252** Drill Guide and Sleeve, for drill bit 2.0 mm \varnothing
- 9254** Tap Sleeve, 3.5 mm \varnothing . Drill Sleeve 2.5 mm \varnothing
- 9278** Insert Sleeve, 3.5 mm / 2.5 mm \varnothing
- 9172** Small Hexagonal Screwdriver, insert for hexagonal socket 2.5 mm
- 9174** Small Hexagonal Screwdriver Shaft, hex. 2.5 mm, with end for quick coupling
- 9112** Small Depth Gauge
- 9270** Drill Guide for 3.5 mm screws, use drill bit 2.5 mm \varnothing

General Instruments:

- 9116** Sharp Hook
- 9402/04** Bending Irons for small plates 1 pair
- 3075/76** Bending Templates, 7 and 9 holes respectively 1 unit each
- 9580** Self-centering Bone Holding Forceps
- 9596** Reduction Forceps with points
- 9600** Reduction Forceps for small fragments
- 9650/52** Small Retractor, width 6 and 8 mm respectively 1 unit each
- 9654** Retractor for small fragments, with broad shank 2 units
- 9758** Periosteal Elevator, width 6 mm small, straight edge
- 4002-** Small Cortex Screws, 3.5 mm \varnothing , 1.25 mm pitch
- 4028** 4 each: 10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 / 26 / 28 / 32 / 36 / 40 mm 52 units
- 4054-** Small Cancellous Bone Screws, 3.5 mm \varnothing , 1.75 mm pitch
- 4084** 2 each: 14 / 16 / 18 / 20 / 22 / 24 / 26 / 28 / 32 / 36 / 40 / 45 / 50 / 55 / 60 mm 30 units
- 4102-** Small Cancellous Bone Screws, 4.0 mm \varnothing short thread
- 4128** 2 each: 12 / 14 / 16 / 18 / 20 / 22 / 24 / 26 / 28 / 30 / 35 / 40 / 45 / 50 mm 28 units
- 4176** Small Washer for 3.5 mm and 4.0 mm screws 6 units
- 4220** One-third Tubular Plates, 1 each of 2, 3, 7 and 8 holes
- 4232** 2 each of 4, 5 and 6 holes 10 units
- 4208-** Dynamic Compression Plates 3.5 mm
- 4216** 2 each of 6 and 8 holes: 1 with 10 holes 5 units
- 4240/44** Small T-Plates, right angle: 1 each with 3 and 4 holes respectively in head 2 units
- 4250/52** Small T-Plates, oblique angle: 1 each with 3 and 5 holes respectively in shaft 2 units
- 4256/58** Cloverleaf Plates: 1 each with 3 and 4 holes respectively in shaft 2 units
- 7254/60/64** Kirschner Wires: 1.2 / 1.6 / 2.0 mm \varnothing , 150 mm long, 10 each 30 units
- 4184** Screws Forceps
- 9410** Bending Pliers

Small Fragment Instruments



- Taps
- 9074** 3.5 mm \varnothing / 1.25 mm pitch, cortex
 - 9075** 3.5 mm \varnothing / 1.75 mm pitch cancellous



- 9094** Tap Handle with quick coupling



- 9252** Drill Guide and Drill Sleeve
For 2.0 mm \varnothing drill bit



- 9254** Tap Sleeve, 3.5 mm \varnothing
Drill Sleeve, 2.5 mm \varnothing



- 9270** Neutral and Load Drill Guide, 3.5 mm
For 3.5 mm cortex screws with fine thread
used with 2.5 mm \varnothing Drill Guide

Small Fragment Instruments



9016 Drill Bits with end to fit quick coupling
2.5 mm \varnothing
9022 3.5 mm \varnothing



9102 Small Countersink



9172 Small Hexagonal Screw Driver with Holding Sleeve



9174 Small Hexagonal Screw Driver with end to fit quick coupling



9278 Insert Drill Sleeve, 3.5 mm / 2.5 mm \varnothing



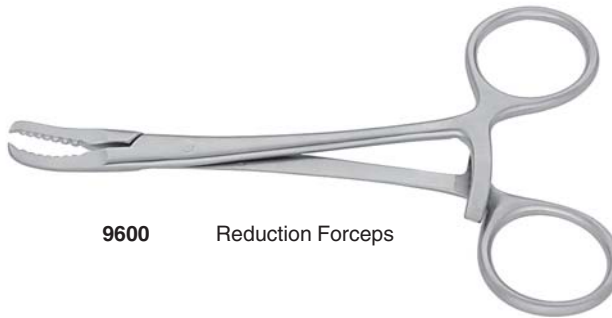
9758 Periosteal Elevator small, straight edge curved blade width 6 mm



9650 Small Hohmann Retractor 6 mm
9652 Small Hohmann Retractor 8 mm



9580 Self-Centering Bone Holding Forceps



9600 Reduction Forceps



9410 Bending Pliers for 2.7 and 3.5 mm plates



9654 Hohmann Retractor with broad shank



9596 Reduction Forceps



9112 Depth Gauge for 2.7 - 4.0 mm ø screws



4184 Screw Forceps self holding



9116 Sharp Hook



3075 Bending Template for small plates 7 holes
3076 Bending Template for small plates 9 holes



9402



9404 Bending Irons for small plates to be used as a pair

Bone Screws

Small Screws with Spherical Head and Small Hexagonal Socket width across flats 2.5 mm



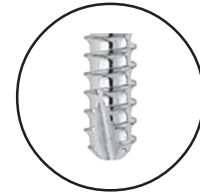
Dia of thread	3.5 mm	3.5 mm	4.0 mm	4.0 mm
Pitch	1.25 mm	1.75 mm	1.75 mm	1.75 mm
Dia of core	2.4 mm	1.9 mm	1.9 mm	1.9 mm
Dia of shaft			2.3 mm	
Dia of head	6.0 mm	6.0 mm	6.0 mm	6.0 mm
Length				
10 mm	4002	4050	4100	4140
12 mm	4004	4052	4102	4142
14 mm	4006	4054	4104	4144
16 mm	4008	4056	4106	4146
18 mm	4010	4058	4108	4148
20 mm	4012	4060	4110	4150
22 mm	4014	4062	4112	4152
24 mm	4016	4064	4114	4154
26 mm	4018	4066	4116	4156
28 mm	4020	4068	4118	4158
30 mm	4022	4070	4120	4160
32 mm	4024	4072	4121	4162
34 mm	4025	4073		
35 mm			4122	4164
36 mm	4026	4074		
38 mm	4027	4075		
40 mm	4028	4076	4124	4166
42 mm	4029			
45 mm	4030	4078	4126	4168
48 mm	4031			
50 mm	4032	4080	4128	4170
55 mm	4034	4082	4129	4172
60 mm	4036	4084	4130	4174
65 mm	4038			
70 mm	4040			
75 mm	4042			
80 mm	4044			



4176

Washer for Navicular Spongiosa Screws \varnothing 7 mm

Bone Screws, self tapping



self cutting screws, tapping not needed

Dia of thread	3.5 mm	4.0 mm	4.0 mm
Pitch	1.25 mm	1.75 mm	1.75 mm
Dia of core	2.4 mm	1.9 mm	1.9 mm
Dia of shaft		2.3 mm	
Dia of head	6.0 mm	6.0 mm	6.0 mm
Length			
10 mm	41002	41100	41140
12 mm	41004	41102	41142
14 mm	41006	41104	41144
16 mm	41008	41106	41146
18 mm	41010	41108	41148
20 mm	41012	41110	41150
22 mm	41014	41112	41152
24 mm	41016	41114	41154
26 mm	41018	41116	41156
28 mm	41020	41118	41158
30 mm	41022	41120	41160
32 mm	41024	41121	41162
34 mm	41025		
35 mm		41122	41164
36 mm	41026		
38 mm	41027		
40 mm	41028	41124	41166
42 mm	41029		
45 mm	41030	41126	41168
48 mm	41031		
50 mm	41032	41128	41170
55 mm			41172
60 mm			41174

MATTES



Small Fragment Plates for 3.5 ø screws DPL
 Profil 10 x 3 mm Distance between Holes 12 and 16 mm

	Length	Holes
4200	25 mm	2
4202	37 mm	3
4204	49 mm	4
4206	61 mm	5
4208	73 mm	6
4210	85 mm	7
4212	97 mm	8
4214	109 mm	9
4216	121 mm	10
4218	145 mm	12



One-third Tubular Plates
 Profil 1/3 tube 12 x 1 mm

	Length	Holes
4220	25 mm	2
4222	37 mm	3
4224	49 mm	4
4226	61 mm	5
4228	73 mm	6
4230	85 mm	7
4232	97 mm	8
4234	109 mm	9
4236	121 mm	10
4238	145 mm	12



Small T-Plates right angle
 3 holes in Head

	Length	Holes
4240	45 mm	3
4242	67 mm	5



Small T-Plates right angle
 4 holes in Head

	Length	Holes
4244	56 mm	4
4246	78 mm	6



Small T-Plates Oblique angle
 3 holes in Head

	Length	Holes
4250	52 mm	3
4251	63 mm	4
4252	74 mm	5



Cloverleaf Plates
 3 holes in Head

4256	Shaft with 3 holes, 88 mm long
4258	Shaft with 4 holes, 104 mm long

Small Plates

Straight Narrow Reconstruction Plates, 2.7 mm

	Length	Holes
4260	48 mm	6
4261	64 mm	8
4262	80 mm	10
4263	96 mm	12
4264	112 mm	14
4265	128 mm	16
4266	144 mm	18
4267	160 mm	20
4268	176 mm	22
4269	192 mm	24



Profil: 8.0 x 2.7 mm
Distance between holes: 8.0 mm

Reconstruction Plates, 3.5 mm

	Length	Holes
4270	58 mm	5
4271	70 mm	6
4272	82 mm	7
4273	94 mm	8
4274	106 mm	9
4275	118 mm	10
4276	130 mm	11
4277	142 mm	12
4278	154 mm	13
4279	166 mm	14
4280	178 mm	15
4281	190 mm	16
4282	214 mm	18
4283	238 mm	20
4284	262 mm	22



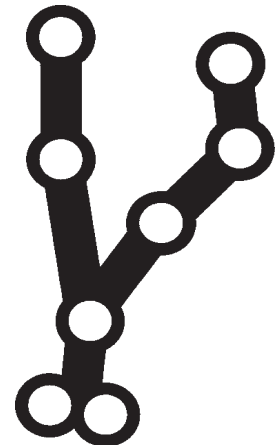
Profil: 10.0 x 2.8 mm
Distance between holes: 12.0 mm



4286 Y-Plate
Profil: 10.0 x 2.0 mm
Distance between holes: 12.0 mm



4288 Calcaneus bone Plate, large
4290 Calcaneus bone Plate, small





- M 04100** Mini Instrument and Implant Set
- M 01110** Aluminium Case Red
- M 04120** Upper Tray
- M 04020** Lower Case

			Screw type use (mm)
Instruments for 2.0 or 2.7 mm ø screws			
9014	Drill Bit, 2.0 mm ø, with quick coupling for small air drill	2 units	2.0 + 2.7 mm
9018	Drill Bit, 2.7 mm ø, with quick coupling for small air drill	2 units	2.7
9102	Small Countersink, with end to fit quick coupling handle		2.7
9073	Tap, 2.7 mm ø, with end to fit quick coupling handle	2 units	2.7
9094	Handle with quick coupling		
9252	Drill Guide and Drill Sleeve for 2.0 mm ø, drill bit		2.0 + 2.7 mm
9256	Tap Sleeve 3.5 mm ø		2.7
9172	Small Hexagonal Screwdriver 2.5 mm with holding-sleeve		2.7
9112	Depth Gauge (only for 2.7 mm screws)		2.7
Instruments for Mini Screws 1.5 mm or 2.0 mm ø			
9010	Drill Bit, 1.1 mm ø, with quick coupling for small air drill	2 units	1.5
9012	Drill Bit, 1.5 mm ø, with quick coupling for small air drill	2 units	2.0
9100	Mini Countersink to fit handle with mini quick coupling		1.5 + 2.0
9071	Tap, 1.5 mm ø to fit handle with mini quick coupling	2 units	1.5
9072	Tap, 2.0 mm ø to fit handle with mini quick coupling	2 units	2.0
9096	Handle with mini quick coupling		
9250	Mini Drill Sleeve for 1.1 and 1.5 mm ø drill bits		1.5 + 2.0
9110	Mini Depth Gauge for 2.0 mm ø screws only		
General Instruments			
9116	Sharp Hook		
9170	Screw Driver 1.5 mm with holding-sleeve		
9400	Bending Iron for finger plates		
9630	Holding Forceps for small plates		
9596	Reduction Forceps with points		
9650	Small Retractor, 6 mm		
9652	Small Retractor, 8 mm		
9654	Retractor for small fragments, with broad shank, short	2 units	
9760	Periosteal Elevator, small with straight edge 3 mm		
Implants for 2.7 mm ø screws			
4460-	2.7 mm Cortex Screws with hexagonal socket 2.5 mm		
4478	5 ea: 6 / 8 / 10 / 12 / 14 / 16 / 18 / 20 / 22 / 24 mm	50 units	
4176	Small Washer, for 2.7 mm screws	6 units	
4540-	Quarter Tubular Plates: 2 ea with 3 / 4 / 5 holes		
4550	1 each with 6 / 7 / 8 holes	9 units	
4552/54	L-Plates, oblique left and oblique right, 2 each	4 units	
4556	T-Plates	4 units	
Mini Implants for 1.5 or 2.0 mm ø Screws			
4400-	1.5 mm Cortex Screws, with hexagonal recess		
4416	4 each: 6 / 7 / 8 / 9 / 10 / 11 / 12 / 14 / 16	36 units	
4430-	2.0 mm Cortex Screws, with hexagonal recess		
4444	4 ea: 6 / 8 / 10 / 12 / 14 / 16 / 18 / 20	32 units	
4592-96	Straight Mini Plates, 2 each with 4 / 5 / 6	6 units	
4600/02	Mini L-Plates oblique left and oblique right 2 each	4 units	
4604	Mini T-Plate	4 units	
7200/01	10 each 0.8 mm, 1.0 mm ø 70 mm long Kirschner Wires		
7252/60	10 each 1.0 / 1.2 / 1.6 mm ø 150 long	50 units	
4184	Screw Forceps		

Mini Fragment Combined Instruments and Implant Set

Instruments for 1.5 and 2.0 mm \varnothing Screw



- 9071** Tap 1.5 mm \varnothing (Dental)
- 9072** Tap 2.0 mm \varnothing (Dental)
- 9073** Tap 2.7 mm \varnothing



- 9010** Drill Bit with end to fit quick coupling 1.1 mm \varnothing
- 9012** 1.5 mm \varnothing
- 9014** 2.0 mm \varnothing
- 9018** 2.7 mm \varnothing



- 9100** Mini Countersink



- 9110** Depth Gauge for 1.5 mm and 2.0 mm \varnothing screws



- 9250** Mini Drill Sleeve for 1.1 mm and 1.5 mm \varnothing drill bits



- 9102** Small Countersink with end to fit quick coupling



9096 Tap Handle with dental coupling



9094 Tap Handle with quick coupling



9170 Small Hexagonal Screwdriver
1.5 mm with holding sleeve
9172 2.5 mm with holding sleeve



9760 Periosteal Elevator



9112 Depth Gauge for 2.7 - 4.0 mm \varnothing screws



9256 Tap Sleeve 3.5 mm \varnothing



9116 Sharp Hook



9252 Drill Guide and Drill Sleeve for 2.0 mm ø drill bit



9400 Bending Iron



9654 Hohmann Retractor with broad shank



9630 Holding Forceps



9596 Reduction Forceps with points



9650 Hohmann Retractor 6 mm
9652 Hohmann Retractor 8 mm

Bone Screws

Mini Screws



Dia of thread	1.5 mm	2.0 mm	2.7 mm
Dia of core	1.0 mm	1.3 mm	1.9 mm
Dia of head	3.0 mm	4.0 mm	5.0 mm
Length			
6 mm	4400	4430	4460
7 mm	4402		
8 mm	4404	4432	4462
9 mm	4406		
10 mm	4408	4434	4464
11 mm	4410		
12 mm	4412	4436	4466
14 mm	4414	4438	4468
16 mm	4416	4440	4470
18 mm	4418	4442	4472
20 mm	4420	4444	4474
22 mm		4446	4476
24 mm		4448	4478
26 mm			4480
28 mm			4482
30 mm			4484
32 mm			4486
34 mm			4488
36 mm			4490
38 mm			4492
40 mm			4494

Mini Plates

Plates for 2.7 mm \varnothing Screws



Profil: 8.0 x 2.0 mm
Distance between holes: 8.0 mm

	Length	Holes
4520	20 mm	2
4522	36 mm	4
4524	44 mm	5
4526	52 mm	6

Profil: 8.0 x 2.5 mm
Distance between holes: 8.0 mm

	Length	Holes
4528	60 mm	7
4530	68 mm	8
4532	76 mm	9
4534	84 mm	10
4536	100 mm	12



Finger Plates
Quarter-tubular Plates

	Length	Holes
4540	25 mm	3
4542	33 mm	4
4544	41 mm	5
4546	49 mm	6
4548	57 mm	7
4550	65 mm	8



4552
oblique left



4554
oblique right



4556
straight



4558
angled left 90°



4560
angled right 90°



4562

Mini Plates

Plates for 2.0 mm \varnothing Screws



	Length	Holes
4570	22 mm	4
4572	27 mm	5
4574	32 mm	6
4576	37 mm	7
4578	42 mm	8

Profil:
 Thick 4-6 holes 1.0 mm
 Thick 7-8 holes 1.5 mm
 Broad 5 mm
 Distance 5 mm



Profil: 5.0 x 1.2 mm
 Distance between holes: 5.0 mm

Mini T-Plates for 2.0 mm Screws
 Primary Indication: Fracture of the phalanges

	Length	Number of holes	
		in head	in shaft
4580	50 mm	3	9
4582	50 mm	4	9



4584 Straight Mini Plates for 2.0 mm screws with 20 holes, 100 mm length



4586 Mini - Adaptationplate for 2.0 mm screws with 20 holes, 100 mm length



Straight Mini Plates

	Length	Holes
4590	17 mm	3
4592	23 mm	4
4594	29 mm	5
4596	35 mm	6

Profil:
 Thick: 1.2 mm
 Broad: 5 mm
 Distance: 6 mm



4600
oblique left



4602
oblique right



4604
straight



4606
angled 90° left



4608
angled 90° right

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Bone Screws

Small Screws with Spherical Head and Small Hexagonal Socket width across flats 2.5 mm



Dia of thread	3.5 mm	3.5 mm	4.0 mm	4.0 mm
Pitch	1.25 mm	1.75 mm	1.75 mm	1.75 mm
Dia of core	2.4 mm	1.9 mm	1.9 mm	1.9 mm
Dia of shaft			2.3 mm	
Dia of head	6.0 mm	6.0 mm	6.0 mm	6.0 mm
Length				
10 mm	400200	405000	410000	414000
12 mm	400400	405200	410200	414200
14 mm	400600	405400	410400	414400
16 mm	400800	405600	410600	414600
18 mm	401000	405800	410800	414800
20 mm	401200	406000	411000	415000
22 mm	401400	406200	411200	415200
24 mm	401600	406400	411400	415400
26 mm	401800	406600	411600	415600
28 mm	402000	406800	411800	415800
30 mm	402200	407000	412000	416000
32 mm	402400	407200	412100	416200
34 mm	402500	407300		
35 mm			412200	416400
36 mm	402600	407400		
38 mm	402700	407500		
40 mm	402800	407600	412400	416600
42 mm	402900			
45 mm	403000	407800	412600	416800
48 mm	403100			
50 mm	403200	408000	412800	417000
55 mm	403400	408200	412900	417200
60 mm	403600	408400	413000	417400
65 mm	403800			
70 mm	404000			
75 mm	404200			
80 mm	404400			



41760

Washer for Navicular Spongiosa Screws \varnothing 7 mm

TITAN Implants DIN ISO 5832-3 ASTM F620-96



Small Fragment Plates for 3.5 ø screws DPL
Profil 10 x 3 mm Distance between Holes 12 and 16 mm

	Length	Holes
42000	25 mm	2
42020	37 mm	3
42040	49 mm	4
42060	61 mm	5
42080	73 mm	6
42100	85 mm	7
42120	97 mm	8
42140	109 mm	9
42160	121 mm	10
42180	145 mm	12



One-third Tubular Plates
Profil 1/3 tube 12 x 1 mm

	Length	Holes
42200	25 mm	2
42220	37 mm	3
42240	49 mm	4
42260	61 mm	5
42280	73 mm	6
42300	85 mm	7
42320	97 mm	8
42340	109 mm	9
42360	121 mm	10
42380	145 mm	12



Small T-Plates right angle
3 holes in Head

	Length	Holes
42400	45 mm	3
42420	67 mm	5



Small T-Plates right angle
4 holes in Head

	Length	Holes
42440	56 mm	4
42460	78 mm	6



Small T-Plates Oblique angle
3 holes in Head

	Length	Holes
42500	52 mm	3
42510	63 mm	4
42520	74 mm	5



Cloverleaf Plates
3 holes in Head

42560	Shaft with 3 holes, 88 mm long
42580	Shaft with 4 holes, 104 mm long

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Small Plates

Straight Narrow Reconstruction Plates, 2.7 mm

	Length	Holes
42600	48 mm	6
42610	64 mm	8
42620	80 mm	10
42630	96 mm	12
42640	112 mm	14
42650	128 mm	16
42660	144 mm	18
42670	160 mm	20
42680	176 mm	22
42690	192 mm	24



Profil: 8.0 x 2.7 mm
Distance between holes: 8.0 mm

Reconstruction Plates, 3.5 mm

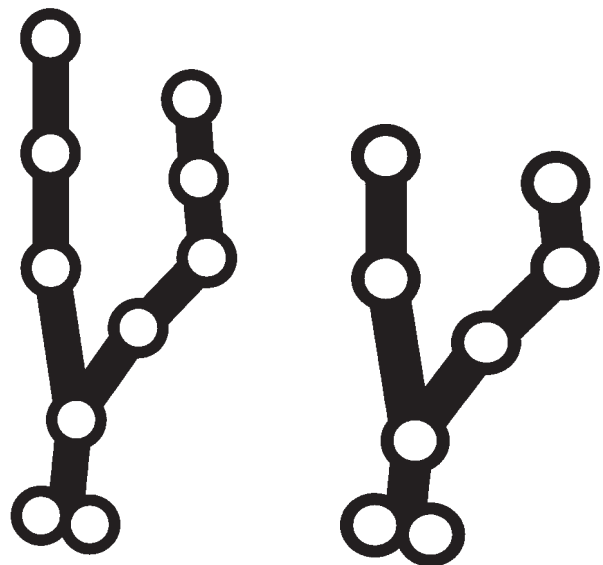
	Length	Holes
42700	58 mm	5
42710	70 mm	6
42720	82 mm	7
42730	94 mm	8
42740	106 mm	9
42750	118 mm	10
42760	130 mm	11
42770	142 mm	12
42780	154 mm	13
42790	166 mm	14
42800	178 mm	15
42810	190 mm	16
42820	214 mm	18
42830	238 mm	20
42840	262 mm	22



Profil: 10.0 x 2.8 mm
Distance between holes: 12.0 mm



42860 Y-Plate
Profil: 10.0 x 2.0 mm
Distance between holes: 12.0 mm



42880 Calcaneus bone Plate, large
42900 Calcaneus bone Plate, small

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Bone Screws

Mini Screws



Dia of thread	1.5 mm	2.0 mm	2.7 mm
Dia of core	1.0 mm	1.3 mm	1.9 mm
Dia of head	3.0 mm	4.0 mm	5.0 mm
Length			
6 mm	440000	443000	446000
7 mm	440200		
8 mm	440400	443200	446200
9 mm	440600		
10 mm	440800	443400	446400
11 mm	441000		
12 mm	441200	443600	446600
14 mm	441400	443800	446800
16 mm	441600	444000	447000
18 mm	441800	444200	447200
20 mm	442000	444400	447400
22 mm		444600	447600
24 mm		444800	447800
26 mm			448000
28 mm			448200
30 mm			448400
32 mm			448600
34 mm			448800
36 mm			449000
38 mm			449200
40 mm			449400

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Mini Plates

Plates for 2.7 mm \varnothing Screws



Profil: 8.0 x 2.0 mm
Distance between holes: 8.0 mm

	Length	Holes
45200	20 mm	2
45220	36 mm	4
45240	44 mm	5
45260	52 mm	6



Finger Plates
Quarter-tubular Plates

	Length	Holes
45400	25 mm	3
45420	33 mm	4
45440	41 mm	5
45460	49 mm	6
45480	57 mm	7
45500	65 mm	8

Profil: 8.0 x 2.5 mm
Distance between holes: 8.0 mm

	Length	Holes
45280	60 mm	7
45300	68 mm	8
45320	76 mm	9
45340	84 mm	10
45360	100 mm	12



45520
oblique left



45540
oblique right



45560
straight



45580
angled left 90°



45600
angled right 90°



45620

TITAN Implants DIN ISO 5832-3 ASTM F620-96

Mini Plates

Plates for 2.0 mm \varnothing Screws



	Length	Holes
45700	22 mm	4
45720	27 mm	5
45740	32 mm	6
45760	37 mm	7
45780	42 mm	8

Profil:
 Thick 4-6 holes 1.0 mm
 Thick 7-8 holes 1.5 mm
 Broad 5 mm
 Distance 5 mm



Profil: 5.0 x 1.2 mm
 Distance between holes: 5.0 mm

Mini T-Plates for 2.0 mm Screws
 Primary Indication: Fracture of the phalanges

	Length	Number of holes	
		in head	in shaft
45800	50 mm	3	9
45820	50 mm	4	9



45840 Straight Mini Plates for 2.0 mm screws with 20 holes, 100 mm length



45860 Mini - Adaptationplate for 2.0 mm screws with 20 holes, 100 mm length



Straight Mini Plates

	Length	Holes
45900	17 mm	3
45920	23 mm	4
45940	29 mm	5
45960	35 mm	6

Profil:
 Thick: 1.2 mm
 Broad: 5 mm
 Distance: 6 mm



46000
oblique left



46020
oblique right



46040
straight



46060
angled 90° left



46080
angled 90° right

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



Titanium
Titan

Angle-stable plate for distal radius
Winkelstabile Platte für distalen Radius

- *Product Description and OR-Technique*
- *Produktbeschreibung und OP-Technik*

Advantages

- Anatomical pre-bent
- Intraoperative corrections are not necessary
- Result of the operative reduction is permanently fixed by three angle-stable screws
- No secondary correction losses
- Allows an early functional post-operative treatment

Vorteile

- Anatomisch vorgeformt.
- Keine intraoperativen Korrekturen notwendig.
- Operatives Repositionsergebnis wird durch 3 winkelstabile Schrauben dauerhaft fixiert.
- Keine sekundären Korrekturverluste
- Frühfunktionelle Nachbehandlung möglich.

M 327 Set complete
Set komplett



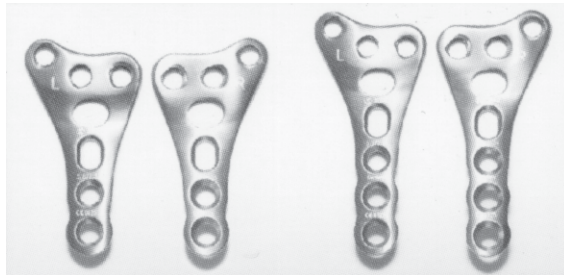
ANGLE-STABLE RADIUS PLATE TITAN WINKELSTABILE RADIUSPLATTE TITAN		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
Plate, 3 holes right Platte, 3 Loch rechts	42904	1
Plate, 3 holes left Platte, 3 Loch links	42905	1
Plate, 4 holes right Platte, 4 Loch	42906	1
Plate, 4 holes Platte, 4 Loch	42907	1

Instruments Instrumente		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
Drill ø 2.5 mm, 110 mm length Spiralbohrer ø 2,5 mm, 110 mm Länge	9016	1
Drill Sleeve Bohrbüchsen	9082	2
Screwdriver hex. 2,5 Schraubendreher hex. 2,5 mm	9142	1
Depth Gauge for small screws Schrauben-Längenmesslehre	9112	1
Kirschner Wire ø 1.8 mm, 150 mm L Kirschner Draht ø 1,8 mm, 150 mm L	7262	5
Screw Holding Forceps Schraubenthaltepinzette	4184	1
Basket Siebkorb	153075	1

Corticalis screw ø 3.5 mm (selfcutting, conical head thread)TITAN Kortikalisschraube ø 3,5 mm (selbstschneidend, konisches Kopfgewinde) TITAN		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
16 mm Length / Länge	42910	3
18 mm Length / Länge	42912	3
20 mm Length / Länge	42914	3
22 mm Length / Länge	42916	3
24 mm Length / Länge	42918	3
26 mm Length / Länge	42920	3
28 mm Length / Länge	42922	3
30 mm Length / Länge	42924	3

Cortical Screws ø 3.5 mm, Titan, selfcutting TITAN Kortikalisschrauben ø 3.5 mm, Titan, selbstschneidend TITAN		
Description Beschreibung	Cat. No. Art. Nr.	Pieces Anzahl
14 mm Length / Länge	410060	5
16 mm Length / Länge	410080	5
18 mm Length / Länge	410100	5
20 mm Length / Länge	410120	5
22 mm Length / Länge	410130	5
24 mm Length / Länge	410140	5

TITAN	
ANGLE-STABLE RADIUS PLATE WINKELSTABILE RADIUSPLATTE	
Description Beschreibung	Cat. No. Art. Nr.
Plate, 3 holes right Platte, 3 Loch rechts	42904
Plate, 3 holes left Platte, 3 Loch links	42905
Plate, 4 holes right Platte, 4 Loch rechts	42906
Plate, 4 holes left Platte, 4 Loch links	42907



TITAN	
Corticalis screw \varnothing 3.5 mm (selfcutting, conical head thread) Kortikalisschraube \varnothing 3,5 mm (selbstschneidend, konisches Kopfgewinde)	
Description Beschreibung	Cat. No. Art. Nr.
16 mm Length / Länge	42910
18 mm Length / Länge	42912
20 mm Length / Länge	42914
22 mm Length / Länge	42916
24 mm Length / Länge	42918
26 mm Length / Länge	42920
28 mm Length / Länge	42922
30 mm Length / Länge	42924

TITAN	
Corticalis screw \varnothing 3.5 mm (selfcutting) Kortikalisschraube \varnothing 3,5 mm (selbstschneidend)	
Description Beschreibung	Cat. No. Art. Nr.
14 mm Length / Länge	410060
16 mm Length / Länge	410080
18 mm Length / Länge	410100
20 mm Length / Länge	410120
22 mm Length / Länge	410130
24 mm Length / Länge	410140





9142 for Hexagonal Head 2.5 mm, 20 cm length
Schraubendreher Kopf 2,5 mm, 20 cm Länge



7262 Kirschner wire \varnothing 1.8 mm, 150 mm long
Kirschnerdraht \varnothing 1,8 mm, 150 mm lang



9114 Depth Gauge for Small Screws
Tiefenmesser für kleine Schrauben



9082 Drill sleeve (with connection for plate thread)
Bohrbuchse



4184 Screw Forceps
Schraubenpinzette



9016 Drill AO shaft \varnothing 2.5 mm, 110 mm long
Bohrer mit AO Schaft \varnothing 2,5 mm, 110 mm lang

OR-Instruction

The angle-stable radius plate is an anatomical formed implant for use of fractures of the body distant palmary radius. Correcting of the implant pre-operatively and intra-operatively is not necessary.

Recommended operational steps:

The acces to the distal radius starts with a 5 to 10 cm skin incision with the arm in supine position leading from the distal wrist bend to the tendon of the Musculus Flexor Carpi Radialis proximally.

After splitting the forearm fascia and the tendon sheath of the Flexor Carpi Radialis, the Flexor Carpi Radialis is pushed aside.

The muscles Flexor Digitorum Superficialis and Flexor Policis Longus are now visible. Both muscle bellies are pushed ulnarly.

The appearing Musculus Pronator Quadratus is separated radially and shifted ulnarly. The distal palmar parts of the radius with the fracture can now be identified.

With the elbow fixed follows now a pre-reduction under a slight longitudinal traction of the hand above the 2nd and the 3rd ray. An elevator can be used as a support in case of twisting. It is placed in the fracture gap to lift the distal radius end over the proximal fracture edge.

The corresponding plate side is placed onto the bone and positioned in the way that the distal plate end is maximum 5mm proximal of the palmar joint line of the distal radius.

This procedure is done under X-ray control. It is necessary that the shaft of the plate is positioned in the mids of the radius.

With a small fragment cortical screw which is placed through the gliding hole in the mids of plate shaft the plate is fixed to the radius. Another X-ray control in A/P- and L/M direction follows.

Afterwards two 1.8 mm Kirschner - wires are introduced radially and ulnarly next to the middle thread hole distally to the plate edge, so that it is placed strictly subcortical along the radius joint surface in dorsal direction.

Now the drill protection sleeve is screwed into the middle thread hole. The position of the drill protection sleeve corresponds exactly to the joint angle foreseen. The palmary reduction is performed using Kirschner -wires to protect the radius joint surface.

Is the desired angle reached then this position is held in place by an assistant. The angle-stable screw osteosyntheses can be carried out in the conventional way through the middle plate hole. A further X-ray control in A/P- and L/M- direction follows. The fractur is now angle - stable and the radial and ulnar threaded srew are screwed in through the drill protection sleeve. Depending of the bone condition the surgeon decides whether additional fixation with a screw in the shaft of the plate is necessary.

The angle - stable fixation of the distal radius fracture is now completed and the wound can be closed in the conventional way.

Metal removal is not absolutely necessary.

OP – Anleitung

Die Winkelstabile Radiusplatte ist ein anatomisch angepaßtes Implantat zur Versorgung von Frakturen an der körperfernen palmarseitigen Speiche. Korrigierende Maßnahmen am Implantat präoperativ und intraoperativ müssen nicht vorgenommen werden.

Empfohlenen Operations- Schritte:

Der Zugang zum distalen Radius beginnt mit einem Hautschnitt am supinierten Arm, der von der distalen Handgelenksbeuge über der Sehne des Musculus Flexor Carpi Radialis 5 bis 10 cm nach proximal geführt wird.

Nach Spaltung der Unterarmfaszie und der Sehnenscheide des Flexor Carpi Radialis erfolgt das Abdrängen desselben.

Die Musculi Flexor Digitorum Superficialis und Flexor Policis Longus werden nun sichtbar. Beide Muskelbäuche werden nach ulnar abgedrängt.

Der nun erscheinende Musculus Pronator Quadratus wird radial abgelöst und nach ulnar verschoben.

Die distalen palmaren Anteile des Radius mit der vorliegenden Fraktur können nun dargestellt werden.

Es erfolgt eine Vorreposition der Fraktur bei fixierten Ellenbogen unter diskreten Längszug der Hand über den II. und III. Strahl. Ein Elevatorium wirkt unterstützend beim Verhaken der Frakturkanten, indem es im Frakturspalt liegend das distale Radiusende über die proximale Frakturkante hebt.

Die entsprechende Plattenseite wird auf den Knochen aufgelegt und so plaziert, dass das distale Plattenende maximal 5 mm proximal der palmaren Gelenklinie des distalen Radius zu liegen kommt.

Dieser Vorgang erfolgt unter Bildwandlerkontrolle. Es ist dabei zu beachten, dass der Plattenschaft sich in der Mitte des Radius einstellt.

Mit einer Kleinfragmentschraube wird nun durch das Gleitloch in der Mitte des Plattenschaftes die Platte am Radiuschaft fixiert. Es erfolgt nun eine Kontrollaufnahme in A/P – und L/M – Richtung

Nun werden zwei 1,8mm Kirschner-Drähte jeweils radial und ulnar neben dem mittleren Gewindeschraubenloch distal der Plattenkante eingebracht, so dass sie streng subkortical entlang der Radiusgelenkfläche nach dorsal verlaufen.

Anschließend wird die Bohrbüchse in das mittlere Gewindeloch eingeschraubt. Die Stellung der Bohrbüchse entspricht genau dem später zu erreichenden Gelenkwinkel. Damit die Radiusgelenkfläche geschützt wird, erfolgt das Reponieren mit den Kirschnerdrähten nach palmar. Ist der gewünschte Winkel erreicht, wird dieser von einem Assistenten in Position gehalten.

Die Winkelstabile Schraubenosteosynthese kann nun in gewohnter Weise durch das mittlere Plattenloch erfolgen. Eine weitere Kontrollaufnahme in A/P- und L/M – Richtung wird nun durchgeführt. Die Fraktur ist jetzt winkelstabil und die radiale und die ulnare Gewindeschraube werden nun durch die Bohrhülse fixiert. Abschließend wird die zweite Plattenschaftschraube eingebracht. Je nach Knochenzustand entscheidet nun der Anwender, ob eine weitere Schaftverschraubung erforderlich ist.

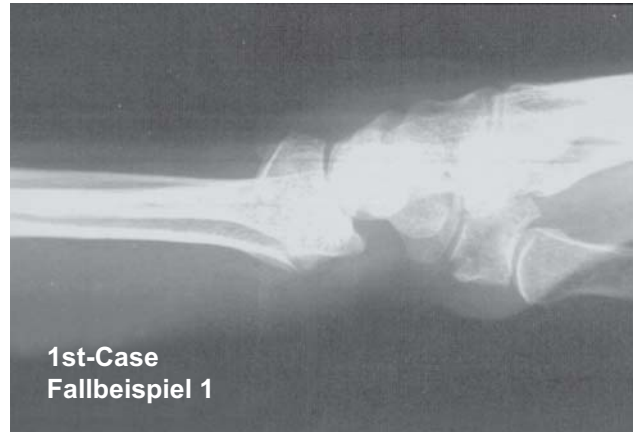
Die Fraktur ist nun winkelstabil versorgt. Die Verschluß erfolgt in gewohnter Weise.

Eine Metallentfernung ist nicht unbedingt erforderlich.

Preoperative / Präoperativ

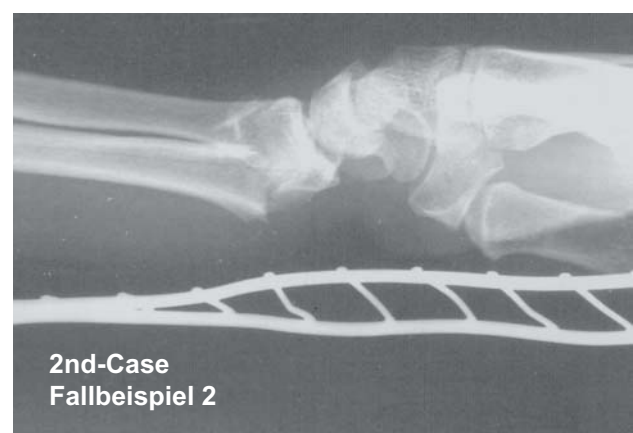
Indication

- Extra-articular flexion and tension fracture with comminuted zone and volarly
- Independently of the bone density grade
- Limiting indication, Extension and flexion fractures affecting one joint

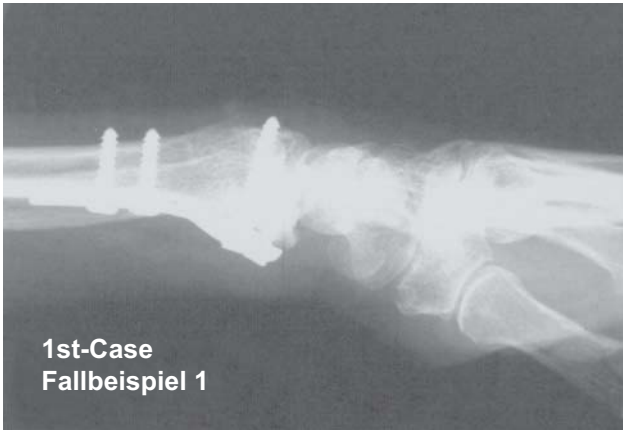


Indikation

- Extraartikuläre Flexions- und Extensionsfrakturen mit Trümmerzone dorsal und volar
- Unabhängig vom Grad der Knochendichte
- Grenzindikationen, Extensions- oder Flexionsfraktur mit einfacher Gelenkbeteiligung



Postoperative / Postoperativ



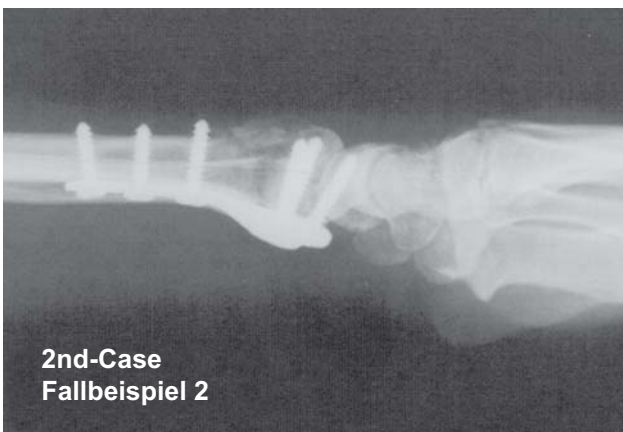
Treatment

- Angle-stable plate for distal radius
- 3 hole or 4 hole plate

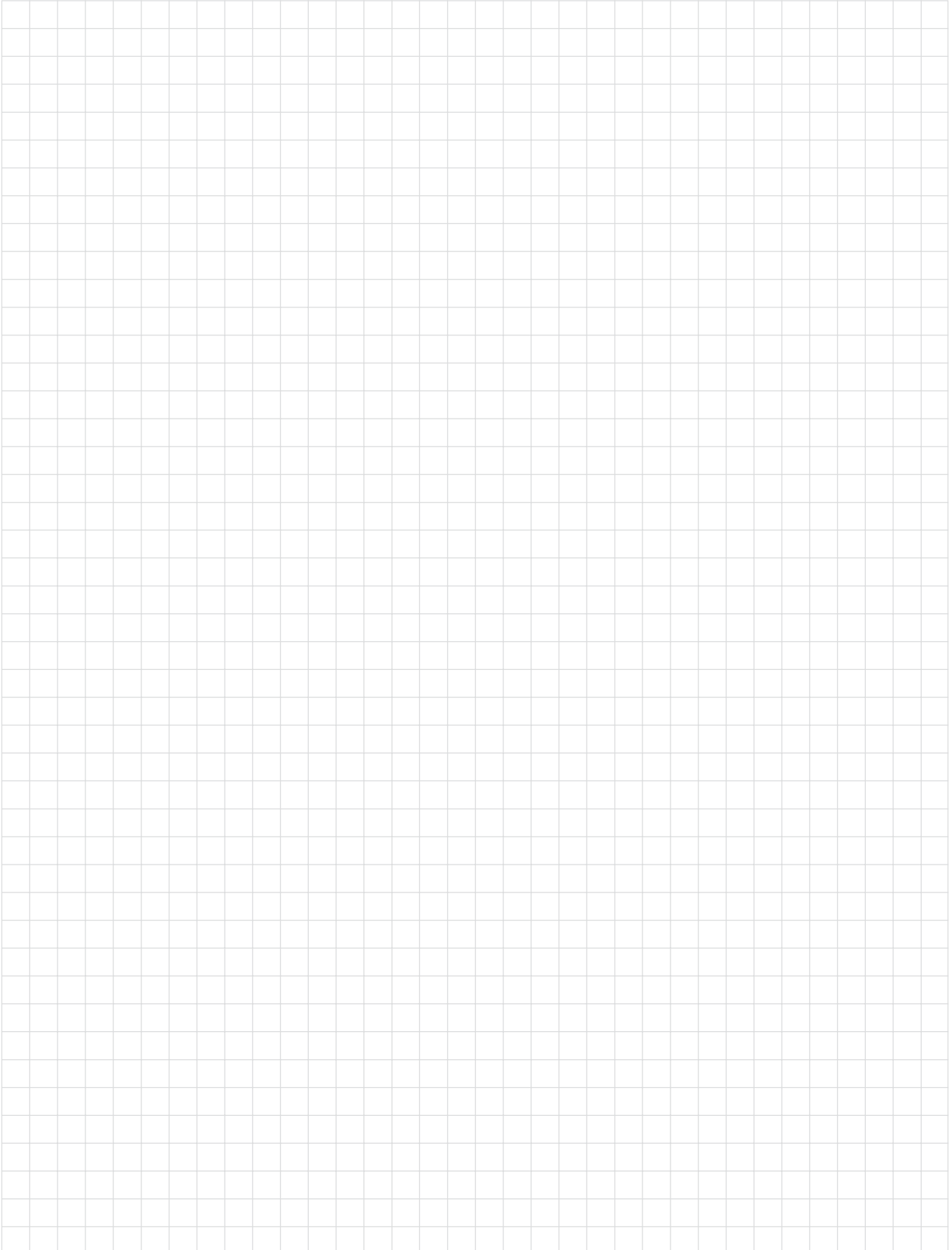


Versorgung

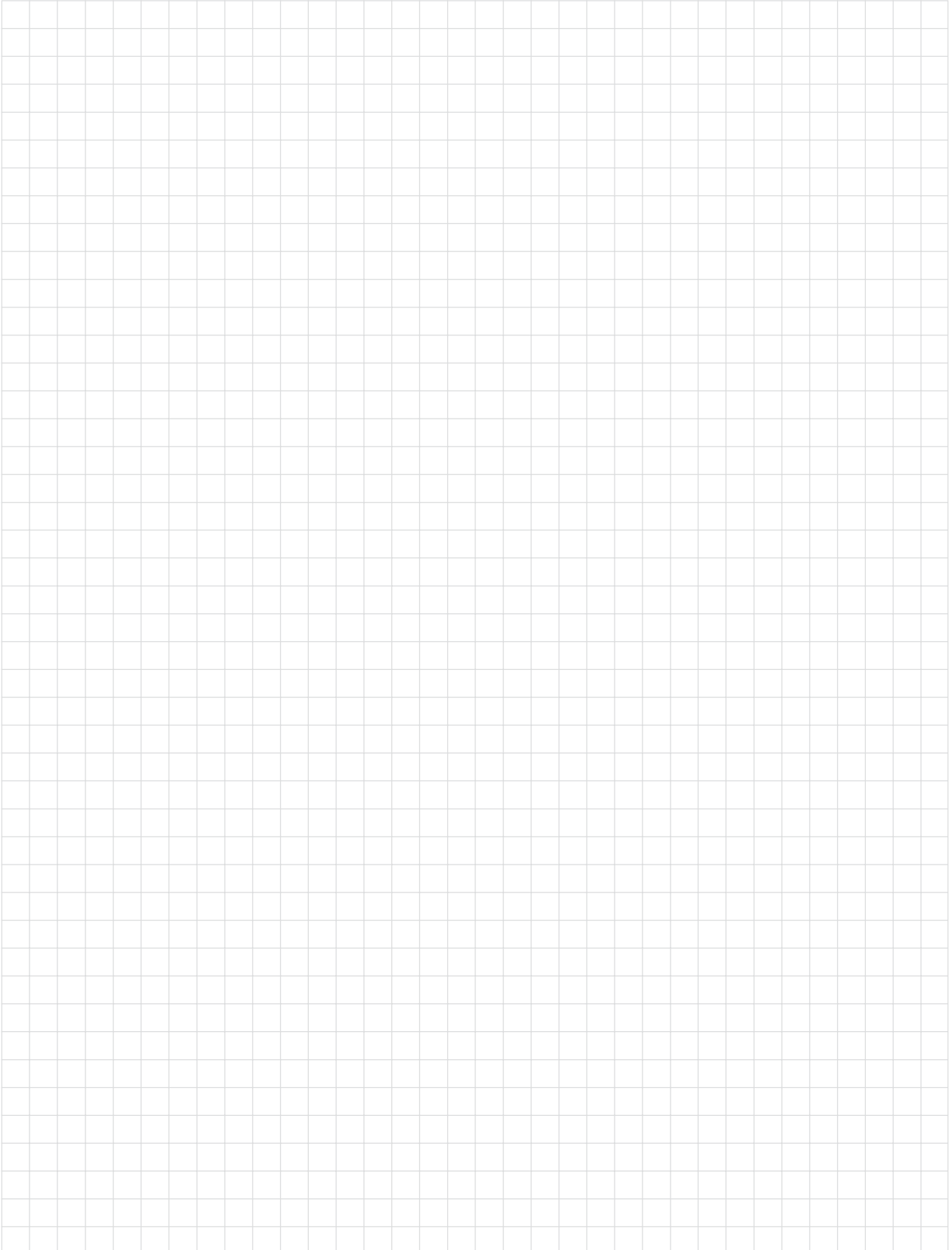
- Winkelstabile Platte für distalen Radius
- 3 Loch oder 4 Loch Platte



