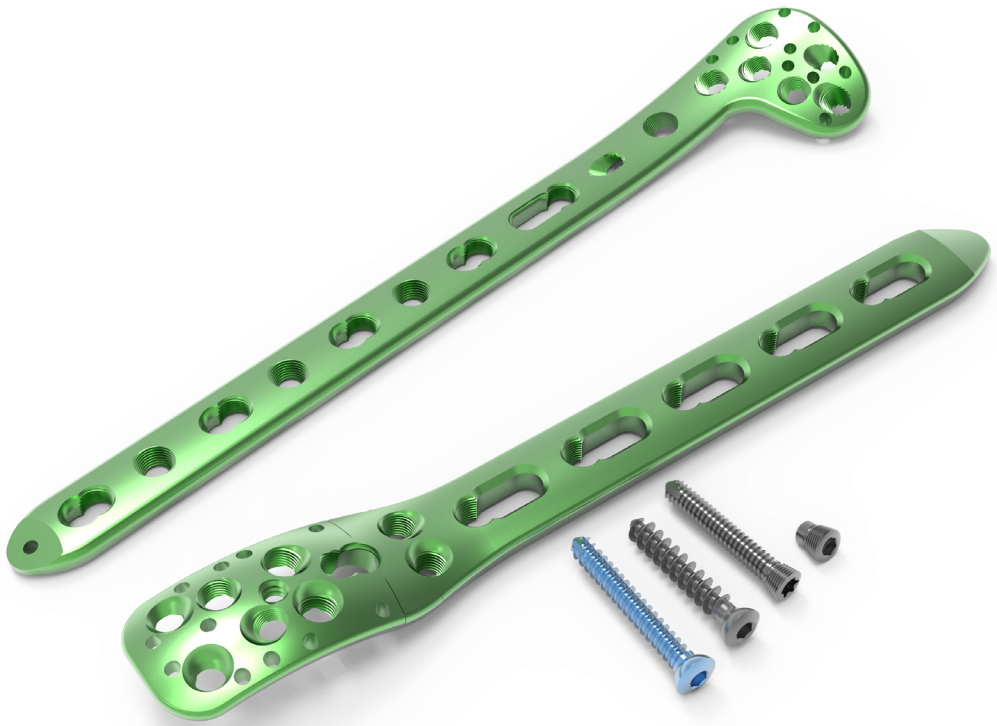
austofix Proximal Humeral
3.5mm L&C Plates

Surgical Technique



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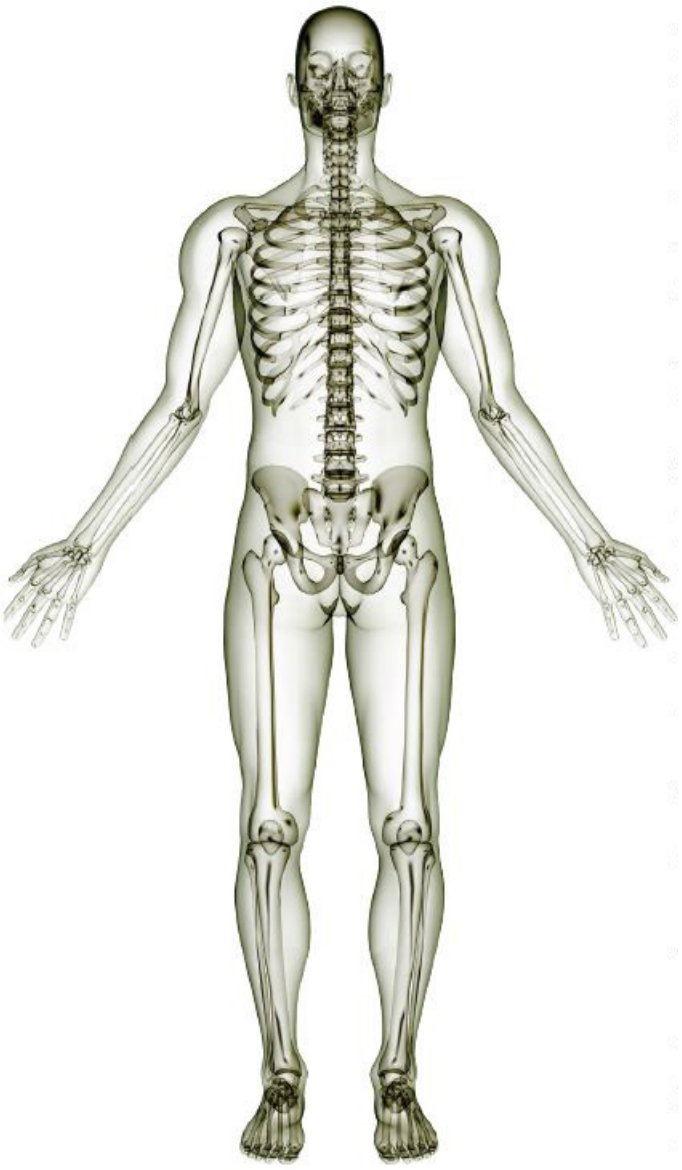


