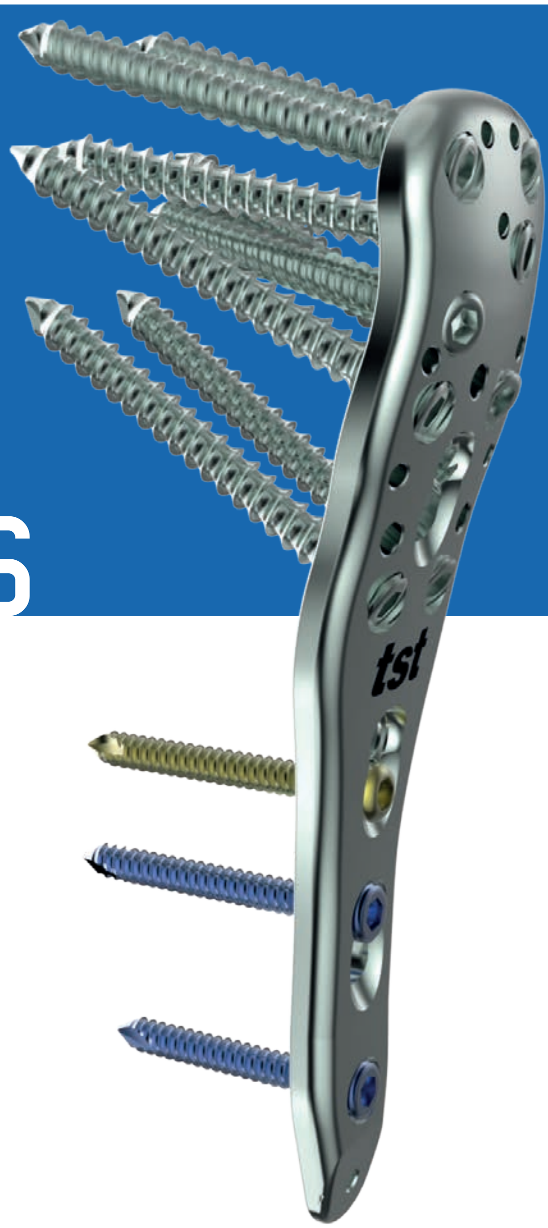
Proximal Humerus Plates



Surgical Technique

PROXIMAL HUMERUS LOCKING PLATES

Indications: Proximal Humerus Locking Plate is indicated for fractures and fracture-dislocations, osteotomies and nonunions of the proximal humerus and especially for patients with osteopenic bone.

Plate Profile: Thickness: 3.9 mm, Width: 12.0 mm, Distance between holes: 15.0 mm.

TST Code	Barcode	Description	Material	Length (mm)
34620710012	8698673441415	MISS PROXIMAL HUMERUS LOCKING PLATE 12 HOLES	Ti	94
34620710014	8698673441422	MISS PROXIMAL HUMERUS LOCKING PLATE 14 HOLES	Ti	124
34620710016	8698673441439	MISS PROXIMAL HUMERUS LOCKING PLATE 16 HOLES	Ti	150
34620710017	8698673441446	MISS PROXIMAL HUMERUS LOCKING PLATE 17 HOLES	Ti	162
34620710019	8698673469693	MISS PROXIMAL HUMERUS LOCKING PLATE 19 HOLES	Ti	190
34620710021	8698673441453	MISS PROXIMAL HUMERUS LOCKING PLATE 21 HOLES	Ti	218

12 holes

Anatomical Shaped for Proximal Humeral lateral side.