Notice:



Notice:



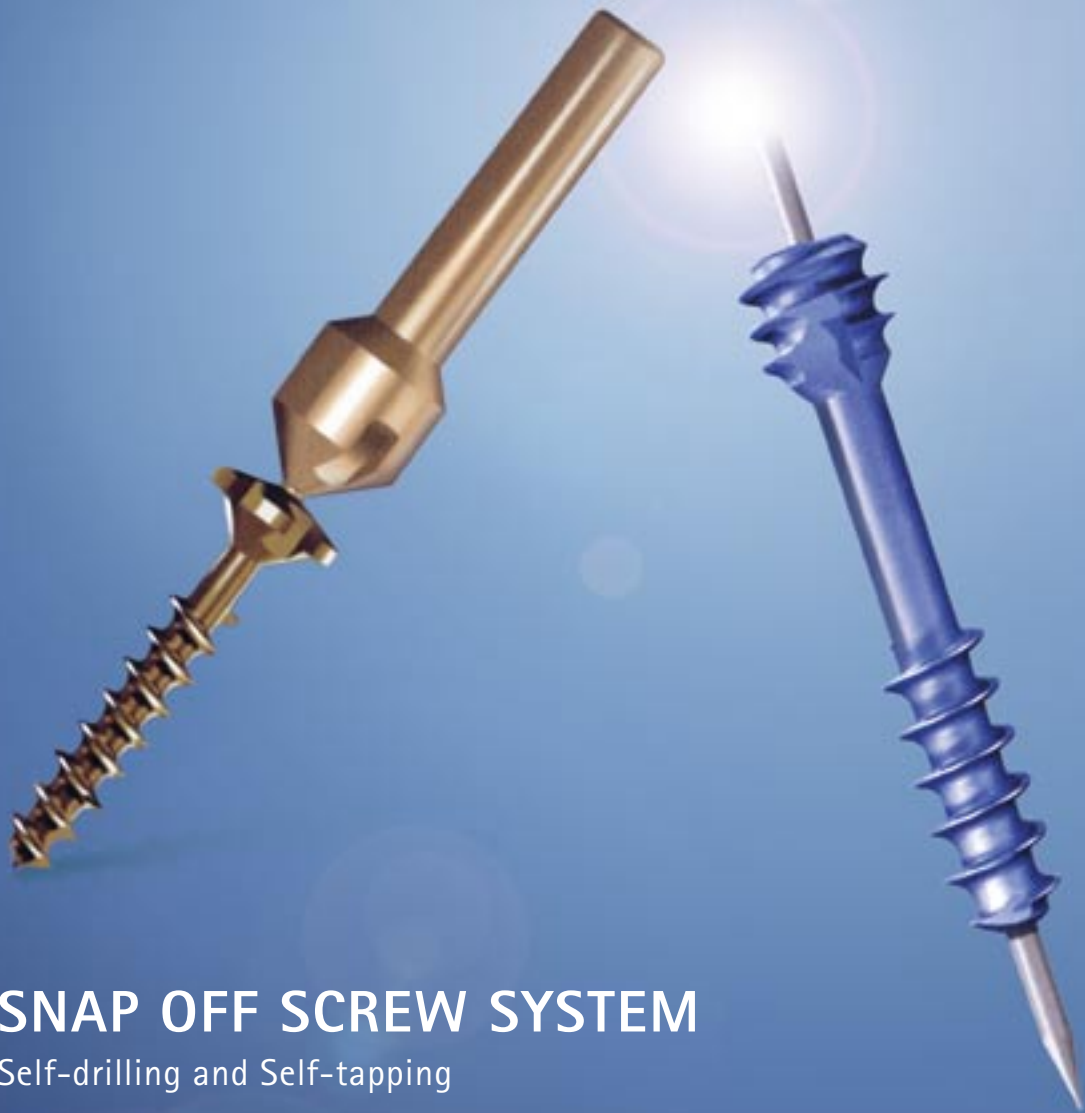
MATTES

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SNAP OFF SCREW SYSTEM

Self-drilling and Self-tapping

HBS COMPRESSION SCREW SYSTEM

Double threading for optimal compression

Scaphoid Bone Screws TITAN

HAND AND FOOT SURGERY

HBS Osteosynthese · Osteosynthesis · Osteosíntesis

Durchbohrte Schraube mit doppeltem Gewinde · Headless Bone Screw · Tornillo sin cabeza

Vis sans tête · Vite senza testa



D Einführung

Für die Fixation intraartikulärer Frakturen bietet das neue HBS-System die Wahl zwischen zwei Schraubentypen mit unterschiedlicher Kompression (Standard/Hohe Kompression).

Aufgrund ihrer Kanülierung können die Schrauben über einen 1 mm starken Führungsdraht eingebracht werden, was die Verwendung eines Zielgeräts überflüssig macht als auch eine perkutane Einbringung ermöglicht. Da beide Gewinde der Schrauben selbstschneidend sind, ist nur ein einziger kanülierter Bohrer erforderlich. Das T-Drive-System wiederum sorgt für sichere und präzise Handhabung.

Da die Schrauben inaktiv und komplett versenkbar sind, stellen sie das ideale Implantat zur intraartikulären oder gelenknahen Verwendung dar.

Indikationen

- Kahnbeinfrakturen
- Karpalfrakturen und Pseudarthrosen
- Mittelhandfrakturen
- Distale Radiusfrakturen (artikuläre Fragmente)
- Griffelfortsatzfrakturen der Ulna
- Proximale Radiuskopffrakturen
- Capitellumfrakturen
- Humeruskopffrakturen
- Frakturen der Cavitas glenoidalis
- Interkarpale Fusionen
- Interphalangeale Fusionen
- Mittelfußosteotomien
- Tarsalfusionen
- Knöchelfrakturen
- Patellafrakturen
- Osteochondrale Frakturen
- Densfrakturen
- Unterkieferfrakturen

Vorteile

- Kanülierte Schraube für 1 mm Führungsdraht
- Zwei verschiedene Kompressionsstufen
- Selbsthaltende T-Drive Aufnahme
- Beide Gewinde selbstschneidend
- 1 mm Abstufung der Schrauben



GB Introduction

For the fixation of intra-articular fractures the new HBS system offers a choice of Standard or High Compression Screws.

Being cannulated, the screws can be inserted over a 1 mm Guide Wire, thus eliminating the need to use a Jig, and allowing for percutaneous insertion. The self-tapping screw requires only a single cannulated drill, and the T-Drive system ensures complete control.

Since the screws are both inert and non-protrusive, they do not have to be removed, making them the ideal implant for use within or adjacent to a joint.

Indications

- Scaphoid Fractures
- Carpal Fractures and Nonunions
- Metacarpal Fractures
- Distal Radial Fractures (articular fragments)
- Ulnar Styloid Fractures
- Radial Head Fractures
- Capitellum Fractures
- Humeral Head Fractures
- Glenoid Fractures
- Inter-Carpal Fusions
- Inter-Phalangeal Fusions
- Metatarsal Osteotomies
- Tarsal Fusions
- Malleolar Fractures
- Patellar Fractures
- Osteochondral Fractures
- Odontoid Fractures
- Mandibular Fractures

Advantages

- Cannulated Screw for 1 mm Guide Wire
- Two kind of compressions
- Self retaining T-Drive
- Both threads are self-tapping
- Screw length in 1 mm increments



E Introducción

Para la fijación de las fracturas intraarticulares el nuevo sistema HBS ofrece la opción de tornillos estándar o de alta compresión.

Ya que vienen canulados, los tornillos pueden ser introducidos sobre un alambre de guía de 1 mm, lo que permite la inserción percutánea, eliminando así la necesidad de usar un aparato de puntería (Jig). Ambas roscas del tornillo son autoroscantes y solamente una broca canulada es necesario. La adaptación „T-Drive“ de la cabeza del tornillo asegura un control y una precisión total.

Ya que los tornillos son inertes y no protruyen al ser introducidos, no es necesario quitarlos, convirtiéndolos así en el implante ideal para emplearse adentro o al lado de la articulación.

Indicaciones

- Fracturas escafoideas
- Fracturas carpales y pseudartrosis
- Fracturas metacarpales
- Fracturas radiales distales (fragmentos articulares)
- Fracturas estiloideas del cúbito
- Fracturas de la cabeza radial

- Fracturas del capitellum
- Fracturas de la cabeza del húmero
- Fracturas glenoideas
- Fusiones intercarpales
- Fusiones interfalangeales
- Osteotomías metatarsales
- Fusiones tarsales
- Fracturas maleolares
- Fracturas patelares
- Fracturas osteocondrales
- Fracturas odontoideas
- Fracturas mandibulares

Ventajas

- Tornillo canulado para el alambre guía de 1 mm
- Dos distintos tipos de compresiones
- T-Drive con autoretenición
- Ambas roscas son autorroscantes
- La longitud del tornillo viene en incrementos de 1 mm



Introduction

Pour la fixation de fractures intra-articulaires le nouveau système HBS permet de choisir entre deux types de vis à compression différentes (à compression standard ainsi qu'à haute compression) selon les besoins.

Ces vis à canule spéciale peuvent être introduites par l'intermédiaire d'une broche de guidage de 1 mm d'épaisseur, ce qui rend l'emploi d'un appareil pilote inutile et qui permet une introduction percutanée. Puisque les deux filetages de la vis sont autotaradants, on n'a besoin que d'un seul foret canulé. Le système de guidage en T assure en outre une manipulation sûre et précise.

Puisque ces vis sont inertes et peuvent être entièrement noyées, elles sont des implants tout à fait indiqués pour l'emploi intra-articulaire ou à proximité d'articulation.

Indications

- Fractures naviculaires
- Fractures carpiennes et pseudarthroses
- Fractures métacarpiennes
- Fractures distales radiales (fragments articulaires)
- Fractures styloïdes ulnaires
- Fractures proximales de la tête du radius
- Fractures du capitellum
- Fractures de la tête de l'humérus
- Fractures de la cavité glénoïde
- Fusions inter-carpiennes
- Fusions inter-phalangiennes
- Ostéotomies métatarsiennes
- Fusions tarsiennes
- Fractures malléolaires
- Fractures patellaires
- Fractures ostéochondrales
- Fractures dentaires
- Fractures mandibulaires

Avantages

- Vis canulée pour une broche de guidage de 1 mm
- Deux forces différentes de compression
- Guidage en T autostatique (embout de Torx)
- Deux filetages auto taraudeurs
- Longueurs de vis en gradations de 1 mm



Introduzione

Per il fissaggio di fratture intraarticolari il nuovo sistema HBS offre una risposta a queste problematiche e permette al chirurgo la scelta, a seconda delle esigenze, fra due tipi di viti con compressione differenziata (compressione standard e alta compressione).

Grazie alla cannulazione le viti possono essere inserite su un filo guida di spessore 1 mm, rendendo in tal modo superfluo l'impiego del puntatore e permettendo al contempo l'inserzione percutanea. Poiché la vite è completamente autofilettante, è necessaria soltanto un'unica punta cannulata. Il sistema T-Drive provvede inoltre alla sicurezza e alla precisione delle operazioni.

Poiché le viti sono inerte e a scomparsa completa, esse rappresentano l'impianto ideale per impiego intraarticolare o in prossimità di articolazioni.

Indicazioni

- Fratture dello scafoide
- Fratture carpali e pseudoartrosi
- Fratture metacarpali
- Fratture distali del radio (frammenti articolari)
- Fratture dell'ulna stiloide
- Fratture prossimali della testa radiale
- Fratture del capitello dell'omero
- Fratture della testa dell'omero
- Fratture della fossa glenoide
- Fusioni intercarpali
- Fusioni interfalangee
- Osteotomie del metatarso
- Fusioni tarsali
- Fratture della caviglia
- Fratture della rotula
- Fratture osteocondriche
- Fratture dentali
- Fratture mandibolari

Vantaggi

- Vite cannulata per filo guida da 1 mm
- Due differenti forze di compressione
- T-Drive autoreggente (attacco Torx)
- Completamente autofilettante
- Lunghezza vite in passi di 1 mm



Instrument/Implant Set

Cat. No. M 47000 HBS and Snap off Screw Implant and Instrument Set



Cat. No. M 47010

Graphic Case (Tray in Steel) for Set Cat. No. M 47000



Cat. No. 152162 Sterilization Container

310x190x65 mm, Lid and Bottom perforated

Recommended Sterilization Container for Set Cat. No. M 47000 (are not included in the Set)

Listing for Set Cat. No. M 47000

Cat. No.: Instruments for HBS - Snap off Screw System	Pcs.:
47390 HBS - Guide Wire Dia. 1.0 mm x Length 80 mm	- 4 -
47400 HBS - Cannulated Drill Bit Dia. 2.1 mm / 3.3 mm	- 1 -
47410 HBS - Cannulated Drill Bit Dia. 2.1 mm	- 1 -
47420 HBS - Screw Length Gauge	- 1 -
47430 HBS - Measuring Sleeve for Guide Wire	- 1 -
47440 HBS - Cannulated Screw Driver, Hexagonal 2.0 mm	- 1 -
47450 HBS - Screw Driver for Snap off Screws	- 1 -
41840 Screw Forceps	- 1 -
Cat. No.: Dia. 3.0 mm Ti. HBS Screws, Cannulated	Pcs.:
47120 Length 12 mm, Titanium	- 4 -
47140 Length 14 mm, Titanium	- 4 -
47160 Length 16 mm, Titanium	- 4 -
47180 Length 18 mm, Titanium	- 4 -
47200 Length 20 mm, Titanium	- 4 -
47220 Length 22 mm, Titanium	- 4 -
47240 Length 24 mm, Titanium	- 4 -
47260 Length 26 mm, Titanium	- 4 -
47280 Length 28 mm, Titanium	- 4 -
47300 Length 30 mm, Titanium	- 4 -
Cat. No.: Dia. 2.0 mm Ti. Snap off Screws	Pcs.:
47600 Length 11 mm, Titanium	- 4 -
47620 Length 12 mm, Titanium	- 4 -
47640 Length 13 mm, Titanium	- 4 -
47660 Length 14 mm, Titanium	- 4 -

Implants

For Cat. No. see page 6!

Scaphoid bone screws in Titanium DIN ISO 5832-3 HBS bone screw system

Dia. 4.0 mm  Dia. 3.0 mm

For Cat. No. see page 9!

Self-drilling and tapping Snap off Screw Dia. 2.0 mm in Titanium DIN ISO 5832-3 (weil osteotomy)

 Dia. 2.0 mm



Cat. No. 47390 HBS-Guide Wire Dia. 1.0 mm x Length 80 mm



Cat. No. 47430 HBS-Measuring Sleeve for Guide Wire 4-739



Cat. No. 47400 HBS-Cannulated Drill Bit Dia. 2.1 mm/3.3 mm



Cat. No. 47440 HBS-Cannulated Screw Driver, Hex. 2.0 mm



Cat. No. 47410 HBS-Cannulated Drill Bit Dia. 2.1 mm



Cat. No. 47450 HBS-Screw Driver for Snap off Screws



Cat. No. 47420 HBS-Screw Length Gauge



Cat. No. 41840 Screw Forceps



Cat. No. 1332500 Inge 16.0 cm



Cat. No. 47460 Bone Clamp

DOUBLE THREADING for OPTIMAL COMPRESSION

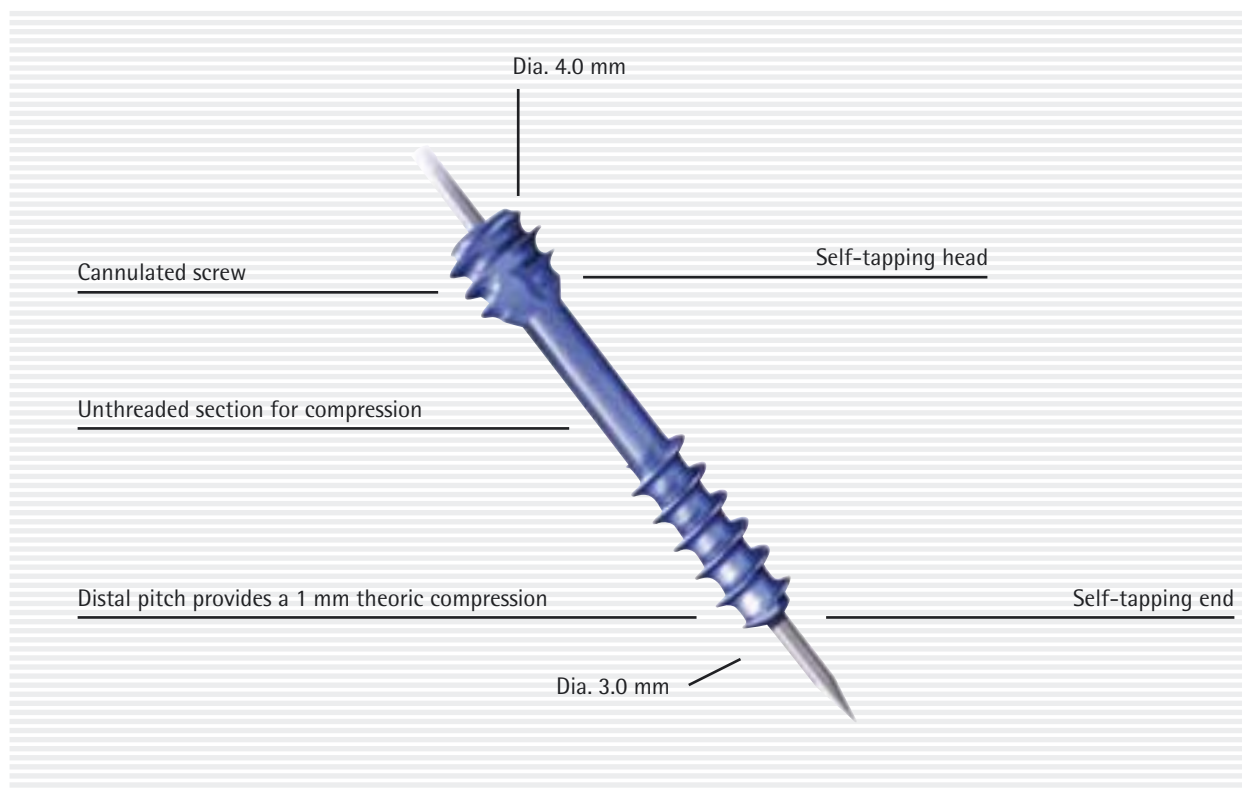
Design rationale and Main features

The Compression Screw is easy to insert (over a guide wire) and provides efficient compression (through two separate threadings with different pitches, and an intermediate unthreaded section), thus ensuring quick, dependable internal fixation.

INDICATIONS

- Distal and proximal metatarsal osteotomies
- SCARF osteotomy
- Uni and biocortical internal fixation (ex.: scaphoid)
- Small bone fusion

COMPRESSION SCREW



Cat. No.:	Total Length	Cat. No.:	Total Length
	Cannulated		non Cannulated
47120	12 mm	47130	12 mm
47140	14 mm	47150	14 mm
47160	16 mm	47170	16 mm
47180	18 mm	47190	18 mm
47200	20 mm	47210	20 mm
47220	22 mm	47230	22 mm
47240	24 mm	47250	24 mm
47260	26 mm	47270	26 mm
47280	28 mm	47290	28 mm
47300	30 mm	47310	30 mm

Surgical Technique (Scarf Osteotomy)

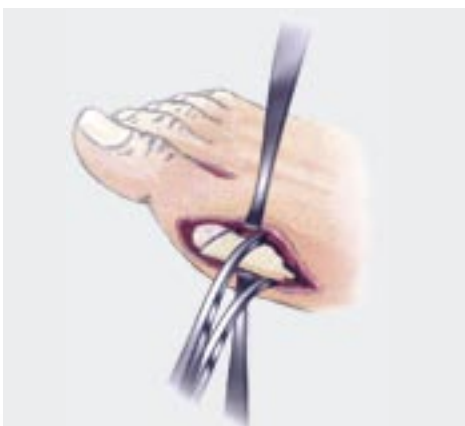
EXPOSURE AND EXOSTOSECTOMY

- After lateral freeing of the base of the phalanx, a medial skin incision is made over the first metatarsal.
- Exostosectomy is performed using an oscillating saw, taking care to preserve cartilage integrity.
- Edges of the cut are smoothed off using a reamer or a small rasp.



OSTEOTOMY

- The longitudinal cut is performed on the medial aspect of the metatarsal shaft, parallel to the plantar surface.
- Transverse bone cuts should be parallel to each other, and between 45° and 60° (depending on the technique used) to the longitudinal bone cut.

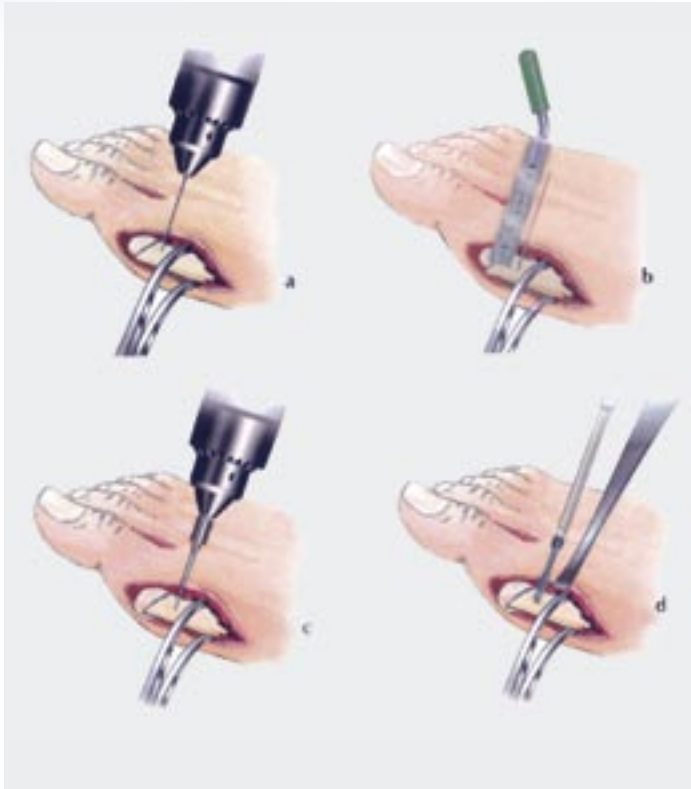


TRANSLATION

- After translation has been performed, it is maintained with the special bone clamp.
- Lateral translation is normally used. However, certain corrections may require translation in the frontal or sagittal plane (for lowering or shortening).

Surgical Technique (Scarf Osteotomy)

FIXATION



- A 10/10 Kirschner wire is inserted at the proper entry point and with the proper angulation (for head or shaft fixation), to serve as a guide for later drilling and screw insertion.
- Use the screw length gauge (using the subtraction principle) to determine the appropriate length of the screw. *The lag screw should be at least 4 mm shorter than the measured length to avoid cartilage penetration.*
- The cannulated drill is inserted over the guide wire and fully advanced to create the countersink for the screw head.
- The selected screw is inserted and its head is carefully countersunk to ensure optimal compression and avoid later impingement. *Make sure that the diaphyseal screw is firmly anchored in both cortices.*

The proximal screw is inserted using the same technique.

ANTEROMEDIAL RESECTION

- Once the screws are positioned, the anteromedial angle is cut in line with the exostosectomy, using an oscillating saw. Edges of the cut are smoothed off.
- The capsule is closed in a routine fashion.



SELF-DRILLING and SELF-TAPPING

Design rationale and Main features

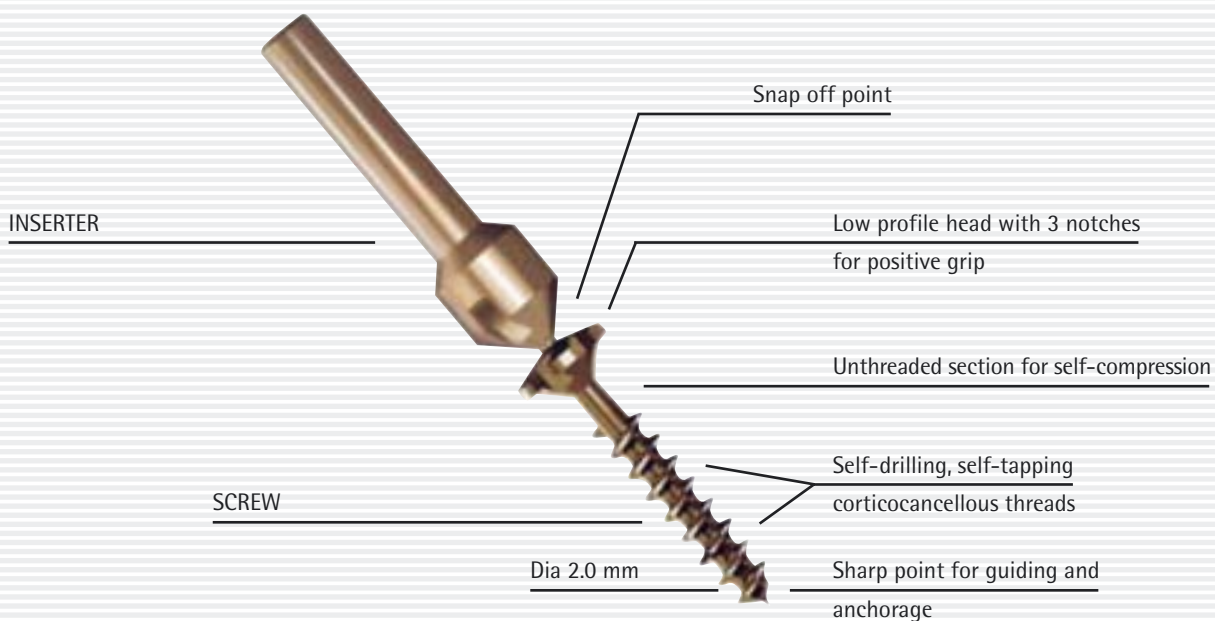
The Snap off Screw provides superior fixation: it saves time (no need for a pilot drill hole), and it is easy to use, safe (clean break), accurate (guide point), and efficient (self-compression).

The Snap off Screw consists of two parts: implantable screw which provides firm anchorage inserter which allows powered insertion.

- 47600 Snap off Screw Ø 2 mm Length 11 mm
- 47620 Snap off Screw Ø 2 mm Length 12 mm
- 47640 Snap off Screw Ø 2 mm Length 13 mm
- 47660 Snap off Screw Ø 2 mm Length 14 mm

INDICATIONS

- Weil osteotomy
- Unicortical internal fixation



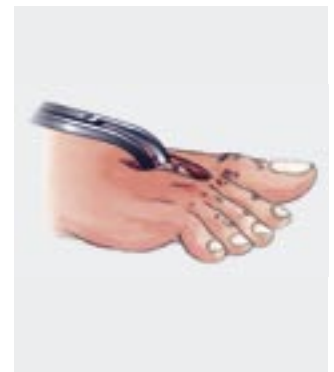
SNAP OFF SCREW

Surgical Technique (Weil Osteotomy)

EXPOSURE

The procedure is performed using a dorsal intermetatarsal and/or transverse approach. After the two extensor muscles have been separated:

- Hohmann retractors are placed on both metatarsal sides.
- The metatarsophalangeal joint is dislocated between the extensor digitorum longus and the extensor digitorum brevis.
- A Hinge spreader is inserted to protect the extensor muscles and afford good exposure for the osteotomy.



Surgical Technique (Weil Osteotomy)



OSTEOTOMY

Osteotomy is performed using an oscillating saw:

- Make a 3 cm (approximately) horizontal cut parallel to the sole, to increase the interfragmental contact area and thus enhance healing.
- Osteotomy results in spontaneous recession of the metatarsal head, which relieves tension on soft tissue.



TRANSLATION

- Grasp the metatarsal head with Kocher forceps
- Use the „Index Plus Minus“ formula and the Lelièvre Curve to determine the amount of recession of the metatarsal head.
- The metatarsal head must be held in the correct position for subsequent screw fixation.



INSERTION OF THE SNAP OFF SCREW

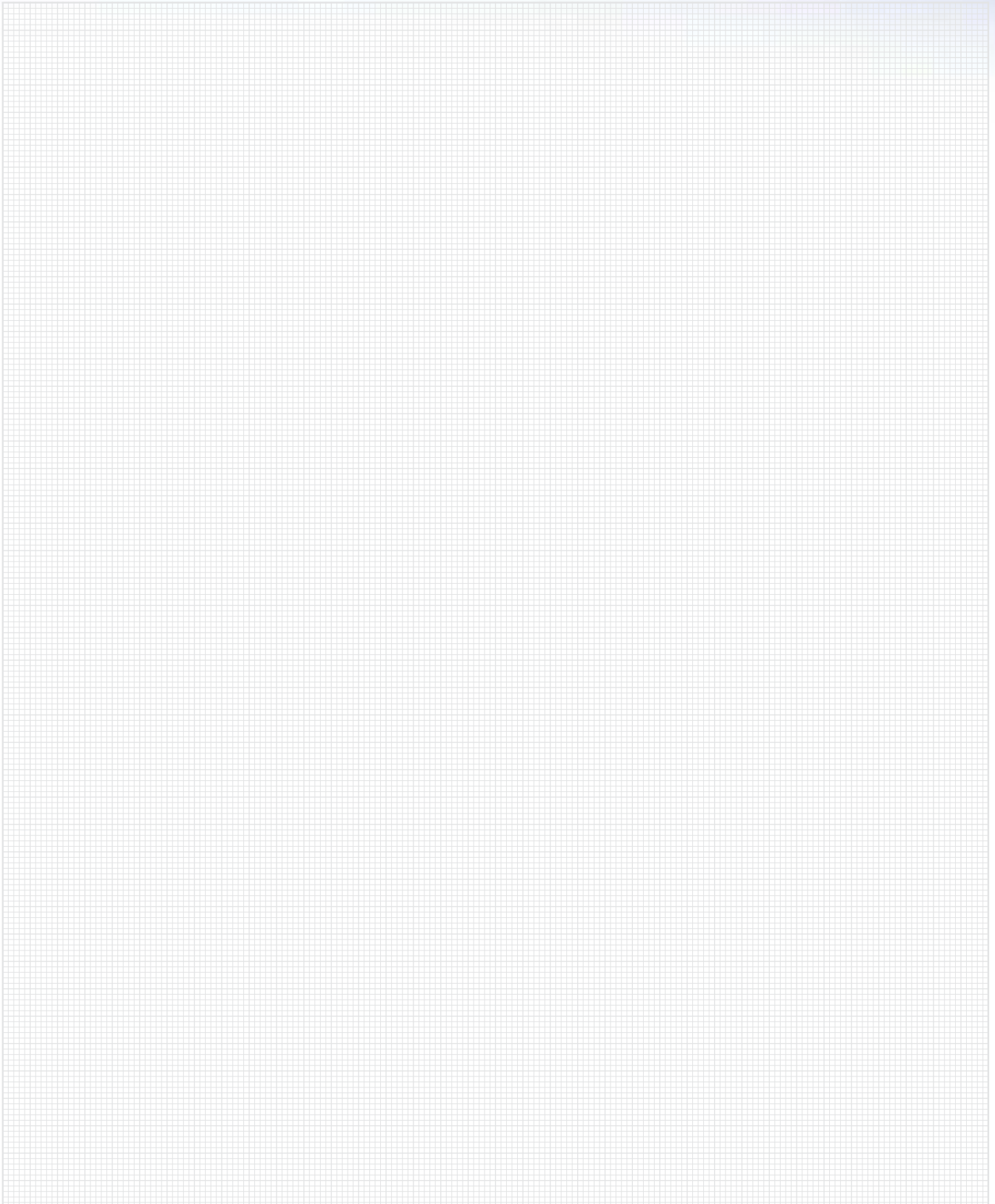
- Connect the screw inserter to the power drill, and drive the screw into the metatarsal.
- The inserter snaps off as soon as the screw head makes contact with the dorsal cortex.
- If necessary, insertion of the screw can be completed with the special screwdriver (with 3 notches).



RESECTION OF THE BONE PEAK

- Bone peak is resected using Liston pliers. This allows deep flexion of the metatarsophalangeal joint.
- It may be necessary to perform a Z-shaped release (Green technique) of the extensor muscles.

Notice



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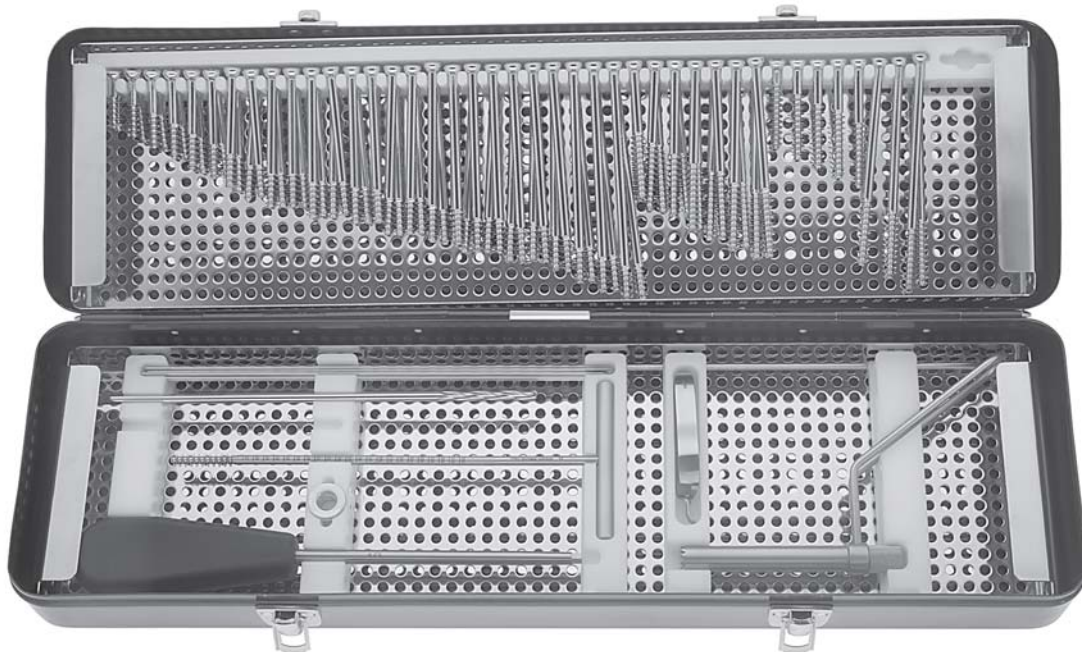
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www.mattes-medizintechnik.com

Cannulated Screws and Instrument Set



M 05000 Cannulated Screws and Instrument Set

M 01110 Aluminium Case Red

M 05010 Upper Tray

M 05020 Lower Tray

			pieces
5002-5009	Hollow Screws 7.0 mm \varnothing , 16 mm 30-35-40-45-50-55-60-65 mm	ea. 2	16
5010-5016	Hollow Screws 7.0 mm \varnothing 16 mm 70-75-80-85-90-95-100 mm	ea. 4	28
5017-5020	Hollow Screws 7.0 mm \varnothing 16 mm 105-110-115-120 mm	ea. 2	8
5031-5035	Hollow Screws 7.0 mm \varnothing 32 mm 45-50-55-60-65 mm	ea. 1	5
5036-5042	Hollow Screws 7.0 mm \varnothing 32 mm 70-75-80-85-90-95-100 mm	ea. 2	14
5043-5046	Hollow Screws 7.0 mm \varnothing 32 mm 105-110-115-120 mm	ea. 1	4
5132	Washer 19 mm \varnothing		6
	1 Tray		
5100	Drill Bit 5.0 mm \varnothing		1
5114	Tap 7.0 mm \varnothing		1
5118	Screw Driver		1
5130	Tissue Protector Sleeve		1
5140	Guide Wire 2.0 mm \varnothing 230 mm		10
4184	Screw Holding Forceps		1

Cannulated Screws



7 mm \varnothing with over flats SW 5.0 mm
16 mm length of thread, drill bit 5.0 mm

5001	25 mm	5011	75 mm
5002	30 mm	5012	80 mm
5003	35 mm	5013	85 mm
5004	40 mm	5014	90 mm
5005	45 mm	5015	95 mm
5006	50 mm	5016	100 mm
5007	55 mm	5017	105 mm
5008	60 mm	5018	110 mm
5009	65 mm	5019	115 mm
5010	70 mm	5020	120 mm



7 mm \varnothing with over flats SW 5.0 mm
32 mm length of thread, drill bit 5.0 mm

5030	40 mm	5040	90 mm
5031	45 mm	5041	95 mm
5032	50 mm	5042	100 mm
5033	55 mm	5043	105 mm
5034	60 mm	5044	110 mm
5035	65 mm	5045	115 mm
5036	70 mm	5046	120 mm
5037	75 mm		
5038	80 mm		
5039	85 mm		



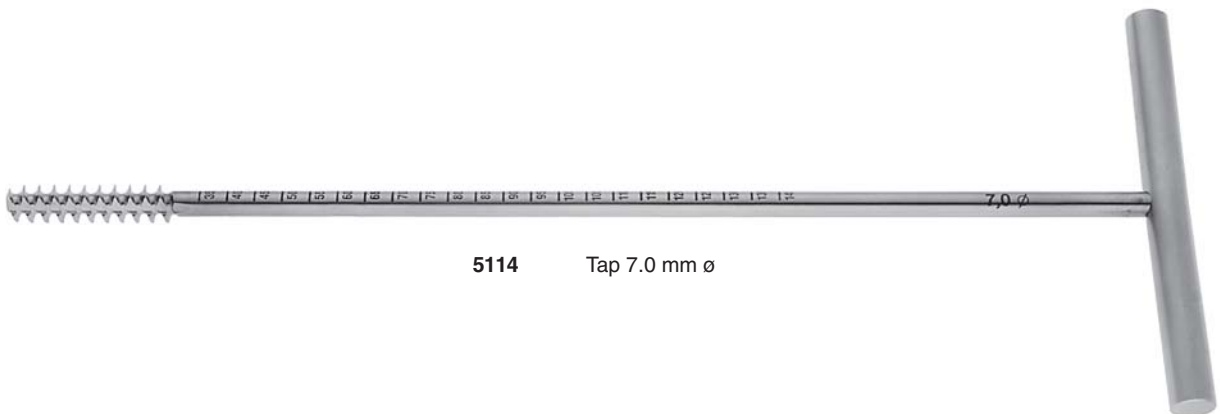
Guide Wire with 10 mm thread

5140 Guide Wire 2.0 mm \varnothing for Hollow Screws 7 mm \varnothing 230 mm

Instruments for 7 mm Cannulated Screws



5100 Drill Bit 5.0 mm ø



5114 Tap 7.0 mm ø



5118 5 mm Screw Driver for 7 mm screws



5130 Tissue Protector Sleeve



Washers for Hollow Screws

- | | |
|-------------|---------------------|
| 5132 | 19 mm \varnothing |
| 5134 | 16 mm \varnothing |
| 5522 | 13 mm \varnothing |



5131 Parallel Target Device for Guide Wires \varnothing 2.0 mm

Cannulated Screws \varnothing 3.5 mm



Dia of thread	3.5 mm	3.5 mm
Width over flats	2.5 mm	2.5 mm
Drill Bit	2.7 mm	2.7 mm
Length		
10 mm	5300	5342
12 mm	5302	5344
14 mm	5304	5346
16 mm	5306	5348
18 mm	5308	5350
20 mm	5310	5352
22 mm	5312	5354
24 mm	5314	5356
26 mm	5316	5358
28 mm	5318	5360
30 mm	5320	5362
32 mm	5322	5364
34 mm	5324	5366
36 mm	5326	5368
38 mm	5328	5370
40 mm	5330	5372
42 mm	5332	5374
44 mm	5334	5376
46 mm	5336	5378
48 mm	5338	5380
50 mm	5340	5382



Guide Wire with 10 mm thread

5138 Guide Wire 1.0 mm \varnothing for Hollow Screws 3.5 mm \varnothing 230 mm

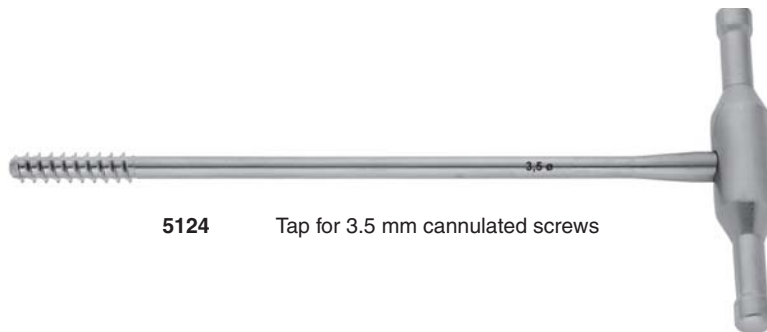
Instruments for 3.5 mm Cannulated Screws



9334 Tap Sleeve 3.5 mm
Drill Sleeve 2.5 mm



5122 Screw Driver for 3.5 mm cannulated screws



5124 Tap for 3.5 mm cannulated screws



5098 Cannulated Drill Bit 160 mm length
Drill Bit ø 3.5 mm / 1.35 mm
5099 Drill Bit ø 2.7 mm / 1.35 mm



5126 Tap Sleeve 2.7 mm
Drill Sleeve 1.0 mm

Cannulated Screws \varnothing 4.5 mm



Dia of thread	4.5 mm	4.5 mm
Width over flats	3.5 mm	3.5 mm
Drill Bit	3.2 mm	3.2 mm
Length		
20 mm	5200	5230
22 mm	5201	5231
24 mm	5202	5232
26 mm	5-203	5233
28 mm	5204	5234
30 mm	5205	5235
32 mm	5206	5236
34 mm	5207	5237
36 mm	5208	5238
38 mm	5209	5239
40 mm	5210	5240
42 mm	5211	5241
44 mm	5212	5242
46 mm	5213	5243
48 mm	5214	5244
50 mm	5215	5245
52 mm	5216	5246
54 mm	5217	5247
56 mm	5218	5248
58 mm	5219	5249
60 mm	5220	5250

Guide Wire with 10 mm thread

5260 Guide Wire 1.6 mm \varnothing for Hollow Screws 7 mm \varnothing 230 mm

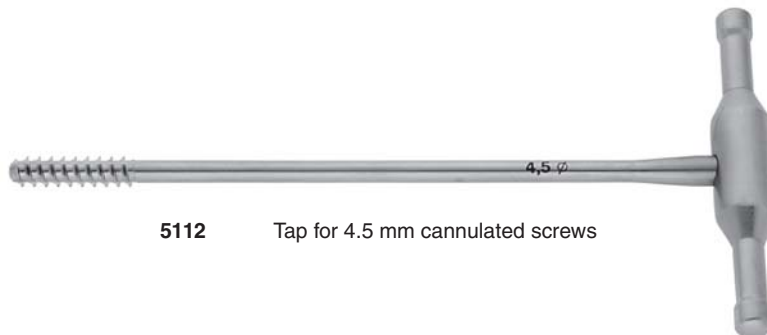
Instruments for 4.5 mm Cannulated Screws



9334 Tap Sleeve 3.5 mm
Drill Sleeve 2.5 mm



5120 Screw Driver for 4.5 mm cannulated screws



5112 Tap for 4.5 mm cannulated screws



5142 Cannulated Drill Bit 160 mm length
Drill Bit \varnothing 4.5 mm / 1.75 mm
5144 Drill Bit \varnothing 3.2 mm / 1.75 mm



9330 Tap Sleeve 4.5 mm
Drill Sleeve 3.2 mm

Epiphyseal Staples Stainless Steel



- 5600** Barbed Staples 8.7 x 16 x 2 mm
- 5602** Barbed Staples 8.7 x 19 x 2 mm
- 5604** Barbed Staples 8.7 x 22 x 2 mm
- 5606** Barbed Staples 8.7 x 25 x 2 mm