Austofix is a leading manufacturer and designer of orthopaedic trauma medical devices with a particular focus on innovation, excellence and patient safety. Austofix has the expertise and experience in developing a new device from concept to a fully Commercialised product with regulatory approval for world-wide distribution.

Throughout its 20+ years Austofix has gathered a team of world-class research and development specialists. Together with orthopaedic surgeons, our specialists identify emerging techniques and innovations in the field of orthopaedic trauma and develop world-class solutions.

Austofix is now one of Australia's key contributors to the world-wide medical technology industry. By focusing on specific market needs we can leverage our staff expertise to develop effective solutions and successfully compete on the world stage.

We understand that accidents don't wait to happen, so we ensure that our equipment and devices are ready when needed. With a dedicated 24 hour, seven day a week customer service and sales team, Austofix products are ready when you are.

With our focus on trauma we understand the specific needs of trauma surgeons. Our product specialists actively support the surgeon by being on call to support procedures and offer advice.

Austofix products and innovations assist the surgeon in performing accurate, efficient and safe procedures that result in better health outcomes for the patient.

The measurement of our success is seen through our excellent clinical results and positive surgeon feedback. We understand the need for efficiency during operations and that this is key in improving patient outcomes. Our products and tools are designed to minimise time spent in theatre. Furthermore, all clinical feedback of our products is promptly addressed to ensure product refinements reflect all surgical concerns.

For further information, updates and contact details visit austofix.com.au and follow us on LinkedIn.

Disclaimer

This document is intended to be read by experienced orthopaedic surgeons familiar with plate fixation

This document is intended as the recommended procedure for using the Small Fragment Plates system. It offers guidance only. Each surgeon should consider the particular needs of the patient and make appropriate adjustments where necessary.

For further advice please contact your local Austofix representative.

austofix Proximal Humeral
3.5mm L&C Plates

The Austofix Proximal Humeral Locking Plates are designed for the fixation of the many fracture patterns found in the proximal humerus.

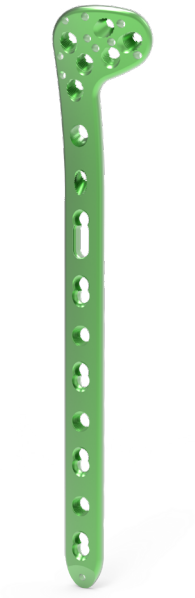
Austofix understands the importance of proven, high quality medical devices and instruments. The Proximal Humeral Locking Plates adhere to these principles and will provide the surgeon with a comprehensive proximal humerus fixation solution.

The use of Locking Screws allows for fixed-angle construction providing particular advantages in osteopenic bone or in multifragmentary fractures near the joints.