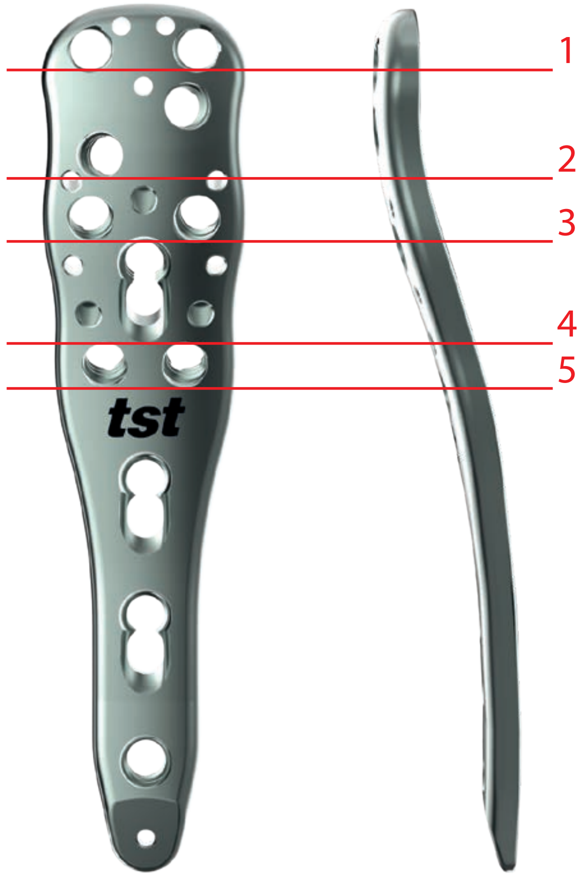
Same plate can be us efor right or left humerus

Locked construct in humeral head

Plate consists combi holes and round holes.

Plate holes accept 3.5 mm locking cortex screws and 4.0 mm locking cancellous screws in the threaded portion, and 3.5 mm cortex screws and 4.0 mm cancellous screws in the compression portion.

Suture holes around proximal part.
Kirschner wires holes for temporary fixing of the plate.



Proximal locking holes provide options in screw placement, allowing different constructs.

1, 3, 4, and 5 level screws for a "diverging" screw pattern

1, 2, and 4 level screws for a "converging" screw pattern

LOW PROF. CORT. SELFT SCREW Ti Ø 3.5 MM

TST Code	Barcode	Length	Qty
20120120035	8698673417076	12	3
20120140035	8698673417083	14	3
20120160035	8698673417090	16	6
20120180035	8698673417106	18	6
20120200035	8698673417113	20	6
20120220035	8698673417120	22	3
20120240035	8698673417137	24	3
20120260035	8698673417144	26	3
20120280035	8698673417151	28	3
20120300035	8698673417168	30	3
20120320035	8698673417175	32	3
20120340035	8698673417182	34	3
20120360035	8698673417199	36	3
20120380035	8698673417205	38	3
20120400035	8698673417212	40	3
20120420035	8698673417229	42	3
20120440035	8698673417236	44	3
20120460035	8698673417243	46	3
20120480035	8698673417250	48	3
20120500035	8698673417267	50	3
20120550035	8698673477216	55	3
20120600035	8698673426238	60	3

LOW PROF. CORT. LOCK. SCREW SELFT Ti Ø 3.5 MM

TST Code	Barcode	Length	Qty
20127120035	8698673417571	12	5
20127140035	8698673417588	14	5
20127160035	8698673417595	16	10
20127180035	8698673417601	18	10
20127200035	8698673417618	20	10
20127220035	8698673417625	22	5
20127240035	8698673417632	24	5
20127260035	8698673417649	26	5
20127280035	8698673417656	28	5
20127300035	8698673417663	30	5
20127320035	8698673417670	32	5
20127340035	8698673417687	34	5
20127360035	8698673417694	36	5
20127380035	8698673417700	38	5
20127400035	8698673417717	40	5
20127420035	8698673417724	42	5
20127440035	8698673417731	44	5
20127460035	8698673417748	46	5
20127480035	8698673417755	48	5
20127500035	8698673417762	50	5
20127550035	8698673445895	55	5
20127600035	8698673439306	60	5