5610
24 x 33 x 4.8 mm



5612
24 x 33 x 9.5 mm



5614
24 x 33 x 14 mm



	Diameter	Width	Length
5620	2.5 mm	22 mm	19 mm
5622	2.5 mm	16 mm	19 mm
5624	1.5 mm	22 mm	19 mm
5626	1.5 mm	16 mm	19 mm



5630 Staples Extractor



5632 Staples Driver



5634 Staples Inserter

Staples - Chrome Cobalt Molybden



5650 6 mm



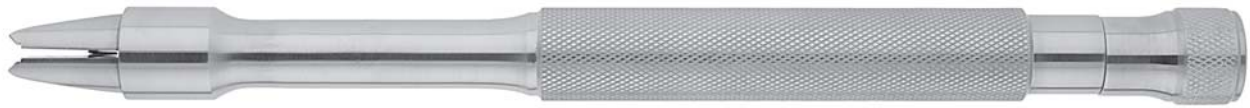
5652 8 mm



5654 11 mm



5656 14 mm



5670 Impactor



5680
9.5 x 22 mm



5682
16 x 22 mm



5684
22 x 22 mm



5686
28 x 22 mm

INTERFERENCE SCREW KREUZBANDSCHRAUBE



Cannulated Drill

5950	ø 6.0 mm
5952	ø 7.0 mm
5954	ø 8.0 mm
5956	ø 9.0 mm
5958	ø 10.0 mm
5960	ø 11.0 mm
5962	ø 12.0 mm



Material: Titan ISO 5832 / 03

Total Length / mm	20	25	30
-------------------	----	----	----

Flat Head

ø 7 mm	5900	5902	5904
ø 8 mm	5910	5912	5914
ø 9 mm	5920	5922	5924

Round Head

ø 7 mm	5927	5928	5929
ø 8 mm	5930	5931	5932
ø 9 mm	5933	5934	5935

Cannulated



Cannulated Drill Sleeve

5970	Drill Sleeve for 5-950
5972	Drill Sleeve for 5-954
5974	Drill Sleeve for 5-958
5976	Drill Sleeve for 5-962

Instruments for cannulated Screws



5160 Direct Screws Length Gauge for 7.0 mm ø



5162 Canal Brush 2.1 mm ø



5164 Canal Cleaner 2.0 mm ø



5166 Direct Screws Length Gauge for 4.5 mm ø



5168 Canal Brush 1.75 mm ø



5170 Canal Cleaner 1.6 mm ø



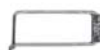
5172 Direct Screws Length Gauge for 3.5 mm ø



5174 Canal Brush 1.35 mm ø



5176 Canal Cleaner 1.2 mm ø



5178 Holding Clamp

Chrome Cobalt Molybden Osteotomy Staples



Cat. No.:	Width	Length
5705	16 mm	22 mm
5706	22 mm	22 mm
5707	28 mm	22 mm



Cat. No.:	Width A	Length B	Height C
5710	24 mm	30 mm	5 mm
5712	24 mm	30 mm	10 mm
5714	24 mm	30 mm	15 mm



Cat. No.:	Width	Length	Height
5730	24 mm	35 mm	5 mm
5732	24 mm	40 mm	10 mm
5734	24 mm	40 mm	15 mm

MATTES



Wilberg
5750



Wilberg
5752



Wilberg
5754



Palmer
5766



Palmer
5768



Palmer

Cat. No.:	Length	Diam.
5770	15 mm	1.5 mm
5772	20 mm	1.5 mm
5774	25 mm	1.5 mm
5776	30 mm	1.5 mm
5778	35 mm	1.5 mm
5780	40 mm	1.5 mm
5782	45 mm	1.5 mm
5784	50 mm	1.5 mm
5786	55 mm	1.5 mm
5788	60 mm	1.5 mm
5790	65 mm	1.5 mm
5792	70 mm	1.5 mm

MATTES

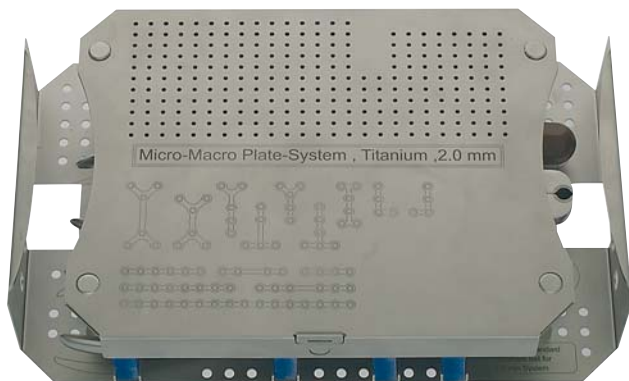
INSTRUMENTE GmbH
MEDIZINTECHNIK



**Micro
Titanium Plating
2.0 mm System**

ORAL - MAXILLO - CRANIO - FACIAL SURGERY 2.0 MM SYSTEM

M 06001 complete include Sterilization Container



152168 gold
 Deckel und Boden gelocht
 Lid and Bottom perforated
 L x B x H
 310 x 190 x 65 mm

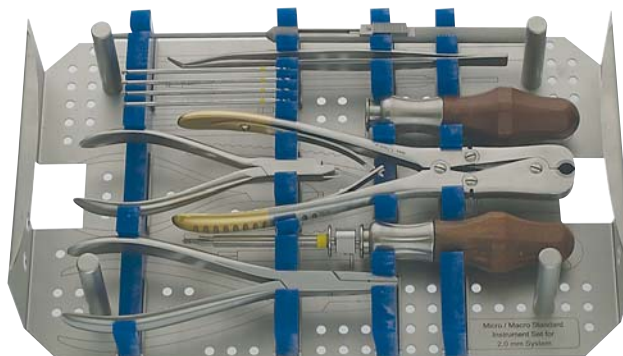
M 06001 Mini Standard Platten Set / Standrad Set Mini Plates komplett, bestehend aus / complete, consisting out of:

152168	1	Steril-Container 310 x 190 x 65 mm	Sterilization Container 310 x 190 x 65 mm
M 06010	1	Rack für Platten und Schrauben, TITAN (leer)	Rack für Platten and screws, TITANIUM (empty)
M 06060	1	Rack für Instrumente (leer)	Rack for instruments (empty)
7432	1	Plattenschneidezange, mit Hartmetall, 18,0 cm	Plate cutting pliers, with Tungsten Carbide inserts, 18,0 cm
9406	1	Flachzange, 13,5 cm	Flat pliers, 13,5 cm
06580	1	Plattenbiegezange ADERER, 13,0 cm	Plate bending pliers ADERER, 13,0 cm
06586	1	Platten / Schrauben-Haltepinzette, 15,0 cm	Plates and screws holding forceps, 15,0 cm
06190	1	Spiralbohrer 1,5 x 50 mm	Twist drill 1,5 x 50 mm
06194	1	Spiralbohrer 1,5 x 70 mm	Twist drill 1,5 x 70 mm
06400	1	Selbsthaltender Schraubendreher	Screwdriver with Selfholding Facility
06250	5	Gerade Miniplatten 4 Löcher	Straight Mini Plates 4 holes
06252	5	Gerade Miniplatten 4 Löcher	Straight Mini Plates 4 holes
06254	5	Gerade Miniplatten 6 Löcher	Straight Mini Plates 6 holes
06256	5	Gerade Miniplatten 6 Löcher	Straight Mini Plates 6 holes
06258	5	Gerade Miniplatten 6 Löcher	Straight Mini Plates 6 holes
06260	5	Gerade Miniplatten 16 Löcher	Straight Mini Plates 16 holes
06200	5	L - Platten, 90°	L - Plates, 90°
06202	5	L - Platten, 90°	L - Plates, 90°
06316	5	Y - Platten	Y - Plates
06318	5	Y - Platten	Y - Plates
06326	5	Doppel - Y - Platten	Double - Y - Plates
06328	5	Doppel - Y - Platten	Double - Y - Plates
06304	5	T - Platten, 90°	T - Plates, 90°
06306	5	T - Platten, 90°	T - Plates, 90°
06324	5	H - Platten	H - Plates
06120	10	Corticalis Minischrauben, 5 mm	Cortex Mini Screws, 5 mm
06122	10	Corticalis Minischrauben, 7 mm	Cortex Mini Screws, 7 mm
06124	10	Corticalis Minischrauben, 9 mm	Cortex Mini Screws, 9 mm
06126	10	Corticalis Minischrauben, 11 mm	Cortex Mini Screws, 11 mm
06128	10	Corticalis Minischrauben, 13 mm	Cortex Mini Screws, 13 mm
06130	10	Corticalis Minischrauben, 15 mm	Cortex Mini Screws, 15 mm
06132	10	Corticalis Minischrauben, 17 mm	Cortex Mini Screws, 17 mm
06140	10	Corticalis Minischrauben, 2,3 x 7 mm	Cortex Mini Screws, 2,3 x 7 mm
06142	10	Corticalis Minischrauben, 2,3 x 9 mm	Cortex Mini Screws, 2,3 x 9 mm
06144	10	Corticalis Minischrauben, 2,3 x 17 mm	Cortex Mini Screws, 2,3 x 17 mm

ORAL - MAXILLO - CRANIO - FACIAL SURGERY 2.0 MM SYSTEM



M 06010 Rack für Platten und Schrauben (leer)
Rack for Plates and screws (empty)



M 06060 Rack für Instrumente (leer)
Rack for Instruments (empty)

MINI-SCHRAUBEN, SELBSTSCHNEIDEND MINI-SCREWS, SELF-CUTTING

SYSTEM 2,0 MM



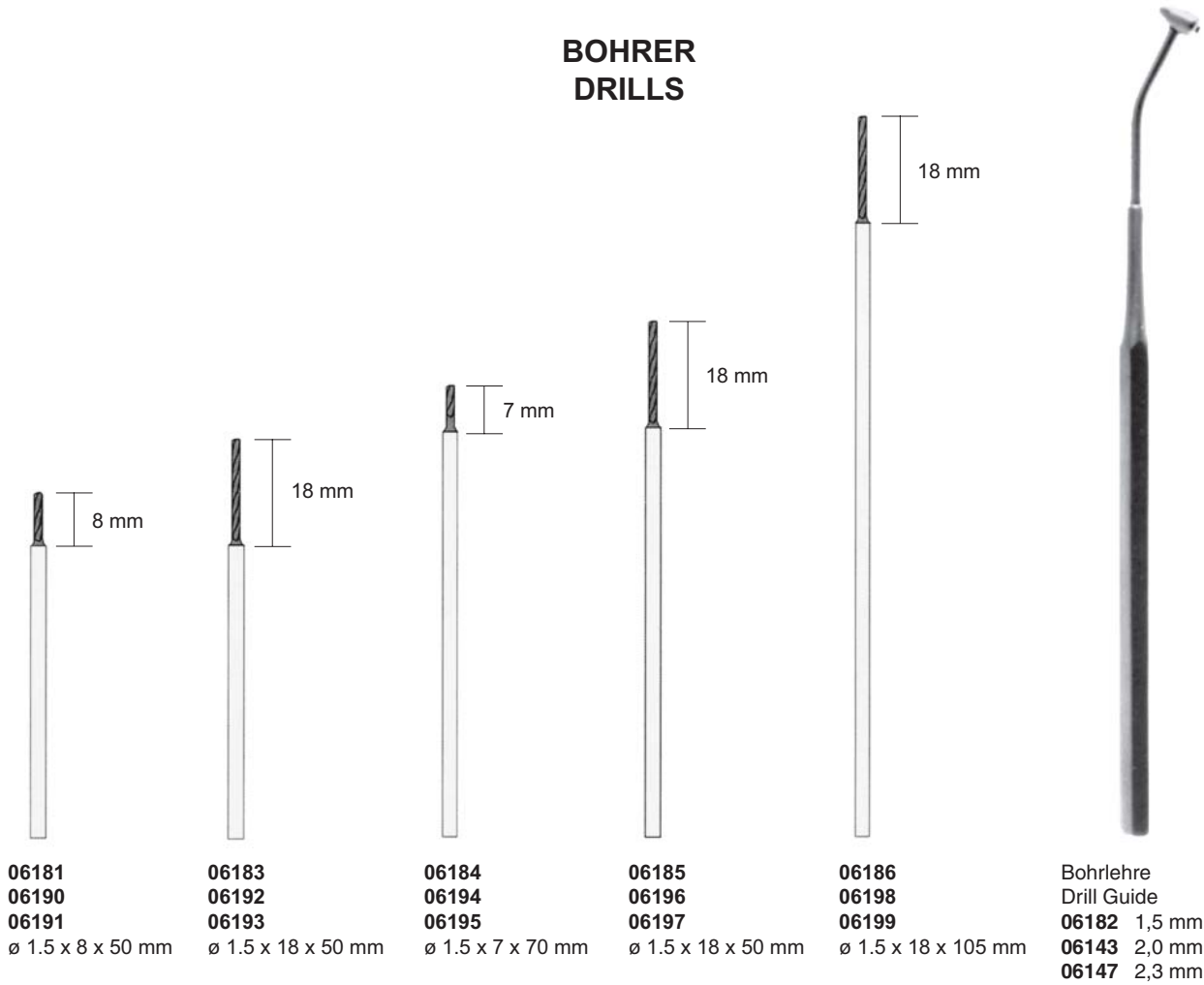
CROSS RECESSED ø 2.0 mm			
Cat. No.	Description	Diameter	Length
06120	screw cross-recessed	ø 2.0 mm	5 mm
06122	screw cross-recessed	ø 2.0 mm	7 mm
06124	screw cross-recessed	ø 2.0 mm	9 mm
06126	screw cross-recessed	ø 2.0 mm	11 mm
06128	screw cross-recessed	ø 2.0 mm	13 mm
06130	screw cross-recessed	ø 2.0 mm	15 mm
06132	screw cross-recessed	ø 2.0 mm	17 mm
06140	emergency screw cross-recessed	ø 2.3 mm	7 mm
06142	emergency screw cross-recessed	ø 2.3 mm	9 mm
06144	emergency screw cross-recessed	ø 2.3 mm	11 mm
06146	emergency screw cross-recessed	ø 2.3 mm	13 mm
06148	emergency screw cross-recessed	ø 2.3 mm	15 mm
06150	emergency screw cross-recessed	ø 2.3 mm	17 mm
06152	emergency screw cross-recessed	ø 2.3 mm	19 mm



Cat. No.	Description	Diameter	Length
06121	screw cross-recessed	ø 2.0 mm	4 mm
06123	screw cross-recessed	ø 2.0 mm	5 mm
06125	screw cross-recessed	ø 2.0 mm	6 mm
06127	screw cross-recessed	ø 2.0 mm	7 mm
06129	screw cross-recessed	ø 2.0 mm	8 mm
06131	screw cross-recessed	ø 2.0 mm	9 mm
06133	screw cross-recessed	ø 2.0 mm	10 mm
06135	screw cross-recessed	ø 2.0 mm	12 mm
06141	emergency screw cross-recessed	ø 2.3 mm	7 mm
06143	emergency screw cross-recessed	ø 2.3 mm	9 mm

selbstbohrende Schrauben für Titan-Implantat-Systeme
Self-drilling screws for Titanium Implant-Systems

BOHRER DRILLS



Stryker End			
Cat. No.	Description		
06181	Drill for 2.0 mm screws	ø 1.5 x 8 x 50 mm	stop stryker end
06183	Drill for 2.0 mm screws	ø 1.5 x 18 x 50 mm	stop stryker end
06184	Drill for 2.0 mm screws	ø 1.5 x 7 x 70 mm	stop stryker end
06185	Drill for 2.0 mm screws	ø 1.5 x 18 x 70 mm	stop stryker end
06186	Drill for 2.0 mm screws	ø 1.5 x 18 x 105 mm	stop stryker end

Round End			
Cat. No.	Description		
06190	Drill for 2.0 mm screws	ø 1.5 x 8 x 50 mm	stop round end
06192	Drill for 2.0 mm screws	ø 1.5 x 18 x 50 mm	stop round end
06194	Drill for 2.0 mm screws	ø 1.5 x 7 x 70 mm	stop round end
06196	Drill for 2.0 mm screws	ø 1.5 x 18 x 70 mm	stop round end
06198	Drill for 2.0 mm screws	ø 1.5 x 18 x 105 mm	stop round end

Dental Coupling			
Cat. No.	Description		
06191	Drill for 2.0 mm screws	ø 1.5 x 8 x 50 mm	stop dental end
06193	Drill for 2.0 mm screws	ø 1.5 x 18 x 50 mm	stop dental end
06195	Drill for 2.0 mm screws	ø 1.5 x 7 x 70 mm	stop dental end
06197	Drill for 2.0 mm screws	ø 1.5 x 18 x 70 mm	stop dental end
06199	Drill for 2.0 mm screws	ø 1.5 x 18 x 105 mm	stop dental end

TITAN MINIPLATEN TITANIUM MINIPLATES

SYSTEM 2,0 MM



06200
06201



06202
06203



06204
06205



06206
06207



06208
06209



06210
06211



06212
06213



06214
06215

Cat. No.	Description	Thickness	
06200	L - right 4 holes	plate 1.0 mm	2.0 mm system
06202	L - left 4 holes	plate 1.0 mm	2.0 mm system
06204	L - angle right 4 holes	plate 1.0 mm	2.0 mm system
06206	L - angle left 4 holes	plate 1.0 mm	2.0 mm system
06208	L - right 4 holes +	plate 1.0 mm	2.0 mm system
06210	L - left 4 holes +	plate 1.0 mm	2.0 mm system
06212	L - angle right 4 holes +	plate 1.0 mm	2.0 mm system
06214	L - angle left 4 holes +	plate 1.0 mm	2.0 mm system

Cat. No.	Description	Thickness	
06201	L - right 4 holes	plate 0.6 mm	2.0 mm system
06203	L - left 4 holes	plate 0.6 mm	2.0 mm system
06205	L - angle right 4 holes	plate 0.6 mm	2.0 mm system
06207	L - angle left 4 holes	plate 0.6 mm	2.0 mm system
06209	L - right 4 holes +	plate 0.6 mm	2.0 mm system
06211	L - left 4 holes +	plate 0.6 mm	2.0 mm system
06213	L - angle right 4 holes +	plate 0.6 mm	2.0 mm system
06215	L - angle left 4 holes +	plate 0.6 mm	2.0 mm system

SYSTEM 2.0 MM

TITAN MINIPLATEN TITANIUM MINIPLATES



06250
06251
straight
4 holes



06252
06253
straight
4 holes +



06254
06255
straight
6 holes



06256
06257
straight
6 holes +



06258
06259
straight
8 holes



06260
06261
straight
16 holes

Cat. No.	Description	Thickness	
06250	straight 4 hole	plate 1.0 mm	2.0 mm system
06252	straight 4 hole +	plate 1.0 mm	2.0 mm system
06254	straight 6 hole	plate 1.0 mm	2.0 mm system
06256	straight 6 hole +	plate 1.0 mm	2.0 mm system
06258	straight 8 hole	plate 1.0 mm	2.0 mm system
06260	straight 16 hole	plate 1.0 mm	2.0 mm system

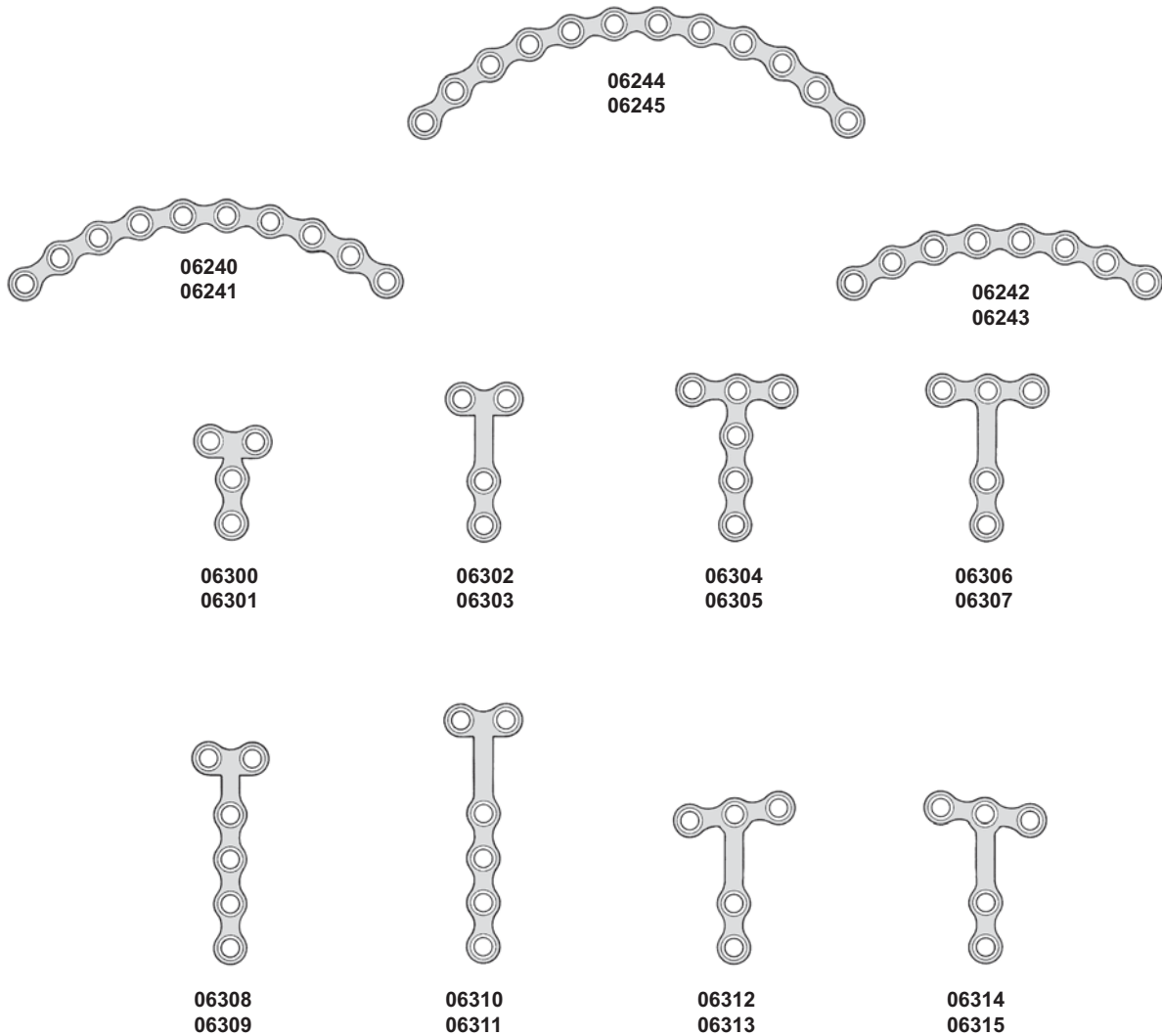
Cat. No.	Description	Thickness	
06251	straight 4 hole	plate 0.6 mm	2.0 mm system
06253	straight 4 hole +	plate 0.6 mm	2.0 mm system
06255	straight 6 hole	plate 0.6 mm	2.0 mm system
06257	straight 6 hole +	plate 0.6 mm	2.0 mm system
06259	straight 8 hole	plate 0.6 mm	2.0 mm system
06261	straight 16 hole	plate 0.6 mm	2.0 mm system



45860 Mini - Adaptationsplatte für 2,0 mm Schrauben, 20 Loch, 100 mm Länge
Mini - Adaptationplate for 2.0 mm screws with 20 holes, 100 mm length

SYSTEM 2.0 MM

TITAN MINIPLATEN TITANIUM MINIPLATES



Cat. No.	Description	Cat. No.	Description	
06240	10 holes plate 1.0 mm	06241	10 holes plate 0.6 mm	2.0 mm system
06242	8 holes plate 1.0 mm	06243	8 holes plate 0.6 mm	2.0 mm system
06244	12 holes plate 1.0 mm	06245	12 holes plate 0.6 mm	2.0 mm system
06300	4 holes plate 1.0 mm	06301	4 holes plate 0.6 mm	2.0 mm system
06302	4 holes plate 1.0 mm	06303	4 holes plate 0.6 mm	2.0 mm system
06304	6 holes plate 1.0 mm	06305	6 holes plate 0.6 mm	2.0 mm system
06306	5 holes plate 1.0 mm	06307	5 holes plate 0.6 mm	2.0 mm system
06308	6 holes plate 1.0 mm	06309	6 holes plate 0.6 mm	2.0 mm system
06310	6 holes plate 1.0 mm	06311	6 holes plate 0.6 mm	2.0 mm system
06312	5 holes plate 1.0 mm	06313	5 holes plate 0.6 mm	2.0 mm system
06314	5 holes plate 1.0 mm	06315	5 holes plate 0.6 mm	2.0 mm system

SYSTEM 2.0 MM

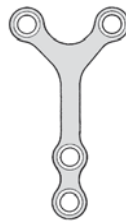
TITAN MINIPLATEN TITANIUM MINIPLATES



06316
06317



06318
06319



06320
06321



06322
06323



06324
06325



06326
06327



06328
06329



06330
06331

Cat. No.		Cat. No.		
06316	5 holes plate 1.0 mm	06317	5 holes plate 0.6 mm	2.0 mm system
06318	5 holes plate 1.0 mm	06319	5 holes plate 0.6 mm	2.0 mm system
06320	4 holes plate 1.0 mm	06321	4 holes plate 0.6 mm	2.0 mm system
06322	5 holes plate 1.0 mm	06323	5 holes plate 0.6 mm	2.0 mm system
06324	6 holes plate 1.0 mm	06325	6 holes plate 0.6 mm	2.0 mm system
06326	6 holes plate 1.0 mm	06327	6 holes plate 0.6 mm	2.0 mm system
06328	6 holes plate 1.0 mm	06329	6 holes plate 0.6 mm	2.0 mm system
06330	4 holes plate 1.0 mm	06331	4 holes plate 0.6 mm	2.0 mm system

SYSTEM 2.0 MM

TITAN MINIPLATEN TITANIUM MINIPLATES



06340



06342



06344



06346

Cat. No.	Description		
06340	4 holes	plate 1.0 mm	2.0 mm system
06342	4 holes	plate 1.0 mm	2.0 mm system
06344	4 holes	plate 1.0 mm	2.0 mm system
06346	4 holes	plate 1.0 mm	2.0 mm system

Cat. No.	Description		
06341	4 holes	plate 0.6 mm	2.0 mm system
06343	4 holes	plate 0.6 mm	2.0 mm system
06345	4 holes	plate 0.6 mm	2.0 mm system
06347	4 holes	plate 0.6 mm	2.0 mm system

Kinnplatten Paulus Chin Plates Paulus

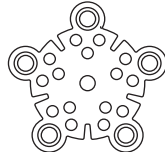


Thickness 1.0 mm		Thickness 0.6 mm	
Cat. No.	Length mm	Cat. No.	Length mm
06362	4	06361	4
06364	6	06363	6
06366	8	06365	8
06368	10	06367	10
06370	12	06369	12
06372	14	06371	14

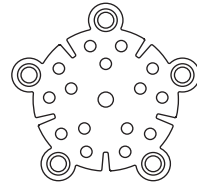
für Trepanation
for trepanation



06380
ø 7 mm



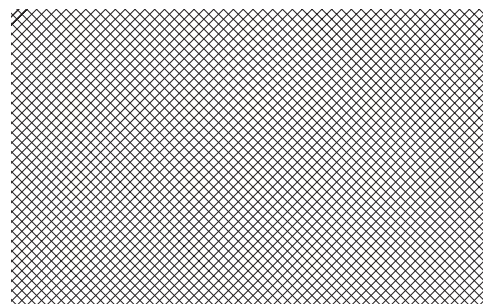
06382
ø 10 mm



06384
ø 14 mm

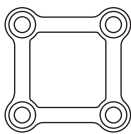
Bohrlochplatten
Burr hole plates

Gitter-Platten, TITAN
Mesh Plates, TITANIUM

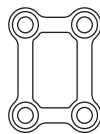


Cat. No.	
06386	60 x 60 x 0,1 mm
06387	120 x 60 x 0,1 mm
06388	120 x 120 x 0,1 mm
06389	60 x 60 x 0,2 mm
06390	120 x 60 x 0,2 mm
06391	120 x 120 x 0,2 mm
06392	80 x 50 x 0,3 mm

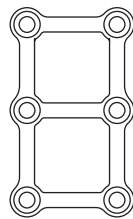
Mini-Platten, TITAN, Profil 1,0 mm, System 2,0 mm
Mini Plates, TITANIUM, Profile 1.0 mm, System 2.0 mm



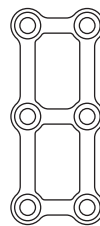
06750



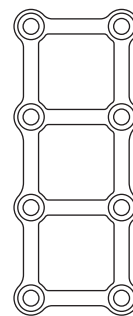
06751



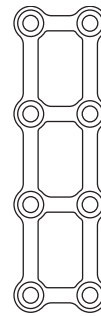
06752



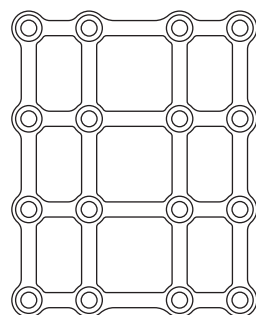
06753



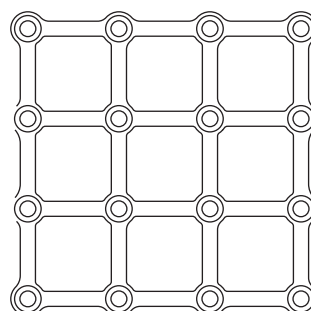
06754



06755



06763



06764

Instrumente für Mini-Platten-System, 2,0 mm Instruments for Mini Plate System, 2.0 mm

06430

Transbuccale Bohrhilfe
für Schraubendreher mit Haltevorrichtung
Transbuccal drilling guide
for screw-driver with holding sleeve

06431

Transbuccale Bohrhilfe
für Schraubendreher ohne Haltevorrichtung
Transbuccal drilling guide
for screw-driver without holding sleeve



06580
ADERER
Biegezange
Bending Forceps



06582
Biegezange mit Stift
Bending Forceps with Pin
13,0 cm

Instrumente für Mini-Platten-System, 2,0 mm
Instruments for Mini Plate System, 2.0 mm



9406
Biegezange
Bending Pliers



7410
7412
Universal Scissors
Universal Scissors
with TC cutting edges



7441
Wire Cutter TC
Hard Wire 1.2 mm



7432
180 mm frontal and lateral
cutting action TC
soft wire 2.0 mm
hard wire 1.5 mm



06586
Plattenfaßpinzette, 15,5 cm
Plate Holding Forceps, 15,5 cm



06180
Bohrloch - Meßinstrument, 21,0 cm
Depth Measuring Gauge, 21,0 cm



06400
Schraubendreher, Kreuzschlitz, drehbar 18,0 cm
selbsthaltend für Schrauben ø 2,0 mm / 2,3 mm
Screw-driver, crosslock, turnable 18,0 cm
selfretaining, for screws ø 2,0 mm / 2,3 mm



06402
Schraubendreher, Kreuzschlitz, fest 18,0 cm
selbsthaltend für Schrauben ø 2,0 mm / 2,3 mm
Screw-driver, crosslock, firm 18,0 cm
selfretaining, for screws ø 2,0 mm / 2,3 mm



06404
Screw-driver blade
for cross lock screws
ø 2,0 / 2,3 mm



06406
Schraubendrehergriff aus Ferozell
drehbar
Ferozell Screw-driver handle
turnable



06408
Schraubendrehergriff aus Ferozell
nicht drehbar
Ferozell Screw-driver handle
not turnable



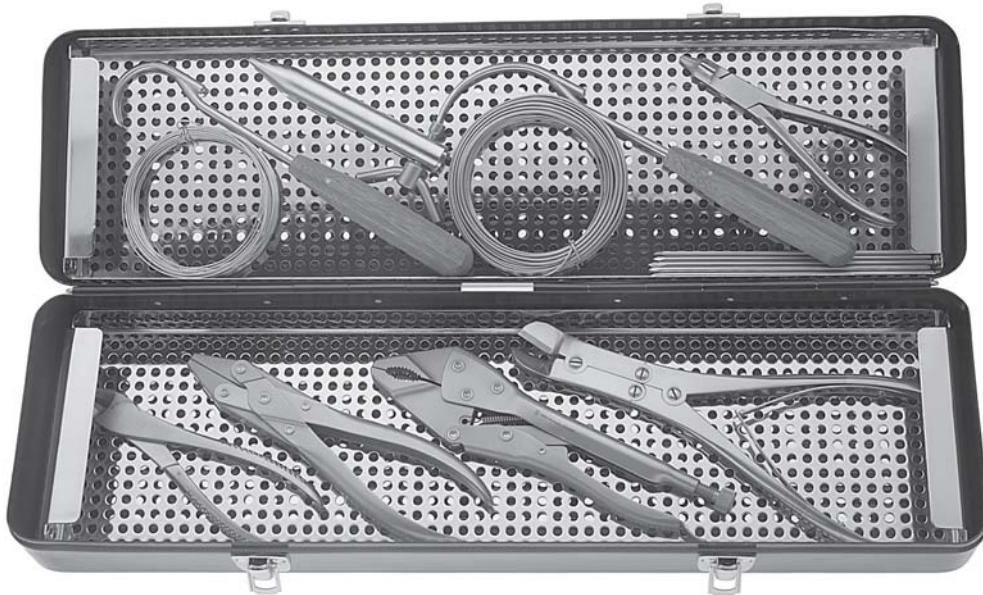
06403
Blade for Gripping Device

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

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Haldenstrasse 27 · D-78532 Tuttlingen
Tel.: 07461 - 3643 · Fax: 07461 - 77399
e-mail: jens.mattes@mattes-medizintechnik.com
Internet: www.mattes-medizintechnik.com

Wire Instrument Set



- M 07000** Wire Instrument Set
- M 01110** Aluminium Case Red
- M 01120** Upper Tray
- M 01120** Lower Tray

	Instruments	
	Tray (lower)	
7416	Forceps for holding cerclage wire	2 units
7418	Wire Bending-Cutting Pliers	
7402	Flat-Nosed Parallel Pliers	
7398	Vise Grip	
7414	Wire Cutter, small	
7434	Wire Cutter, large	
	Instruments	
	Tray (upper)	
7375	Wire Guide 45 mm	
7377	Wire Guide 70 mm	
7378	Wire Tightener	
7022	Cerclage Wires with eye, 1.0 mm \varnothing , 280 mm long	10 units
7023	Cerclage Wires with eye, 1.2 mm \varnothing , 280 mm long	20 units
7010	Wire Coil, 1.0 mm \varnothing , length 10 metres	1 units
7012	Wire Coil, 1.2 mm \varnothing , length 10 metres	1 units
7252-7270	1.0 / 1.2 / 2.0 / 2.5 / 3.0 mm \varnothing , 10 each Kirschner	50 units
7260	1.6 mm \varnothing	20 units



Cerclage Wire soft,
in coils of 10 m

ø mm	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5
Gauge	31	29	27	25	23	22	21	20	19	18	17
Cat. No.:	7002	7003	7004	7005	7006	7007	7008	7009	7010	7012	7015



Cerclage Wires
with eye, soft

	Diameter	Length
7020	0.8 mm	280 mm
7022	1.0 mm	280 mm
7023	1.2 mm	280 mm
7024	1.0 mm	600 mm
7025	1.2 mm	600 mm



7380 Wire Tightener



7030 Parham Martin Band Tightener



7032 Parham Metal Bone Bands 19 cm x 0.5 mm

Metall Rack for Kirschner Wires



Metall Rack for Kirschner Wires

For storage and sterilization of Kirschner Wires

for different sizes 310 mm **7840**

for 8 different sizes 150 mm **7842**

3 different sizes for Kirschner Wires, 10 cm, 16 cm, 31 cm
made of stainless material, sterilizable - 134°
for 4, 6, 8 and 10 different diameters each
each compartment can receive from 6 up to 20 Kirschner Wires (depending on the diameters)
with special Silicon strip to protect the wire tips
with integrated measuring gauge



7370 Loute 22 cm Bone Wire Tightener



7372 Demel 28 cm Bone Wire Tightener



7375 Wire Guide 45 mm



7377 Wire Guide 70 mm



7378 Wire Tightener

Kirschner Wires



Point	Trocar	Trocar
Shaft End	round	Trocar
Length	310 mm	310 mm
ø 1.0 mm	7120	7140
ø 1.2 mm	7121	7141
ø 1.4 mm	7122	7142
ø 1.5 mm	7123	7143
ø 1.6 mm	7124	7144
ø 1.8 mm	7126	7145
ø 2.0 mm	7127	7146
ø 2.2 mm	7128	7147
ø 2.5 mm	7129	7148
ø 3.0 mm	7130	

Point	Trocar	Trocar	Trocar
Shaft End	round	round	Trocar
Length	70 mm	150 mm	150 mm
ø 0.8 mm	7200	7250	7280
ø 1.0 mm	7201	7252	7282
ø 1.2 mm		7254	7284
ø 1.4 mm		7256	7286
ø 1.5 mm	7208	7258	7288
ø 1.6 mm		7260	7290
ø 1.8 mm		7262	7292
ø 2.0 mm		7264	7294
ø 2.2 mm		7266	7296
ø 2.5 mm	7210	7268	7298
ø 3.0 mm		7270	



Kirschner Wires with thread and trocar points, round end

	Diameter	Length	Threaded Length
7310	1.6 mm	150 mm	5 mm
7312	1.6 mm	150 mm	15 mm
7314	2.0 mm	150 mm	15 mm
7316	2.0 mm	200 mm	15 mm
7318	2.5 mm	200 mm	15 mm
7320	2.5 mm	230 mm	20 mm



7350 Bending Iron for Kirschner Wires



7353 Pliers with serrated jaws and groove
7356 Pliers with serrated jaws without groove



7358 Rounded Pliers with serrated jaws



7388 Extraction Pliers for boring wire 130 mm
7390 Extraction Pliers for boring wire 180 mm



7392 Extraction Pliers for wire 180 mm
7394 Extraction Pliers TC jaws



7396 Vise Grip 180 mm
Chrom Vanadium
7398 Vise Grip 180 mm
Stainless Steel
7397 Vise Grip 200 mm
Stainless Steel
7399 Vise Grip 240 mm
Stainless Steel



7400 Flat-nosed Pliers, parallel,
with lateral Wire Cutter, 180 mm
Chrom Vanadium Steel
7401 Flat-nosed Pliers, parallel,
without lateral Wire Cutter, 180 mm
Chrom Vanadium Steel
7402 Flat-nosed Pliers, parallel,
without lateral Wire Cutter, 180 mm
Stainless Steel
7403 Flat-nosed Pliers, parallel,
with lateral Wire Cutter, 180 mm
Stainless Steel

Extraction Instruments



7404 Extraction Pliers, 190 mm TC



7406 Extraction Pliers, 200 mm TC

Needle Nosed Locking Pliers



7407 30,0 cm



7408 25,0 cm



7409 22,0 cm



7410 Universal Scissors
7412 Universal Scissors
with TC cutting edges



7414 Wire Cutter



7416 Wire Tightening Pliers TC



7418 Wire Bending Pliers
soft wire 1.5 mm
hard wire 1.0 mm



7420 Wire Bending Cutting
Pliers
soft wire 1.5 mm
hard wire 1.0 mm



7422 Wire Cutter
soft wire 2.0 mm
hard wire 1.2 mm

Wire Cutters



7430 TC 180 mm
soft wire 2.0 mm
hard wire 1.5 mm



7432 180 mm frontal and lateral
cutting action TC
soft wire 2.0 mm
hard wire 1.5 mm



7434 Wire Cutter 220 mm TC
soft wire 3.0 mm
hard wire 2.5 mm



7436 Wire Cutter 220 mm TC
soft wire 2.5 mm
hard wire 2.2 mm



7438 Wire Cutter TC 140 mm
soft wire 1.2 mm
hard wire 0.8 mm



7440 Wire Cutter TC
soft wire 3.0 mm
hard wire 2.5 mm

Diamond Pin Cutter



7442 Wire Cutter
cannulated 180 mm
soft wire 2.4 mm
hard wire 1.6 mm



7443 Wire Cutter
Hard Wire 2.0 mm



7441 Wire Cutter TC
Hard Wire 1.2 mm

Wire Cutters



7444 Cutter for cutting of Kirschner wires
Steinmann Pins up to 6 mm ø hard
540 mm TC

7446 Cutter for cutting of Kirschner wires
Steinmann Pins up to 6 mm ø hard
460 mm TC



7450 575 mm
Hard wire 6.0 mm



7452 260 mm
Hard wire 3.5 mm

Wire Extension



Kirscher, American type

	Size	Max. Jaw Opening
7460	Medium	130 mm
7462	Large	185 mm
7464	Extra Large	220 mm



	Kirscher
7468	40 x 140 mm
7470	60 x 220 mm



7490 Wire Strainer for Kirschner Extension Bow



7492 Screw Nut Wrench
14 x 17 mm

Wire Extension



	Inside Length	Inside Width
7496	90 mm	75 mm
7498	160 mm	90 mm
7500	210 mm	110 mm
7502	210 mm	150 mm



7520 Hexagonal Wrench for Tibia Bolt



7524 Tibia Bolt \varnothing 2.4 mm, 180 mm length
7526 Tibia Bolt \varnothing 3.2 mm, 180 mm length



7530 Charnley-Mueller
Compression Clamp



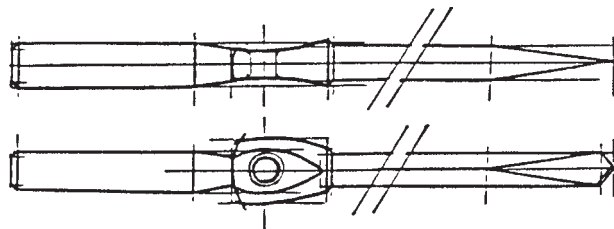
7540	Larsen Pin Dia. 1.6 mm x Length 60 mm
7541	Larsen Pin Dia. 1.6 mm x Length 80 mm
7542	Larsen Pin Dia. 1.6 mm x Length 100 mm
7543	Larsen Pin Dia. 1.6 mm x Length 120 mm

The Larsen Pin

A non-sliding device for Tension Absorbing Wire (TAW) technique

FEATURES

The stainless steel (W14310 - AISI 302) pin is a high polished 1,6 mm diameter shaped implant, which is available in 4 sizes, 60, 80, 100 and 120 mm of length. The head of the pin is 2,5 mm thick, and the anchoring hole is 1,2 mm to facilitate a 1 mm cerclage wire. The proximal part of the Larsen Pin is prepared for cutting, and fits in conventional as well as mini drivers. This part of the pin is 2 mm thick. No special device or tool is required for the insertion, and a normal wire cutter will suffice for cutting off the pin.



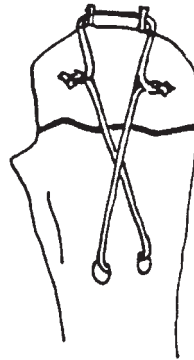
GENERAL OPERATIVE TECHNIQUES

When using tension absorbing wire techniques in connection with this non-sliding pin, the risk of skin problems, sliding off the cerclage wire, pin migration and fragmentation of small bone fragments will be excluded.



TECHNIQUE

The Larsen Pin is designed for the treatment of transverse or oblique fractures of the olecranon and the patella, but is also well suited in all cases where the tension absorbing wire techniques is desirable.



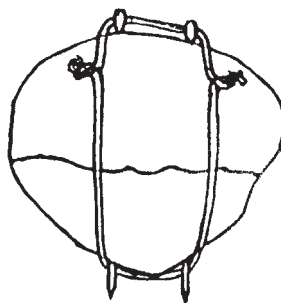
INDICATIONS

The operation technique when using the Larsen Pin is very simple, and in many ways similar to the routine used with conventional Kirschner wires. The fracture and joint is exposed through a postero-lateral approach. The fracture is reduced, and the two Larsen Pins are drilled in parallel to the axis of the diaphyseal part of the ulna. The holes of the pins should at this stage be left 0,5 - 1 cm apart from the olecranon bone. The pins are then positioned with the holes aligned to facilitate the insertion of the cerclage wire.

A 2 mm hole is drilled perpendicular to the long axis of the ulna and 3 - 4 mm distally of the fracture line.

A 1 mm cerclage wire is inserted through the holes in the pin heads, and another similar cerclage is placed through the hole in the ulnar bone.

The pins are impacted until stopped by the pin heads. The importance of good impaction on the fracture side is emphasized. Further compression of the fracture is achieved by twisting the free ends of the cerclage wires, making sure that equal tension is reached on both sides. In cases of olecranon fractures, a figure-of-eight technique is recommended. The loop-ends are bent and placed properly, taking into account the risk of skin affection.



Wire Drill Dispenser

easy to transport and storage
- silicone insert avoids damaging the wire tips



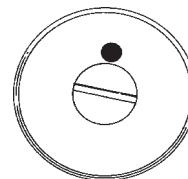
Wire length	Wire ø 0,8 mm	Wire ø 1,0 mm	Wire ø 1,2 mm	Wire ø 1,4 mm	Wire ø 1,6 mm	Wire ø 2,0 mm	Wire ø 2,2 mm	Wire ø 2,5 mm
16,0 cm	7850	7852	7854	7856	7858	7860	7862	7864
31,0 cm	7870	7872	7874	7876	7878	7880	7882	7884



7890 Vickers Easidriver

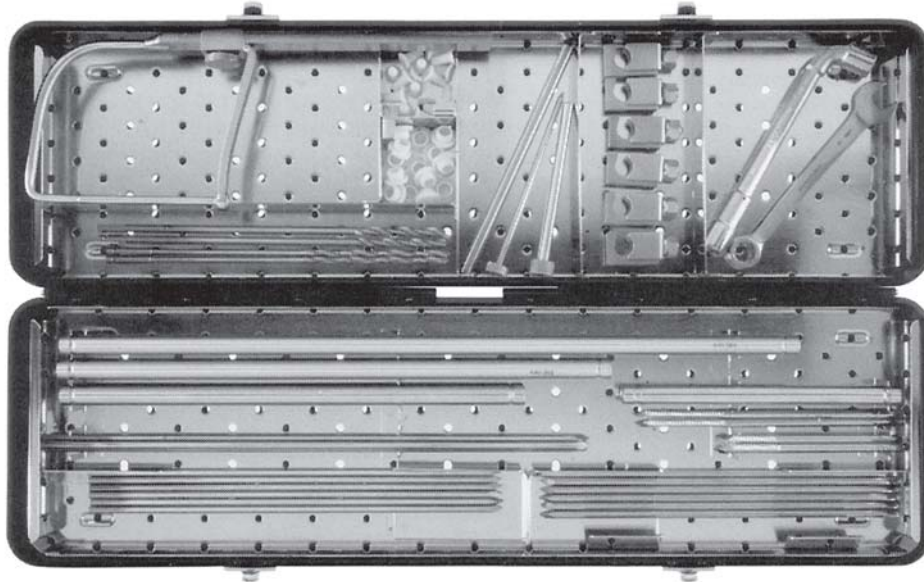


This specially designed dispenser holds four different wire gauges
ø 1.0 / 1.2 / 1.4 / and 1.6 mm, each 10 cm long.