LOWPROF. CANCELLOUS SCREW (FULL THREAD) Ti Ø 4 MM

TST Code	Barcode	Length	Qty
20420160040	8698673422599	16	2
20420180040	8698673422605	18	2
20420200040	8698673422612	20	2
20420220040	8698673422629	22	2
20420240040	8698673422636	24	2
20420260040	8698673426993	26	2
20420280040	8698673422650	28	2
20420300040	8698673422667	30	2
20420350040	8698673422674	35	4
20420400040	8698673422681	40	4
20420450040	8698673422698	45	4
20420500040	8698673422704	50	4
20420550040	8698673434394	55	4
20420600040	8698673444140	60	4

LOW PROF. CANCEL. LOCK. SCREW SELFT Ti Ø 4 MM

TST Code	Barcode	Length	Qty
20427140040	8698673416826	14	4
20427160040	8698673416833	16	4
20427180040	8698673416840	18	4
20427200040	8698673416857	20	4
20427220040	8698673416864	22	4
20427240040	8698673416871	24	4
20427260040	8698673416888	26	4
20427280040	8698673416895	28	4
20427300040	8698673416901	30	4
20427350040	8698673416918	35	8
20427400040	8698673416925	40	8
20427450040	8698673416932	45	8
20427500040	8698673416949	50	8
20427550040	8698673476639	55	8
20427600040	8698673476646	60	4

Preparations

A beach-chair position is recommended.

The skin incision starts from the coracoid process and is slightly convex toward the medial side, extending distally as far as the insertion of the deltoid muscle on the lateral shaft. The approach is the interval between the deltoid and pectoral muscles proximally.
For the long plate, the incision may be extended to the humeral shaft.
During the dissection do not injure the axillary nerve.

Reduce the fracture fragments and confirm the reduction under fluoroscopic control.

Fracture fragments may be temporarily fixed with Kirschner wires (ref 23410180015).

Optionally the stability of the construct can be increased with the insertion of sutures. Use sutures attached to the tuberosity fragments to manipulate them until provisional fixation is obtained. The sutures can later be attached to the plate by passing them through the suture holes with undercuts.

Attach Monoblock Screw Guide to Plate

To facilitate insertion of the proximal locking screws, place the Monoblock Screw Guide (ref 00346000001) against the plate and tighten the Guide Locking Screw (ref 03460000005) with the screwdriver (ref 02020103025), to lock the guide against the plate.

Position Plate

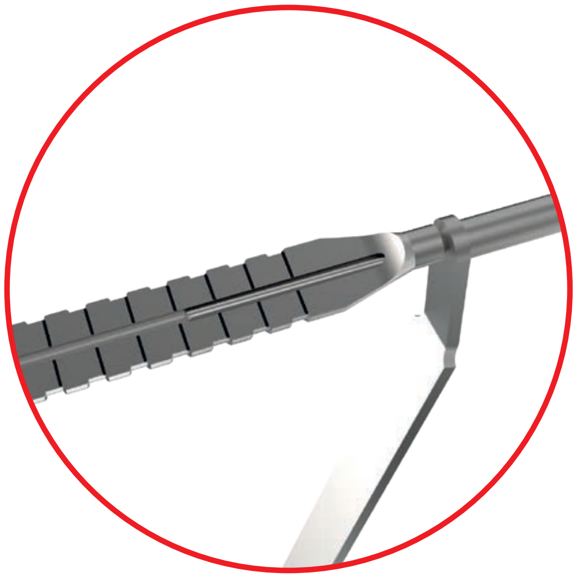
The plate should be placed approximately 8 mm distal to the rotator cuff attachment on the upper edge of the greater tuberosity.
Determine plate position by placing a 1.5 mm K-wire (ref 23410180015) through the proximal K-wire hole of the Monoblock Screw Guide (ref 00346000001) so that the K-wire rests on top of the humeral head and aims at the proximal joint surface.
The plate should be centered against the lateral aspect of the greater tuberosity.
Consider that the risk of subacromial impingement during plate placement.