7892 Wire Drill Dispenser

External Fixateur



M 08000	Standard Set External Fixateur (Tubular System)		
M 01110	Aluminium Case Red		
M 08110	Upper Tray		
M 08120	Lower Tray		
	Instruments		
9023	Drill Bit, \varnothing 3.5 mm, extra long, with end to fit quick coupling	ea. 2	
9438	Combination Wrench, width across flats 11 mm		
80070	Socket Wrench, width across flats 11 mm		
80072	Hexagonal Allen Key		
80068	Universal Chuck with T-handle		
80080	Open Compressor	ea. 2	
80060	Drill Sleeve, 5.0 mm / 3.5 mm \varnothing , 100 mm length		
80061	Drill Sleeve, 5.0 mm / 3.5 mm \varnothing , 80 mm length		
80064	Drill Sleeve, 6.0 mm / 5.0 mm \varnothing		
80065	Drill Sleeve, 6.0 mm / 5.0 mm \varnothing		
80062	Trocar, 3.5 mm \varnothing		
80092	Trocar, 3.5 mm \varnothing		
	Implants		
81138	Steinmann Pin 5.0 mm \varnothing 150 mm length	ea. 6	
81140	Steinmann Pin 5.0 mm \varnothing 180 mm length	ea. 6	
81264- 81270	Schanz Screw 125, 150, 170, 200 mm length	ea. 6	24 pieces
	Fixation Material		
80198	Protective Cap for Fixation pins 5.0 mm \varnothing		
80170	Plug for Tubes		
80100- 80102	Tubes 100, 125 mm length	ea. 1	2 pieces
80104- 80114	Tubes 150, 200, 250, 300, 350, 400 mm length	ea. 2	
80190	Tube to Tube Clamps	ea. 2	
80180	Adjustable Clamp	ea. 4	
80186	Universal Joint for two tubes	ea. 2	
80188	Open clamp	ea. 12	



9023 Drill Bit 3.5 mm extra long
9027 Drill Bit 4.5 mm extra long



9438 Combination Wrench with across flats 11 mm



80068 Simple T-Handle for Steinmann Pin insertion



80070 Socket Wrench with across flats 11 mm
180 mm long, for threaded conical bolts
and external fixateur



80072 Hexagonal Allen Key



80092 Trocar with point ø 3.5 mm short



80062 Trocar for aiming device 3.5 long



80061 Drill Sleeve 5.0 / 3.5 mm short



80060 Drill Sleeve 5.0 / 3.5 mm long



80065 Drill Sleeve 6.0 / 5.0 mm short



80064 Drill Sleeve 6.0 / 5.0 mm long



80080 Open Compressor



80084 Bar with hook and sliding drill sleeve \varnothing 3.5 mm, 80 mm long



80090 Check Tube for Device Alignment



	Tubes 11 mm \varnothing		Carbon fiber rods 11 mm \varnothing
80100	100 mm length	80140	100 length
80102	125 mm length	80142	125 length
80104	150 mm length	80144	150 length
80106	200 mm length	80146	200 length
80108	250 mm length	80148	250 length
80110	300 mm length	80150	300 length
80112	350 mm length	80152	350 length
80114	400 mm length	80154	400 length
80116	450 mm length	80156	450 length
80118	500 mm length	80158	500 length
80120	550 mm length	80160	550 length
80122	600 mm length	80162	600 length



80170 Plug for Tubes



80180 Single Adjustable Clamp



80182 Single Open Clamp
with one nut for tightening both tube and Steinmann Pin
can also be mounted on tubes after External Fixator is assembled
i.e. for three-dimensional fixation



80186 Universal Joint for two tubes
for connecting two tubes



80188 Open adjustable clamp



80190 11 mm Tube-to Tube Clamp

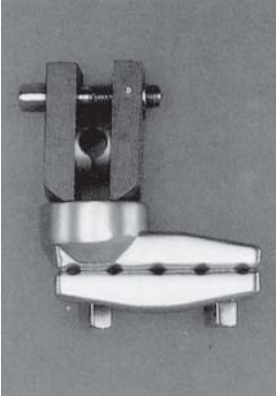


80194 Universal Tube, compatible

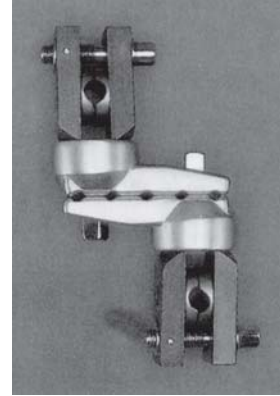


80198 Protective Caps for Steinmann pins
5.0 mm dia.

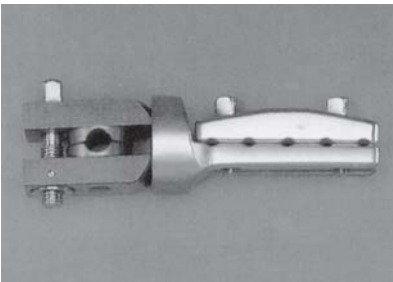
External Fixator - Hofmann System



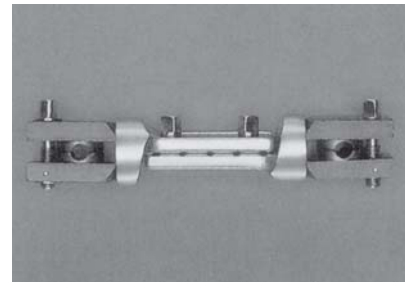
80800
Universal Joint Clamp for
5 pins and for connecting
rod



80802
Universal Joint Clamp for
5 pins and 2 connecting
rods / diagonal



80804
Universal Joint Clamp for 5 pins
and for 1 connecting rod



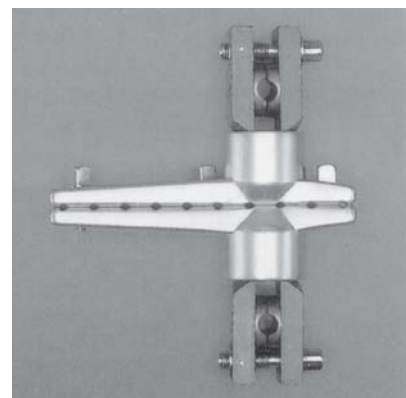
80806
Universal Joint clamp for 5 pins
and for 2 connecting rods / parallel



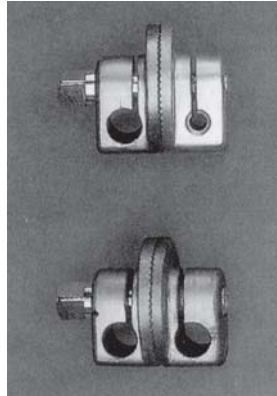
80810
Universal Joint Clamp for 10 pins
for 1 connecting rod



80812
Universal Joint Clamp for up to 10
pins for 2 connecting rods / diagonal



80814
Universal Joint Clamp for up to 10
pins for 2 connecting rods / diagonal



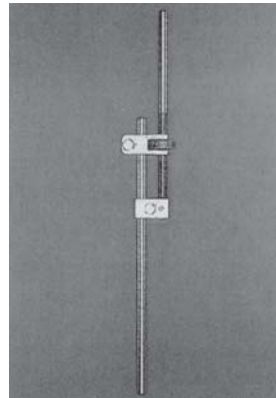
80820
Articulation Coupling
rod/pin 8 mm/4 mm
8 mm/5 mm

80822
Articulation Coupling
rod/rod 8 mm/8mm



Plain Connecting Rods dia. 8 mm
stainless

L = mm	steel
150	80830
200	80832
250	80834
300	80836
350	80838
400	80840
450	80842
500	80844

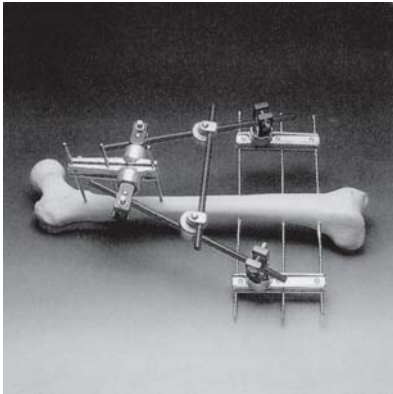


Adjustable Connecting Rod

L = mm	Cat. No.
350	80870

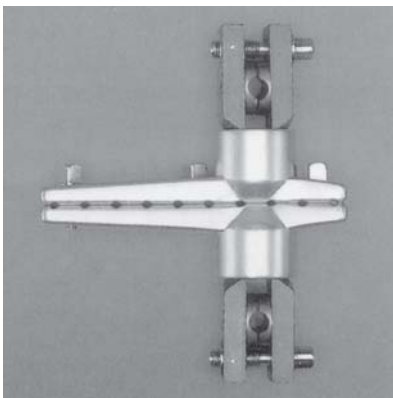
Length can be varied by use of Connecting Rods

80801 Simple Triangular Frame for Femur



- 80810** 2 Universal Clamps
- 80814** 1 Universal Clamps
- 80820** 2 Articulation Couplings 8 x 8 mm
- 80830** 1 Connecting Rod 8 mm 150 mm
- 80836** 2 Connecting Rods 8 mm 300 mm
- 81228** 3 Schanz Screws 4.0 x 170 mm
- 81160** 3 Steinmann Pins with centre thread 4.0 mm 4.0 x 200 mm

Needed components:

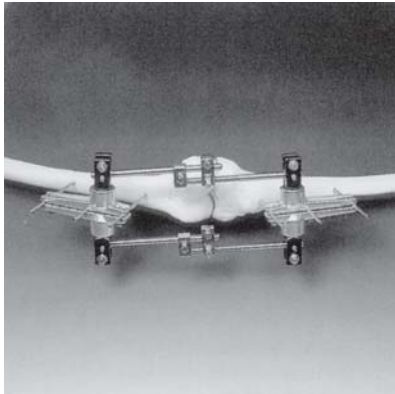


80814
Universal Joint Clamps for 10 pins
for 1 Connecting Rod

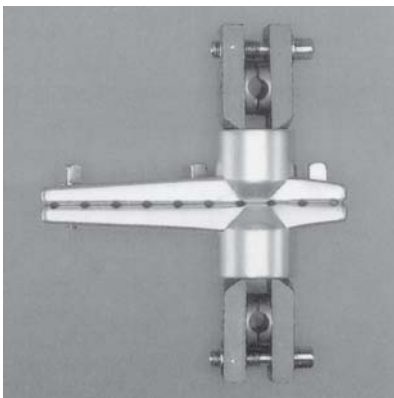


80810
Universal Joint Clamps for 10 pins
for 1 Connecting Rod / diagonal

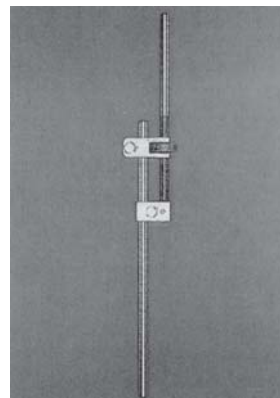
80803 Unilateral Double Arthrodesis Frame



- 80814** 2 Universal Joint Clamps
- 80870** 2 Adjustable Connecting Rods
- 81224** 6 Schanz Screws 4.0 x 130 mm

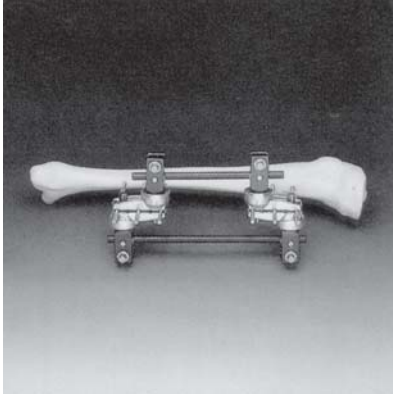


80814
Universal Joint Clamp for
10 pins and 3 Connecting Rods



80870
Adjustable Connecting Rod

80805 Universal Double Frame for Tibia



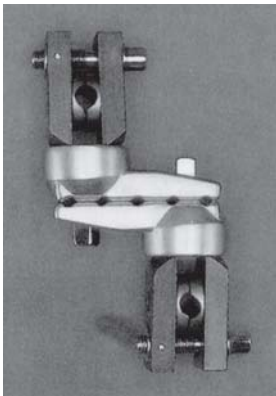
80805 Universal Double Frame for Tibia
components needed:

80802 2 Universal Clamps

80830 1 Connecting Rod 150 mm

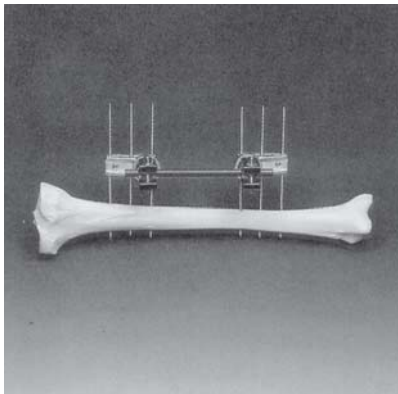
80832 1 Connecting Rod 200 mm

81224 6 Schanz Screws 4.0 x 130 mm



80802 Universal Joint Clamp for 5 Pins and
2 Connecting Rods/diagonal

80807 Simple Unilateral Frame for Tibia Elastic Fixation

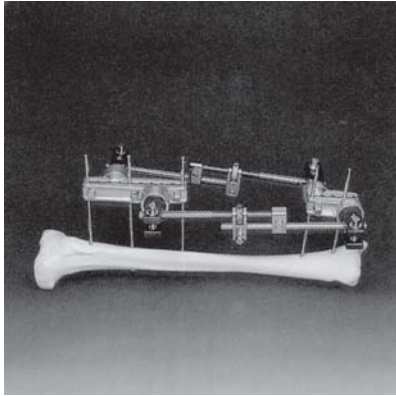


- 80807** Simple Unilateral Frame for Tibia Elastic Fixation
components needed
- 80800** 2 Universal Joint Clamps
 - 80830** 1 Connecting Rod 150 mm
 - 81224** 6 Schanz Screws 4.0 x 130 mm

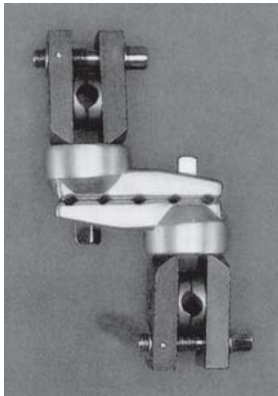


- 80800** Universal Joint Clamp
for 5 Pins and for
1 Connecting Rod

80809 Unilateral Double Frame for Tibia (Lower 3rd Fractures)



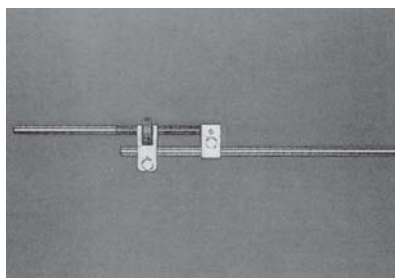
- 80809** Unilateral Double Frame for Tibia (Lower 3rd Fractures)
- 80802** 1 Universal Joint Clamp
- 80812** 1 Universal Joint Clamp
- 80870** 2 Adjustable Connecting Rods
- 81228** 6 Schanz Screws 4.0 x 170 mm



80802
Universal Joint Clamp for 5 Pins
and 2 Connecting Rods /
diagonal



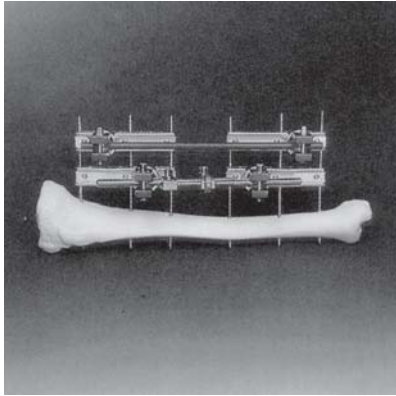
80812
Universal Joint Clamp for up to 10 Pins



Adjustable Connecting Rod
L = 350 mm Cat. No.
350 **80870**

Length can be varied by use of
Connecting Rod

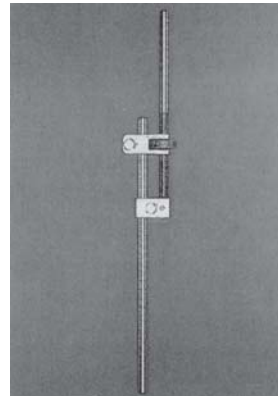
80811 Universal Double Frame for Tibia



- 80811** Unilateral Double Frame for Tibia
components needed:
80810 4 Universal Joint Clamps
80834 1 Connecting Rod 250 mm
80870 Adjustable Connecting Rod



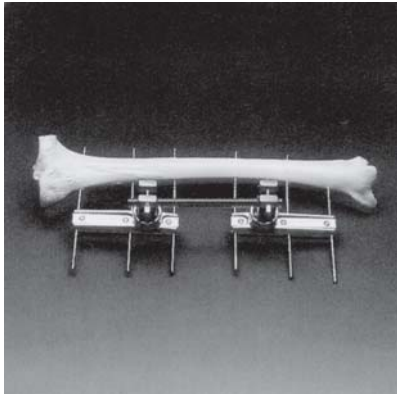
80810 Universal Joint Clamp



Adjustable Connecting Rod
L = 350 mm Cat. No.
350 **80870**

Length can be varied by use of
Connecting Rods

80813 Simple Unilateral Frame Elastic Fixation

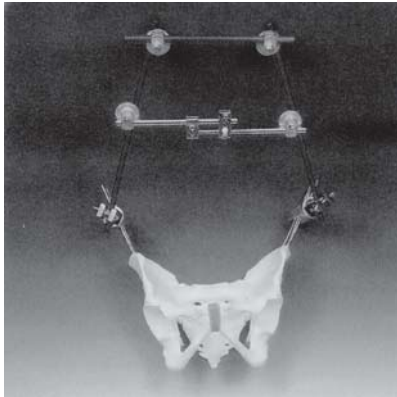


- 80813** Simple Unilateral Frame for Tibia (Elastic Fixation)
components needed:
80810 2 Universal Joint Clamps
80832 1 Connecting Rod 200 mm
81228 6 Schanz Screws 4.0 x 170 mm

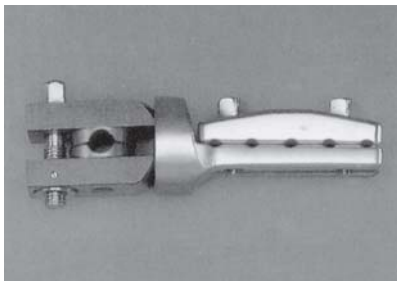


- 80810**
Universal Joint Clamp for 10 Pins
for 1 Connecting Rod

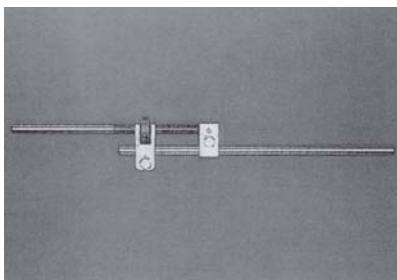
80815 Trapezoidal Frame for Pelvis



- 80815** Trapezoidal Frame for Pelvis
components needed:
- 80804** 2 Universal Joint Clamps
 - 80822** 4 Articulation Clamps
 - 80832** 1 Connecting Rod 200 mm
 - 80836** 2 Connecting Rods 300 mm
 - 80870** 1 Adjustable Connecting Rod
 - 81228** 3 Schanze Screws 4.0 x 170 mm



- 80804**
Universal Joint Clamp for 5 pins
and for 1 Connecting Rod



Adjustable Connecting Rod

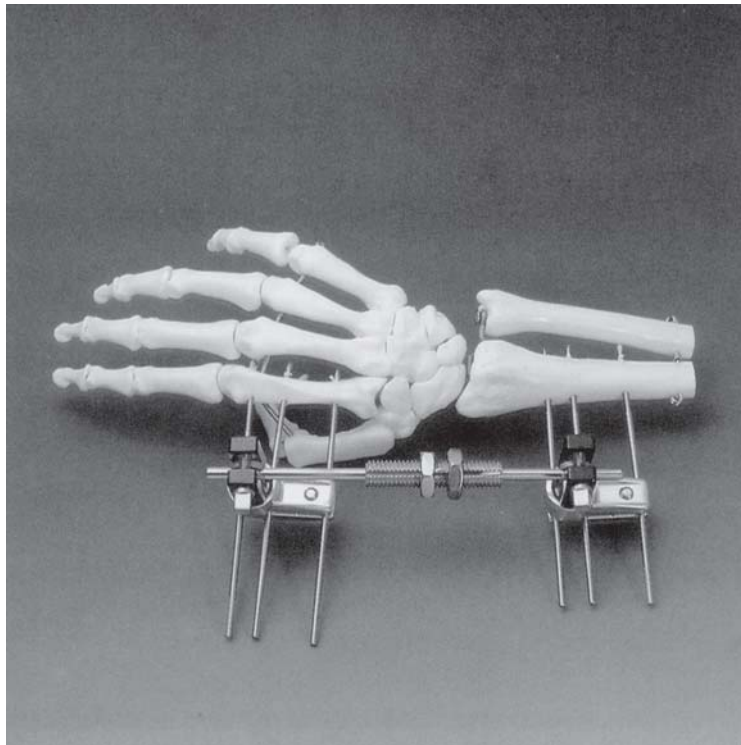
L = mm
350

Cat. No.
80870



- 80822**
Articulation Coupling
8 mm / 8 mm

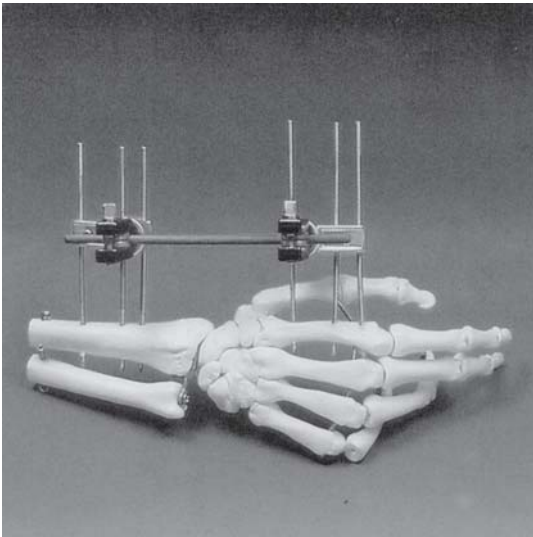
Midi - Fixateur - Externe



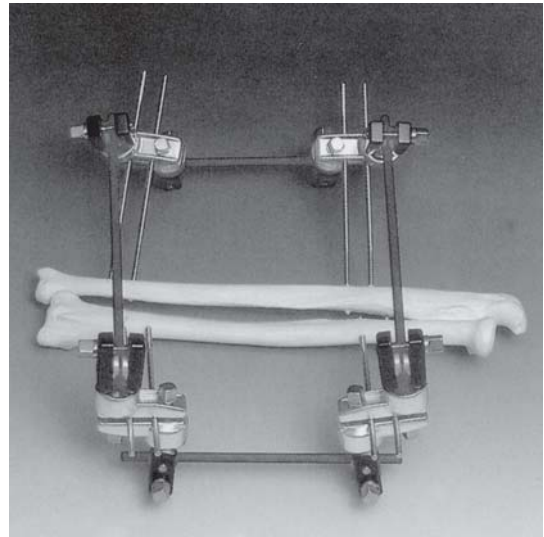
Midi - Fixateur

The forearm assembly requires smaller dimensions of components. In our hands the midi - version has been highly efficient in the management of distal radius fractures presenting the tendency to redislocate regardless of their original type. Lower weight and price compared to other systems together with ease and versatility of handling has made the midifixateur indispensable in our unit.

(Klinikum Villingen-Schwenningen, PD Dr. H. Henkemeyer)



80817 Simple Distal Radius Frame
80900 2 Universal Joint Clamps
80912 2 Connecting Rods 150 mm
81202 6 Schanz Screws 3.0 x 80 mm



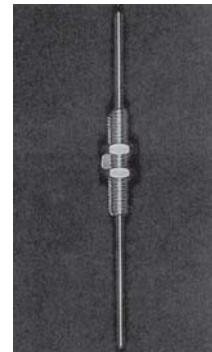
80819 Forearm Frame
80902 4 Universal Joint Clamps
80912 2 Connecting Rods 150 mm
80914 2 Connecting Rods 200 mm
81202 8 Schanz Screws 3.0 x 80 mm



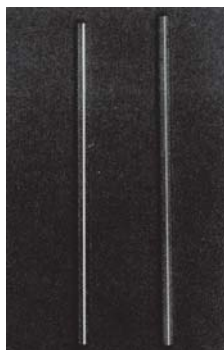
80900
 Universal Joint Clamp
 for 4 pins and for 1
 Connecting Rod



80902
 Universal Joint Clamp
 for 4 pins and 2
 Connecting Rods / diagonal



80904
 Adjustable Connecting
 Rod \varnothing 5 mm



Plain Connecting Rods \varnothing 5 mm

L = mm	steel	carbon
100	80910	80920
150	80912	80922
200	80914	80924
250	80916	80926
300	80918	80928

Instruments for Maxi and Midi External Fixation



80930 T-Wrench



9090 T-Handle with quick action chuck



80934 Spanner width 7 mm



80936 Drill Brace



80942 Drill Sleeve for 2.5 mm Twist Drill



80944 Drill Sleeve for 3.2 mm Twist Drill
80946 Drill Sleeve for 4.0 mm Twist Drill
80948 Drill Sleeve for 4.5 mm Twist Drill

Instruments for Maxi and Midi External Fixation



80954 Maxi External Fixation Pin-Guide



80956 Midi External Fixation Pin-Guide



- 80947** Twist Drill d=2.5 mm for 3 mm pins
- 80951** Twist Drill d=3.2 mm for 4 mm pins
- 80955** Twist Drill d=4.0 mm for 5 mm pins
- 80957** Twist Drill d=4.5 mm for 6 mm pins



- 80960** Guide Sleeve for 4 mm pins
- 80962** Guide Sleeve for 5 mm pins



80870 Adjustable Connecting Rod



- 80970** Stop clip 5 mm
- 80972** Stop clip 8 mm



80904 Adjustable Connecting Rod ø 5 mm



4184 Applying Forceps

Steinmann Pins



Point	Trocar	Trocar	Trocar	Trocar
Shaft end	Triangular	Triangular	Triangular	Triangular
Length	ø 3.5 mm	ø 4.0 mm	ø 4.5 mm	ø 5.0 mm
120 mm	81100	81112	81124	81136
150 mm	81102	81114	81126	81138
180 mm	81104	81116	81128	81140
200 mm	81106	81118	81130	81142
250 mm	81108	81120	81132	81144
300 mm	81110	81122	81134	81146



- 81147** Protective Caps for Steinmann Pins 3.0 mm
- 81148** Protective Caps for Steinmann Pins 4.0 mm
- 81149** Protective Caps for Steinmann Pins 5.0 mm

Steinmann Pins with Central Thread with Trocar Point and Triangular Shaft
 (on request, available in other shafts needed)



thread - \varnothing is 0.5 mm
 more than pin - \varnothing

Order No.	mm \varnothing	Length mm
81150	3.00	150
81151	3.00	180
81152	3.00	200
81153	3.00	230
81154	3.50	150
81155	3.50	180
81156	3.50	200
81157	3.50	230
81158	4.00	150
81159	4.00	180
81160	4.00	200
81161	4.00	230
81162	4.00	250
81163	4.50	150
81164	4.50	180
81165	4.50	200
81166	4.50	230
81167	4.50	250
81168	4.50	300
81169	5.00	150
81170	5.00	180
81171	5.00	200
81172	5.00	230
81173	5.00	250
81174	5.00	300

Schanz Screws (with Trocar Point and Triangular Shaft)



Order No.	mm ø	Length mm	Thread length mm
81200	3.00	60	20
81202	3.00	80	20
81220	4.00	60	25
81222	4.00	100	25
81224	4.00	130	25
81228	4.00	170	25
81240	4.50	100	50
81242	4.50	120	50
81244	4.50	150	50
81246	4.50	170	50
81248	4.50	200	50
81250	4.50	250	50
81260	5.00	100	50
81264	5.00	125	50
81266	5.00	150	50
81268	5.00	170	50
81270	5.00	200	50
81272	5.00	250	50
81280	6.00	100	30
81284	6.00	150	50
81285	6.00	170	50
81286	6.00	200	50
81287	6.00	250	50

Cortical Screws
 ø Shaft 6 mm
 ø Thread 6/5 mm
 ø Drill 4.8 mm



Total length mm	Thread length mm							
	30	40	50	60	70	80	90	100
90	81350							
100	81352	81356						
110		81358	81370					
120		81360		81380				
130		81362	81372	81382				
140			81374					
150				81384				
160					81390		81400	
170						81396		
180							81402	81410
200						81398	81404	

Cancellous Screws
 ø Shaft 6 mm
 ø Thread 6/5 mm
 ø Drill 4.8 mm



Total length mm	Thread length mm			
	30	40	50	60
90	81450			
100	81452	81456		
110		81458	81464	
120		81460		81470
130		81462	81466	81472
150			81468	81474

Blunt Half Pin, self tapping, with Triangle End



Order No.	mm ø	Length mm	Thread length mm	Twist Drill
81500	3.00	75	25	25
81502	3.00	110	22	25
81504	4.00	120	45	45
81506	5.00	120	40	40
81508	5.00	150	50	50
81510	5.00	180	50	50
81512	6.00	150	50	50
81514	6.00	180	50	50
81516	6.00	200	60	60

Threaded Steinmann Pins 230 mm
Trocar point and round end



Diameter	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Cat. No.:	81600	81602	81604	81606	81608	81610	81612

Calibrated Steinmann Pins 230 mm (Watson Jones)
Trocar point and round end



Diameter	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Cat. No.:	81620	81622	81624	81626	81628	81630	81632

MATTES Dynamic Axial Fixateur



80400
Long Model



80402
Standard Model



80404
Short Model

**MATTES Dynamic Axial Fixateur
with articulated body**



80410
Long Model

80412
Standard Model

**MATTES Dynamic Axial Fixateur
with T clamp**



80420
Long Model

80422
Standard Model

80424
Short Model

MATTES Limb Lengthener Fixateur



80430
Long Model



80432
Standard Model



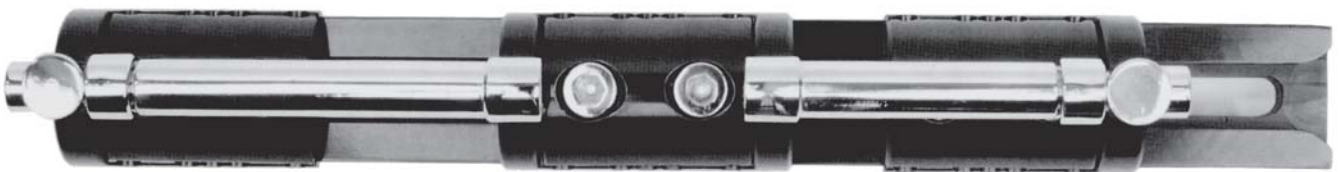
80434
Short Model

MATTES Limb Reconstruction Fixateur



80440

23 cm long with 2 clamps and 1 compression - distraction units



80442

40 cm long with 3 clamps and 2 compression - distraction units

Small External Fixateur for Hand and Forearm



M 08060	Small External Fixateur for Hand and Forearm	
152020	Small Aluminium Case, blue, perforated 300 x 140 x 70 mm	
152115	Trays for small instruments (2 pieces)	
9014	Drill Bit 2.0 mm	2 pieces
9016	Drill Bit 2.5 mm	2 pieces
80934	Combination Wrench width across flats 7 mm	1 piece
80246	Socket Wrench 7 mm	1 piece
80248	Drill Sleeve complete	1 piece
80210 -	Connecting Bars	24 pieces
	2 each: 60 - 160 - 180 -200 mm	
80217	4 each: 80 - 100 - 120 - 140 mm	
80240	Clamps Open	4 pieces
80242	Clamps	12 pieces
80256	Springloaded Nut	2 pieces
80250	Schanz Screw 4.0 x 3.0 mm	4 pieces
7260	Kirschner Wire 1.6 x 150 mm	10 pieces
7264	Kirschner Wire 2.0 x 150 mm	10 pieces
7315	Kirschner Wire with Thread 15 mm, 2.5 x 150 mm	10 pieces

Small External Fixater Set



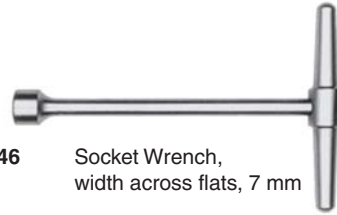
9014 Dril Bit 2.0 mm
9016 Dril Bit 2.5 mm



80934 Combination Wrench,
width across flats, 7 mm



80248 Drill Sleeve complete



80246 Socket Wrench,
width across flats, 7 mm



80250 Drill Sleeve 5.0 / 4.0 mm



80251 Drill Sleeve 5.0 / 4.0 mm



80252 Trokar, \varnothing 2.7 mm



Connecting Bars, 4.0 mm diam.
stainless steel

80210	60 mm
80211	80 mm
80212	100 mm
80213	120 mm
80214	140 mm
80215	160 mm
80216	180 mm
80217	200 mm



80240 Clamp Open
2.5 - 5.0 mm \varnothing



80242 Clamp 2.5 - 5.0 mm \varnothing



80244 Open Compressor

80254 Schanz Screws
 \varnothing 4.0 / 3.0 mm - 80 mm

80255 Schanz Screws
 \varnothing 4.0 - 80 mm



80256 Springloaded Nut

MATIERS



**ORTHO DYNO - FIX
EXTERNAL FIXATEUR SYSTEM**

External Fixateur ORTHO DYNO FIX for Femur and Tibia

Material: Special aluminium alloys
 Type: Dynamic Axial, Long, Standard, Short
 Move angle: 50°
 Diameter: 30 mm



80406
135° Clamp



80408
T Clamp

Cat. No.:	Type	Length	Weight gr	Lengthening
80404	Short	230	600	25
80402	Standard	250	640	45
80400	Long	280	700	65

External Fixateur ORTHO DYNO FIX



80414
Pylon Clamp with long and standard fixator

Cat. No.:	Type	Length	Weight gr
80410	Long	280	700
80412	Standard	250	640

Limb Lengthener Fixateur
Femur and Tibia
DINO-FIX



Cat. No.:	Type	Length mm	Weight gr	Lengthening
80430	Long	230	540	80
80432	Standard	200	480	60
80434	Short	180	420	50

LIMB Reconstruction Fixateur for Femur and Tibia DINO-Fix



80440
Short Model
200 mm long with 2 clamps



80442
Standard Model
250 mm long with 3 clamps



80444
Long Model
300 mm long with 3 clamps

Cat. No.:	Type	Length mm	Weight gr
80440	Short	200	410
80442	Standard	250	480
80444	Long	300	560

External Fixateur for Pelvic



Pelvic External Fixator with Clamp	
Cat. No.:	Model
80450	Short
80452	Standard
80454	Long

Rod and Clamp Fixateur Multipurpose



Rod and Clamp Fixator Multipurpose	
Cat. No.:	Model
80460	Short
80462	Standard
80464	Long
80466	Small

Axial Fixator for Humerus and Small Tibia

Material: Special Aluminium Alloys
 Type: Dynamic Axial, Long, Standard
 Move Angle: 45°
 Diameter: 25 mm



80474
T Clamp

Cat. No.	Type	Length mm	Lengthening mm	Weight gr
80470	Standard	170	25	300
80472	Long	195	46	340

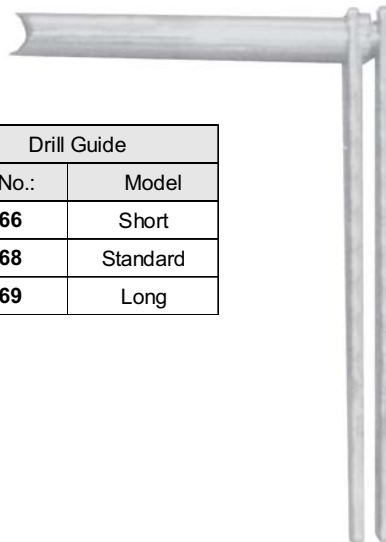
External Fixator for Hand - Wrist and Radius



Cat. No.	Type
80480	Short
80482	Standard
80484	Long



Cat. No.:	
9023	Drill Bit 3.5 mm extra long 180 mm
9027	Drill Bit 4.5 mm extra long 180 mm
1.11864	Drill Bit 2.7 mm 150 mm
1.11866	Drill Bit 4.0 mm 150 mm
1.11867	Drill Bit 4.8 mm 150 mm

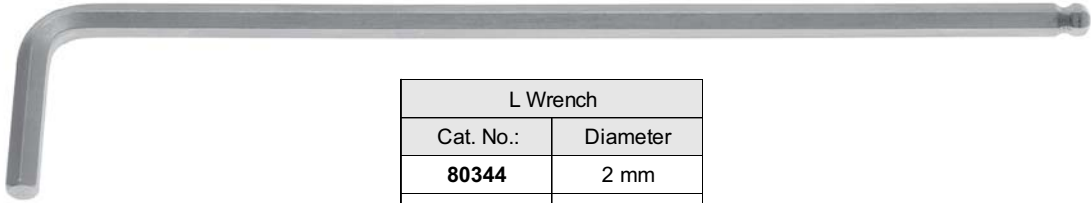


Drill Guide	
Cat. No.:	Model
80366	Short
80368	Standard
80369	Long

Schanz Screws (with Trocar Point and Triangular Shaft)



Order No.	mm \varnothing	Length mm	Thread length mm
81200	3.00	60	20
81202	3.00	80	20
81220	4.00	60	25
81222	4.00	100	25
81224	4.00	130	25
81228	4.00	170	25
81240	4.50	100	50
81242	4.50	120	50
81244	4.50	150	50
81246	4.50	170	50
81248	4.50	200	50
81250	4.50	250	50
81260	5.00	100	50
81264	5.00	125	50
81266	5.00	150	50
81268	5.00	170	50
81270	5.00	200	50
81272	5.00	250	50
81280	6.00	100	30
81284	6.00	150	50
81285	6.00	170	50
81286	6.00	200	50
81287	6.00	250	50



L Wrench	
Cat. No.:	Diameter
80344	2 mm
80343	3 mm
80339	4 mm
80338	5 mm
80345	6 mm



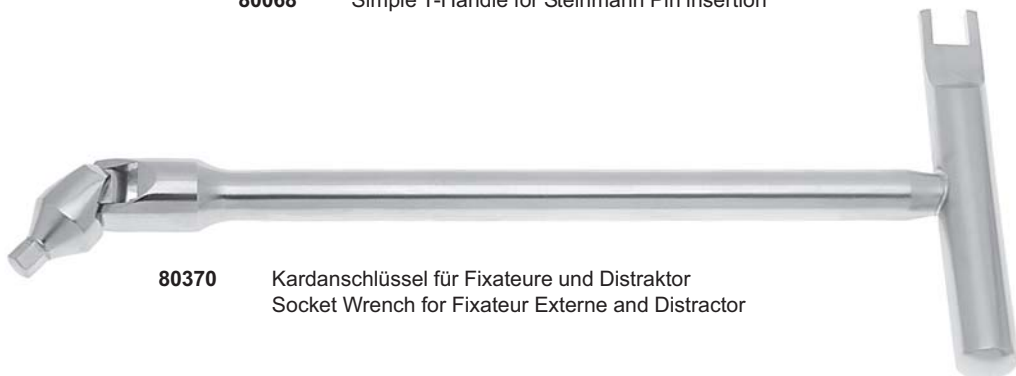
T Wrench	
Cat. No.:	Diameter
80927	3 mm
80928	4 mm
80929	5 mm
80930	6 mm



9090 T-Handle with quick action chuck



80068 Simple T-Handle for Steinmann Pin insertion



80370 Kardanschlüssel für Fixateure und Distraktor
Socket Wrench for Fixateur Externe and Distractor

MATTES

Cortical Screws

∅ Shaft 6 mm

∅ Thread 6/5 mm · Konic

∅ Drill 4.8 mm



Total length mm	Thread length mm			
	30	40	50	60
90	81350			
100	81352	81356		
110	81353	81358	81370	
120		81360		81380
130	81354	81362		81382
140			81374	
150	81355	81364	81376	81384
160			81377	
170		81366		81386
180			81378	81387
190			81379	81388

Cancellous Screws

∅ Shaft 6 mm

∅ Thread 6/5 mm · Konic

∅ Drill 4.8 mm



Total length mm	Thread length mm			
	30	40	50	60
90	81450			
100	81452	81456		
110		81458	81464	
120		81460		81470
130		81462	81466	81472
150			81468	81474

Finger and Mandibula Fixateur



Cat. No.	Type
80500	Long
80502	Standard
80504	Short



8051 Set

- 7300** Kirschnerdraht mit Gewinde und Trokarspitze \varnothing 1,8 mm, 70 mm lang, 10 mm Gewinde
Kirschner Wire with thread and trocar point \varnothing 1.8 mm, 70 mm long, 10 mm thread
- 7301** Kirschnerdraht mit Gewinde und Trokarspitze \varnothing 1,6 mm, 70 mm lang, 10 mm Gewinde
Kirschner Wire with thread and trocar point \varnothing 1.6 mm, 70 mm long, 10 mm thread



7430
TC 180 mm
weicher Draht 2,0 mm
soft Wire 2.0 mm
harter Draht 1,5 mm
hard Wire 1.5 mm



7432
TC 180 mm
Front und Seitenschneider
front and lateral cutting action
weicher Draht 2,0 mm
soft Wire 2.0 mm
harter Draht 1,5 mm
hard Wire 1.5 mm

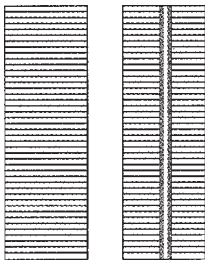


7388

Extraktionszange für Bohrdraht, 130 mm
Extraction Pliers for Boring Wire, 130 mm

7390

Extraktionszange für Bohrdraht, 180 mm
Extraction Pliers for Boring Wire, 180 mm



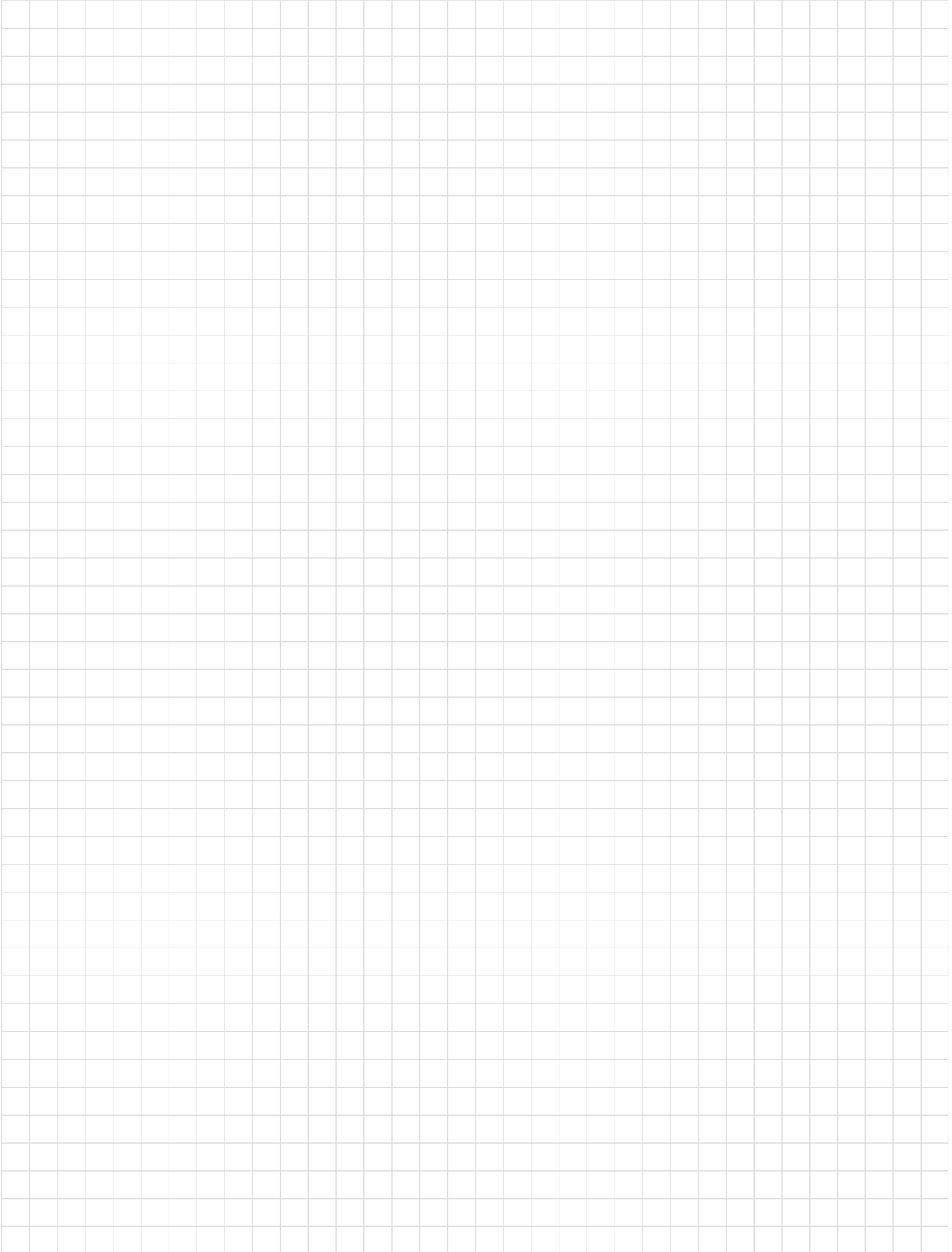
7400

Parallel - Flachzange mit Seitenschneider
180 mm Chrom Vanadium
Flat - Nose Pliers parallel, with lateral Wire
cutter 180 mm Chrom Vanadium