Determine the combination of screws to be used for fixation. Usual screws should be inserted first to pull the plate to the bone. The placement of the initial screw will depend on the fracture type and reduction achieved.

Option: Temporarily Reduce with Reduction Device

In good bone stock, the Reduction Device (ref 03110000111) can optionally be used for maintaining temporary reduction. Insert the reduction device by power tool through the Double Drill Guide 3.2mm (ref 03460002732) to the desired depth. Slide the nut and tighten it to pull bone fragments towards the plate.

In the humeral head before insertion of screws, can be checked final placement of screws by 1.5 mm K-wire with K-wire Sleeve (ref 03501000203).
Check the position of the Kirschner wire. The tip of the Kirschner wire should be located in the subchondral bone (8 mm below the joint surface). Slide the direct Measuring Device (ref 08050003060) for Kirschner wire 1.5 mm over the Kirschner wire and determine the length of the required screw.



After checking the screw position remove the K-wire and K-wire sleeve, place the Double Drill Guide 3.2mm (ref 03460002732) tip in the Monoblock Screw Guide hole.
Predrill the lateral cortex to the desired depth using the Grad. Drill Bit 3.2x200mm (ref 02160130032) for Cancellous Screws.

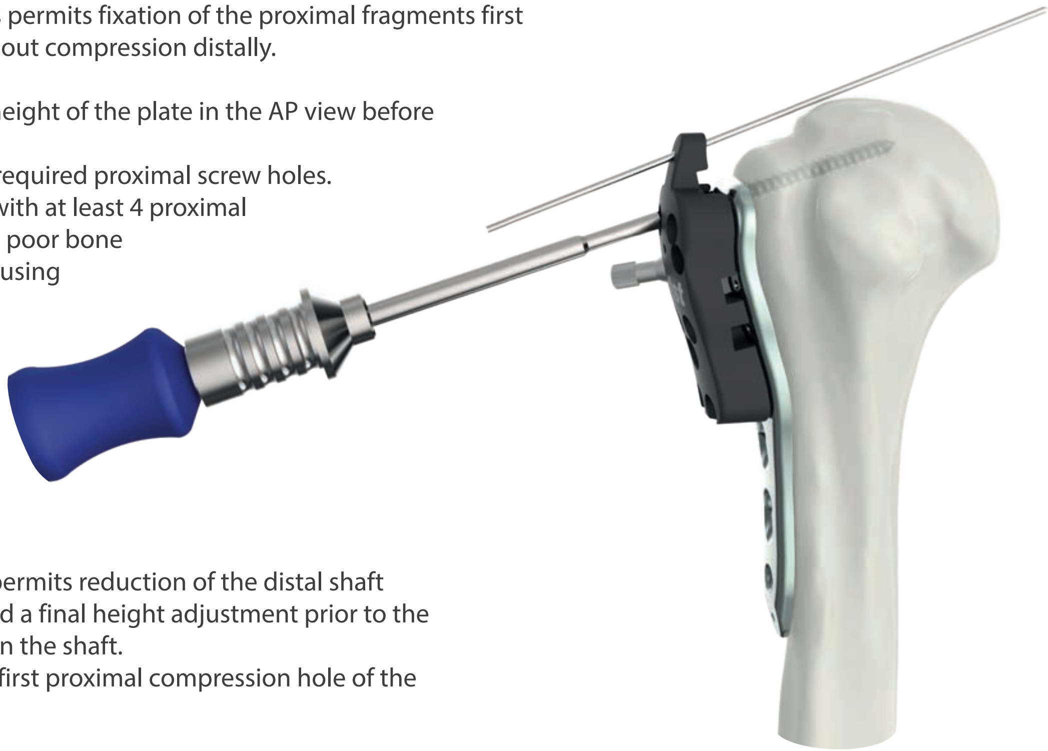
Read the measurment directly from the calibrated drill bit.