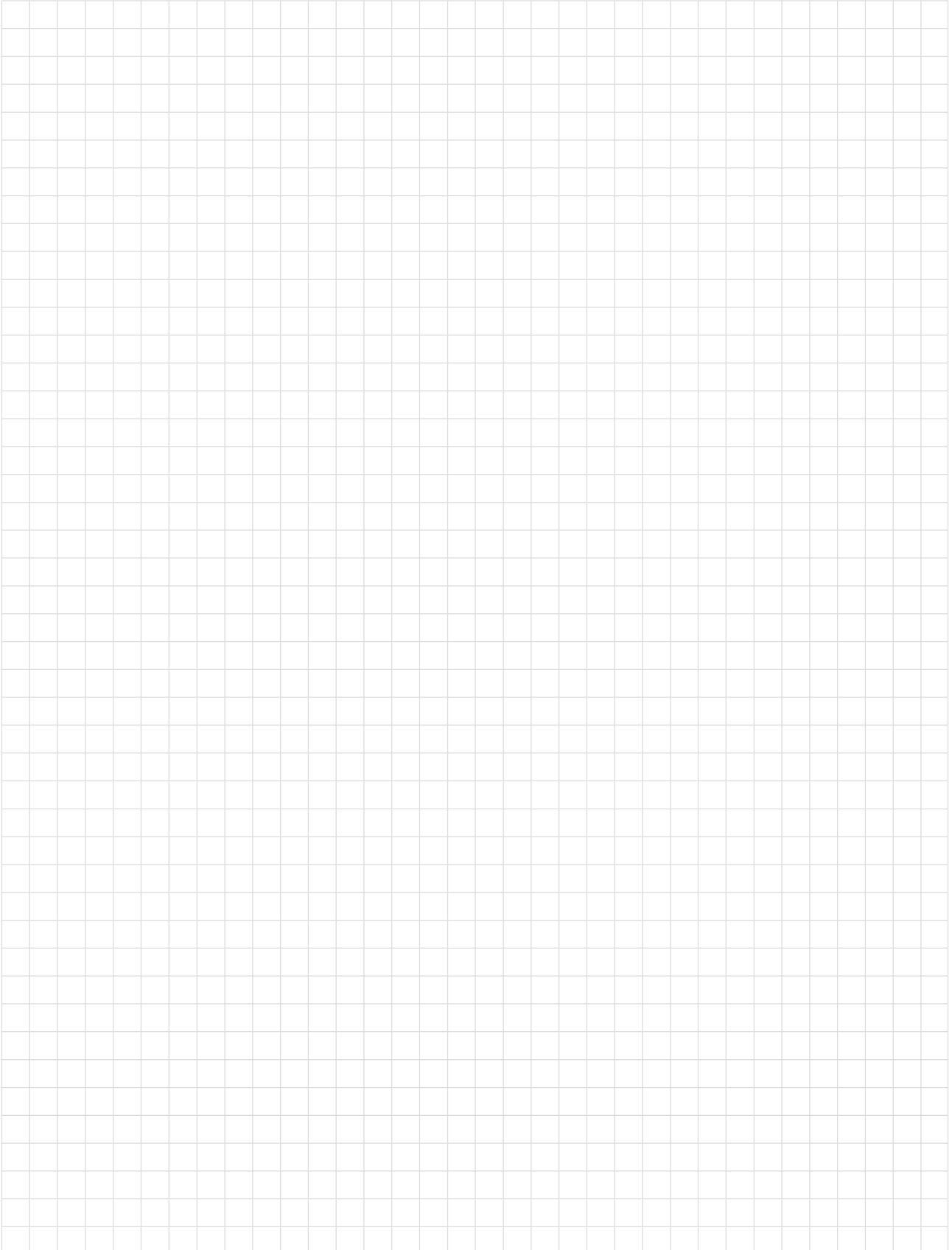
7402

Parallel - Flachzange ohne Seitenschneider
180 mm Stainless Steel
Flat - Nose Pliers parallel, without lateral
wire cutter 180 mm Stainless Steel

Notice:



Notice:





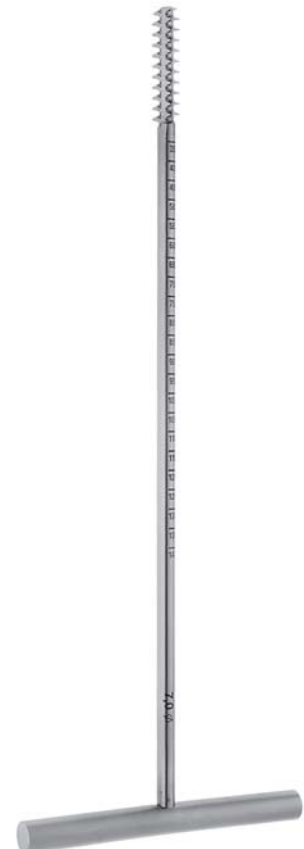
Drill Bits

mm ø	AO shaft	Length mm	round shaft	Length mm
1.1	9010	60 / 35	9040	45 / 30
1.5	9012	85 / 60	9042	70 / 55
2.0	9014	100 / 75	9044	85 / 70
2.5	9016	110 / 85	9046	95 / 80
2.7	9018	100 / 75	9048	85 / 70
3.2	9020	145 / 120	9050	130 / 115
3.2	9021	195 / 170	9051	180 / 165
3.5	9022	100 / 85	9052	95 / 80
3.5	9023	195 / 170	9053	180 / 165
4.5	9026	145 / 120	9056	130 / 115
4.5	9027	195 / 170	9057	180 / 165



Taps

for screws ø mm	AO shaft	T - bar
1.5 dental	9071	
2.0 dental	9072	
2.7	9073	9060
3.5 thread pitch 1.25	9074	9062
3.5 thread pitch 1.75	9075	9064
4.5 short thread	9077	
4.5 long thread	9078	9068
6.5	9079	9070



Drill Bit and Tap Handles

(Complete)



9090 Tap Handle for Jacobs Chuck

Consisting of:



9089 T-Handle



9091 Jacobs Chuck



90910 Wrench for Jacobs Chuck

Drill Bit and Tap Handles



9092 Tap Handle for AO shaft



9094 Tap Handle for AO shaft



9096 Tap Handle for Dental shaft

Instruments for Screw Fixation

Countersinks
For preparing the seat for the screw head



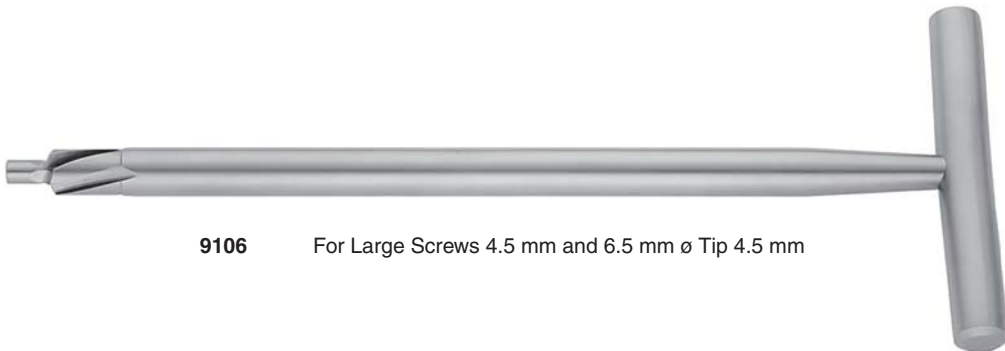
9100 For Mini Screws 1.5 mm and 2.0 mm \varnothing Tip 1.1 mm \varnothing



9102 For Small Screws 2.7, 3.5 and 4.0 mm \varnothing Tip 2.0 mm



9104 For Malleolar Screws Tip 3.2 mm \varnothing



9106 For Large Screws 4.5 mm and 6.5 mm \varnothing Tip 4.5 mm



9110 Depth Gauge for Mini Screws
9112 Depth Gauge for Small Screws
9114 Depth Gauge for Large Screws



4184 Screw Forceps



9116 Sharp Hook
for checking alignment of fracture ends and
for removing in-grown tissue in screw heads

Screw Drivers



9140 for Hexagonal Head 1.5 mm, 20 cm length



9142 for Hexagonal Head 2.5 mm, 20 cm length
9144 for Hexagonal Head 3.5 mm, 20 cm length



9148 for Phillips Head 20 cm length



9150 for Single Head 20 cm length



9152 Slotted Head 20 cm length



A



B



C



D



9158 A Screw Driver Williams for Phillips Head
9160 B Screw Driver Williams for Slotted Head
9162 C Screw Driver Williams for Single Head
9164 D Screw Driver Williams for Hexagonal Head 3.5 mm

Instruments for Screw Fixation



9170 Screw Driver for Mini Screws 1.5 mm



9171 Holding Sleeve 1.5 mm



9172 Screw Driver 2.5 mm



9173 Holding Sleeve 2.5 mm



9174 Screw Driver Shaft 2.5 mm



9176 Screw Driver Shaft 1.5 mm



9178 Screw Driver Shaft 1.5 mm



9188 Screw Driver 3.5 mm



9190 Screw Driver single



9192 Screw Driver Header



9194 Holding for Screw Driver



9196 Screw Driver for 2.5 mm



9198 Screw Driver Philips Head, broad



9200 Screw Driver Philips Head, small

Instruments for Screw Fixation Drill Sleeves and Drill Guides



9250 Mini Drill Sleeve Drill Bit 1.1 and 1.5 mm ø



9252 Drill Guide and Drill Sleeve, 2.0 mm ø
with 3 and 1 hole respectively
Drill Bit 2.0 mm ø



9254 Tap Sleeve 3.5 mm ø
Drill Sleeve 2.5 mm ø
for Drill Bit and Tap for 3.5 mm Cortex Screws
with fine thread



9256 Tap Sleeve 3.5 mm ø
for Taps 3.5 and 2.7 mm ø
May also be used as a Guide
for 3.2 mm ø Drill Bits



9258 Pointed Drill Guide

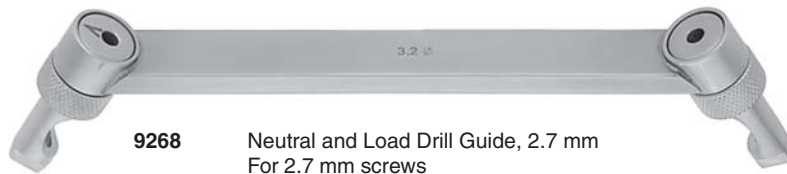
Instruments for Screw Fixation



9260 Tap Sleeve 4.5 mm \varnothing
 For Taps 6.5 mm \varnothing
 May also be used as Drill Guide for
 4.5 mm Drill Bits
 The notched tip prevents slipping on the bone
 Use Sleeve 8 mm \varnothing in the screw holes of plates



9262 Drill Guides for Round-Hole Plates
 for Drill Bit 3.2 mm \varnothing
 Standard, 40 mm



9268 Neutral and Load Drill Guide, 2.7 mm
 For 2.7 mm screws
 Use Drill Bit 2.0 mm \varnothing

9270 Neutral and Load Drill Guide, 3.5 / 1.25 mm
 For 3.5 mm Cortex Screws with fine thread
 Use Drill Bit 2.5 mm \varnothing

9272 Neutral and Load Drill Guide, 4.5 mm
 For 4.5 mm screws
 Use Drill Bit 3.2 mm \varnothing



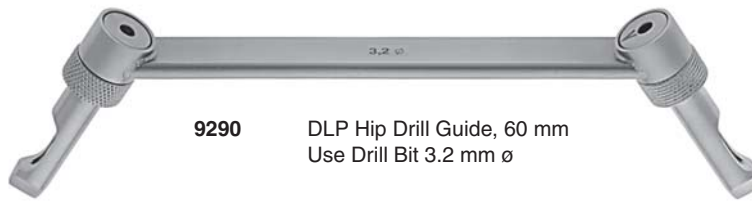
9276 Insert Drill Sleeve 2.7 / 2.0 mm \varnothing
 For 2.7 mm Cortex Lag Screws
 Drill Bit 2.0 mm \varnothing

9278 Insert Drill Sleeve 3.5 / 2.5 mm \varnothing
 For 3.5 mm Cortex Lag Screws
 Drill Bit 2.5 mm \varnothing

9280 Insert Drill Sleeve 4.5 / 3.2 mm \varnothing
 For 3.5 mm Cortex Lag Screws with fine thread
 Drill Bit 3.2 mm \varnothing



9284 C-Clamp Drill Guide with thread
 for Drill Bit 4.5 mm \varnothing



9290 DLP Hip Drill Guide, 60 mm
Use Drill Bit 3.2 mm \varnothing



9264 Drill Guide for Round Holes Plates
60 mm long for hip operations
Use Drill Bit 3.2 mm \varnothing



9294 Triple Drill Guide Angle 130°
for all 130° Angled Blade Plates
Use Drill 3.2 mm \varnothing



9298 Impactor



9296 Chisel Guide



9300 Reamer with end for quick coupling



9302 Condylar Plate Guide



9304 Slotted Hammer



9306 Inserter Extractor



9308 Seating Chisel for preparing blade channel for Adult Angled Blade Plates with U-Profile Shaft and blade width 16 mm



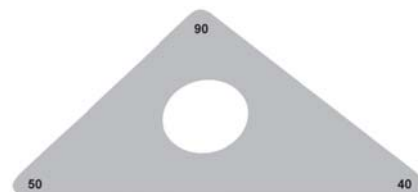
9310 Quadrangular Positioning Plate
110 / 90 / 90 / 70°



9312 Triangular Positioning Plate
100 / 60 / 20°



9314 Triangular Positioning Plate
80 / 70 / 30°



9316 Triangular Positioning Plate
90 / 50 / 40°



9320 Seating Chisel



9322 Seating Chisel



9324 Inserter for Adolescent and Child Hip Plates

Positioning Plates



9325
Triangular for children
90° / 50° / 40°



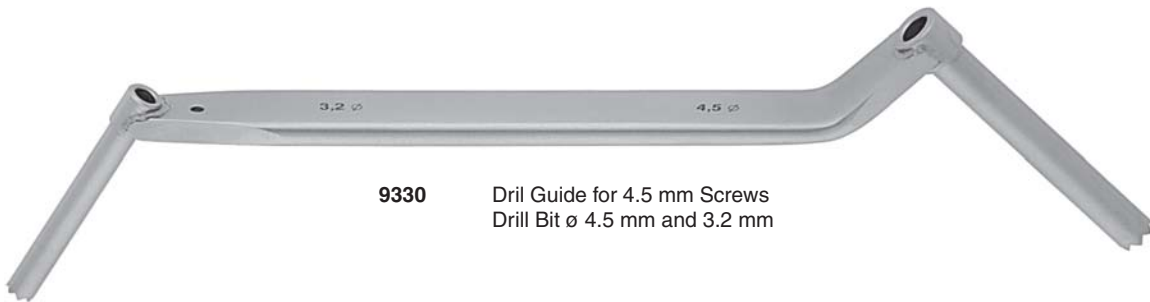
9326
Triangular for children
80° / 70° / 30°



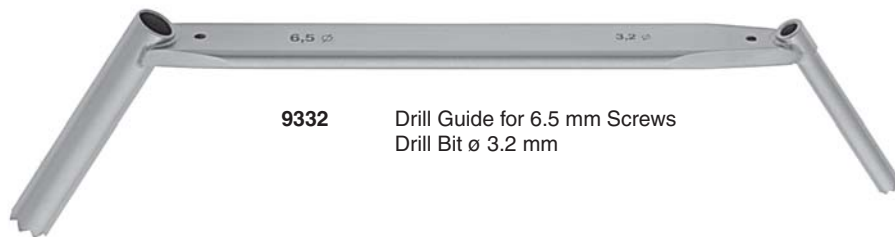
9327
Triangular for children
100° / 60° / 20°



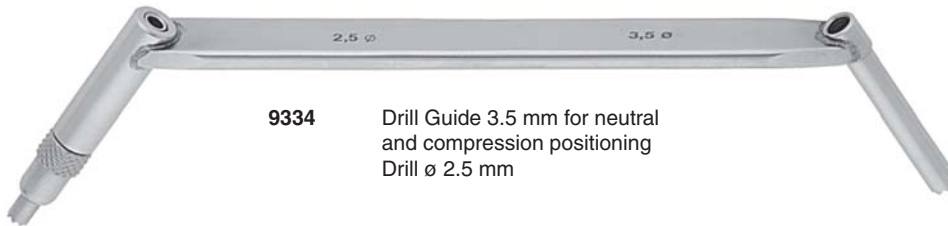
9328
Quadrangular for children
110° / 90° / 90° / 70°



9330 Drill Guide for 4.5 mm Screws
Drill Bit \varnothing 4.5 mm and 3.2 mm



9332 Drill Guide for 6.5 mm Screws
Drill Bit \varnothing 3.2 mm



9334 Drill Guide 3.5 mm for neutral
and compression positioning
Drill \varnothing 2.5 mm



9336 Drill Guide



9338 Drill Guide 4.5 / 3.2
with 2 Inserts

Bending Instruments for Plates



9400 Bending Iron for Mini and Finger Plates



9402 Bending Iron for 3.5 mm Reconstruction Plates



9404 Bending Iron for 2.7 mm Reconstruction Plates



9406 Bending Pliers for 1.5 and 2.0 mm Plates

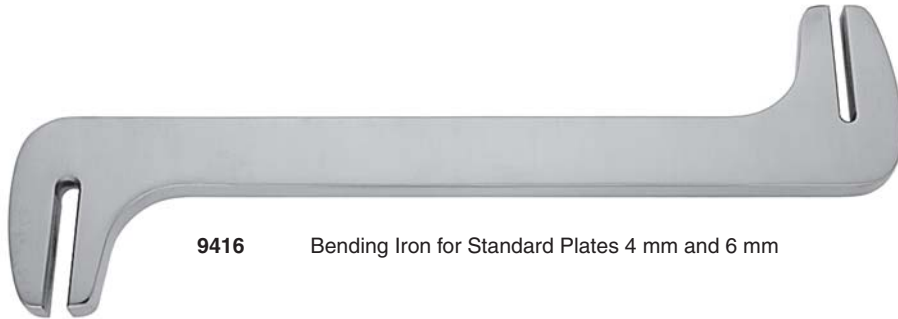


9408 Bending Pliers for 2.7 and 3.5 mm Plates



9410 Bending Pliers

Bending Instruments for Plates



9416 Bending Iron for Standard Plates 4 mm and 6 mm



9418 Bending Pliers for Straight Plates

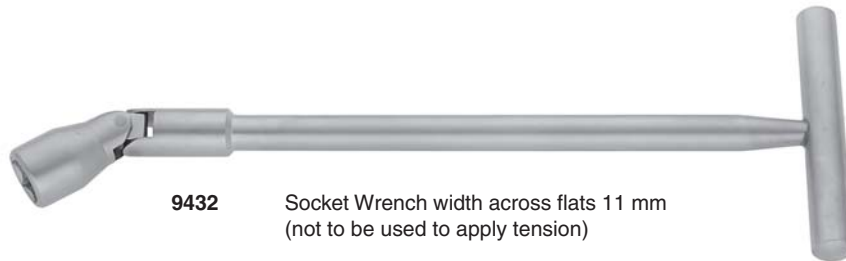


9420 Plate Bending Press

Instruments for Plates



9430 Drill Sleeve for Tension Device for Drill Bit 3.2 mm ø



9432 Socket Wrench width across flats 11 mm
(not to be used to apply tension)



9436 8 mm screw-type
Compression Device



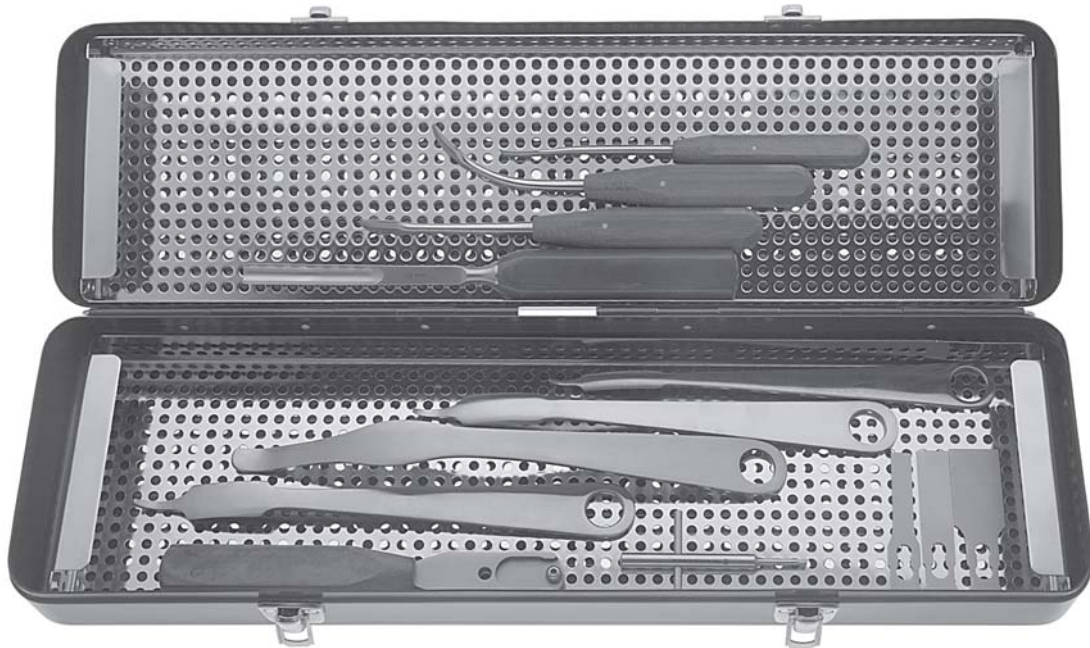
9438 Combination Wrench
width across flats 11 mm
for Tension Device, External Fixator
Medullary Nailing Instruments, etc.



9440 Articulated Tension Device
with Indicator, span 20 mm
May also be used for distraction
of Standard and Small Plates



9442 Pin Wrench for Tension Device and Distractor

General Instruments Set

M 09100 General Instruments Set

M 01110 Aluminium Case

M 01120 Upper Tray

M 01120 Lower Tray

Hohmann Retractors

9656 Blade width 8 mm, short narrow tip

9658 Blade width 18 mm, short narrow tip

9660 Blade width 18 mm, long narrow tip for hip surgery

9676 Blade width 24 mm, long wide tip for hip surgery

9776 Wrench for Chisel Handle

Periosteal Elevators

9750 Medium, straight blade, straight edge, width 14 mm

9752 Medium, curved blade, round edge, width 14 mm

9756 Small, curved blade, round edge, width 6 mm

9704 Hammer, 500 g

9766 Chisel Handle, synthetic, autoclavable

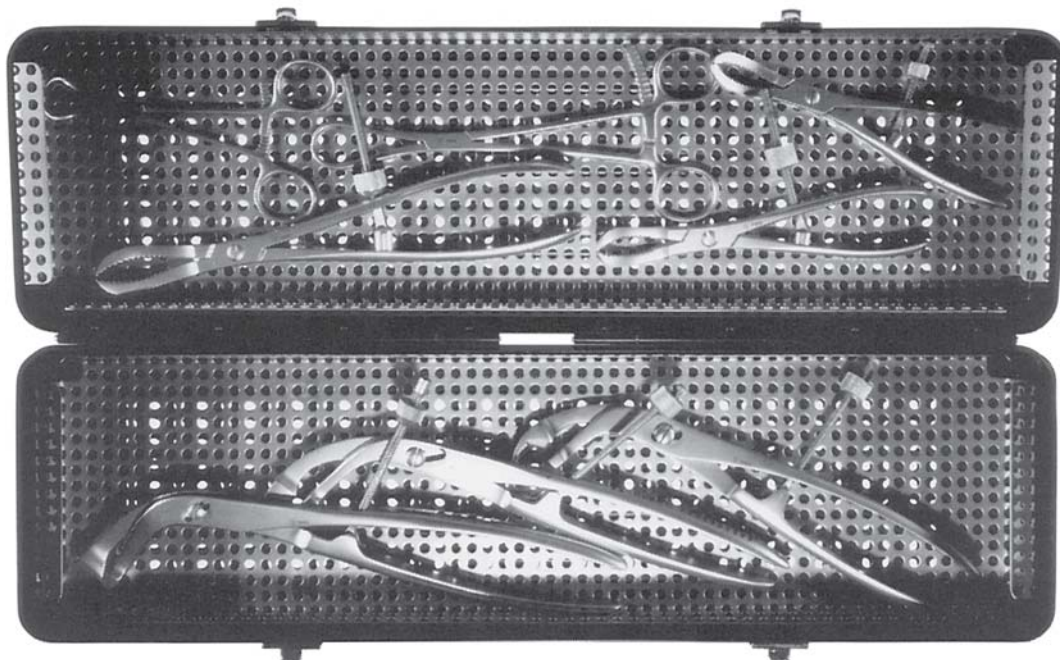
Chisel Blades

9768- 1 ea: 10, 16 and 25 mm

9772

9792 Gouge, straight, width 10 mm for Cancellous Bone Grafts

Standard Bone Forceps Set



M 09200 Standard Bone Forceps Set

M 01110 Aluminium Case

M 01120 Upper Tray

M 01120 Lower Tray

- 9584** Self-Centering Bone Holding Forceps, size 1, 240 mm long
- 9586** Self-Centering Bone Holding Forceps, size 2, 260 mm long
- 9588** Self-Centering Bone Holding Forceps, size 3, 280 mm long
- 9560** Reduction Forceps, large, 240 mm long
- 9562** Reduction Forceps, small, 160 mm long
- 9604** Reduction Forceps with point, 200 mm long

Instruments see General Catalog MATTES

Bone Holding Forceps



9644 Charnley Bone Forceps



Set includes:
Hooked Jaws: 1 pair
Serrated Jaws: 3 pairs
Sizes: 32, 51 and 57 mm



9646 Holding Forceps with ball

Bone Hammers



9700 \varnothing 30 mm / 215 g
with interchangeable plastic disks 250 mm

9701 Pair of spare disks



9702 Weight approx: 350 g
9704 Weight approx: 500 g (Standard size)
9706 Weight approx: 700 g (For Medullary Nailing)

Periosteal Elevators

with synthetic handle, autoclavable



9750
Medium straight blade
round edge, width 14 mm



9752
medium curved blade
round edge, width 14 mm



9754
large straight blade
round edge, width 30 mm



9756
Small curved blade
round edge, width 6 mm



9758
Small curved blade
straight edge, width 6 mm



9760
Extra small curved blade
straight edge, width 3 mm



9766 Chisel Handle



- 9768** Chisel Blade 10 mm
- 9770** Chisel Blade 16 mm
- 9772** Chisel Blade 25 mm
- 9774** Chisel Blade 5 mm



9776 Wrench for Chisel Handle



- 9790** straight 5 mm
- 9792** straight 10 mm
- 9794** straight 15 mm



- 9796** curved 5 mm
- 9798** curved 10 mm
- 9800** curved 15 mm

Awls and Files



91450 Perthes, 22,0 cm
91452 Perthes, 16,0 cm



91454 15,0 cm



91456 16,0 cm



91470 Putti, 30,0 cm



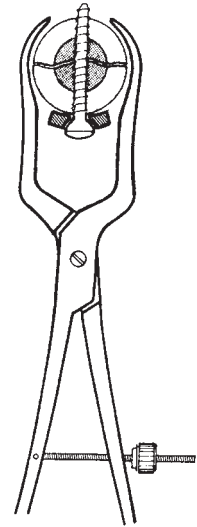
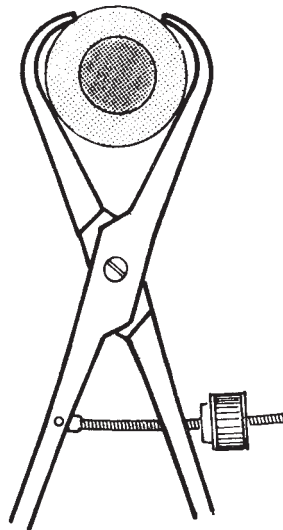
91472 Putti, 28,0 cm



9540 Verbrügge Bone Holding Forceps 175 mm



9544 Verbrügge Bone Holding Forceps 250 mm
9546 Verbrügge Bone Holding Forceps 260 mm
9548 Verbrügge Bone Holding Forceps 270 mm



9560 Reduction Forceps with Thread Lock 240 mm



9562 Reduction Forceps with Thread Lock 160 mm



9570 Ferguson Bone Holding Forceps 230 mm



Self-Centering Bone Holding Forceps with Thread Lock

- 9580** For Small Fragments 150 mm, jaw 9 mm
- 9582** Size 0
190 mm, extra small jaw 10 mm
- 9584** Size 1
240mm, small jaw 14 mm
- 9586** Size 2
260 mm, medium jaw 18 mm
- 9588** Size 3
280 mm, large jaw 23 mm



9590 Lewin 190 mm



9592 Semb 200 mm
9594 Semb 200 mm with ratchet



9596 Reposition Forceps
for Small Fragments 135 mm



9600
Forceps with Ratchet
Fixation 145 mm



9602
Reil 170 mm



9604
Reduction Forceps
with points 200 mm



9620
200 mm



9622
Malleolar Forceps



9624
For fingers, with Drill
Guide for Kirschner
Wires up to \varnothing 1 mm 170 mm



9630
Holding Forceps for Mini 135 mm



9632 Ulrich 230 mm
9634 Ulrich 250 mm
9636 Ulrich 280 mm
9638 Mini 190 mm



9640 Ulrich 260 mm

Bone Mill

Completely made of stainless steel.
Standard type with hand crank, alternatively available with motor for cleaning.

Cutting Drum can be removed for cleaning



91550
Bone Mill, 42,0 cm



91552
Fixation Device

Cutting Drum and Fixation Device have to be specially mentioned in purchase order



91554
Cutting Drum with
4 cutters in each row
Dia. 4.2 mm



91556
Cutting Drum with
5 cutters in each row
Dia. 3.2 mm

MATTES

Vacuum with Plaster Saw „Electronic Power“ ***Vacuum with Plaster Saw „Blue Power“***



Technical details / specifications see overleaf

Pictures shows the plaster saw
 Electronic Power also available
 with the plaster saw Blue Power



Vacuum „Standard“

Vacuum „Exclusiv“

Vacuum with Plaster Saw	
Art.-No. 3592.00ST	Art.-No. 3592.00EX
230 V~, 50 Hz Power 500 - 1200 Watt Continuous Power Output max. 1200 Watt Max. Power Output 1450 Watt PT	
Inclusive plaster saw “Electronic Power” or plaster saw “Blue Power”	

MATTES

- ✓ 500 - 1200 Watt power, vacuum motor
- ✓ Continuous Power Output max. 1200 Watt, vacuum motor
- ✓ Max. Power Output 1450 Watt PT, vacuum motor
- ✓ HEPA-Filter 99,97% of all particle who are $\geq 0,3$ mikron are filtered
- ✓ Automatically turn on/off from the cleaner with the turn on/off from the plaster saw
- ✓ By the turn off the plaster saw the cleaner will going off 6-10 sec. later to clean the hole system
- ✓ Robust construction for highest loading capacity by continuous operation
- ✓ Max. vacuum 2100 mm/H₂O, vacuum motor
- ✓ Max. vacuum 1900 mm/H₂O, vacuum machine
- ✓ Air flow motor 62 lt./sec. in the machine, due to all the filters the air flow goes down to 40 lt./sec.
- ✓ Elektronik power control vacuum motor min. 500 W – max. 1200 W
- ✓ Max. total power (system) 1600 Watt, controlled
- ✓ Noise level vacuum only, 63 – 69 dB(A)
- ✓ Antistatic cleanertube
- ✓ Control lamp for full dust bag
- ✓ “Exclusiv” model : cleanertube is in the pipe and not on the floor
- ✓ “Exclusiv” model : better handling

MATTES

Vacuum with Plaster Saw „Electronic Power“

Vacuum with Plaster Saw „Blue Power“



Technical details / specifications see overleaf

Pictures shows the plaster saw
Electronic Power also available
with the plaster saw Blue Power

Vacuum „Standard“



Vacuum „Exclusiv“

Vacuum with Plaster Saw	
Art.-No. 3592.01ST	Art.-No. 3592.01EX
120 V~, 60 Hz	
Power 500 - 1050 Watt	
Continuous Power Output max. 1050 Watt	
Max. Power Output 1200 Watt PT	
Inclusive plaster saw “Electronic Power” or plaster saw “Blue Power”	

MATTES

Vacuum with Plaster Saw „Electronic Power“

Vacuum with Plaster Saw „Blue Power“

- ✓ 500 - 1050 Watt power, vacuum motor
- ✓ Continuous Power Output max. 1050 Watt, vacuum motor
- ✓ Max. Power Output 1200 Watt PT, vacuum motor
- ✓ HEPA-Filter 99,97% of all particle who are $\geq 0,3$ mikron are filtered
- ✓ Automatically turn on/off from the cleaner with the turn on/off from the plaster saw
- ✓ By the turn off the plaster saw the cleaner will going off 6-10 sec. later to clean the hole system
- ✓ Robust construction for highest loading capacity by continuous operation
- ✓ Max. vacuum 2100 mm/H₂O, vacuum motor
- ✓ Max. vacuum 1900 mm/H₂O, vacuum machine
- ✓ Air flow motor 62 lt./sec. in the machine, due to all the filters the air flow goes down to 40 lt./sec.
- ✓ Elektronik power control vacuum motor min. 500 W – max. 1050 W
- ✓ Max. total power (system) 1350 Watt, controlled
- ✓ Noise level vacuum only, 63 – 69 dB(A)
- ✓ Antistatic cleanertube
- ✓ Control lamp for full dust bag
- ✓ “Exclusiv” model : cleanertube is in the pipe and not on the floor
- ✓ “Exclusiv” model : better handling

MATTES Spinal Instrumentation System



M 13000 Suggested selection for Basic Set
151013 Alu Case
M 01300 Upper Tray
M 01310 Lower Tray

131000	Distraction Rod	1 piece
131004	Distraction Rod	1 piece
131008	Distraction Rod	1 piece
131012	Distraction Rod	1 piece
131016	Distraction Rod	1 piece
131040	Distraction Rod	1 piece
131044	Distraction Rod	1 piece
131048	Distraction Rod	1 piece
131028	Distraction Rod	2 pieces
131032	Distraction Rod	2 pieces
131036	Distraction Rod	3 pieces
131020	Distraction Rod	3 pieces
131024	Distraction Rod	3 pieces
131078	Distraction Hooks for Collar Ends sharp	6 pieces
131080	Distraction Hooks for Collar Ends blunt	6 pieces
131070	Distraction Hooks for Ratchet Ends sharp	12 pieces
131072	Distraction Hooks for Ratchet Ends blunt	4 pieces
131074	Distraction Hooks for Ratchet Ends sharp with rib	12 pieces
131076	Distraction Hooks for Ratchet Ends blunt with rib	4 pieces
131150	Compression Hooks for Threaded Distraction Rod (131120) sharp	18 pieces
131152	Compression Hooks for Threaded Distraction Rod (131120) blunt	18 pieces
131190	Compression Hooks for Threaded Distraction Rod (131160) sharp	6 pieces
131086	"C" Washer for Ratched End	6 pieces
131112	Eyelet for Sacral Rod	2 pieces
131100	Threaded Sacral Rod diam. 6,4 mm with trocar point 203 mm	1 piece
131110	Sacral Rod Nut dia. 6,4 mm	4 pieces
131120	Threaded Distraction Rod dia. 4,8 mm	6 pieces
131126	Hex Nut for 13-1120	12 pieces
131160	Threaded Compression Rod dia. 3,2 mm	6 pieces
131166	Hex Nut for 13-1160	12 pieces

MATTES Instrumentarium zur Skoliose- und Wirbelsäulenfrakturbehandlung Instrumentation for the Treatment of Scoliotic and Fractured Spine

Distraktionsstange ø 6.4 mm
Länge 0 - 356 mm

Distraction Rod diam. 6.4 mm
length 0 - 356 mm



Catalog No.	131000	131004	131008	131012	131016	131020	131024	131028
Länge / Length	0 mm	25 mm	51 mm	76 mm	102 mm	127 mm	152 mm	179 mm
Catalog No.	131032	131036	131040	131044	131048	131050	131052	131056
Länge / Length	203 mm	229 mm	254 mm	279 mm	305 mm	318 mm	330 mm	356 mm

Länge gemessen vom Bundende bis zu ersten Kerbe
Length measured from collar to first ratchet

Andere Längen lieferbar auf Anfrage
Additional length available on request

Distraction Hooks
for use at round end (Collar End)
of distraction rods



131078
Sharp



131080
Blunt

Distraction Hooks for Ratchet End



131070
Sharp



131072
Blunt



131086
Washer



131074
Sharp
with rib



131076
Blunt
with rib



Threaded Sacral Rod with trocar point diam. 6.4 mm

131100	203 mm long
131102	302 mm long



131110
Sacral Rod Nut
Thread dia: ¼ in. (6.4 mm)



131112
Eyelet for connection of
Sacral Rod with Distraction Rod

MATTES
Instrumentarium zur Skoliose- und Wirbelsäulenfrakturbehandlung
Instrumentation for the Treatment of Scoliotic and Fractured Spine



131120 Threaded Compression Rod diam. 4.8 mm length 254 mm complete with 6 nuts

Compression Hooks
for use with Threaded Compression
Rod of 4.8 mm diam.



131150
Sharp



131152
Blunt



131126
Hex Nut only



131160 Threaded Compression Rod diam. 3.2 mm length 254 mm complete with 6 Nuts

Compression Hook
for use with Threaded Compression
Rod of 3,2 mm diam.



131190
Sharp



131166
Hex Nut only

MATTES Spinal Instrumentation System



Distraction - Fusion - Instrumentation

Cat. No.	Rod Length	
	Inch	cm
131330	1 ³ / ₁₆	3
131332	1 ⁹ / ₁₆	4
131334	2	5
131336	2 ³ / ₈	6
131338	2 ³ / ₄	7
131340	3 ¹ / ₈	8
131342	3 ⁹ / ₁₆	9
131344	4	10

MATTES Spinal Instrumentation System



M 13020 Instrumentation Set
151013 Alu Case
M 01320 Upper Tray
M 01330 Lower Tray

131468	Distraction Rod Clamp	1 piece
131470	Hook Clamp Single Locator	1 piece
131472	Hook Clamp Double Locator	1 piece
131450	Distraction Rod Driver, straight	1 piece
131452	Distraction Rod Driver, curved	1 piece
131454	Distraction Rod Driver, straight	1 piece
131456	Distraction Rod Driver, curved	1 piece
131510	Outrigger Distraction Unit	1 piece
131482	French Rod Bender	1 piece
7444	Rod Cutter, large	1 piece
7446	Rod Cutter, small	1 piece
131480	"C" Spreader	1 piece
131474	"C" Washer Clincher	1 piece
131500	Small Threaded Rod Clamp	2 pieces
131460	Flat wrench	1 piece

MATTES Spinal Instrumentation System



131450
Driver straight
for Large Hooks



131452
Driver curved
for Large Hooks



131454
Driver straight
for Small Hooks



131456
Driver curved
for Small Hooks



131460
Flat wrench
for Sacral Nuts



131468
Distraction
Rod Clamp



131470
Hook Clamp
Single Locator



131472
Hook Clamp
Double Locator



131474
"C" Ring Clincher



131480
"C" Spreader



131482
French Rod Bender



Spinal Elevators
131490 9 mm broad
131492 13 mm broad
131494 16 mm broad
131496 19 mm broad



131500
Small Threaded
Rod Clamp



131502
Large Threaded
Rod Clamp



131510
Outrigger Distraction Unit



7444
Rod Cutter large
54,0 cm



7446
Rod Cutter small
46,0 cm



7422
Wire Cutter
soft wire 2,4 mm
hard wire 1,8 mm



7434
Wire Cutter, 22,0 cm
soft wire 3,0 mm
hard wire 2,5 mm



131504
Rod Gripper , 20,0 cm

Roy Camille Spinal Instrumentation System

Dorsal - Lumbar Plates curved



Cat. No.	Holes	Length
132000	4	49
132002	5	62
132004	7	90
132006	9	114
132008	11	140
132010	13	166
132012	15	192
132014	17	218
132016	19	244
132018	21	270



Dia of thread	4,5 mm	4,0 mm
Dia of core	3,0 mm	1,9 mm
Dia of head	8,0 mm	6,0 mm
Length	Cat. No.	Cat. No.
14 mm	3200	4144
16 mm	3202	4146
18 mm	3204	4148
20 mm	3206	4150
22 mm	3208	4152
24 mm	3210	4154
26 mm	3212	4156
28 mm	3214	4158
30 mm	3216	4160
32 mm	3218	
34 mm	3220	
36 mm	3222	
38 mm	3224	
40 mm	3226	
42 mm	3228	
44 mm	3230	
46 mm	3232	
48 mm	3234	
50 mm	3236	

Cervical Plates straight



Cat. No.	Holes	Length
132040	2	23
132042	3	36
132044	4	49
132046	5	62

Cervical Spinal Plates



Cat. No.	Holes	Size
132050	1	small
132052	2	medium
132054	3	large

Small Plates for Cervical Spine For Screws with 2,7 mm and 3,5 mm diameter



Cat. No.	Holes	Size	Length
132200	5	16 mm	23 mm
132202	5	18 mm	25 mm
132204	5	21 mm	28 mm
132206	8	16 + 18 mm	41 mm
132208	8	18 + 21 mm	46 mm
132210	11	16 + 18 + 18 mm	59 mm



Cat. No.	Holes	Size	Length
132212	20	16 mm	103 mm
132214	20	18 mm	115 mm
132216	20	21 mm	133 mm



132250 28 mm 132252 30 mm 132254 32 mm 132256 37 mm



132258 40 mm 132260 44 mm 132262 46 mm 132264 48 mm 132266 50 mm 132268 54 mm 132270 60 mm 132272 66 mm 132274 72 mm

Wirbelkörper Distraktionssystem Vertebral Body Distraction System



- 137030 Distraktor alleine, rechts
mit verlängerter Führungsstange
für mehrere Distraktionen
Distractor only, right with elongated
toothed bar for multilevel distraction
- 137032 Distraktor alleine, links
mit verlängerter Führungsstange
für mehrere Distraktionen
Distractor only, left with elongated
toothed bar for multilevel distraction



- 137040 Bohrlehre rechts, für Distraktor 137034
Drill Guide right, for distractor 137034
- 137042 Bohrlehre links, für Distraktor 137036
Drill Guide left, for distractor 137036

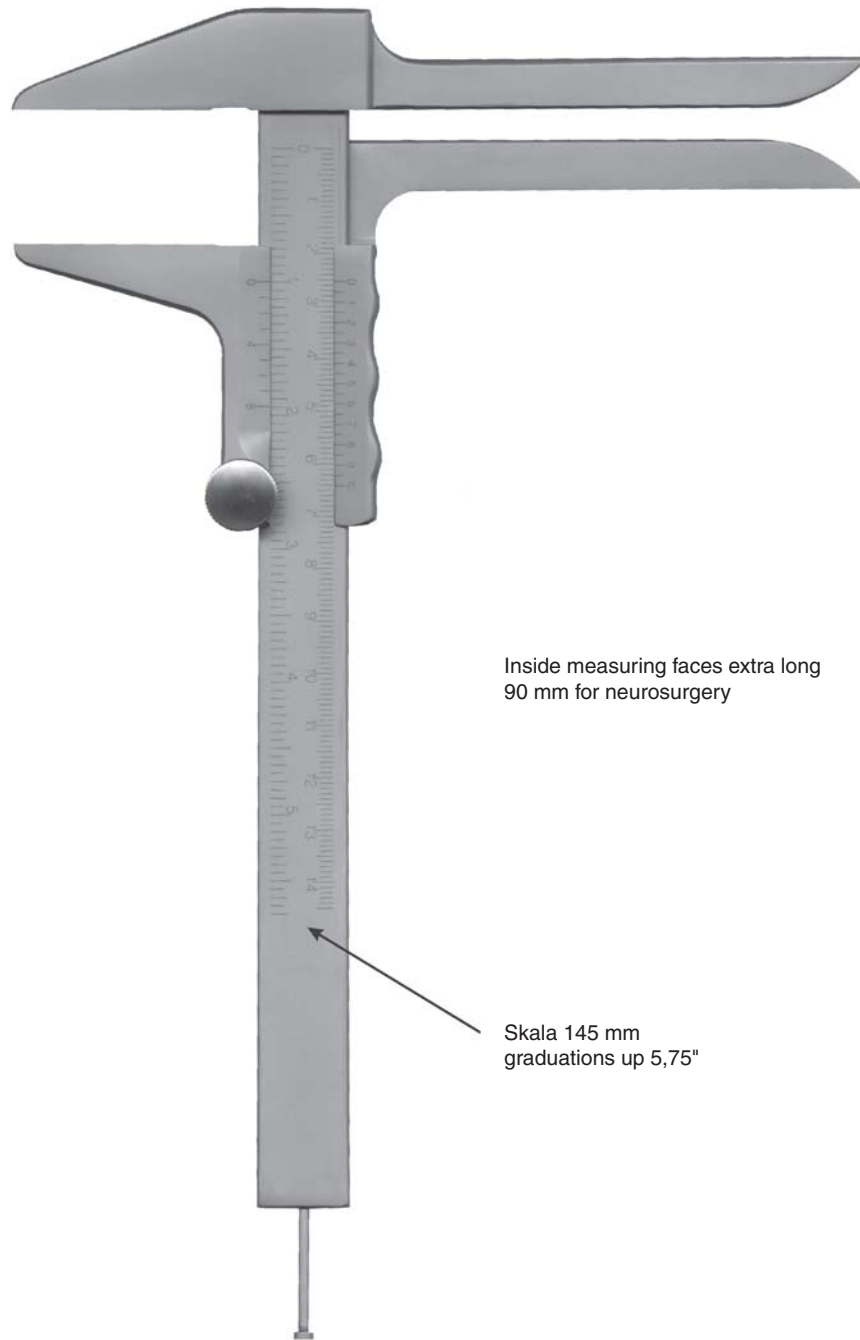


- 137050 Bohrer ø 1,7 mm
für Distraktionsschrauben,
Bohrtiefe: 8 mm
Twist Drill ø 1.7 mm for
distraction screws,
drilling depth: 8 mm



- 137052 Schraubendreher für
Distraktionsschrauben
Screw Driver for
distraction screws

Messschieber Neuro - Caliper



Inside measuring faces extra long
90 mm for neurosurgery

Skala 145 mm
graduations up 5,75"

137080



No.: 1



No.: 2



No.: 3



No.: 4



No.: 5



No.: 6



No.: 7



No.: 8



No.: 9



No.: 10



No.: 11



No.: 12

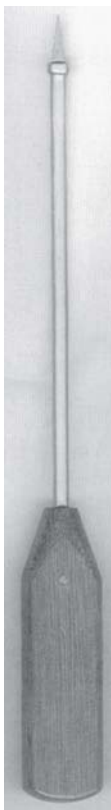


No.: 13

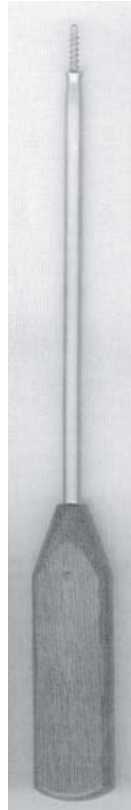
132300	1	26 mm
132302	2	30 mm
132304	3	33 mm
132306	4	36 mm

132308	5	39 mm
132310	6	42 mm
132312	7	45 mm
132314	8	48 mm

132316	9	51 mm
132318	10	54 mm
132320	11	57 mm
132322	12	60 mm
132324	13	63 mm



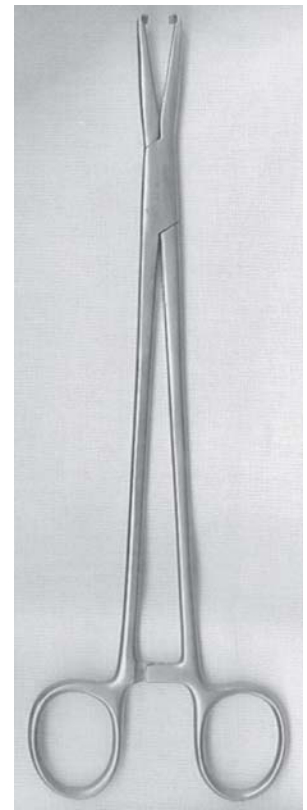
132330
Trocar Awl straight



132332
Tap
Size 3,5 mm



132334
Handle Drill Size
2,5 mm



132336
Plate Holder

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



AKKU - BOHRMASCHINE - SYSTEM
BATTERY - DRIVEN DRILL - SYSTEM
BDDS - SYSTEM



14807 Akku-Bohrmaschine mit Verschlussdeckel (ohne Akku)
Battery-driven drill with closure cover (without battery)

Übersicht von Zubehör :
Overview for accessories :



14810	Akku
	Battery



14814	Ladegerät / Tisch	220 V
	für 1 Batterie	
	Charger / bench	220 V
	for 1 batterie	

14815	Ladegerät / Tisch	110 V
	für 1 Batterie	
	Charger / bench	110 V
	for 1 batterie	



14816	Ladegerät / Tisch	220 V
	für 2 Batterien	
	Charger / bench	220 V
	for 2 batteries	

14817	Ladegerät / Tisch	110 V
	für 2 Batterien	
	Charger / bench	110 V
	for 2 batteries	

Übersicht von Zubehör :
Overview for accessories :



14830 Jacobs Dreibackenfutter bis \varnothing 7,0 mm für Rund - und Dreikantschäfte mit Spannschlüssel
Concentric Jacobs chuck up to \varnothing 7,0 mm for round and triangular shanks with chuck key



14842 Schnellspannfutter für Bohrdrähte von \varnothing 0,8 mm bis \varnothing 3,0 mm
Quick-action chuck for drill wires from \varnothing 0,8 mm up to \varnothing 3,0 mm



14862 Adapter für AO-Ansätze / Aesculap-Ansätze
Adaptor for AO and Aesculap attachments



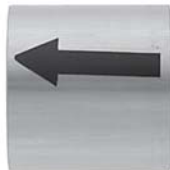
14864 Adapter für DIN Ansätze
Adaptor for DIN attachments



14834 Fräseraufsatz für Acetabulum-Fräsen und Markraumborenen (100 U/min.)
Chuck for acetabular and intramedullary reaming (100 r/min.)



14836 Oszillierende Säge Standardaufnahme für Sägeblätter AO
Oscillating saw standard connection for saw AO



14811 Steriltrichter für Akku **14810**
Sterilizing funnel for battery **14810**



151500 Sterilisationsbehälter
Container

14868 Siebschaleneinsatz (2 Stück)
Tray Set (2 pieces)

14843 Hülse für Kirschnerdrähte
Sleeve for Kirschner wires



14830 Jacobs Dreibackenfutter bis \varnothing 7,0 mm für Rund - und Dreikantschäfte mit Spannschlüssel
 Concentric Jacobs chuck up to \varnothing 7,0 mm for round and triangular shanks with chuck key



Drill Bits Cannulated hole \varnothing 2.1 mm Length 150 mm (recommended)
 Kannulierter Bohrer Bohrung \varnothing 2,1 mm Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11861	3,5
1.11862	4,0
1.11863	4,8



Drill Bits Length 150 mm (recommended)
 Bohrer Länge 150 mm (empfohlen)

Cat. No.	\varnothing mm
1.11864	2,7
1.11865	3,5
1.11866	4,0
1.11867	4,8



Twist Drills Length 305 mm
 Kalibrierter Bohrer Länge 305 mm

Cat. No.	\varnothing mm
1.11869	3,5
1.11870	4,0
1.11871	4,8



11901 Tapered Reamer, cannulated \varnothing 15.5 mm for Femoral MFN. / DNS. - U/R Nails
 Kannulierter Formfräser \varnothing 15,5 mm für Femur MFN. / DNS.- U/R Nägel

11906 Tapered Reamer, cannulated \varnothing 13.5 mm for Femoral MFN. / DNS. - U/R Nails
 Kannulierter Formfräser \varnothing 13,5 mm für Femur MFN. / DNS.- U/R Nägel



11908 Cannulated Reamer \varnothing 9.0 mm
 Kannulierter Stufenfräser \varnothing 9,0 mm



14842 Schnellspannfutter für Bohrdrähte von \varnothing 0,8 mm bis \varnothing 3,0 mm
Quick-action chuck for drill wires from \varnothing 0,8 mm up to \varnothing 3,0 mm

Kirschner Wires



Point	Trocar	Trocar
Shaft End	round	Trocar
Length	310 mm	310 mm
\varnothing 1.0 mm	7120	7140
\varnothing 1.2 mm	7121	7141
\varnothing 1.4 mm	7122	7142
\varnothing 1.5 mm	7123	7143
\varnothing 1.6 mm	7124	7144
\varnothing 1.8 mm	7126	7145
\varnothing 2.0 mm	7127	7146
\varnothing 2.2 mm	7128	7147
\varnothing 2.5 mm	7129	7148
\varnothing 3.0 mm	7130	

Point	Trocar	Trocar	Trocar
Shaft End	round	round	Trocar
Length	70 mm	150 mm	150 mm
\varnothing 0.8 mm	7200	7250	7280
\varnothing 1.0 mm	7201	7252	7282
\varnothing 1.2 mm		7254	7284
\varnothing 1.4 mm		7256	7286
\varnothing 1.5 mm	7208	7258	7288
\varnothing 1.6 mm		7260	7290
\varnothing 1.8 mm		7262	7292
\varnothing 2.0 mm		7264	7294
\varnothing 2.2 mm		7266	7296
\varnothing 2.5 mm	7210	7268	7298
\varnothing 3.0 mm		7270	



Kirschner Wires with thread and trocar points, round end

	Diameter	Length	Threaded Length
7310	1.6 mm	150 mm	5 mm
7312	1.6 mm	150 mm	15 mm
7314	2.0 mm	150 mm	15 mm
7316	2.0 mm	200 mm	15 mm
7318	2.5 mm	200 mm	15 mm
7320	2.5 mm	230 mm	20 mm



14862 Adapter für AO-Ansätze / Aesculap-Ansätze
Adaptor for AO and Aesculap attachments



Drill Bits

ø mm	AO shaft	Length mm	round shaft	Length mm
1.1	9010	60 / 35	9040	45 / 30
1.5	9012	85 / 60	9042	70 / 55
2.0	9014	100 / 75	9044	85 / 70
2.5	9016	110 / 85	9046	95 / 80
2.7	9018	100 / 75	9048	85 / 70
3.2	9020	145 / 120	9050	130 / 115
3.2	9021	195 / 170	9051	180 / 165
3.5	9022	100 / 85	9052	95 / 80
3.5	9023	195 / 170	9053	180 / 165
4.5	9026	145 / 120	9056	130 / 115
4.5	9027	195 / 170	9057	180 / 165



Taps

for screws ø mm	AO shaft	T-bar
1.5 dental	9071	
2.0 dental	9072	
2.7	9073	9060
3.5 thread pitch 1.25	9074	9062
3.5 thread pitch 1.75	9075	9064
4.0 thread pitch 1.75	9076	9065
4.5 short thread	9077	
4.5 long thread	9078	9068
6.5	9079	9070



14864 Adapter für DIN Ansätze
Adaptor for DIN attachments



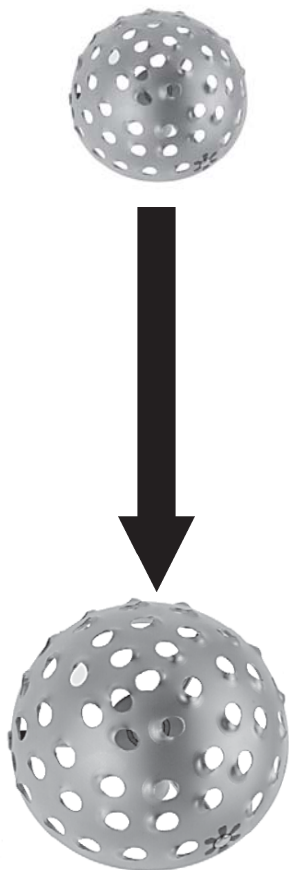
Flexible Medullary Reamer (Aesculap Drive Connection DIN 58809)

∅	6,0 mm 11002	6,5 mm 11004	7,0 mm 11006	7,5 mm 11008	8,0 mm 11010	8,5 mm 11012	9,0 mm 11014	9,5 mm 11016	
∅	10,0 mm 11018	10,5 mm 11020	11,0 mm 11022	11,5 mm 11024	12,0 mm 11026	12,5 mm 11028	13,0 mm 11030	13,5 mm 11032	14,0 mm 11034
∅	14,5 mm 11036	15,0 mm 11038	15,5 mm 11040	16,0 mm 11042	16,5 mm 11044	17,0 mm 11046	17,5 mm 11048	18,0 mm 11050	



14834 Fräseraufsatz für Acetabulum-Fräsen und Markraumbohren (100 U/min.)
Chuck for acetabular and intramedullary reaming (100 r/min.)

Acetabulum-Fräser-System Acetabulum Reamer System



Fräseraufsatz mit Schnellverschluss
Reamer with quick locking device

183440	ø 40 mm
183442	ø 42 mm
183444	ø 44 mm
183446	ø 46 mm
183448	ø 48 mm
183450	ø 50 mm
183452	ø 52 mm
183454	ø 54 mm
183456	ø 56 mm
183458	ø 58 mm
183460	ø 60 mm
183462	ø 62 mm
183464	ø 64 mm



Standard
AO Ansatz

183470

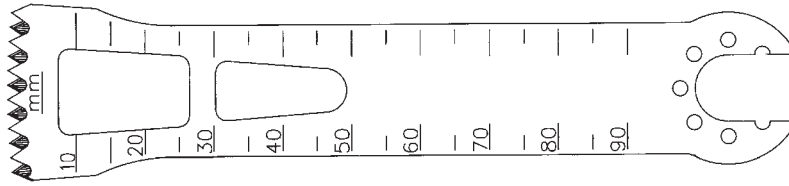


183472

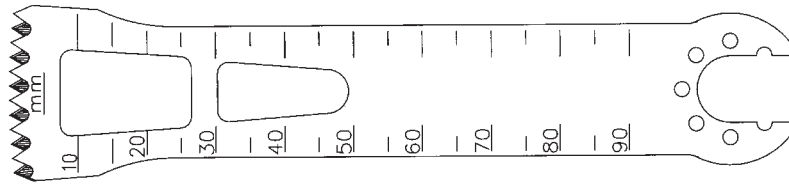
Acetabulumfräser:
Die Fräseraufsätze werden **schlüssellos** mit dem Fräferschaft gekuppelt. Es ist nur ein Schaft für das System erforderlich.

Acetabulum reamer:
The reamer heads are coupled with shafts **without a key**. Only one shaft is necessary for the system.

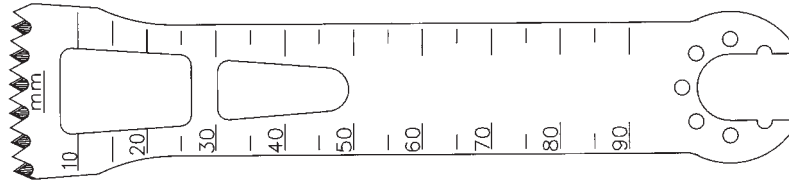
SYNTHE / AO SODEM	Schneidentiefe	Schneidenbreite	Materialdicke	Schnittstärke
	Depth	Width	Material Thickness	Cutting Thickness



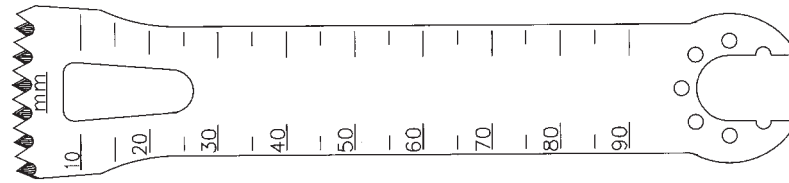
142010	mm	90.0	19.05	1.27	1.37
	in.	3.60	0.75	0.050	0.054



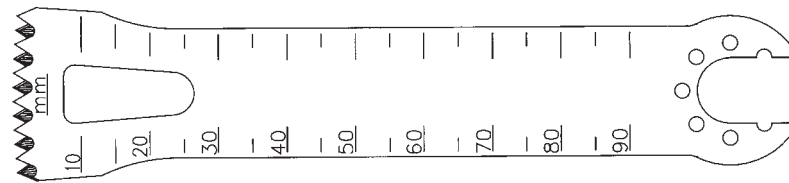
142012	mm	90.0	25.4	1.47	1.47
	in.	3.60	1.00	.058	.058



142014	mm	90.0	25.4	1.19	1.19
	in.	3.60	1.00	.047	.047



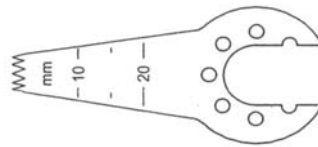
142016	mm	90.0	25.4	.89	1.00
	in.	3.60	1.00	.035	.039



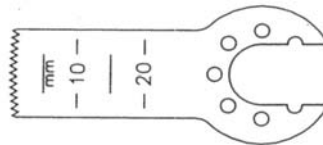
142018	mm	90.0	25.4	1.00	1.00
	in.	3.60	1.00	.039	.039

Oszillierende Sägeblätter / geschränkt
 Oscillating Saw Blades / crossed
 „Synthes / AO“
Sagital Saw Blades for Hip-Protetic

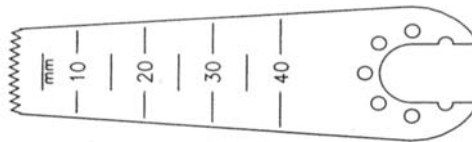
SYNTHESES / AO SODEM	Schneidentiefe	Schneidenbreite	Materialdicke	Schnittstärke
	Depth	Width	Material Thickness	Cutting Thickness



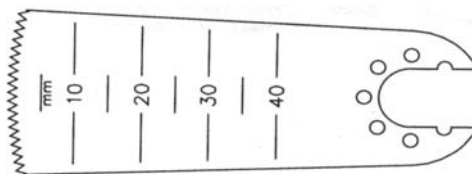
142030	mm	27,0	6,0	0,4	0,6
	in.	1.06	0.24	0.016	0.024



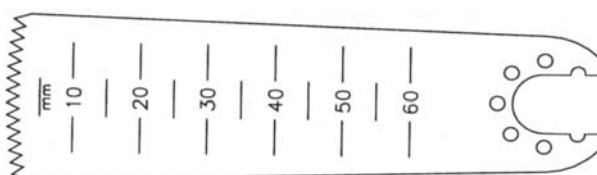
142034	mm	23,0	14,0	0,4	0,58
	in.	0.91	0.55	0.016	0.023



142038	mm	48,0	14,0	0,4	0,66
	in.	1.89	0.55	0.016	0.026



142042	mm	48,0	27,0	0,4	0,66
	in.	1.89	1.06	0.016	0.026

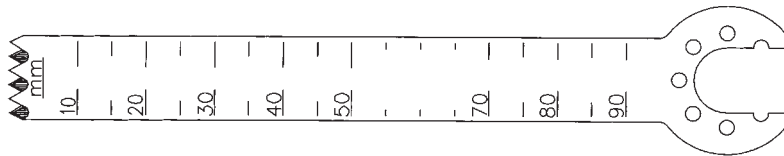


142044	mm	68,0	27,0	0,6	0,81
	in.	2.68	1.06	0.024	0.032

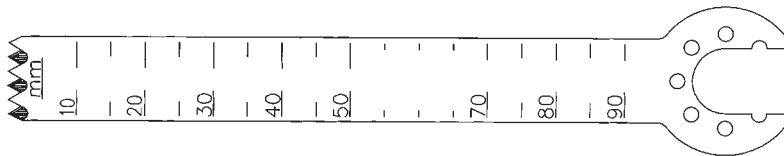


14836 Oszillierende Säge Standardaufnahme für Sägeblätter AO
Oscillating saw standard connection for saw AO

SYNTHESES / AO SODEM	Schneidentiefe	Schneidenbreite	Materialdicke	Schnittstärke
	Depth	Width	Material Thickness	Cutting Thickness



142020	mm	90.0	13.0	1.27	1.37
	in.	3.60	.50	.050	.054



142022	mm	90.0	13.0	.89	1.00
	in.	3.60	.50	.035	.039

Empfohlene Basis Grundaustattung Recommended basic equipment	
1 St. 14807 1 Pcs.	Akku - Bohrmaschine mit Verschlussdeckel Battery-driven drill with closure cover
2 St. 14810 2 Pcs.	Akku Battery
1 St. 14814 1 Pcs.	Ladegerät / Tisch Charger / bench
1 St. 14830 1 Pcs.	Dreibackenfutter bis ø 7,0 mm für Rund- und Dreikantschäfte mit Spannschlüssel Concentric chuck up to ø 7.0 mm for round and triangular shanks with chuck key

Technische Daten für **14807** Akku-Bohrmaschine mit Verschlussdeckel

Gerätetyp: Typ BF	Akku - Bohrmaschine 14807
Spannung:	9,6 Volt
Nennkapazität des Akkus 14810:	1,2 Ah
Drehzahl:	630 U / min
Max. Drehmoment:	6,5 Nm
Gewicht inkl. Akku:	1250 Gramm
Motorleistung:	70 Watt
Typ gemäß Richtlinie der EN 60601-1-2:1993 EN 60601-1:1990 + A1:1993 + A2:1995 MED.UMW Schutzart nach DIN EN 529	IP66

Technical data for **14807** Battery-driven drill with closure cover:

Equipment type: type BF	Battery-driven drill 14807
Voltage:	9,6 V
Rated capacity of 14810 battery:	1,2 Ah
Speed:	630 rev / min
Max. torque:	6,5 Nm
Weight incl. Battery:	1250 grams
Motor output:	70 W
Type as per guideline of: EN 60601-1-2:1993 EN 60601-1:1990 + A1:1993 + A2:1995 MED.UMW Schutzart nach DIN EN 529	IP66

Technische Angaben zu Akku 14810

Akku 14810 ist ein Ni MH (Nickelmetallhydrid) - Akku Typ: VA AA
Bei normaler Belastung: 1,2 V - 1250 mAh 125 mA - 16h
Bei hoher Belastung: 1250 mA - 1,2 h

Technical data for battery 14810

The battery 14810 is a Ni MH (nickel metal hydrid) battery Typ: VA AA
Under normal load levels: 1,2 V - 1250 mAh 125 mA - 16h
With high loads: 1250 mA - 1,2 h

Technische Daten zu Ladegerät 14814 / 14815 / 14816 / 14817

Gerätetyp:	Ladegerät 14814 / 14815 / 14816 / 14817
Nennspannung:	230 Volt / 110 Volt
Nennfrequenz:	50 Hz
Nennaufnahme:	14 VA
Nennausgangsspannung:	12 V
Nennausgangsstrom:	1100 mA max.
Schutzklasse	II
Schutzart nach DIN EN 529	IPX0

Technical data for charger 14814 / 14815 / 14816 / 14817

Equipment type	Charger 14814
Rated voltage:	230 V
Rated frequency:	50 Hz
Rated input:	14 VA
Rated output voltage:	12 V
Rated output current:	1100 mA max.
Protection class:	II
Protection type as per DIN EN 529	IPX0

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

Mattes-Instrumente GmbH
Haldenstrasse 27 · D-78532 Tuttlingen
Tel.: 07461 - 3643 · Fax: 07461 - 77399
e-mail: jens.mattes@mattes-medizintechnik.com
Internet: www.mattes-medizintechnik.com

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK



ALU - STERI - CONTAINER

Material und Verarbeitung

Zur Herstellung der MATTES Alu-Container wird Aluminium (Legierung 5005) verwendet. Das Aluminium hat sich besonders wegen des schnellen Wärmeaustausches und seines geringen Gewichts bewährt. Aluminium benötigt ein Eloxalverfahren, damit die Oberfläche vom Dampf während der Sterilisation nicht angegriffen wird. Ausser dem üblichen weichen Eloxalverfahren wenden wir auch das Harteloxalverfahren an. Das weiche Eloxalverfahren ermöglicht eine Einfärbung des Materials (Containerdeckel) in gewünschter Farbe und somit eine leichte Unterscheidung der einzelnen Container im Gebrauch. Harteloxierte Container können nur in einer Farbe ausgeliefert werden (olivgrün). Durch dieses spezielle Verfahren wird die Oberfläche außerordentlich hart und widerstandsfähig, ohne daß sich das Gewicht des Containers ändert. Die Hauptteile des Containers, Körper und Deckel, werden in einem einzigen Stück formgestanzt, wodurch sich jedes Schweißen erübrigt. Die Montage der Füge-teile wird durch Nietung mit Stiften aus rostfreien Stahl X5 Cr Ni 18/9-10 gemacht. Die Dichtungen des Deckels, wie auch an den Filterhaltern, sind aus unschädlichem Silikon. Die Filter können aus Einwegpapier bzw. wiederverwendbarem Stoff geliefert werden.

Hauptmerkmale



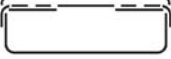






Bei sämtlichen MATTES Containern ist der Körper- und Deckelrand umgebogen, was eine größere Festigkeit dieser kritischen Stelle darstellt. Die Dichtigkeit des Deckels wird außerdem durch eine unschädliche Dichtung aus Schaum-silikon garantiert, die leicht zu inspizieren bzw. zu reinigen und bei Verschleiß jederzeit ersetzbar ist. Das Stapelsystem, welches die Ausnutzung der Sterilisierkammer bzw. platzsparende Lagerung optimiert, ist im Hinblick auf die Belastung der Deckeldichtung geplant worden. Durch das Gewicht der aufgestapelten Container wird die Dichtung bloß um einige Zentimeter weitergequetscht, bis der Deckel auf der entsprechenden Sperre sitzt und die Rückfederung der Dichtung selbst ermöglicht.

Materials and Processing

In the manufacture of MATTES alu-containers aluminium (5005 alloy), with its characteristics of hardness and resistance to oxidation, with its excellent heat dissipation capacity along with light weight are employed. Aluminum by its nature must receive a protective layer by anodizing. Besides the classical anodizing process which can be coloured for quick identification, MATTES also uses a hard anodizing process. This electrolytic process produces aluminum oxide on the surface, thus giving it a higher resistance level. Hard anodizing is used for items which are subject to heavy stress and use, such as pistons and firearms. The surface colour darkness in proportion to the oxide thickness to its unique burnished appearance. Thanks to this treatment the excellent heat dissipation and light weight characteristics remain unchanged, while improving the mechanical. The main parts of the MATTES containers are formed in one piece, so that welding is avoided. The process of welding always puts a thermal strain on the materials and alters the internal structure of the alloy, changing its characteristics in the welding area. For these reasons the assembly of components is carried out by riveting with stainless steel rivets. All gaskets are of non-toxic silicon, and, if the need should arise, are available as replacements. Disposable and reusable textile filters are available.






General characteristics

All MATTES containers have a rolled edge on the pan which adds to the stability as well as providing a better contact surface for the seal. The security of the lid seal is ensured by the non-toxic expanded silicon gasket which is easy to inspect, clean, and replace if worn. The stacking capability which optimizes the utilization of the sterilizing chamber and helps packed stacking, has been planned in consideration of the strain the lid gasket is subject to. Owing to the weight of the stacked containers, the lid gasket is compressed by a few decimillimeters only until the lid gets firm seat on the respective mechanical block, which results in releasing of the gasket itself.

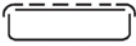







<p>Container Typen und Abmessungen</p> <p>Diverse Containers and their dimensions</p>	<p>Deckel gelocht Boden ungelocht lid perf. bottom non-perf.</p> 	<p>Deckel gelocht Boden gelocht lid and bottom perforated</p> 	<p>Sicherheitsdeckel Boden ungelocht lid perf. bottom non-perf. with safety lid</p> 	<p>Sicherheitsdeckel Boden gelocht lid and bottom perf. with safety lid</p> 																				
<p>580 x 280 x 100 mm</p> 	<table border="1"> <tr><td>151010</td></tr> <tr><td>151030</td></tr> <tr><td>151040</td></tr> <tr><td>151050</td></tr> <tr><td>151060</td></tr> </table>	151010	151030	151040	151050	151060	<table border="1"> <tr><td>151100</td></tr> <tr><td>151130</td></tr> <tr><td>151140</td></tr> <tr><td>151150</td></tr> <tr><td>151160</td></tr> </table>	151100	151130	151140	151150	151160	<table border="1"> <tr><td>151210</td></tr> <tr><td>151230</td></tr> <tr><td>151240</td></tr> <tr><td>151250</td></tr> <tr><td>151260</td></tr> </table>	151210	151230	151240	151250	151260	<table border="1"> <tr><td>151310</td></tr> <tr><td>151330</td></tr> <tr><td>151340</td></tr> <tr><td>151350</td></tr> <tr><td>151360</td></tr> </table>	151310	151330	151340	151350	151360
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Weitere Abmessungen auf Anfrage
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MATTES

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Weitere Abmessungen auf Anfrage
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Container Typen und Abmessungen Diverse Containers and their dimensions											
<p>Deckel gelocht Boden ungelocht lid perforated bottom non-perforated</p> 	<p>Deckel gelocht Boden gelocht lid and bottom perforated</p> 										
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<p>300 x 140 x 70 mm</p>  <table border="1"> <tr><td>152002</td></tr> <tr><td>152012</td></tr> <tr><td>152016</td></tr> <tr><td>152020</td></tr> <tr><td>152024</td></tr> </table>	152002	152012	152016	152020	152024	<p>300 x 140 x 70 mm</p>  <table border="1"> <tr><td>152102</td></tr> <tr><td>152112</td></tr> <tr><td>152122</td></tr> <tr><td>152132</td></tr> <tr><td>152142</td></tr> </table>	152102	152112	152122	152132	152142
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<p>Deckel gelocht Boden gelocht (ohne Filter) Lid and bottom perforated (without filter) 300 x 138 x 65 mm</p> 	<table border="1"> <tr><td>M03210</td></tr> <tr><td>M03211</td></tr> <tr><td>M03212</td></tr> <tr><td>M03213</td></tr> <tr><td>M03214</td></tr> </table>	M03210	M03211	M03212	M03213	M03214					
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<p>Deckel gelocht Boden gelocht (ohne Filter) Lid and bottom perforated (without filter) 500 x 155 x 75 mm</p> 	<table border="1"> <tr><td>M01110</td></tr> <tr><td>M01130</td></tr> <tr><td>M01140</td></tr> <tr><td>M01150</td></tr> <tr><td>M01160</td></tr> </table>	M01110	M01130	M01140	M01150	M01160					
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<p>Deckel gelocht Boden gelocht lid and bottom perforated</p> <p>310 x 190 x 40 mm</p>  <p>152160</p>	<p>Deckel gelocht Boden gelocht lid and bottom perforated</p> <p>310 x 190 x 65 mm</p>  <p>152162</p>	<p>Deckel gelocht Boden gelocht lid and bottom perforated</p> <p>310 x 190 x 130 mm</p>  <p>152164</p>																								
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<p>Siebkörbe Sterilization wire baskets</p>  <table border="1"> <tr><td>255 x 245 x 30 mm</td><td>153040</td></tr> <tr><td>255 x 245 x 50 mm</td><td>153042</td></tr> <tr><td>255 x 245 x 70 mm</td><td>153044</td></tr> <tr><td>255 x 245 x 100 mm</td><td>153046</td></tr> </table>	255 x 245 x 30 mm	153040	255 x 245 x 50 mm	153042	255 x 245 x 70 mm	153044	255 x 245 x 100 mm	153046	<p>Siebkörbe Sterilization wire baskets</p>  <table border="1"> <tr><td>485 x 255 x 30 mm</td><td>153000</td></tr> <tr><td>485 x 255 x 50 mm</td><td>153002</td></tr> <tr><td>485 x 255 x 70 mm</td><td>153004</td></tr> <tr><td>485 x 255 x 100 mm</td><td>153006</td></tr> </table>	485 x 255 x 30 mm	153000	485 x 255 x 50 mm	153002	485 x 255 x 70 mm	153004	485 x 255 x 100 mm	153006	<p>Siebkörbe Sterilization wire baskets</p>  <table border="1"> <tr><td>540 x 255 x 30 mm</td><td>153010</td></tr> <tr><td>540 x 255 x 50 mm</td><td>153012</td></tr> <tr><td>540 x 255 x 70 mm</td><td>153014</td></tr> <tr><td>540 x 255 x 100 mm</td><td>153016</td></tr> </table>	540 x 255 x 30 mm	153010	540 x 255 x 50 mm	153012	540 x 255 x 70 mm	153014	540 x 255 x 100 mm	153016
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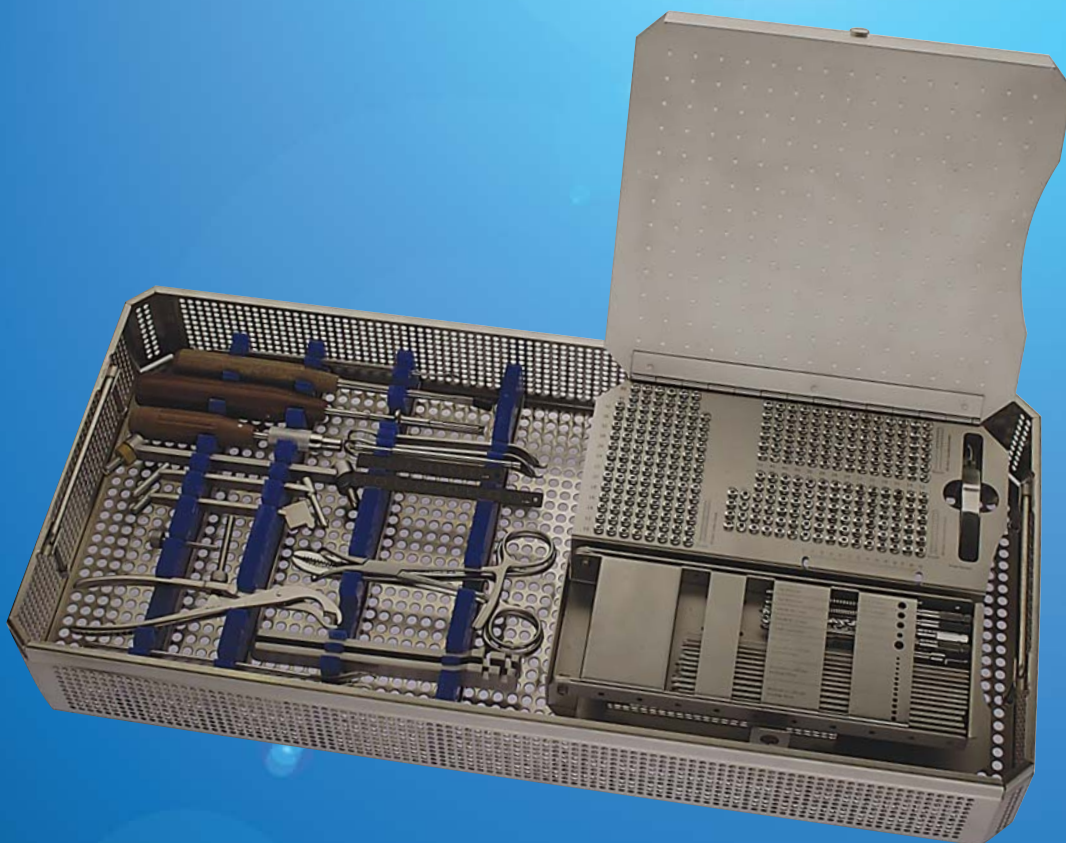
MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

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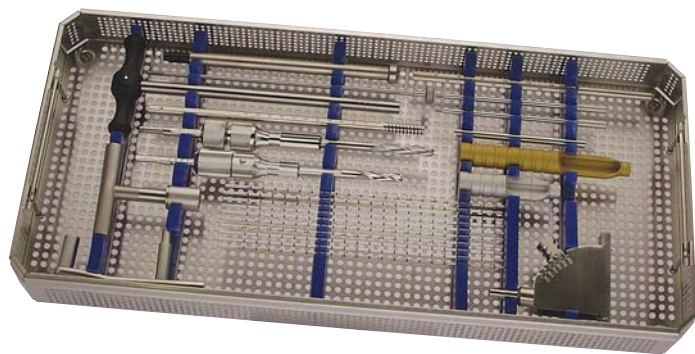
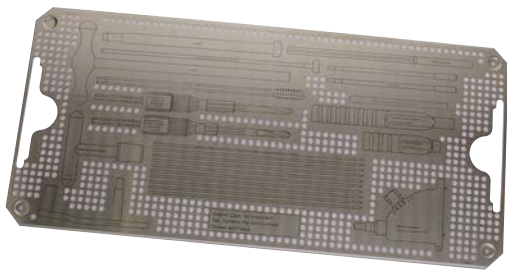
INSTRUMENTE GmbH
MEDIZINTECHNIK



**Standard Sets and Sets in
Graphic Cases for Trauma Surgery**

Standard Instrument Set for Dynamic and Condylar Screws and Plates in Graphic Case

Listing: M 023300 Standard Instrument Set for Dynamic Hip and Condylar Screws and Plates



M 023400 Tray for Instrument Set, Dynamic Hip and Condylar Screws and Plates (Steel)



151010 Sterilization Container (recommended)

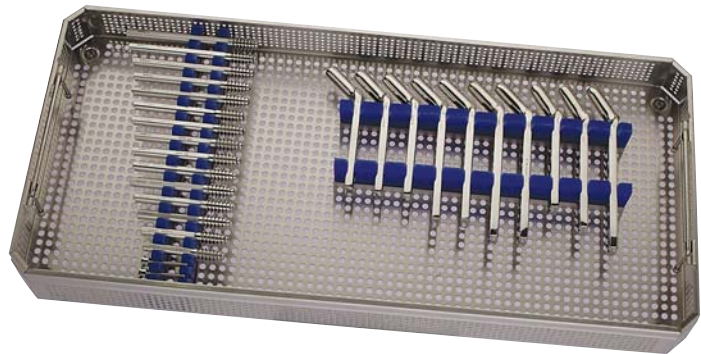
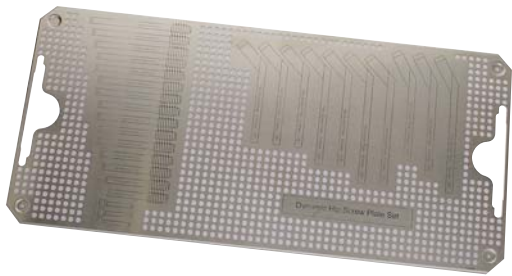
Standard Instrument Set for Dynamic and Condylar Screws and Plates in Graphic Case

Listing: **M 023300** **Standard Instrument Set for Dynamic Hip and Condylar Screws and Plates**
 M 023400 Tray for Instrument Set, Dynamic Hip and Condylar Screws and Plates (Steel)

Cat. No.:		Pcs.:
2300	Calibrated Threaded Guide Pin Dia. 2.5mm x 230 mm Length, Threaded Length 10 mm	10
2302	Drill Guide adjustable to 125° / 130° / 135° / 140° / 145° / 150°	1
2304	Measuring Gauge	1
2306	Triple Reamer complete for Dynamic Hip Plate System	1
2308	Tap	1
2310	Guide Sleeve, short, for tapping	1
2312	Guide Sleeve, long, for screwing in of Lag Screws	1
2314	Guide Shaft for Insertion of Coupling Screws	1
2316	Coupling Screw for Femoral Dynamic Hip Screws	1
2317	Guide Shaft	1
2318	Wrench	1
2320	Impactor	1
2322	Handle	1
2486	Drill Guide 95°	1
2488	Triple Reamer complete for Dynamic Condylar System	1

Dynamic Hip Screw Standard Implant Set in Graphic Case

**Listing: M 024001 Dynamic Hip Screw Standard Implant Set
(Steel Plates in Mat. DIN ISO 5832-1)**



M 024101 Tray for Dynamic Hip Screw Standard Implant Set (Steel)



**151010 Sterilization Container
(recommended)**

Dynamic Hip Screw Standard Implant Set in Graphic Case

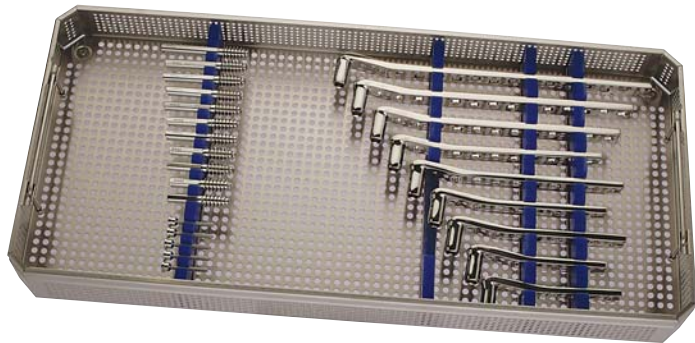
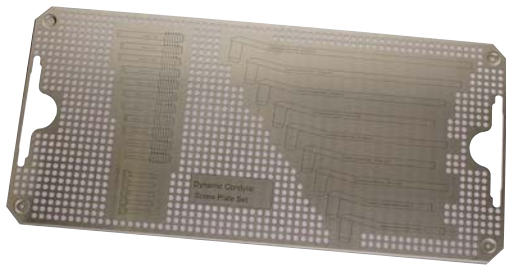
**Listing: M 024001 Dynamic Hip Screw Standard Implant Set
(Steel Plates in Mat. DIN ISO 5832-1)**

M 024101 Tray for Dynamic Hip Screw Standard Implant Set (Steel)

Cat. No.:	Dynamic Lag Screw, Thread Length 22 mm	Pcs.:
2406	Length 65 mm, Steel	1
2408	Length 70 mm, Steel	1
2410	Length 75 mm, Steel	1
2412	Length 80 mm, Steel	1
2414	Length 85 mm, Steel	1
2416	Length 90 mm, Steel	1
2418	Length 95 mm, Steel	1
2420	Length 100 mm, Steel	1
2422	Length 105 mm, Steel	1
2424	Length 110 mm, Steel	1
2426	Length 115 mm, Steel	1
<hr/>		
2440	Compression Screw	3
<hr/>		
Cat. No.:	Dynamic Hip Screw Plates 135°	
2352	4 Holes,Length 78 mm, Steel	3
2354	5 Holes,Length 94 mm, Steel	2
2356	6 Holes,Length 110 mm, Steel	2
<hr/>		
Cat. No.:	Dynamic Hip Screw Plates 150°	
2382	4 Holes,Length 78 mm, Steel	1
2384	5 Holes,Length 94 mm, Steel	1
2386	6 Holes,Length 110 mm, Steel	1

Dynamic Condylar Standard Implant Set in Graphic Case

**Listing: M 025000 Dynamic Condylar Standard Implant Set
(Steel Plates in Mat. DIN ISO 5832-1)**



M 025100 Tray for Dynamic Condylar Standard Implant Set (Steel)



**151010 Sterilization Container
(recommended)**

Dynamic Condylar Standard Implant Set in Graphic Case

**Listing: M 025000 Dynamic Condylar Standard Implant Set
(Steel Plates in Mat. DIN ISO 5832-1)**

M 025100 Tray for Dynamic Condylar Standard Implant Set (Steel)

Cat. No.:	Dynamic Lag Screw, Thread Length 22 mm	Pcs.:
2400	Length 50 mm, Steel	2
2402	Length 55 mm, Steel	2
2404	Length 60 mm, Steel	2
2406	Length 65 mm, Steel	2
2408	Length 70 mm, Steel	2
2410	Length 75 mm, Steel	1
<hr/>		
2440	Compression Screw	3
<hr/>		
Cat. No.:	Dynamic Condylar Screw Plates 95°	
2450	6 Holes, Length 100 mm, Steel	2
2452	8 Holes, Length 130 mm, Steel	2
2454	10 Holes, Length 163 mm, Steel	2
2456	12 Holes, Length 198 mm, Steel	1
2458	14 Holes, Length 225 mm, Steel	1
2460	16 Holes, Length 260 mm, Steel	1

Broad and Narrow Plates Set in Graphic Case

**Listing: M 033000 Broad and Narrow Plates Set
(Steel Plates in Mat. DIN ISO 5832-1)**

M 033100 Tray for Broad and Narrow Plates Set (Steel)

		Pcs.
Semi-tubular Plates		
3674	4.5 / 4 Hole, Length 71 mm Steel	2
3676	4.5, 5 / 5 Hole, Length 87 mm Steel	2
3678	4.5 / 6 Hole, Length 103 mm Steel	2
3680	4.5 / 7 Hole, Length 119 mm Steel	1
<hr/>		
Narrow Dynamic Compression Plates		
3604	4.5 / 4 Hole, Length 71 mm Steel	2
3606	4.5 / 5 Hole, Length 87 mm Steel	2
3608	4.5 / 6 Hole, Length 103 mm Steel	4
3610	4.5 / 7 Hole, Length 119 mm Steel	2
3612	4.5 / 8 Hole, Length 135 mm Steel	2
3614	4.5 / 9 Hole, Length 151 mm Steel	2
3616	4.5 / 10 Hole, Length 167 mm Steel	1
3620	4.5 / 12 Hole, Length 199 mm Steel	1
<hr/>		
Broad Dynamic Compression Plates		
3640	4.5 / 6 Hole, Length 103 mm Steel	2
3642	4.5 / 7 Hole, Length 119 mm Steel	2
3644	4.5 / 8 Hole, Length 135 mm Steel	2
3646	4.5 / 9 Hole, Length 151 mm Steel	1
3648	4.5 / 10 Hole, Length 167 mm Steel	1
3652	4.5 / 12 Hole, Length 199 mm Steel	1
3656	4.5 / 14 Hole, Length 231 mm Steel	1
<hr/>		
Spoon Plates		
3692	4.5 / 5 Hole, Length 100 mm Steel	1
3694	4.5 / 6 Hole, Length 120 mm Steel	1
<hr/>		
T-Plates		
3702	4.5 / 4 Hole, Length 84 mm Steel	1
3706	4.5 / 6 Hole, Length 116 mm Steel	1
3708	4.5 / 8 Hole, Length 148 mm Steel	1
<hr/>		
T-Buttress Plate		
3714	4.5 / 4 Hole, Length 81 mm Steel	1
<hr/>		
L-Buttress Plate		
3720	4.5 / 4 Hole, Length 85 mm left Steel	1
3722	4.5 / 4 Hole, Length 85 mm right Steel	1