Do not drill through the joint surface. Usage of fluoroscopic control is recommended.
Drill bit should come as close as possible to the sunchondral bone, approximately 8mm from the joint surface.

After removing Drill Guide, insert the appropriate length Locking Cancellous Screw through the Monoblock Screw Guide (ref 00346000001) with the screwdriver shaft.
Locking screws should be inserted under power using the Torque Limiting Screw Driver (ref 1191000015).
The sleeve ensures that the locking screw is correctly locked in the plate.

Insertion of a proximal screws permits fixation of the proximal fragments first and then fixation with or without compression distally.

It is necessary to control the height of the plate in the AP view before insertion of the screws.
Repeat the above step for all required proximal screw holes.
The plate should be secured with at least 4 proximal Cancellous Screws whereas in poor bone stock multiple fixation points using more screws is recommended.



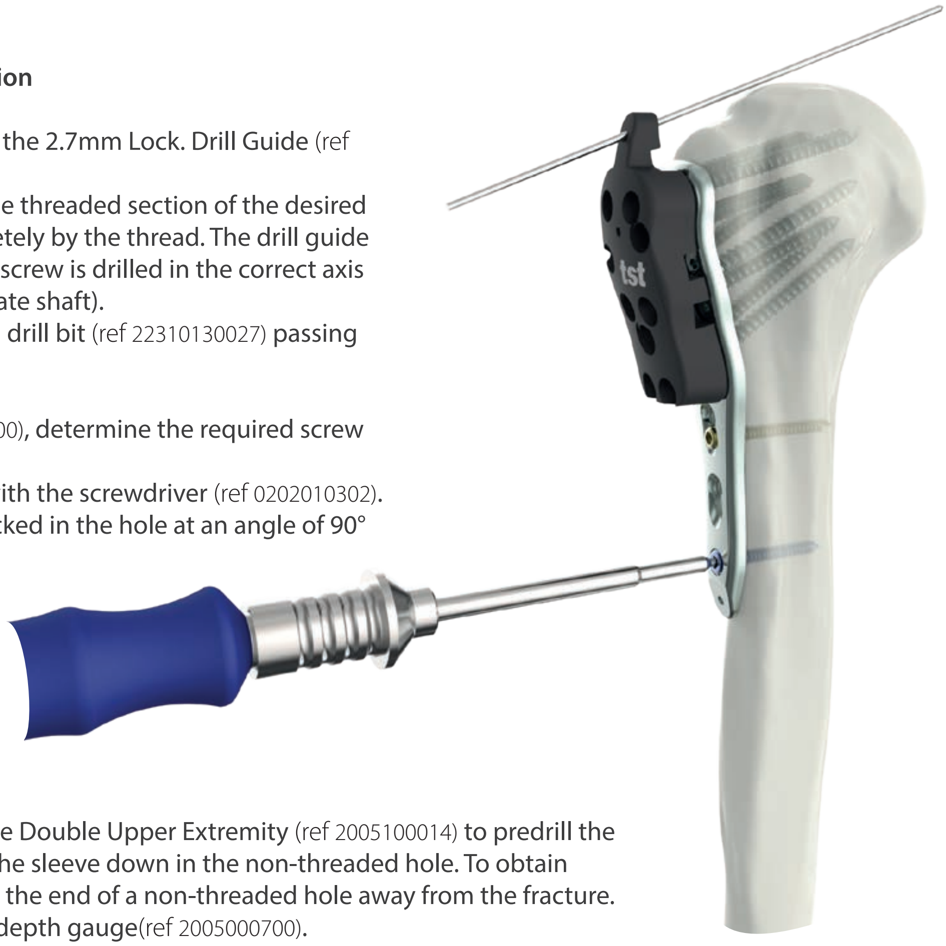
Optionally;

Insertion of distal screw first permits reduction of the distal shaft fragment against the plate and a final height adjustment prior to the insertion of the other screws in the shaft.
Insert a cortex screw into the first proximal compression hole of the plate.