Steel Screw Set in Graphic Case

**Listing: M 033600 Screw Plates Set
(Steel Screws in Mat. DIN ISO 5832-1)**

M 033700 Tray for Screw Set

Cat. No. Dia 4.5 mm Cortex Screws.			Pcs.	Cat. No. Dia 6.5 mm/16 mm Cancellous Screws.			Pcs.
3200	Length 14 mm		6	3396	Length 65 mm		2
3202	Length 16 mm		6	3398	Length 70 mm		2
3204	Length 18 mm		6	3400	Length 75 mm		2
3206	Length 20 mm		6	3402	Length 80 mm		2
3208	Length 22 mm		6	3404	Length 85 mm		2
3210	Length 24 mm		6	3406	Length 90 mm		2
3212	Length 26 mm		7	3408	Length 95 mm		2
3214	Length 28 mm		7	3410	Length 100 mm		2
3216	Length 30 mm		14	3412	Length 105 mm		2
3218	Length 32 mm		14	3414	Length 110 mm		2
3220	Length 34 mm		14				
3222	Length 36 mm		14	Cat. No. Dia 6.5 mm/32 mm Cancellous Screws.			Pcs.
3224	Length 38 mm		7	3436	Length 45 mm		3
3226	Length 40 mm		14	3438	Length 50 mm		3
3228	Length 42 mm		6	3440	Length 55 mm		3
3230	Length 44 mm		6	3442	Length 60 mm		3
3232	Length 46 mm		6	3444	Length 65 mm		3
3234	Length 48 mm		3	3446	Length 70 mm		3
3238	Length 52 mm		3	3448	Length 75 mm		3
3242	Length 56 mm		3	3450	Length 80 mm		3
3246	Length 60 mm		3	3452	Length 85 mm		3
3248	Length 65 mm		3	3454	Length 90 mm		3
3250	Length 70 mm		3	3456	Length 95 mm		3
				3458	Length 100 mm		3
				3460	Length 105 mm		3
				3462	Length 110 mm		3
Cat. No. Dia 4.5 mm Malleolar Screws.			Pcs.	Cat. No. Dia 6.5 mm Cancellous Screws.			Pcs.
3352	Length 25/12 mm		3	fully threaded			
3354	Length 30/15 mm		3	3480	Length 25 mm		4
3356	Length 35/18 mm		3	3482	Length 30 mm		4
3358	Length 40/20 mm		3	3484	Length 35 mm		4
3360	Length 45/22 mm		3	3486	Length 40 mm		4
3362	Length 50/24 mm		3	3488	Length 45 mm		2
3364	Length 55/26 mm		3	3490	Length 50 mm		2
3366	Length 60/28 mm		3	3492	Length 55 mm		2
3368	Length 65/30 mm		3	3494	Length 60 mm		2
3370	Length 70/32 mm		3	3496	Length 65 mm		2
				3498	Length 70 mm		2
Cat. No. Dia 6.5 mm/16 mm Cancellous Screws.			Pcs.	3500	Length 75 mm		2
3382	Length 30 mm		2	3502	Length 80 mm		2
3384	Length 35 mm		2	3504	Length 85 mm		2
3386	Length 40 mm		2	3506	Length 90 mm		2
3388	Length 45 mm		2	3508	Length 95 mm		2
3390	Length 50 mm		2	3510	Length 100 mm		2
3392	Length 55 mm		2	3512	Length 105 mm		2
3394	Length 60 mm		2	3514	Length 110 mm		2
				Cat. No.			Pcs.
				3522	Washer for Dia. 6.5 mm Cancellous Screws		6
				4184	Forceps		1

Titanium Screw Set in Graphic Case

Listing: M 033601 Screw Set
(Titanium Screws in Mat. DIN ISO 5832-3)



M 033701 Tray for Screw Set



151513 Sterilization Container
(recommended)

Titanium Screw Set in Graphic Case

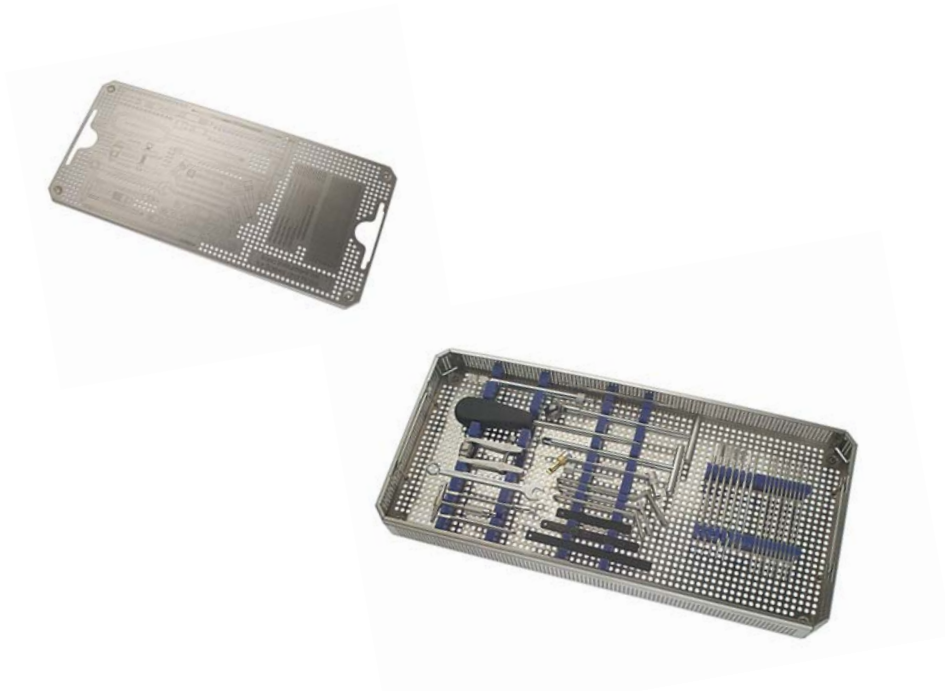
**Listing: M 033601 Screw Set
(Titanium Screws in Mat. DIN ISO 5832-3)**

M 033701 Tray for Screw Set

Cat. No. Dia 4.5 mm Cortex Screws.			Cat. No. Dia 6.5 mm/16 mm Cancellous Screws.		
		Pcs.			Pcs.
320000	Length 14 mm	6	339600	Length 65 mm	2
320200	Length 16 mm	6	339800	Length 70 mm	2
320400	Length 18 mm	6	340000	Length 75 mm	2
320600	Length 20 mm	6	340200	Length 80 mm	2
320800	Length 22 mm	6	340400	Length 85 mm	2
321000	Length 24 mm	6	340600	Length 90 mm	2
321200	Length 26 mm	7	340800	Length 95 mm	2
321400	Length 28 mm	7	341000	Length 100 mm	2
321600	Length 30 mm	14	341200	Length 105 mm	2
321800	Length 32 mm	14	341400	Length 110 mm	2
322000	Length 34 mm	14			
322200	Length 36 mm	14	Cat. No. Dia 6.5 mm/32 mm Cancellous Screws.		
322400	Length 38 mm	7			Pcs.
322600	Length 40 mm	14	343600	Length 45 mm	3
322800	Length 42 mm	6	343800	Length 50 mm	3
323000	Length 44 mm	6	344000	Length 55 mm	3
323200	Length 46 mm	6	344200	Length 60 mm	3
323400	Length 48 mm	3	344400	Length 65 mm	3
323800	Length 52 mm	3	344600	Length 70 mm	3
324200	Length 56 mm	3	344800	Length 75 mm	3
324600	Length 60 mm	3	345000	Length 80 mm	3
324800	Length 65 mm	3	345200	Length 85 mm	3
325000	Length 70 mm	3	345400	Length 90 mm	3
			345600	Length 95 mm	3
			345800	Length 100 mm	3
			346000	Length 105 mm	3
			346200	Length 110 mm	3
Cat. No. Dia 4.5 mm Malleolar Screws.			Cat. No. Dia 6.5 mm Cancellous Screws.		
		Pcs.			Pcs.
335200	Length 25/12 mm	3		fully threaded	
335400	Length 30/15 mm	3	348000	Length 25 mm	4
335600	Length 35/18 mm	3	348200	Length 30 mm	4
335800	Length 40/20 mm	3	348400	Length 35 mm	4
336000	Length 45/22 mm	3	348600	Length 40 mm	4
336200	Length 50/24 mm	3	348800	Length 45 mm	2
336400	Length 55/26 mm	3	349000	Length 50 mm	2
336600	Length 60/28 mm	3	349200	Length 55 mm	2
336800	Length 65/30 mm	3	349400	Length 60 mm	2
337000	Length 70/32 mm	3	349600	Length 65 mm	2
			349800	Length 70 mm	2
			350000	Length 75 mm	2
			350200	Length 80 mm	2
			350400	Length 85 mm	2
			350600	Length 90 mm	2
			350800	Length 95 mm	2
			351000	Length 100 mm	2
			351200	Length 105 mm	2
			351400	Length 110 mm	2
Cat. No. Dia 6.5 mm/16 mm Cancellous Screws.			Cat. No.		
		Pcs.			Pcs.
338200	Length 30 mm	2	352200	Washer for Dia. 6.5 mm Cancellous Screws	6
338400	Length 35 mm	2			
338600	Length 40 mm	2	4184	Forceps	1
338800	Length 45 mm	2			
339000	Length 50 mm	2			
339200	Length 55 mm	2			
339400	Length 60 mm	2			

Basic Instrument Set for Screws and Plates in Graphic Case

**Listing: M 034000 Basic Instrument Set for Screws and Plates
(Steel Plates in Mat. DIN ISO 5832-1)**



M 034100 Tray for Basic Instrument Set (Steel)



**151010 Sterilization Container
(recommended)**

Basic Instrument Set for Screws and Plates in Graphic Case

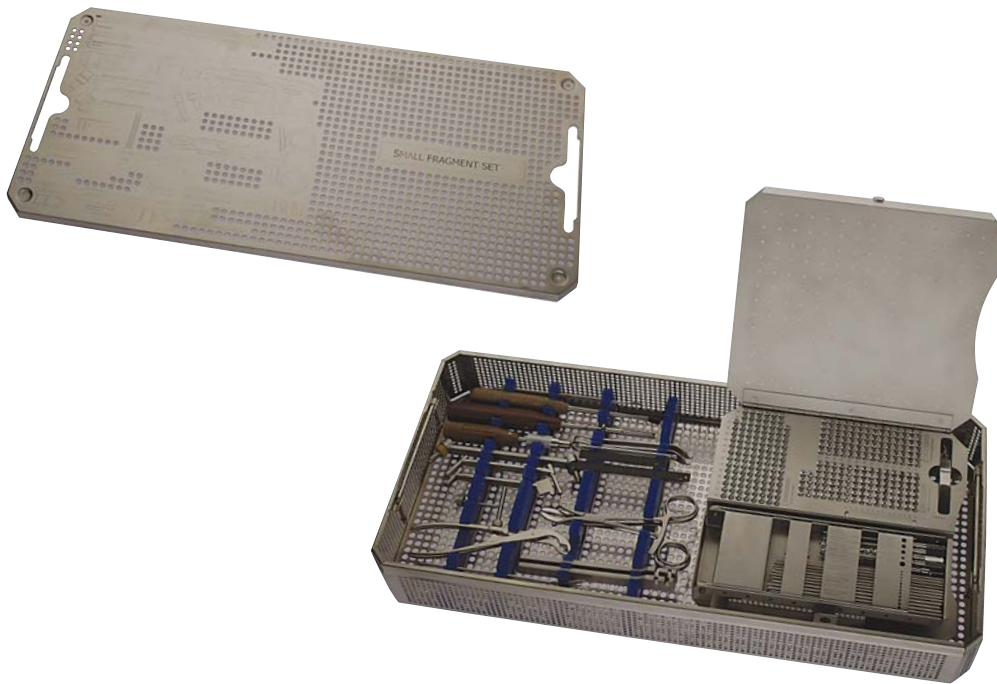
**Listing: M 034000 Basic Instrument Set for Screws and Plates
(Steel Plates in Mat. DIN ISO 5832-1)**

M 034100 Tray for Basic Instrument Set (Steel)

Cat. No.:		Pcs.:
9020	Drill Bit , \varnothing 3.2 mm , with end to fit quick coupling	3
9026	Drill Bit , \varnothing 4.5 mm , with end to fit quick coupling	2
9104	Malleolar Countersink , 3.2 \varnothing mm tip , for Malleolar Screws	1
9092	Tap Handle for \varnothing 4.5 mm and \varnothing 6.5 mm Taps and Countersink	1
9078	Tap , \varnothing 4.5 mm	2
9079	Tap , \varnothing 6.5 mm	1
9256	Tap Sleeve , \varnothing 3.5 mm (also for use as \varnothing 3.2 mm Drill Guide)	1
9280	Insert Drill Sleeve , \varnothing 4.5 mm / \varnothing 3.2 mm , 58 mm Length	1
9260	Tap Sleeve , \varnothing 4.5 mm (also for use as \varnothing 4.5 mm Drill Guide)	1
9144	Hexagonal Screwdriver , width across flats 3.5 mm	1
9176	Hexagonal Screwdriver for quick coupling , width across flats 3.5 mm	1
9114	Depth Gauge for \varnothing 4.5 mm and \varnothing 6.5 mm Screws	1
9116	Sharp Hook	1
9262	Drill Sleeve for Plates , 40 mm Length , for Round Hole Plates	1
9440	Articulated Tension Device with Gauge , 20 mm span	1
9432	Socket Wrench , width across flats 11 mm	1
9438	Combination Wrench , width across flats 11 mm	1
9272	Neutral and Load Drill Guide , \varnothing 4.5 mm	1
3070	Bending Template , 5 Holes	1
3071	Bending Template , 7 Holes	1
3072	Bending Template , 9 Holes	1
9106	Countersink \varnothing 4.5 mm	1
7264	Kirschner Wires \varnothing 2.0 mm / 150 mm (Steel)	1

Small Fragment Instrument and Steel Implant Set in Graphic Case

**Listing: M 041500 Small Fragment Instrument and Steel Implant Set
(Steel Screws and Plates in Mat. DIN ISO 5832-1)**



M 041600 Tray for Small Fragment Instrument and Steel Implant Set



**151013 Sterilization Container
(recommended)**

Small Fragment Instrument and Steel Implant Set in Graphic Case

**Listing: M 041500 Small Fragment Instrument and Steel Implant Set
(Steel Screws and Plates in Mat. DIN ISO 5832-1)**

M 041600 Tray for Small Fragment Instrument and Steel Implant Set

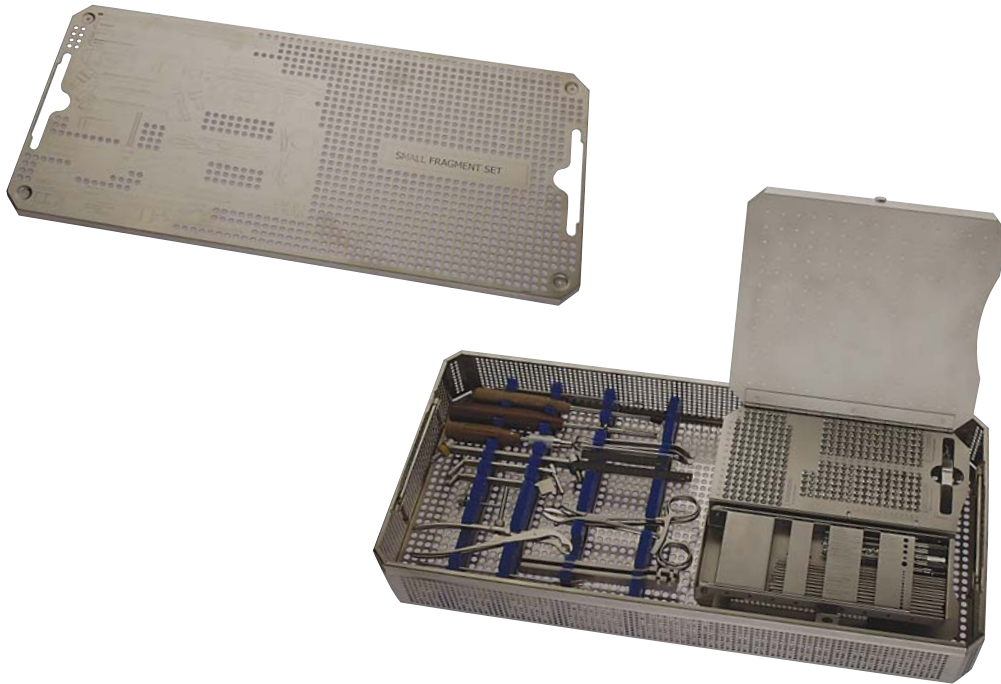
Cat.No.:	Instruments for Dia. 3.5mm / Dia. 4.0mm Screws	Pcs.:	Screw type used in (Dia. mm)
9016	Drill Bit Dia. 2.5 mm with quick coupling end	2	4.0 mm (Cancellous Screws)
9022	Drill Bit Dia. 3.5 mm with quick coupling end	2	3.5 mm (Cortex Screws)
9102	Small Countersink with quick coupling end	1	
9074	Cortical Tap Dia. 3.5 mm with quick coupling end	2	3.5 mm (Cortex Screws)
9076	Cancellous Tap Dia. 4.0 mm with quick coupling end	2	4.0 mm (Cancellous Screws)
9094	Handle with quick coupling	1	
9252	Drill Guide and Drill Sleeve for Drill Bit Dia. 2.0 mm	1	
9254	Tap Sleeve Dia.3.5 mm, Sleeve for Drill Bit Dia.2.5mm	1	
9278	Insert Sleeve Dia.3.5mm / Dia. 2.5mm	1	
9172	Small Hexagonal Screwdriver, insert for Hex.-Socket 2.5 mm	1	
9174	Small Hexagonal Screwdriver Shaft, Hex. 2.5mm	1	
9112	Small Depth Gauge	1	
9270	Neutral Drill Guide Dia. 3.5 mm, used for Drill Bit 2.5 mm	1	

Cat.No.:	General Instruments	Pcs.:	Screw type used in (Dia. mm)
9116	Sharp Hook	1	
9402	Bending Iron for Small Plates	1	
9404	Bending Iron for Small Plates	1	
3075	Bending Template for Small Plates 7 Holes	1	
3076	Bending Template for Small Plates 9 Holes	1	
9580	Self-centring Bone Holding Forceps	1	
9596	Reduction Forceps with points	1	
9600	Reduction Forceps for Small Fragments	1	
9650	Small Hohmann Retractor 6 mm	1	
9652	Small Hohmann Retractor 8 mm	1	
9654	Hohmann Retractor with broad shank	1	
9758	Periosteal Elevator, width 6 mm small, straight edge	1	
4184	Screw Forceps self holding	1	

Cat.No.:	Dia. 3.5 mm Cortex Screws	Pcs.:	Cat.No. :	Dia. 4.0 mm Cancellous Screws short Thread	Pcs.:
4002	Length 10 mm , Steel	8	4102	Length 12 mm / 5 mm, Steel	6
4004	Length 12 mm , Steel	8	4104	Length 14 mm / 5 mm, Steel	6
4006	Length 14 mm , Steel	8	4106	Length 16 mm / 6 mm, Steel	6
4008	Length 16 mm , Steel	8	4108	Length 18 mm / 7 mm, Steel	6
4010	Length 18 mm , Steel	8	4110	Length 20 mm / 8 mm, Steel	6
4012	Length 20 mm , Steel	8	4112	Length 22 mm / 9 mm, Steel	6
4014	Length 22 mm , Steel	8	4114	Length 24 mm / 10 mm, Steel	6
4016	Length 24 mm , Steel	8	4116	Length 26 mm / 12 mm, Steel	6
4018	Length 26 mm , Steel	8	4118	Length 28 mm / 14 mm, Steel	6
4020	Length 28 mm , Steel	8	4120	Length 30 mm / 14 mm, Steel	6
4024	Length 32 mm , Steel	8	4122	Length 35 mm / 14 mm, Steel	6
4026	Length 36 mm , Steel	8	4124	Length 40 mm / 14 mm, Steel	6
4028	Length 40 mm , Steel	8	4126	Length 45 mm / 15 mm, Steel	6
4030	Length 45 mm , Steel	8	4128	Length 50 mm / 15 mm, Steel	6
4032	Length 50 mm , Steel	8			
			4176	Small Washer for Dia. 3.5 mm / 4.0 mm Screws	6
			4240	Small T-Plate right angle 3/3 Holes Steel	1
			4244	Small T-Plate right angle 4/4 Holes Steel	1
			4250	Small T-Plate oblique angle 3/3 Holes Steel	1
			4252	Small T-Plate oblique angle 5/3 Holes Steel	1
			4220	One Third Tubular Plate 2 Holes, Steel	1
			4222	One Third Tubular Plate 3 Holes, Steel	1
			4224	One Third Tubular Plate 4 Holes, Steel	1
			4226	One Third Tubular Plate 5 Holes, Steel	1
			4228	One Third Tubular Plate 6 Holes, Steel	1
			4230	One Third Tubular Plate 7 Holes, Steel	1
			4232	One Third Tubular Plate 8 Holes, Steel	1
			4256	Cloverleaf Plate, Shaft 3 Holes, Steel	1
			4258	Cloverleaf Plate, Shaft 4 Holes, Steel	1
			4208	Small Fragment Plate 6 Holes, Steel	2
			4210	Small Fragment Plate 7 Holes, Steel	2
			4212	Small Fragment Plate 8 Holes, Steel	2
			4214	Small Fragment Plate 10 Holes, Steel	2
			7254	Kirschner Wire Dia.1.2 mm x Length 150 mm, Steel	12
			7260	Kirschner Wire Dia.1.6 mm x Length 150 mm, Steel	12
			7264	Kirschner Wire Dia.2.0 mm x Length 150 mm, Steel	12

Small Fragment Instrument and Titanium Implant Set in Graphic Case

**Listing: M 041501 Small Fragment Instrument and Titanium Implant Set
(Titanium Screws and Plates in Mat. DIN ISO 5832-3)**



M 041601 Tray for Small Fragment Instrument and Titanium Implant Set



**151013 Sterilization Container
(recommended)**

Small Fragment Instrument and Titanium Implant Set in Graphic Case

**Listing: M 041501 Small Fragment Instrument and Titanium Implant Set
(Titanium Screws and Plates in Mat. DIN ISO 5832-3)**

M 041601 Tray for Small Fragment Instrument and Titanium Implant Set

Cat.No.:	Instruments for Dia. 3.5mm / Dia. 4.0mm Screws	Pcs.:	Screw type used in (Dia. mm)
9016	Drill Bit Dia. 2.5 mm with quick coupling end	2	4.0 mm (Cancellous Screws)
9022	Drill Bit Dia. 3.5 mm with quick coupling end	2	3.5 mm (Cortex Screws)
9102	Small Countersink with quick coupling end	1	
9074	Cortical Tap Dia. 3.5 mm with quick coupling end	2	3.5 mm (Cortex Screws)
9076	Cancellous Tap Dia. 4.0 mm with quick coupling end	2	4.0 mm (Cancellous Screws)
9094	Handle with quick coupling	1	
9252	Drill Guide and Drill Sleeve for Drill Bit Dia. 2.0 mm	1	
9254	Tap Sleeve Dia.3.5 mm, Sleeve for Drill Bit Dia.2.5mm	1	
9278	Insert Sleeve Dia.3.5mm / Dia. 2.5mm	1	
9172	Small Hexagonal Screwdriver, insert for Hex.-Socket 2.5 mm	1	
9174	Small Hexagonal Screwdriver Shaft, Hex. 2.5mm	1	
9112	Small Depth Gauge	1	
9270	Neutral Drill Guide Dia. 3.5 mm, used for Drill Bit 2.5 mm	1	

Cat.No.:	General Instruments	Pcs.:	Screw type used in (Dia. mm)
9116	Sharp Hook	1	
9402	Bending Iron for Small Plates	1	
9404	Bending Iron for Small Plates	1	
3075	Bending Template for Small Plates 7 Holes	1	
3076	Bending Template for Small Plates 9 Holes	1	
9580	Self-centring Bone Holding Forceps	1	
9596	Reduction Forceps with points	1	
9600	Reduction Forceps for Small Fragments	1	
9650	Small Hohmann Retractor 6 mm	1	
9652	Small Hohmann Retractor 8 mm	1	
9654	Hohmann Retractor with broad shank	1	
9758	Periosteal Elevator, width 6 mm small, straight edge	1	
4184	Screw Forceps self holding	1	

Cat.No.:	Dia. 3.5 mm Cortex Screws	Pcs.:	Cat.No. :	Dia. 4.0 mm Cancellous Screws short Thread	Pcs.:
400200	Length 10 mm , Titanium	8	410200	Length 12 mm / 5 mm, Titanium	6
400400	Length 12 mm , Titanium	8	410400	Length 14 mm / 5 mm, Titanium	6
400600	Length 14 mm , Titanium	8	410600	Length 16 mm / 6 mm, Titanium	6
400800	Length 16 mm , Titanium	8	410800	Length 18 mm / 7 mm, Titanium	6
401000	Length 18 mm , Titanium	8	411000	Length 20 mm / 8 mm, Titanium	6
401200	Length 20 mm , Titanium	8	411200	Length 22 mm / 9 mm, Titanium	6
401400	Length 22 mm , Titanium	8	411400	Length 24 mm / 10 mm, Titanium	6
401600	Length 24 mm , Titanium	8	411600	Length 26 mm / 12 mm, Titanium	6
401800	Length 26 mm , Titanium	8	411800	Length 28 mm / 14 mm, Titanium	6
402000	Length 28 mm , Titanium	8	412000	Length 30 mm / 14 mm, Titanium	6
402400	Length 32 mm , Titanium	8	412200	Length 35 mm / 14 mm, Titanium	6
402600	Length 36 mm , Titanium	8	412400	Length 40 mm / 14 mm, Titanium	6
402800	Length 40 mm , Titanium	8	412600	Length 45 mm / 15 mm, Titanium	6
403000	Length 45 mm , Titanium	8	412800	Length 50 mm / 15 mm, Titanium	6
403200	Length 50 mm , Titanium	8			
			41760	Small Washer for Dia. 3.5 mm / 4.0 mm Screws	6
			42400	Small T-Plate right angle 3/3 Holes Titanium	1
			42440	Small T-Plate right angle 4/4 Holes Titanium	1
			42500	Small T-Plate oblique angle 3/3 Holes Titanium	1
			42520	Small T-Plate oblique angle 5/3 Holes Titanium	1
			42200	One Third Tubular Plate 2 Holes, Titanium	1
			42220	One Third Tubular Plate 3 Holes, Titanium	1
			42240	One Third Tubular Plate 4 Holes, Titanium	1
			42260	One Third Tubular Plate 5 Holes, Titanium	1
			42280	One Third Tubular Plate 6 Holes, Titanium	1
			42300	One Third Tubular Plate 7 Holes, Titanium	1
			42320	One Third Tubular Plate 8 Holes, Titanium	1
			42560	Cloverleaf Plate, Shaft 3 Holes, Titanium	1
			42580	Cloverleaf Plate, Shaft 4 Holes, Titanium	1
			42080	Small Fragment Plate 6 Holes, Titanium	2
			42100	Small Fragment Plate 7 Holes, Titanium	2
			42120	Small Fragment Plate 8 Holes, Titanium	2
			42140	Small Fragment Plate 10 Holes, Titanium	2
			7254	Kirschner Wire Dia.1.2 mm x Length 150 mm	12
			7260	Kirschner Wire Dia.1.6 mm x Length 150 mm	12
			7264	Kirschner Wire Dia.2.0 mm x Length 150 mm	12

Mini Instrument and Steel Implant Set in Graphic Case

**Listing: M 042000 Mini Instrument and Steel Implant Set
(Steel Screws and Plates in Mat. DIN ISO 5832-1)**



M 042100 Tray for Mini Instrument and Implant Set (Steel)



**151010 Sterilization Container
(recommended)**

Mini Instrument and Steel Implant Set in Graphic Case

**Listing: M 042000 Mini Instrument and Steel Implant Set
(Steel Screws and Plates in Mat. DIN ISO 5832-1)**

M 042100 Tray for Mini Instrument and Implant Set (Steel)

Cat.No.:	Instruments for Dia. 2.0mm / Dia. 2.7mm Screws	Pcs.:	Screw type used in (Dia. mm)
9014	Drill Bit Dia. 2.0 mm with quick coupling	2	2.0 mm + 2.7 mm
9018	Drill Bit Dia. 2.7 mm with quick coupling	2	2.7 mm
9102	Small Countersink with end to fit quick coupling Handle	1	2.7 mm
9073	Tap Dia. 2.7 mm with end to fit quick coupling Handle	2	2.7 mm
9094	Handle with quick coupling	1	
9252	Drill Guide and Drill Sleeve for Dia. 2.0 mm Drill Bit	1	2.0 mm + 2.7 mm
9256	Tap Sleeve Dia. 3.5 mm	1	2.7 mm
9172	Small Hexagonal Screwdriver 2.5 mm with holding Sleeve	1	2.7 mm
9112	Depth Gauge (only for 2.7 mm Screws)	1	2.7 mm

Cat.No.:	Instruments for Dia. 1.5 mm / Dia. 2.0 mm Mini Screws	Pcs.:	Screw type used in (Dia. mm)
9010	Drill Bit Dia. 1.1 mm with quick coupling	2	1.5 mm
9012	Drill Bit Dia. 1.5 mm with quick coupling	2	2.0 mm
9100	Mini Countersink to fit Handle with mini quick coupling	1	1.5 mm + 2.0 mm
9071	Tap Dia. 1.5 mm to fit Handle with mini quick coupling	2	1.5 mm
9072	Tap Dia. 2.0 mm to fit Handle with mini quick coupling	2	2.0 mm
9096	Handle with mini quick coupling	1	
9250	Mini Drill Sleeve for Dia. 1.1 and Dia. 1.5 mm Drill Bits	1	1.5 mm + 2.0 mm
9110	Mini Depth Gauge (only for 2.0 mm Screws)	1	2.0 mm

Cat.No.:	General Instruments	Pcs.:
9116	Sharp Hook	1
9170	Hexagonal Screw Driver 1.5 mm with holding Sleeve	1
9400	Bending Iron for Finger Plates1	
9630	Holding Forceps for small Plates	1
9596	Reduction Forceps with points	1
9650	Small Retractor, 6 mm	1
9652	Small Retractor, 8 mm	1
9654	Retractor for small fragments with broad shank , short	2
9760	Periosteal Elevator, small with straight edge 3 mm	1
4184	Screw Forceps self holding	1

Cat.No.:	Dia. 2.7 mm Cortex Screws	Pcs.:
4460	Length 6 mm , Steel	6
4462	Length 8 mm , Steel	6
4464	Length 10 mm , Steel	6
4466	Length 12 mm , Steel	6
4468	Length 14 mm , Steel	6
4470	Length 16 mm , Steel	6
4472	Length 18 mm , Steel	6
4474	Length 20 mm , Steel	6
4476	Length 22 mm , Steel	6
4478	Length 24 mm , Steel	6

Cat.No. :	Dia. 1.5 mm Cortex Screws	Pcs.:
4400	Length 6 mm , Steel	4
4402	Length 7 mm , Steel	4
4404	Length 8 mm , Steel	4
4406	Length 9 mm , Steel	4
4408	Length 10 mm , Steel	4
4410	Length 11 mm , Steel	4
4412	Length 12 mm , Steel	4
4414	Length 14 mm , Steel	4
4416	Length 16 mm , Steel	4

4176	Small Washer for Dia. 2.7 mm Screws , Steel	6
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Cat.No. :	Dia. 2.0 mm Cortex Screws	Pcs.:
4430	Length 6 mm , Steel	6
4432	Length 8 mm , Steel	6
4434	Length 10 mm , Steel	6
4436	Length 12 mm , Steel	6
4438	Length 14 mm , Steel	6
4440	Length 16 mm , Steel	6
4442	Length 18 mm , Steel	6
4444	Length 20 mm , Steel	6

Cat.No.:	Plates for Dia. 2.7 mm Cortex Screws	Pcs.:
4540	Quarter Tubular Plate Length 25 mm / 3 Hole , Steel	2
4542	Quarter Tubular Plate Length 33 mm / 4 Hole , Steel	2
4544	Quarter Tubular Plate Length 41 mm / 5 Hole , Steel	2
4546	Quarter Tubular Plate Length 49 mm / 6 Hole , Steel	2
4548	Quarter Tubular Plate Length 57 mm / 7 Hole , Steel	2
4550	Quarter Tubular Plate Length 65 mm / 8 Hole , Steel	2
4552	L - Plate , oblique left 3/2 Hole , Steel	2
4554	L - Plate , oblique right 3/2 Hole , Steel	2
4556	T - Plate , Shaft 3 Hole / Head 2 Hole , Steel	4

Cat.No.:	Plates for Dia. 1.5 mm / 2.0 mm Cortex Screws	Pcs.:
4590	Mini Plate 2.0 straight , 3 Hole / Length 17 mm , Steel	2
4592	Mini Plate 2.0 straight , 4 Hole / Length 23 mm , Steel	2
4594	Mini Plate 2.0 straight , 5 Hole / Length 29 mm , Steel	2
4600	Mini L - Plate 2.0 oblique left 2/2 Hole , Steel	2
4602	Mini L - Plate 2.0 oblique right 2/2 Hole , Steel	2
4604	Mini T - Plate 2.0 , 2/2 Hole , Steel	4

Cat.No.:	Kirschner Wires with Trocar	Pcs.:
7200	Dia. 0.8 mm / Length 70 mm , Steel	10
7201	Dia. 1.0 mm / Length 70 mm , Steel	10
7252	Dia. 1.0 mm / Length 150 mm , Steel	10
7254	Dia. 1.2 mm / Length 150 mm , Steel	10
7260	Dia. 1.6 mm / Length 150 mm , Steel	10

Mini Instrument / Titanium Implant Set in Graphic Case

**Listing: M 042001 Mini Instrument / Titanium Implant Set
(Titanium Screws and Plates in Mat. DIN ISO 5832-3)**



M 042101 Tray for Mini Instrument and Implant Set (Steel)



**151010 Sterilization Container
(recommended)**

Mini Instrument / Titanium Implant Set in Graphic Case

**Listing: M 042001 Mini Instrument / Titanium Implant Set
(Titanium Screws and Plates in Mat. DIN ISO 5832-3)**

M 042101 Tray for Mini Instrument and Implant Set (Steel)

Cat.No.:	Instruments for Dia. 2.0mm / Dia. 2.7mm Screws	Pcs.:	Screw type used in (Dia. mm)
9014	Drill Bit Dia. 2.0 mm with quick coupling	2	2.0 mm + 2.7 mm
9018	Drill Bit Dia. 2.7 mm with quick coupling	2	2.7 mm
9102	Small Countersink with end to fit quick coupling Handle	1	2.7 mm
9073	Tap Dia. 2.7 mm with end to fit quick coupling Handle	2	2.7 mm
9094	Handle with quick coupling	1	
9252	Drill Guide and Drill Sleeve for Dia. 2.0 mm Drill Bit	1	2.0 mm + 2.7 mm
9256	Tap Sleeve Dia. 3.5 mm	1	2.7 mm
9172	Small Hexagonal Screwdriver 2.5 mm with holding Sleeve	1	2.7 mm
9112	Depth Gauge (only for 2.7 mm Screws)	1	2.7 mm

Cat.No.:	Instruments for Dia. 1.5 mm / Dia. 2.0 mm Mini Screws	Pcs.:	Screw type used in (Dia. mm)
9010	Drill Bit Dia. 1.1 mm with quick coupling	2	1.5 mm
9012	Drill Bit Dia. 1.5 mm with quick coupling	2	2.0 mm
9100	Mini Countersink to fit Handle with mini quick coupling	1	1.5 mm + 2.0 mm
9071	Tap Dia. 1.5 mm to fit Handle with mini quick coupling	2	1.5 mm
9072	Tap Dia. 2.0 mm to fit Handle with mini quick coupling	2	2.0 mm
9096	Handle with mini quick coupling	1	
9250	Mini Drill Sleeve for Dia. 1.1 and Dia. 1.5 mm Drill Bits	1	1.5 mm + 2.0 mm
9110	Mini Depth Gauge (only for 2.0 mm Screws)	1	2.0 mm

Cat.No.:	General Instruments	Pcs.:
9116	Sharp Hook	1
9170	Hexagonal Screw Driver 1.5 mm with holding Sleeve	1
9400	Bending Iron for Finger Plates1	
9630	Holding Forceps for small Plates	1
9596	Reduction Forceps with points	1
9650	Small Retractor, 6 mm	1
9652	Small Retractor, 8 mm	1
9654	Retractor for small fragments with broad shank , short	2
9760	Periosteal Elevator, small with straight edge 3 mm	1

Cat.No.:	Dia. 2.7 mm Cortex Screws	Pcs.:	Cat.No. :	Dia. 1.5 mm Cortex Screws	Pcs.:
446000	Length 6 mm , Ti	6	440000	Length 6 mm , Ti	4
446200	Length 8 mm , Ti	6	440200	Length 7 mm , Ti	4
446400	Length 10 mm , Ti	6	440400	Length 8 mm , Ti	4
446600	Length 12 mm , Ti	6	440600	Length 9 mm , Ti	4
446800	Length 14 mm , Ti	6	440800	Length 10 mm , Ti	4
447000	Length 16 mm , Ti	6	441000	Length 11 mm , Ti	4
447200	Length 18 mm , Ti	6	441200	Length 12 mm , Ti	4
447400	Length 20 mm , Ti	6	441400	Length 14 mm , Ti	4
447600	Length 22 mm , Ti	6	441600	Length 16 mm , Ti	4
447800	Length 24 mm , Ti	6			

Cat.No.:	Dia. 2.0 mm Cortex Screws	Pcs.:
443000	Length 6 mm , Ti	6
443200	Length 8 mm , Ti	6
443400	Length 10 mm , Ti	6
443600	Length 12 mm , Ti	6
443800	Length 14 mm , Ti	6
444000	Length 16 mm , Ti	6
444200	Length 18 mm , Ti	6
444400	Length 20 mm , Ti	6

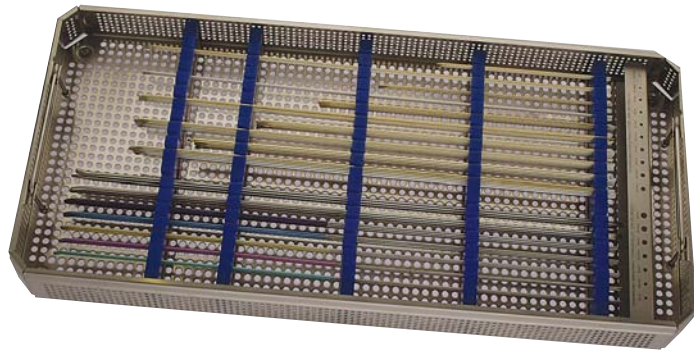
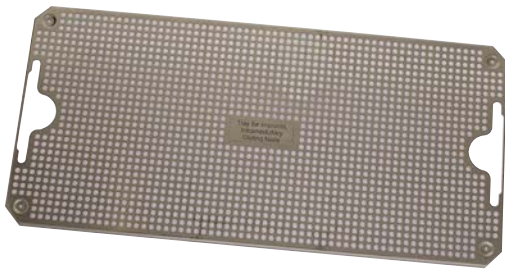
Cat.No.:	Plates for Dia. 2.7 mm Cortex Screws	Pcs.:
45400	Quarter Tubular Plate Length 25 mm / 3 Hole , Ti	2
45420	Quarter Tubular Plate Length 33 mm / 4 Hole , Ti	2
45440	Quarter Tubular Plate Length 41 mm / 5 Hole , Ti	2
45460	Quarter Tubular Plate Length 49 mm / 6 Hole , Ti	2
45480	Quarter Tubular Plate Length 57 mm / 7 Hole , Ti	2
45500	Quarter Tubular Plate Length 65 mm / 8 Hole , Ti	2
45520	L - Plate , oblique left 3/2 Hole , Ti	2
45540	L - Plate , oblique right 3/2 Hole , Ti	2
45560	T - Plate , Shaft 3 Hole / Head 2 Hole , Ti	4

Cat.No.:	Plates for Dia. 1.5 mm / 2.0 mm Cortex Screws	Pcs.:
45900	Mini Plate 2.0 straight , 3 Hole / Length 17 mm , Ti	2
45920	Mini Plate 2.0 straight , 4 Hole / Length 23 mm , Ti	2
45940	Mini Plate 2.0 straight , 5 Hole / Length 29 mm , Ti	2
46000	Mini L - Plate 2.0 oblique left 2/2 Hole , Ti	2
46020	Mini L - Plate 2.0 oblique right 2/2 Hole , Ti	2
46040	Mini T - Plate 2.0 , 2/2 Hole , Ti	4

Cat.No.:	Kirschner Wires with Trocar	Pcs.:
7200	Dia. 0.8 mm / Length 70 mm , Steel	10
7201	Dia. 1.0 mm / Length 70 mm , Steel	10
7252	Dia. 1.0 mm / Length 150 mm , Steel	10
7254	Dia. 1.2 mm / Length 150 mm , Steel	10
7260	Dia. 1.6 mm / Length 150 mm , Steel	10

Implant Set for Intramedullary Gliding Nails

**Listing: M 050000 Implant Set for Intramedullary Gliding Nails
(Steel and Titanium Gliding Nail Set)**



15001 Tray (empty)



**151010 Sterilization Container
(recommended)**

Implant Set for Intramedullary Gliding Nails

**Listing: M 050000 Implant Set for Intramedullary Gliding Nails
(Steel and Titanium Gliding Nail Set)**

15001 Tray (empty)

Steel Intramedullary Gliding Nail Implants (Stainless Steel DIN ISO 5832-1)

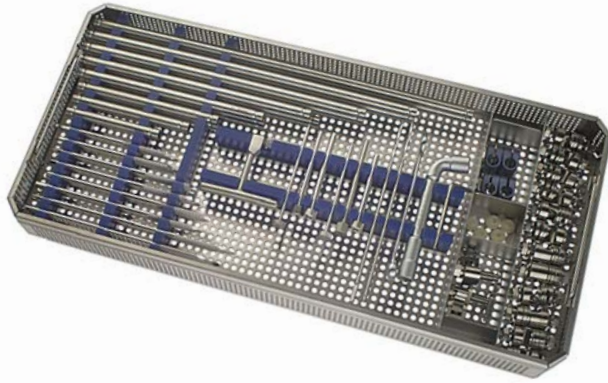
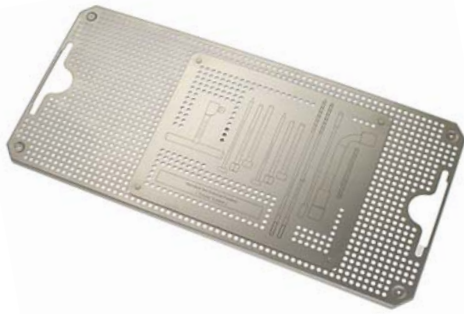
15250	Dia. 1,5 mm x Length 150 mm	4 Pcs.
15251	Dia. 1,5 mm x Length 400 mm	4 Pcs.
15252	Dia. 2,0 mm x Length 200 mm	4 Pcs.
15253	Dia. 2,0 mm x Length 400 mm	4 Pcs.
15254	Dia. 2,5 mm x Length 250 mm	4 Pcs.
15255	Dia. 2,5 mm x Length 400 mm	4 Pcs.
15256	Dia. 3,0 mm x Length 300 mm	4 Pcs.
15257	Dia. 3,0 mm x Length 400 mm	4 Pcs.
15258	Dia. 3,5 mm x Length 350 mm	4 Pcs.
15259	Dia. 3,5 mm x Length 400 mm	4 Pcs.

Titanium Intramedullary Gliding Nail Implants (Titanium DIN ISO 5832-3)

15263	Dia. 2,0 mm x Length 450 mm Colour Coding Green	4 Pcs.
15264	Dia. 2,5 mm x Length 450 mm Colour Coding Pink	4 Pcs.
15265	Dia. 3,0 mm x Length 450 mm Colour Coding Gold	4 Pcs.
15266	Dia. 3,5 mm x Length 450 mm Colour Coding Blue	4 Pcs.
15267	Dia. 4,0 mm x Length 450 mm Colour Coding Violet	4 Pcs.
15268	Dia. 4,5 mm x Length 450 mm Colour Coding Gray	4 Pcs.
15269	Dia. 5,0 mm x Length 450 mm Colour Coding Silver	4 Pcs.

Standard Set External Fixateur (Tubular System) in Graphic Case

Listing: M 080000 Grafic Case Standard Set External Fixateur (Tubular System)



18001 Tray (empty)



**151010 Sterilization Container
(recommended)**

Standard Set External Fixateur (Tubular System) in Graphic Case

Listing: M 080000 Grafic Case Standard Set External Fixateur (Tubular System)

18001 Tray (empty)

Cat.No.		Pcs. :
9023	Drill Bit Ø 3.5 mm , extra long	2
9438	Combination Wrench with across flats 11 mm	1
80068	Simple T-Handle for Steinmann Pins and Schanz Screws Ø5.0 mm	1
80070	Socket Wrench with across flats 11mm 180mm long for threadet conical Bolts and External Fixateur	1
80072	Hexagonal Allen Key withacross flats 3.5 mm	1
80092	Trocar with point Ø 3.5 mm short	1
80061	Drill Sleeve Ø 5.0 mm / Ø 3.5 mm short	1
80065	Drill Sleeve Ø 6.0 mm / Ø 5.0 mm short	1
80062	Trocar with point for Aiming Device Ø 3.5 mm long	1
80060	Drill Sleeve Ø 5.0 mm / Ø 3.5 mm long	1
80064	Drill Sleeve Ø 6.0 mm / Ø 5.0 mm long	1

Cat.No.	Fixateur Components	Pcs. :
80080	Open Compressor	2
80100	Tube Rod Ø 11 mm , 100 mm Length (Steel)	1
80102	Tube Rod Ø 11 mm , 125 mm Length (Steel)	1
80104	Tube Rod Ø 11 mm , 150 mm Lenght (Steel)	2
80106	Tube Rod Ø 11 mm , 200 mm Length (Steel)	2
80108	Tube Rod Ø 11 mm , 250 mm Lenght (Steel)	2
80110	Tube Rod Ø 11 mm , 300 mm Length (Steel)	2
80112	Tube Rod Ø 11 mm , 350 mm Length (Steel)	2
80114	Tube Rod Ø 11 mm , 400 mm Length (Steel)	2
80170	Plug for Tube Rods	10
80188	Open adjustable Clamp	12
80190	Ø 11 mm Tube-to Tube Clamp	2

**Schanz Screws Ø 5.0 mm , Thread - Length 50 mm (with Trocar Point and Triangular Shaft)
(Steel Implants DIN ISO 5832-1)**

Cat.No.		Pcs. :
81264	Ø 5.0 mm , Length 125 mm	6
81266	Ø 5.0 mm , Length 150 mm	6
81268	Ø 5.0 mm , Length 170 mm	6
81270	Ø 5.0 mm , Length 200 mm	6

MATTES

INSTRUMENTE GmbH
MEDIZINTECHNIK

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e-mail: jens.mattes@mattes-medizintechnik.com
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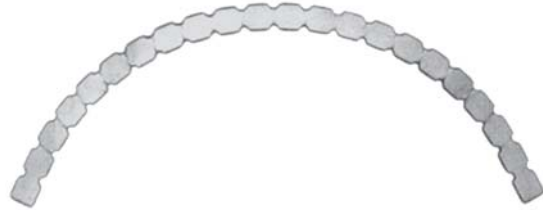
Pelvic Basis Set



M 01700	Pelvic Basis Set	
151010	Container	
153013	Tray	
9021	Drill Bit 3.2 mm 195 mm	2 pieces
9027	Drill Bit 4.5 mm 195 mm	2 piece
9074	Taps 3.5 mm	1 piece
9078	Taps 4.5 mm	1 piece
9142	Screw Drivers 2.5 mm	1 piece
9144	Screw Drivers 3.5 mm	1 piece
9114	Depth Gauge	1 piece
171400	Bending Forceps	1 piece
171424	Bending Templates for curved Plates	1 piece
171426	Bending Templates for straight Plates	1 piece
171404	Bending Iron	1 piece



171400
Bending Pliers for
2.7 mm and 3.5 mm Plates



- 171420** Bending Templates
for curved Reconstruction Plates 4.5 mm
- 171422** Bending Templates
for straight Reconstruction Plates 4.5 mm
- 171424** Bending Templates
for curved Reconstruction Plates 3.5 mm
- 171426** Bending Templates
for straight Reconstruction Plates 3.5 mm



171404
Bending Iron
for 3.5 mm and 4.5 mm Plates



- 171430** Osteotomy Chisels 304 mm
15 mm
- 171432** Osteotomy Chisels 304 mm
20 mm

Pelvic Basis Set

M 01710	Pelvic Basis Set	
151010	Container	
151013	Tray	
9090	Tap Handle	1 piece
181304	Sharp Bone Hook	1 piece
9676	Pelvic Retractor	1 piece
9521	Pelvic Repositions Forceps 190 mm	1 piece
9522	Pelvic Repositions Forceps 260 mm	1 piece
9604	Reduction Forceps 200 mm	1 piece
171550	Pelvic Repositions Forpceps 190 mm	1 piece
171554	Pelvic Repositions Forpceps 230 mm	1 piece
171552	Pelvic Repositions Forpceps 250 mm	1 piece
171556	Pelvic Repositions Forpceps 400 mm	1 piece
171558	Pelvic Repositions Forpceps 400 mm	1 piece
171600	Straight Ball Spike	1 piece
81516	Schanze ø 6 mm 200 mm	4 pieces
171602	Pelvis Reduction Forceps	1 piece



9090 Tap Handle for Jacobs Chuck



181304 Sharp Bone Hook



9676
long wide tip for Pelvic
Surgery, width 24 mm



9521 Pelvic Reposition Forceps 190 mm
for Screws 3,5 mm
9523 Pelvic Reposition Forceps 190 mm
for Screws 4,5 mm



9604
Reduction Forceps
with points 200 mm

Pelvic Instruments



171550
Pelvic Reposition Forceps 190 mm



171554
Pelvic Reposition Forceps 230 mm



171552 Pelvic Reposition Forceps 250 mm

Pelvic Instruments



171556
Pelvic Reposition Forceps 400 mm



171558
Pelvic Reposition Forceps 400 mm

Pelvis Reposition Forceps



171600
Straight Ball Spike
12"



81516
Schanze Screws
ø 6 mm 200 mm



A new shifting technique permits adjusting of the holding area within seconds and without dismantling the instrument.

Easy and quick fixation in both directions by means of 2 nuts

171405
Reposition Forceps

Pelvic Basis Implant Set



M 01720	Pelvic Basis Implant Set	
151010	Container	
153013	Tray	
153043	Tray	
3600	Small Platess 4.5 mm 2 holes	2 pieces
171100	Reconstruction Plates 3 holes	2 pieces
171102	Reconstruction Plates 4 holes	2 pieces
171122	Reconstruction Plates 14 holes	1 piece
4270 -	Reconstruction Plates	
4274	2 each: 5 - 6 - 7 - 8 - 9 holes	10 pieces
4275 -	Reconstruction Plates	
4282	1 each: 10 - 12 - 14 - 16 - 18 holes	5 piece
171140 -	Curved Reconstruction Plates	
171142	2 each: 6 - 8 holes	4 pieces
171144 -	Curved Reconstruction Plates	
171150	1 each: 10 - 12 - 14 - 16 - 18 holes	4 piece
31250 -	Self cutting screws 4.5 mm ø	
31266	each 3: 70 - 75 - 80 - 85 - 90 95 - 100 - 105 - 110 mm	27 pieces
41034 -	Self cutting screws 3.5 mm ø	
41048	each 3: 55 - 60 - 65 - 70 - 75 - 80 85 - 90 - 95 - 100 - 105 - 110 mm	36 pieces
3415 -	Cancellous Screws 16 mm	
3416	each 3: 115 - 120 mm	6 pieces
3490 -	Cancellous Screws 16 mm	
3394	each 3: 50 - 55 - 60 mm	9 pieces

Plates for Pelvic Fractures

Reconstruction Plates - 4.5 mm

For use with 4.5 mm cortex screws. Can be bent in three dimensions with special bending irons (do not bend more than 15° between holes)



Profil: 12.0 x 2.8 mm
Distance between holes: 16.0 mm

	Length	Holes		Length	Holes
171100	45 mm	3	171114	157 mm	10
171102	61 mm	4	171116	173 mm	11
171104	77 mm	5	171118	189 mm	12
171106	93 mm	6	171120	205 mm	13
171108	109 mm	7	171122	221 mm	14
171110	125 mm	8	171124	237 mm	15
171112	141 mm	9	171126	253 mm	16

Reconstruction Plates, 3.5 mm



	Length	Holes		Length	Holes
4270	58 mm	5	4278	154 mm	13
4271	70 mm	6	4279	166 mm	14
4272	82 mm	7	4280	178 mm	15
4273	94 mm	8	4281	190 mm	16
4274	106 mm	9	4282	214 mm	18
4275	118 mm	10	4283	238 mm	20
4276	130 mm	11	4284	262 mm	22
4277	142 mm	12			



Curved Reconstruction Plates - 3.5 mm

Primary Indication: Pelvic and acetabular reconstructive surgery

Profil: 10.0 x 2.8 mm
Distance between holes: 12.0 mm
Curving radius: 100.0 mm

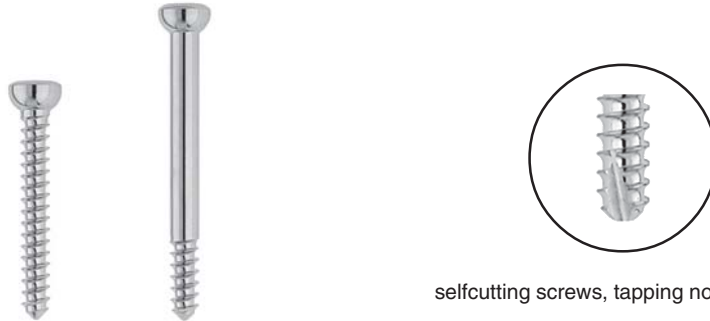
	Length	Holes
171140	70 mm	6
171142	94 mm	8
171144	118 mm	10
171146	142 mm	12
171148	166 mm	14
171150	190 mm	16
171152	214 mm	18

For Operation of symphysis-scission



3600 2 Holes

Bone Screws, selftapping



selfcutting screws, tapping not needed

Dia of thread	4.5 mm	4.5 mm
Dia of core	3.0 mm	
Dia of shaft		4.5 mm
Dia of head	8.0 mm	8.0 mm
Length		
14 mm	31200	
16 mm	31202	
18 mm	31204	
20 mm	31206	
22 mm	31208	31280
24 mm	31210	31282
25 mm		
26 mm	31212	31284
28 mm	31214	31286
30 mm	31216	31288
32 mm	31218	31290
34 mm	31220	31292
35 mm		
36 mm	31222	31294
38 mm	31224	31296
40 mm	31226	31298
42 mm	31228	31300
44 mm	31230	31302
45 mm		
46 mm	31232	31304
48 mm	31234	31306
50 mm	31236	31308
52 mm	31238	31310
54 mm	31240	31312
55 mm		
56 mm	31242	31314
58 mm	31244	31316
60 mm	31246	31318
65 mm	31248	31320
70 mm	31250	31322
75 mm	31252	31324
80 mm	31254	31326
85 mm	31256	31328
90 mm	31258	31330
95 mm	31260	31332
100 mm	31262	31334
105 mm	31264	31336
110 mm	31266	31338
115 mm	31271	
120 mm	31272	

MAKERS



HIP - Prosthesis

Femoral Hip Prosthesis

Austin Moore Hip Prosthesis
Regular Stem



Order No.:	Head \varnothing mm	Stem Length mm	Seat Width mm
18038	38	127	24.0
18039	39	127	24.0
18040	40	127	24.0
18041	41	127	24.0
18042	42	127	24.0
18043	43	127	24.0
18044	44	127	24.0
18045	45	127	24.0
18046	46	127	24.0
18047	47	157	25.5
18048	48	157	25.5
18049	49	157	25.5
18050	50	157	25.5
18051	51	157	25.5
18052	52	157	25.5
18053	53	157	25.5
18054	54	157	25.5
18055	55	157	25.5
18056	56	157	25.5

Austin Moore Hip Prosthesis
Narrow Stem

Order No.:	Head \varnothing mm	Stem Length mm	Seat Width mm
18138	38	140	23.0
18139	39	140	23.0
18140	40	140	23.0
18141	41	140	23.0
18142	42	140	23.0
18143	43	140	23.0
18144	44	140	23.0
18145	45	140	23.0
18146	46	140	23.0
18147	47	152	24.0
18148	48	152	24.0
18149	49	152	24.0
18150	50	152	24.0
18151	51	152	24.0
18152	52	152	24.0
18153	53	152	24.0
18154	54	152	24.0
18155	55	152	24.0
18156	56	152	24.0

Instrumentation for Austin Moore Hip Prosthesis



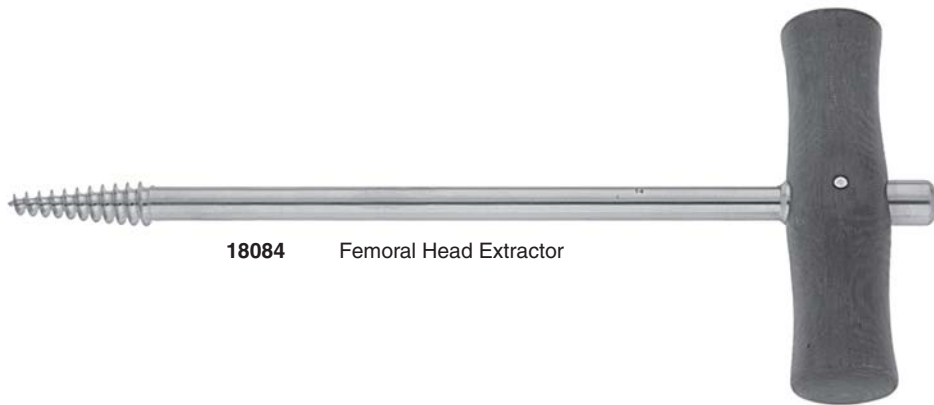
18076 Moore Rasp for Standard Stem
18078 Moore Rasp for Narrow Stem



18080 Mortising chisel



18082 Prosthesis extractor



18084 Femoral Head Extractor



18086 Prosthesis Driver
18087 Head Only



18088 Murphy Lane Bone Skid

Thompson Stainless Steel Hip Prosthesis



Order No.:	Head Size mm	Stem Length A mm	Neck Length B mm	Seat Length C mm	Seat Width D mm
18238	38	104	26	45	27
18239	39	104	26	45	27
18240	40	104	26	45	27
18241	41	104	26	45	27
18242	42	104	26	45	27
18243	43	104	26	45	27
18244	44	104	26	45	27
18245	45	104	26	45	27
18246	46	104	26	45	27
18247	47	104	26	45	27
18248	48	104	26	45	27
18249	49	104	26	45	27
18250	50	104	26	45	27
18251	51	104	26	45	27
18252	52	104	26	45	27
18253	53	104	26	45	27
18254	54	104	26	45	27
18255	55	104	26	45	27
18256	56	104	26	45	27



18260 Thompson Rasp

Straight Stem, cemented, Standard
Steel-ISO 5832/9 cone 12/14
Geradschaft, zementiert, Standard
Implantatstahl-ISO 5832/9, Konus 12/14



Order No:	Dimension
182300	7,50 mm
182302	10,00 mm
182304	11,25 mm
182306	12,50 mm
182308	13,75 mm
182310	15,00 mm
182312	17,50 mm

Straight Stem, cemented, Standard
CoCrMo 5832/4 cone 12/14
Geradschaft, zementiert, Standard
CoCrMo-ISO 5832/4, Konus 12/14



Order No:	Dimension
182320	7,50 mm
182322	10,00 mm
182324	11,25 mm
182326	12,50 mm
182328	13,75 mm
182330	15,00 mm
182332	17,50 mm

Straight Stem, cemented, lateral
CoCrMo 5832/4 cone 12/14
Geradschaft, zementiert, lateral
CoCrMo-ISO 5832/4, Konus 12/14



Order No:	Dimension
182370	7,50 mm
182372	10,00 mm
182374	11,25 mm
182376	12,50 mm
182378	13,75 mm
182380	15,00 mm
182382	17,50 mm
182384	20,00 mm

Instrumentation for Selflocking Prosthesis

Rasps, stainless steel



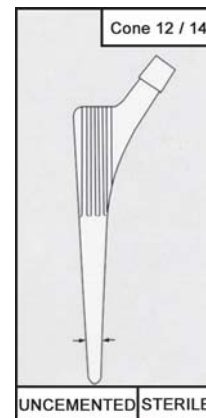
Order No:	Head ø mm
182400	7.5
182402	10.0
182404	12.5
182406	15.0
182408	17.5
182410	20.0

Cementless Modular Straight Stem (Spotorno)



Cat. No.:	Stem Size
182420	5.0 mm
182421	6.0 mm
182422	7.0 mm
182423	8.0 mm
182424	9.0 mm
182425	10.0 mm
182426	11.25 mm
182427	12.50 mm
182428	13.75 mm
182429	15.00 mm
182430	16.25 mm
182431	17.50 mm
182432	20.00 mm

Titan Ti6Al7Nb
(ISI 5832-11)



Cementless Straight Stem Rasp



Cat. No.:	Size
182450	5.00 mm
182451	6.00 mm
182452	7.00 mm
182453	8.00 mm
182454	9.00 mm
182455	10.00 mm
182456	11.25 mm
182457	12.50 mm
182458	13.75 mm
182459	15.00 mm
182460	16.25 mm
182461	17.50 mm
182462	20.00 mm

**Femoral Head for Total Hip Prosthesis
CoCrMo-ISO 5832/4 Cone 12/14**

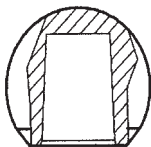
**Hüftkopf für Hüfttotalprothese
CoCrMo-ISO 5832/4 Konus 12/14**

Cat. No.:	Size Grösse	Neck Halslänge
182500	22	S
182501	22	M
182502	22	L
182510	28	S
182511	28	M
182512	28	L
182513	28	XL
182514	28	XXL
182515	28	XXXL
182520	32	S
182521	32	M
182522	32	L
182523	32	XL
182524	32	XXL
182525	32	XXXL

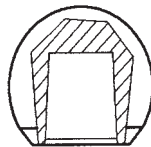
**Femoral Head for Total Hip Prosthesis
Implant Steel - ISO 5832/1 Cone 12/14**

**Hüftkopf für Hüfttotalprothese
Implantatstahl - ISO 5832/9 Konus 12/14**

Cat. No.:	Size Grösse	Neck Halslänge
182530	22	S
182531	22	M
182532	22	L
182540	28	S
182541	28	M
182542	28	L
182543	28	XL
182544	28	XXL
182545	28	XXXL
182550	32	S
182551	32	M
182552	32	L
182553	32	XL
182554	32	XXL
182555	32	XXXL



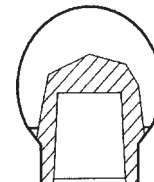
Femoral Head S



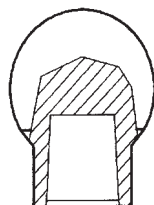
Femoral Head M



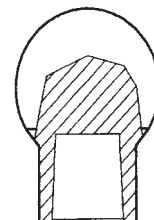
Femoral Head L



Femoral Head XL



Femoral Head XXL

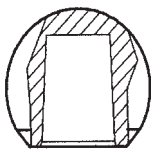


Femoral Head XXXL

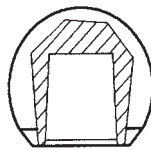
Femoral Head for Total Hip Prosthesis
Ti6Al4V-ISO 5832/3 - Coating TiN
Cone 12/14

Hüftkopf für Hüfttotalprothese
Ti6Al4V-ISO 5832/3 - Beschichtung TiN
Konus 12/14, Hasllängenabstufungen:

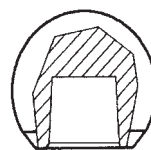
Cat. No.:	Size Grösse	Neck Halslänge
182560	22	S
182561	22	M
182562	22	L
182570	28	S
182571	28	M
182572	28	L
182573	28	XL
182574	28	XXL
182575	28	XXXL
182580	32	S
182581	32	M
182582	32	L
182583	32	XL
182584	32	XXL
182585	32	XXXL



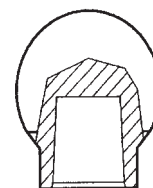
Femoral Head S



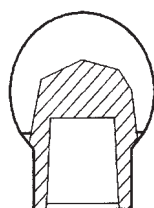
Femoral Head M



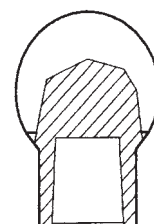
Femoral Head L



Femoral Head XL



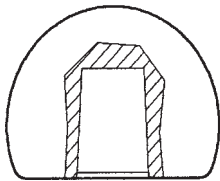
Femoral Head XXL



Femoral Head XXXL

**Unipolar Head, modular
Implantat Steel - ISO 5832/1
Cone 12/14**

**Großkopf, modular
Stahl - ISO 5832/1
Konus 12/14**

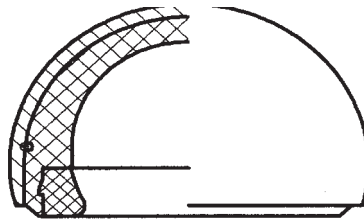


Unipolar Head Implant Steel

Cat. No.:	Description	Size Grösse
182600	Unipolar Head	40 mm
182602	Unipolar Head	42 mm
182604	Unipolar Head	44 mm
182606	Unipolar Head	46 mm
182608	Unipolar Head	48 mm
182610	Unipolar Head	50 mm
182612	Unipolar Head	52 mm
182614	Unipolar Head	54 mm
182616	Unipolar Head	56 mm
182618	Unipolar Head	58 mm
182620	Unipolar Head	60 mm

Bipolar Head, modular
incl. Insert, Polyethlen ISO 5834/2

DUO-Kopf, modular
inkl. DUO-Kopf-Ring, Polyethylen ISO 5834/2



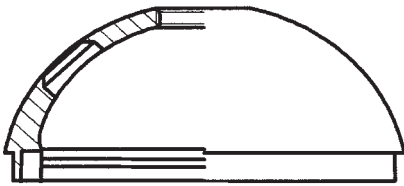
Bipolar Head

Bipolar Head CoCrMo			
Cat. No.:	Description	Insert	Outer
182650	Bipolar Head	22	38
182651	Bipolar Head	22	39
182652	Bipolar Head	22	40
182653	Bipolar Head	22	41
182660	Bipolar Head	28	42
182661	Bipolar Head	28	43
182662	Bipolar Head	28	44
182663	Bipolar Head	28	45
182664	Bipolar Head	28	46
182665	Bipolar Head	28	47
182666	Bipolar Head	28	48
182667	Bipolar Head	28	49
182668	Bipolar Head	28	50
182669	Bipolar Head	28	51
182670	Bipolar Head	28	52
182671	Bipolar Head	28	53
182672	Bipolar Head	28	54
182673	Bipolar Head	28	55
182674	Bipolar Head	28	56
182675	Bipolar Head	28	57
182676	Bipolar Head	28	58
182677	Bipolar Head	28	59
182678	Bipolar Head	28	60

Bipolar Head Implant Steel			
Cat. No.:	Description	Insert	Outer
182680	Bipolar Head	22	38
182681	Bipolar Head	22	39
182682	Bipolar Head	22	40
182683	Bipolar Head	22	41
182700	Bipolar Head	28	42
182701	Bipolar Head	28	43
182702	Bipolar Head	28	44
182703	Bipolar Head	28	45
182704	Bipolar Head	28	46
182705	Bipolar Head	28	47
182706	Bipolar Head	28	48
182707	Bipolar Head	28	49
182708	Bipolar Head	28	50
182709	Bipolar Head	28	51
182710	Bipolar Head	28	52
182711	Bipolar Head	28	53
182712	Bipolar Head	28	54
182713	Bipolar Head	28	55
182714	Bipolar Head	28	56
182715	Bipolar Head	28	57
182716	Bipolar Head	28	58
182717	Bipolar Head	28	59
182718	Bipolar Head	28	60

Press-Fit-Cup, cementless for Total Hip Prosthesis
Ti6AL4V - ISO 5832/3
Size 44 mm - 68 mm

Press-Fit-Pfanne, zementfrei für Hüfttotalprothese
Ti6AL4V - ISO 5832/3
Größen 44 mm - 68 mm



Press-Fit -Cup

Cat. No.:	Description	Size
182730	Press-Fit-Cup	44 mm
182732	Press-Fit-Cup	46 mm
182734	Press-Fit-Cup	48 mm
182736	Press-Fit-Cup	50 mm
182738	Press-Fit-Cup	52 mm
182740	Press-Fit-Cup	54 mm
182742	Press-Fit-Cup	56 mm
182744	Press-Fit-Cup	58 mm
182746	Press-Fit-Cup	60 mm
182748	Press-Fit-Cup	62 mm
182750	Press-Fit-Cup	64 mm
182752	Press-Fit-Cup	66 mm
182754	Press-Fit-Cup	68 mm

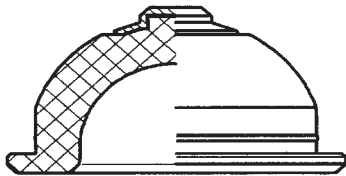
Cat. No.:	Description	Length
182760	Flat Head Screw	20
182762	Flat Head Screw	25
182764	Flat Head Screw	30
182766	Flat Head Screw	35
182768	Flat Head Screw	40
182770	Flat Head Screw	45
182772	Flat Head Screw	50
182774	Flat Head Screw	55
182776	Flat Head Screw	60

Flat Head Screw
Ti6AL4V - ISO 5832/3



**Insert for Press-Fit-Cup,
cementless
for Total Hip Prosthesis**

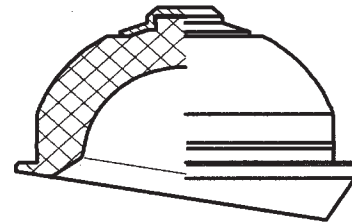
**Polyethylen - ISO 5834/2
Size 44 mm - 68 mm**



Insert Standard 0°

**Inlay für Press-Fit-Pfanne, zementfrei
für Hüfttotalprothese**

**Polyethylen - ISO 5834/2
Größen 44 mm - 68 mm**

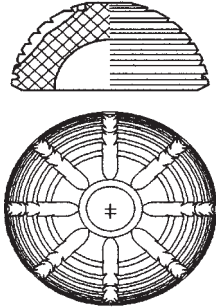


Insert Dys. 10°

Cat. No.:	Inner-ø Innen-ø	Outer-ø Aussen-ø
	Standard 0°	
182800	28 mm	44 mm
182802	28 mm	46 mm
182804	28 mm	48 mm
182806	28 mm	50 mm
182808	28 mm	52 mm
182810	28 mm	54 mm
182812	28 mm	56 mm
182814	28 mm	58 mm
182816	28 mm	60 mm
182818	28 mm	62 mm
182820	28 mm	64 mm
182822	28 mm	66 mm
182824	28 mm	68 mm
182830	32 mm	44 mm
182832	32 mm	46 mm
182834	32 mm	48 mm
182836	32 mm	50 mm
182838	32 mm	52 mm
182840	32 mm	54 mm
182842	32 mm	56 mm
182844	32 mm	58 mm
182846	32 mm	60 mm
182848	32 mm	62 mm
182850	32 mm	64 mm
182852	32 mm	66 mm
182854	32 mm	68 mm

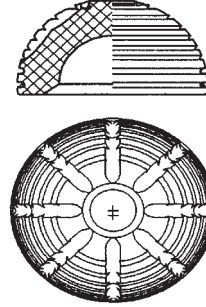
Cat. No.:	Inner-ø Innen-ø	Outer-ø Aussen-ø
	Inlay Dys. 10°	
182860	28 mm	44 mm
182862	28 mm	46 mm
182864	28 mm	48 mm
182866	28 mm	50 mm
182868	28 mm	52 mm
182870	28 mm	54 mm
182872	28 mm	56 mm
182874	28 mm	58 mm
182876	28 mm	60 mm
182878	28 mm	62 mm
182880	28 mm	64 mm
182882	28 mm	66 mm
182884	28 mm	68 mm
182900	32 mm	44 mm
182902	32 mm	46 mm
182904	32 mm	48 mm
182906	32 mm	50 mm
182908	32 mm	52 mm
182910	32 mm	54 mm
182912	32 mm	56 mm
182914	32 mm	58 mm
182916	32 mm	60 mm
182918	32 mm	62 mm
182920	32 mm	64 mm
182922	32 mm	66 mm
182924	32 mm	68 mm

Cup „Müller II“ for Total Hip Prosthesis
Polyethylen - ISO 5834/2
Size 44 mm - 68 mm



Mueller II Cup Standard

Hüftpfanne „Müller II“ für Hüfttotalprothese
Polyethylen - ISO 5834/2
Größen 44 mm - 68 mm



Mueller II Cup Standard

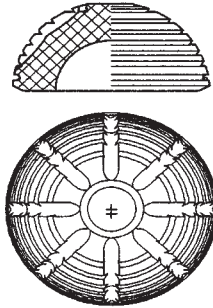
Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183050	28 mm	44 mm
183051	28 mm	46 mm
183052	28 mm	48 mm
183053	28 mm	50 mm
183054	28 mm	52 mm
183055	28 mm	54 mm
183056	28 mm	56 mm
183057	28 mm	58 mm
183058	28 mm	60 mm
183059	28 mm	62 mm
183060	28 mm	64 mm
183061	28 mm	66 mm
183062	28 mm	68 mm

Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183090	32 mm	44 mm
183091	32 mm	46 mm
183092	32 mm	48 mm
183093	32 mm	50 mm
183094	32 mm	52 mm
183095	32 mm	54 mm
183096	32 mm	56 mm
183097	32 mm	58 mm
183098	32 mm	60 mm
183099	32 mm	62 mm
183100	32 mm	64 mm
183101	32 mm	66 mm
183102	32 mm	68 mm

Müller II Snap Fit		
Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183070	28 mm	44 mm
183071	28 mm	46 mm
183072	28 mm	48 mm
183073	28 mm	50 mm
183074	28 mm	52 mm
183075	28 mm	54 mm
183076	28 mm	56 mm
183077	28 mm	58 mm
183078	28 mm	60 mm
183079	28 mm	62 mm
183080	28 mm	64 mm
183081	28 mm	66 mm
183082	28 mm	68 mm

Müller II Snap Fit		
Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183110	32 mm	44 mm
183111	32 mm	46 mm
183112	32 mm	48 mm
183113	32 mm	50 mm
183114	32 mm	52 mm
183115	32 mm	54 mm
183116	32 mm	56 mm
183117	32 mm	58 mm
183118	32 mm	60 mm
183119	32 mm	62 mm
183120	32 mm	64 mm
183121	32 mm	66 mm
183122	32 mm	68 mm

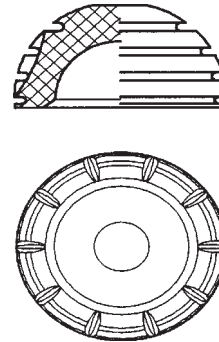
Cup „Mueller II“ for Total Hip Prosthesis
Polyethylen - ISO 5834/2
Size 44 mm - 68 mm



Cup Low Profile
 MI Pfanne flach

Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183150	28 mm	44 mm
183151	28 mm	46 mm
183152	28 mm	48 mm
183153	28 mm	50 mm
183154	28 mm	52 mm
183155	28 mm	54 mm
183156	28 mm	56 mm
183157	28 mm	58 mm
183158	28 mm	60 mm
183159	28 mm	62 mm
183160	28 mm	64 mm
183161	28 mm	66 mm
183162	28 mm	68 mm
183170	32 mm	44 mm
183171	32 mm	46 mm
183172	32 mm	48 mm
183173	32 mm	50 mm
183174	32 mm	52 mm
183175	32 mm	54 mm
183176	32 mm	56 mm
183177	32 mm	58 mm
183178	32 mm	60 mm
183179	32 mm	62 mm
183180	32 mm	64 mm
183181	32 mm	66 mm
183182	32 mm	68 mm

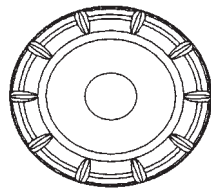
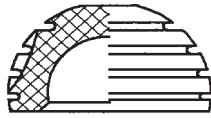
Hüftpfanne MI für Hüfttotalprothese
Polyethylen - ISO 5834/2
Größen 44 mm - 68 mm



MI Cup Standard
 MI Pfanne Standard

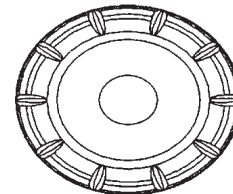
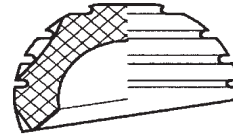
Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183190	28 mm	44 mm
183191	28 mm	46 mm
183192	28 mm	48 mm
183193	28 mm	50 mm
183194	28 mm	52 mm
183195	28 mm	54 mm
183196	28 mm	56 mm
183197	28 mm	58 mm
183198	28 mm	60 mm
183199	28 mm	62 mm
183200	28 mm	64 mm
183201	28 mm	66 mm
183202	28 mm	68 mm
183210	32 mm	44 mm
183211	32 mm	46 mm
183212	32 mm	48 mm
183213	32 mm	50 mm
183214	32 mm	52 mm
183215	32 mm	54 mm
183216	32 mm	56 mm
183217	32 mm	58 mm
183218	32 mm	60 mm
183219	32 mm	62 mm
183220	32 mm	64 mm
183221	32 mm	66 mm
183222	32 mm	68 mm

Cup MI for Total Hip Prosthesis
Polyethylen - ISO 5834/2
Size 44 mm - 68 mm



MI Cup Snap Fit
 MI Pfanne Schnapp

Hüftpfanne MI für Hüfttotalprothese
Polyethylen - ISO 5834/2
Größen 44 mm - 68 mm

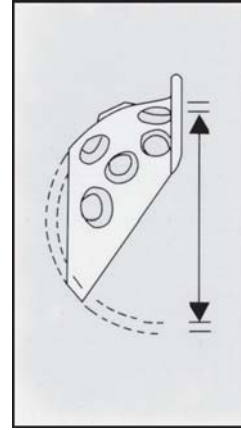


MI Cup Dys. 10°
 MI Pfanne Dys. 10°

Cat. No.:	Inner- \emptyset Innen- \emptyset	Outer- \emptyset Aussen- \emptyset
183230	28 mm	44 mm
183231	28 mm	46 mm
183232	28 mm	48 mm
183233	28 mm	50 mm
183234	28 mm	52 mm
183235	28 mm	54 mm
183236	28 mm	56 mm
183237	28 mm	58 mm
183238	28 mm	60 mm
183239	28 mm	62 mm
183240	28 mm	64 mm
183241	28 mm	66 mm
183242	28 mm	68 mm
183250	32 mm	44 mm
183251	32 mm	46 mm
183252	32 mm	48 mm
183253	32 mm	50 mm
183254	32 mm	52 mm
183255	32 mm	54 mm
183256	32 mm	56 mm
183257	32 mm	58 mm
183258	32 mm	60 mm
183259	32 mm	62 mm
183260	32 mm	64 mm
183261	32 mm	66 mm
183262	32 mm	68 mm

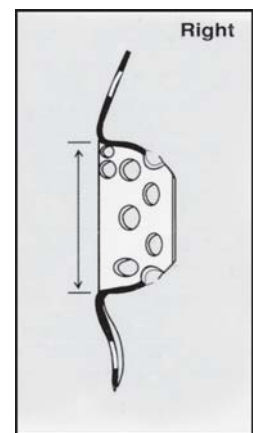
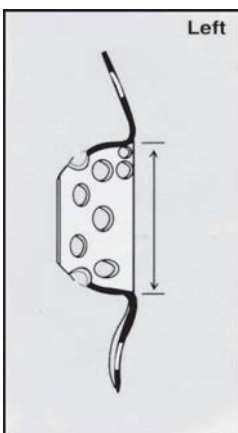
Cat. No.:	Inner Innen	Outer Aussen
183270	28 mm	44 mm
183271	28 mm	46 mm
183272	28 mm	48 mm
183273	28 mm	50 mm
183274	28 mm	52 mm
183275	28 mm	54 mm
183276	28 mm	56 mm
183277	28 mm	58 mm
183278	28 mm	60 mm
183279	28 mm	62 mm
183280	28 mm	64 mm
183281	28 mm	66 mm
183282	28 mm	68 mm
183290	32 mm	44 mm
183291	32 mm	46 mm
183292	32 mm	48 mm
183293	32 mm	50 mm
183294	32 mm	52 mm
183295	32 mm	54 mm
183296	32 mm	56 mm
183297	32 mm	58 mm
183298	32 mm	60 mm
183299	32 mm	62 mm
183300	32 mm	64 mm
183301	32 mm	66 mm
183302	32 mm	68 mm

Acetabular Roof Reinforcement Ring



Cat. No.:	Ring Size
183350	44 mm
183352	46 mm
183354	48 mm
183356	50 mm
183358	52 mm
183360	54 mm
183362	56 mm
183364	58 mm

Reinforcement Cage



Right		Left	
183370	44 mm	183380	44 mm
183372	50 mm	183382	50 mm
183374	54 mm	183384	54 mm

Acetabulum Cutters Hüftfräser



183402	40 mm
183403	42 mm
183404	44 mm
183405	46 mm
183406	48 mm
183407	50 mm
183408	52 mm
183409	54 mm
183410	56 mm
183411	58 mm
183412	60 mm

183400	40 mm
183401	42 mm



183420
for Cutting Grater
44 - 64 mm
Standard



183430
Handle for Cutting Grater

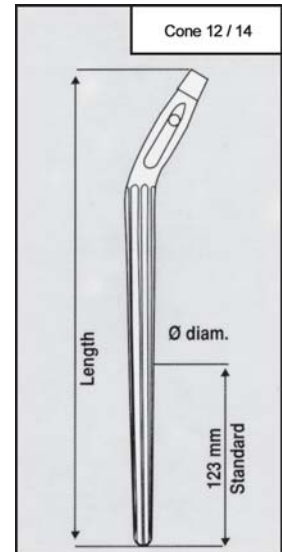


183421
for Cutting Grater
40 - 42 mm

Revision Prostheses Uncemented Ti6A17NB



Cat. No.:	Diameter	Length
183800	14 mm	190 mm
183801	14 mm	225 mm
183802	14 mm	265 mm
183803	14 mm	305 mm
183804	15 mm	190 mm
183805	15 mm	225 mm
183806	15 mm	265 mm
183807	15 mm	305 mm
183808	16 mm	190 mm
183809	16 mm	225 mm
183810	16 mm	265 mm
183811	16 mm	305 mm
183812	17 mm	190 mm
183813	17 mm	225 mm
183814	17 mm	265 mm
183815	17 mm	305 mm
183816	18 mm	190 mm
183817	18 mm	225 mm
183818	18 mm	265 mm
183819	18 mm	305 mm





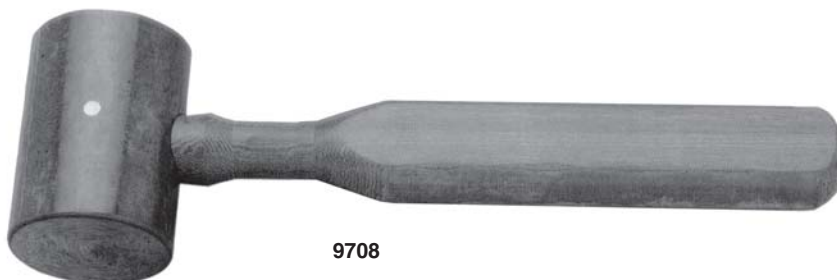
184200 Cup Positioning Guides complete
184201 Position Guide 40



184210 32 mm Plastic Cap for Cup Introducer
184212 28 mm Plastic Cap for Cup Introducer



C.D.H. Brim for Cup Introducer
184250 32 mm Brim for Cup Introducer
184252 28 mm Brim for Cup Introducer



9708



184500 Curette, small 9 mm / 280 mm



184502 Curette, medium 15 mm / 280 mm



184504 Curette, large 27 mm / 270 mm



184506 Lever for dislocation of Femoral Head 265 mm



184510
Lexer Chisel 10 mm
200 mm length



184512
Chisel for cup extraction
7,5 mm 310 mm length



184514
Lexer Chisel 20 mm 315 mm



184518
Straight Chisel
3 mm / 310 mm length



184520
Osteotome 16 mm / 310 mm length
184522
Curved Chisel 16 mm / 310 mm length



184524
Bone Chisel,
ground on one side only
12 mm / 260 mm
184526
20 mm / 315 mm



184528
Swan necked Gouge
16 mm / 315 mm length



184530
Swan necked Gouge
25 mm / 315 mm length



184534
Chisel for extraction of cement
9 mm Angled 15° 330 mm



184536
Chisel for splitting the cement
115 mm / 280 mm



184538
Chisel for cement extraction
9 mm, negative / 280 mm

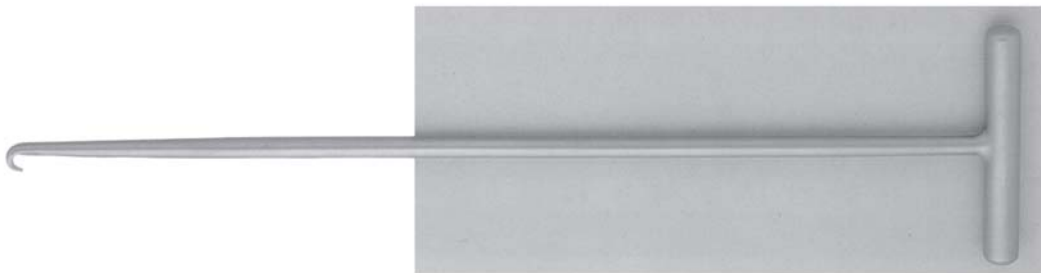


184540
Chisel for cement extraction
9 mm negativ / 340 mm

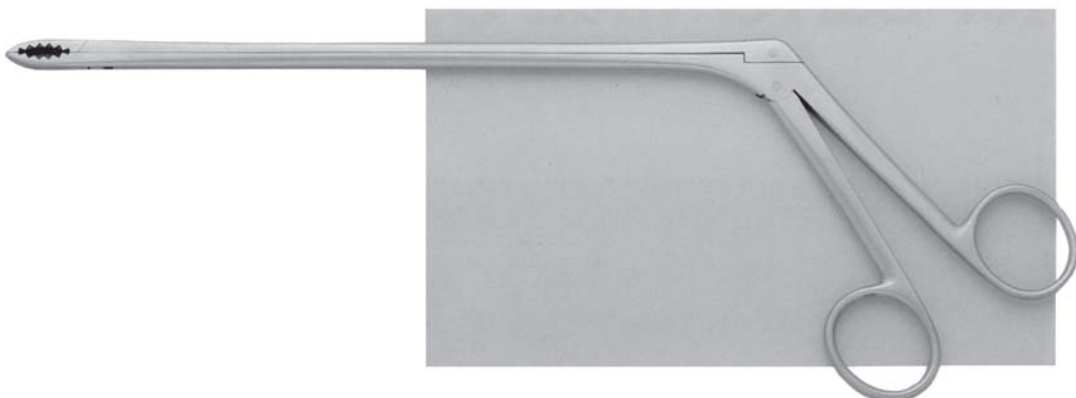
184542
Chisel for cement extraction
9 mm positiv / 400 mm



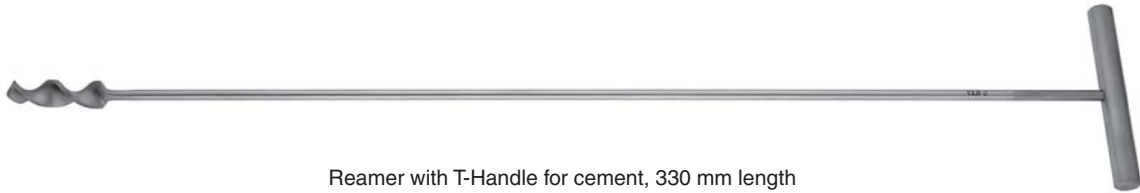
184550 Trochanter Forceps



184552 Hook for Extraction of Cement



184554 Rongeur Forceps for Cement Extraction



Reamer with T-Handle for cement, 330 mm length

- 184570** Hand Reamer 7 mm
- 184572** Hand Reamer 8 mm
- 184574** Hand Reamer 9 mm
- 184576** Hand Reamer 10 mm
- 184578** Hand Reamer 11 mm
- 184580** Hand Reamer 12 mm
- 184582** Hand Reamer 13 mm
- 184584** Hand Reamer 14 mm



184600 Langenbeck Retractor



184602 Volkmann Skin Retractor 38 mm



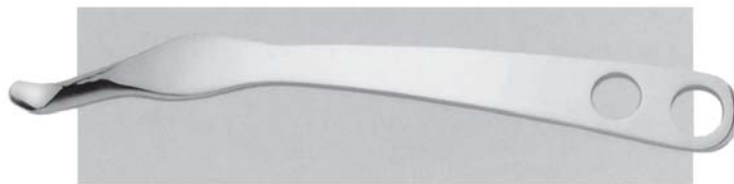
184604 Sharp Bone Hook



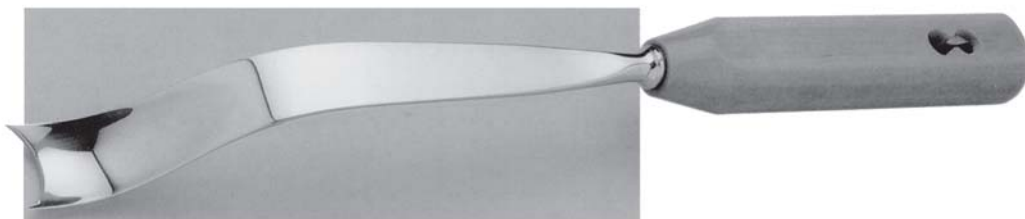
184608 Joint Capsule Scissors



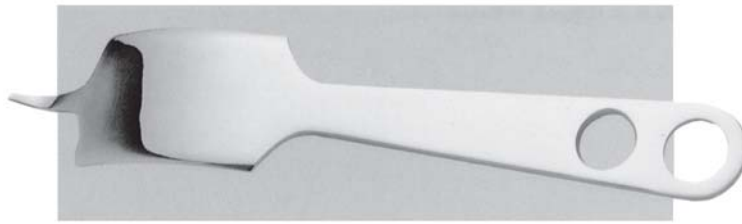
184610 Weight (1250 gr) for Muller Femoral Retractor



9676 Hohmann Retractor 24 mm



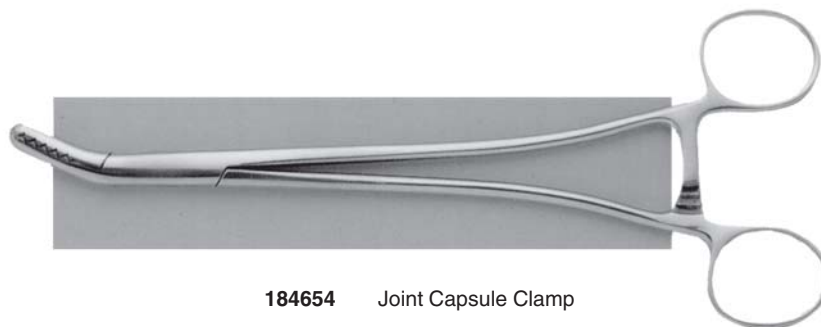
184650 Muller Femoral Retractor 26 mm broad



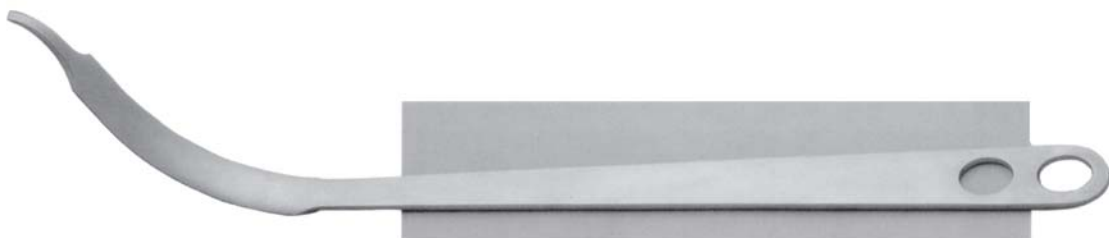
9666 Hohmann Retractor Wide 43 mm
9660 Hohmann Retractor Narrow 18 mm



184652 Anterior Retractor 43 mm



184654 Joint Capsule Clamp



184656 Anterior Retractor 22 mm
184658 Anterior Retractor 22 mm with insert hole