After making a final height adjustment, insert proximal locking screws.

Distal Locking Cortex Screws Insertion

For proper drilling of the shaft holes, the 2.7mm Lock. Drill Guide (ref 08061008027) must be used.
Carefully screw the drill guide into the threaded section of the desired combi-hole until it is gripped completely by the thread. The drill guide ensures that the hole for the locking screw is drilled in the correct axis (perpendicular to the plane of the plate shaft).
Predrill the screw hole with a 2.7 mm drill bit (ref 22310130027) passing through both cortices.
Remove the drill guide.
Using the Depth Gauge (ref 2005000700), determine the required screw length.
Insert the locking screws manually with the screwdriver (ref 0202010302).
The distal locking screws must be locked in the hole at an angle of 90° to ensure optimal stability.



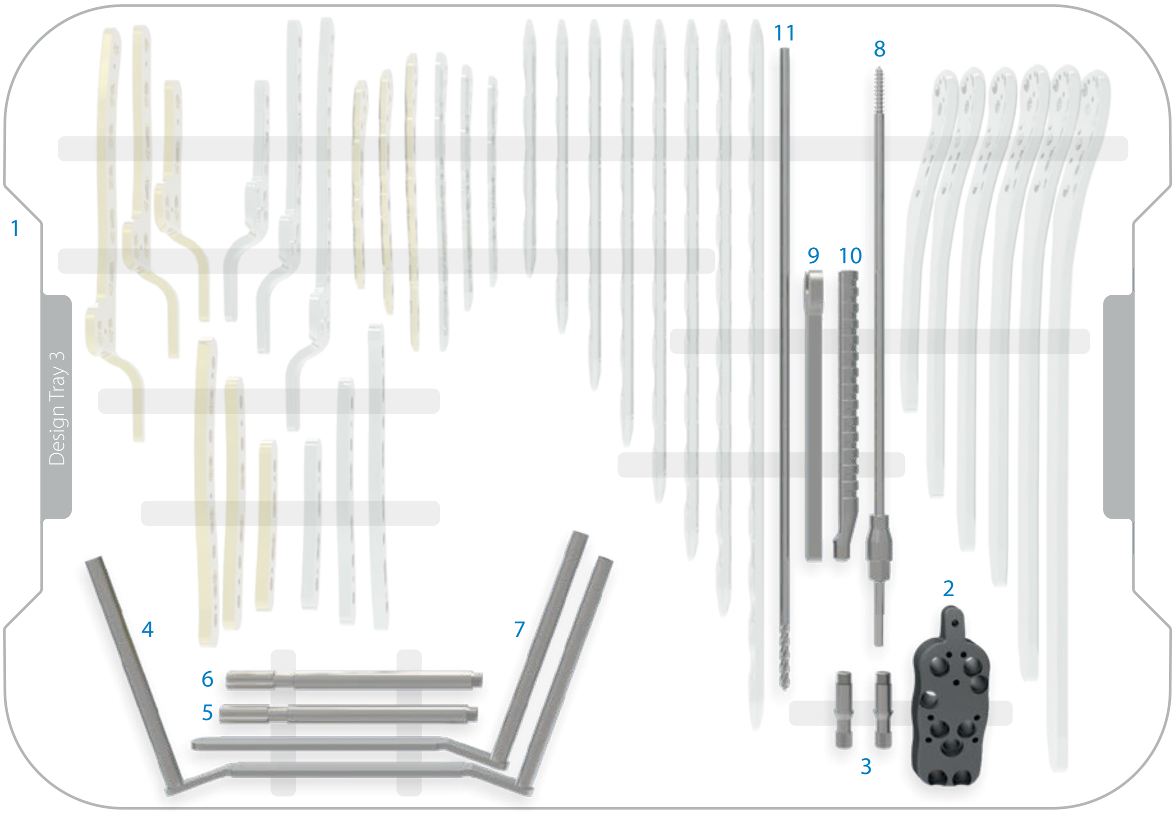
Cortex Screws Insertion

Cortex screws must be inserted first to pull the plate to the bone. For nonlocking screws use the 2.7 mm drill bit (ref 0202010302) through the 2.7 mm Modular Drill Sleeve (ref 2052000027) with Drill Guide Double Upper Extremity (ref 2005100014) to predrill the hole. For the neutral position, press the sleeve down in the non-threaded hole. To obtain compression, place the drill sleeve at the end of a non-threaded hole away from the fracture.
Measure the screw length using the depth gauge(ref 2005000700).
Select and insert the appropriate 3.5 mm cortex screw.

Remove guides from the plate after all screws insertion.

After fluoroscopic control of the reduction and screws placement, the wound layers are closed in accordance with its anatomy.

No	TST Code	Barcode	Description	Qty
1	**00000301300**	**8699931023657**	**UPPER EXTREMITY 3. DESIGN TRAY**	**1**
2	00346000001	8698673478046	MISS PROXIMAL HUMERUS MONOBLOCK SCREW GUIDE	1
3	03460000005	8698673468016	MISS PROXIMAL HUMERUS GUIDE LOCKING SCREW	2
4	03460002732	8680858400041	MISS PROX. HUMERUS DOUBLE DRILL GUIDE 2.7-3.2 MM	1
5	02057008032	8680858406630	LOCK. DRILL GUIDE Ø 3.2X80 MM	1
6	08061008027	8698673495067	LOCK. DRILL GUIDE Ø 2.7X80 MM	1
7	03501000203	8699931024838	MISS PROXIMAL HUMERUS K-WIRE SLEEVE Ø1.5 MM	1
8	03110000111	8699931031010	MISS PROX.HUM.REDUCTION DEVICE	1
9	08044000006	8699931030938	WRENCH Ø 6 MM	1
10	08050003060	8699931031003	LENGTH MEASURING DEVICE - MISS PROX.HUM. PLATE	1
11	02160130032	8699931032499	GRAD.DRILL BIT Ø3.2X200 MM (MISS PROX.HUMERUS)	1
12	**00000301400**	**8699931023664**	**UPPER EXTREMITY 4. DESIGN TRAY**	**1**
13	1191000015	8699931008722	SCREW DRIVER TORQUE 1.5NM	1
14	2006000700	8680858410965	DEPTH GAUGE - UPPER EXT. PLATE (2.7 MM)	1
15	2005000700	8699931028874	DEPTH GAUGE - UPPER EXT. PLATE (3.5 MM & 4.0 MM)	1
16	2010101001	8698673441187	SOFT SCREW DRIVER QUICK SMALL	1
17	02020103025	8699931010930	SCREW DRIVER QUICK TIP 2.5XØ5X130 MM	2
18	02025010323	8699931010947	SCREWDRIVER QUICK TIP T8X80MM	2
19	2005900002	8699931028041	VAL DRILL SLEEVE Ø 2.0 MM	1
20	8040108165	8699931019025	STABL VAL DRILL SLEEVE Ø 2.0 MM	1
21	2005100014	8699931021844	DRILL GUIDE DOUBLE UPPER EXTREMITY	1
22	2052000027	8699931017595	MODULAR DRILL SLEEVE Ø2.7 MM	1
23	2052000032	8699931017601	MODULAR DRILL SLEEVE Ø3.2 MM	1
24	2005700027	8698673495074	LOCK. DRILL GUIDE Ø 2.7X50 MM	2
25	2005100037	8698673447646	THREADED DRILL GUIDE Ø3.2 MM	2
26	22310130027	8698673450424	BONE DRILL 2.7 X 130 MM	1
27	22310200027	8698673450431	BONE DRILL 2.7X200 MM	1
28	22310200032	8698673450455	BONE DRILL 3.2 X 200 MM	2
29	4551000160	8699931028805	K-WIRE TUBE Ø10XØ8X160 MM	1
30	22310130020	8698673450400	BONE DRILL 2.0X130 MM	2
30	4551008190	8699931036756	K-WIRE TUBE Ø10XØ8X190 MM	1
31	23410180015	8698673458086	KIRSCHNER WIRE TROCAR POINT 1.5X180 MM	4
31	**00000301600**	**8699931010824**	**UPPER EXTREMITY - ANKLE SCREW TRAY**	**1**
	00560270180	**8699931023152**	**CONTAINER 560X270X180 MM**	**1**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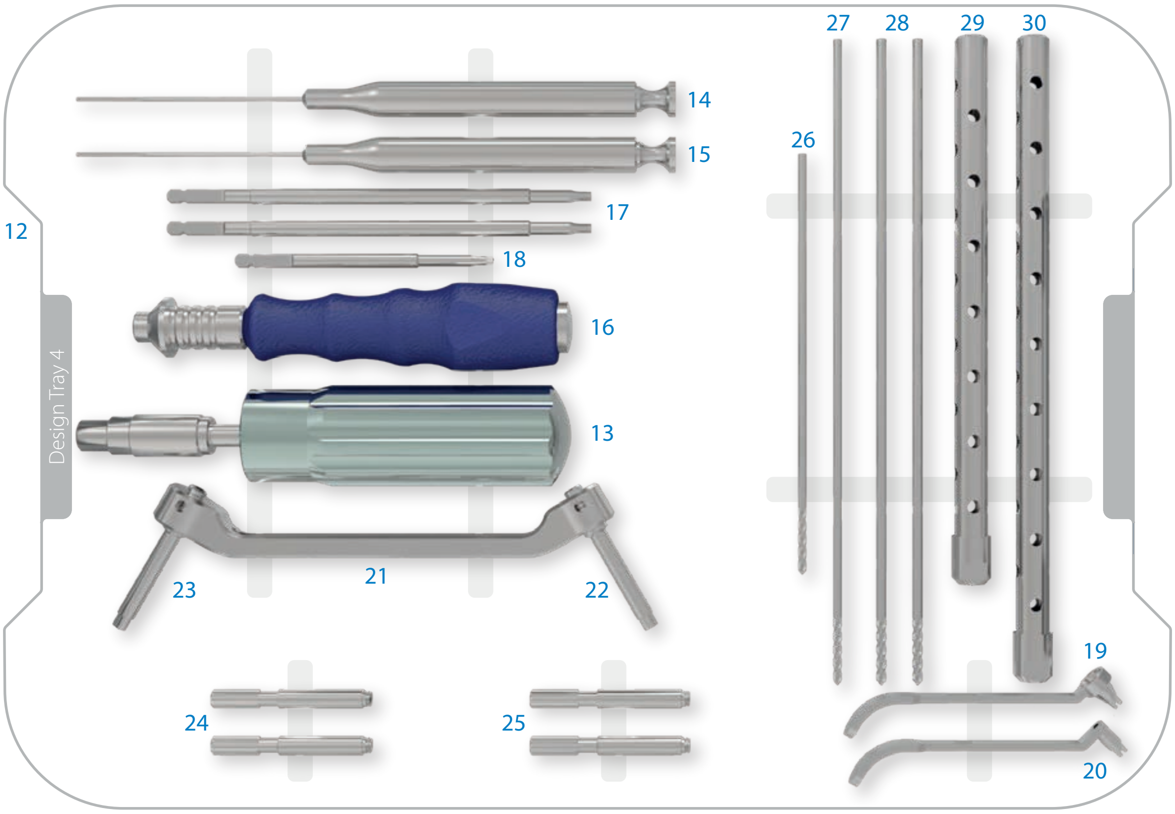
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