Implant grade Titanium Plates and Screws incorporate significant benefits: lightweight, high strength and biocompatible.

L&C Proximal Humeral Plate

L&C Proximal Humeral Greater Tubercle Plate



Screws

Implant Features

Plates

Combi Hole

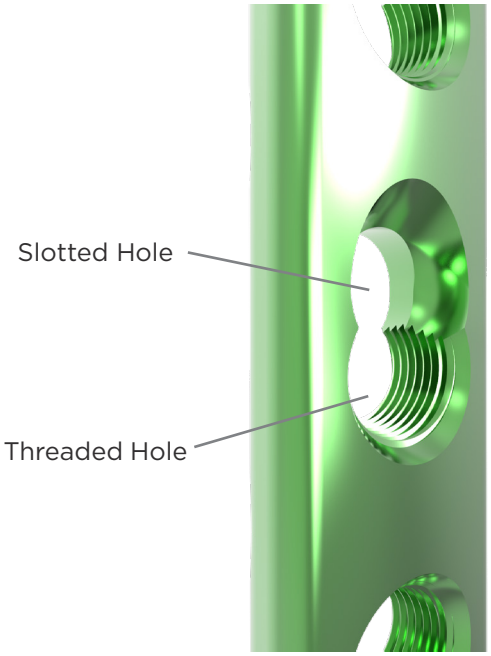
The Combi Hole allows for a range of plate fixation options. The holes accommodate both Compression and Locking screws.

Slotted Hole - Cortex Screws/Cancellous Screws

Cortex or Cancellous Screws used in the slotted hole for plate-to-bone compression increases stability.

Threaded Hole - Locking Screws

Locking screws link with the threads in the Threaded Hole, keeping the screw at a fixed angle.



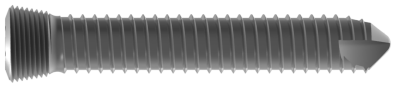
Tapered End

Tapered end assists in submuscular plate insertion and helps to minimise tissue trauma.

Screws

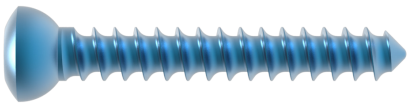
Locking Screw

- Self-Tapping
- Reduced Screw Back-out
- Unicortical or Bicortical Fixation



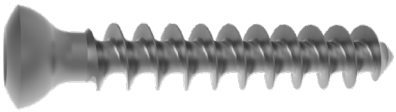
Cortex(Cortical) Screw

- Dynamic Compression
- Compression



Cancellous Screw

- Dynamic Compression
- Interfragmentary compression (Partially Threaded)
- Compression



Spacer

- Reduce Plate-To-Bone Contact
- Minimises Disruption of Periosteal Blood Supply

Plate Features

Anatomical Fit

» L&C Proximal Humeral Plate universally designed for left and right proximal humerus

» L&C Proximal Humeral Greater Tubercle Plate is available in left and right proximal humerus configurations

» Tapered end assists in submuscular plate insertion and helps to minimise tissue trauma

» Plate can be contoured with Plate Benders (112100002/3) for a more suitable anatomical fit

Humeral Head Locking

» Proximal locking holes provide flexibility in Locking Screw fixation

» Multiple points of fixation for improved Humeral Head support

» Diverging and converging Locking Screw patterns can be achieved

Plate Fixation

» Multiple K-Wire/Suture holes surrounding the proximal construct of the Plate allows for provisional fixation and Plate alignment

» Combi-Holes along distal shaft of the Plate for locking and compression

» Gliding Combi-Hole with elongated slotted holes allow for repositioning of the plate for axial compression flexibility

» Distal Plate shaft has increased thickness for additional strength

Clinical Indications

» Can be utilised for osteotomies and nonunions of the proximal Humerus

» Particularly beneficial for patients with osteopenic or osteoporotic bone

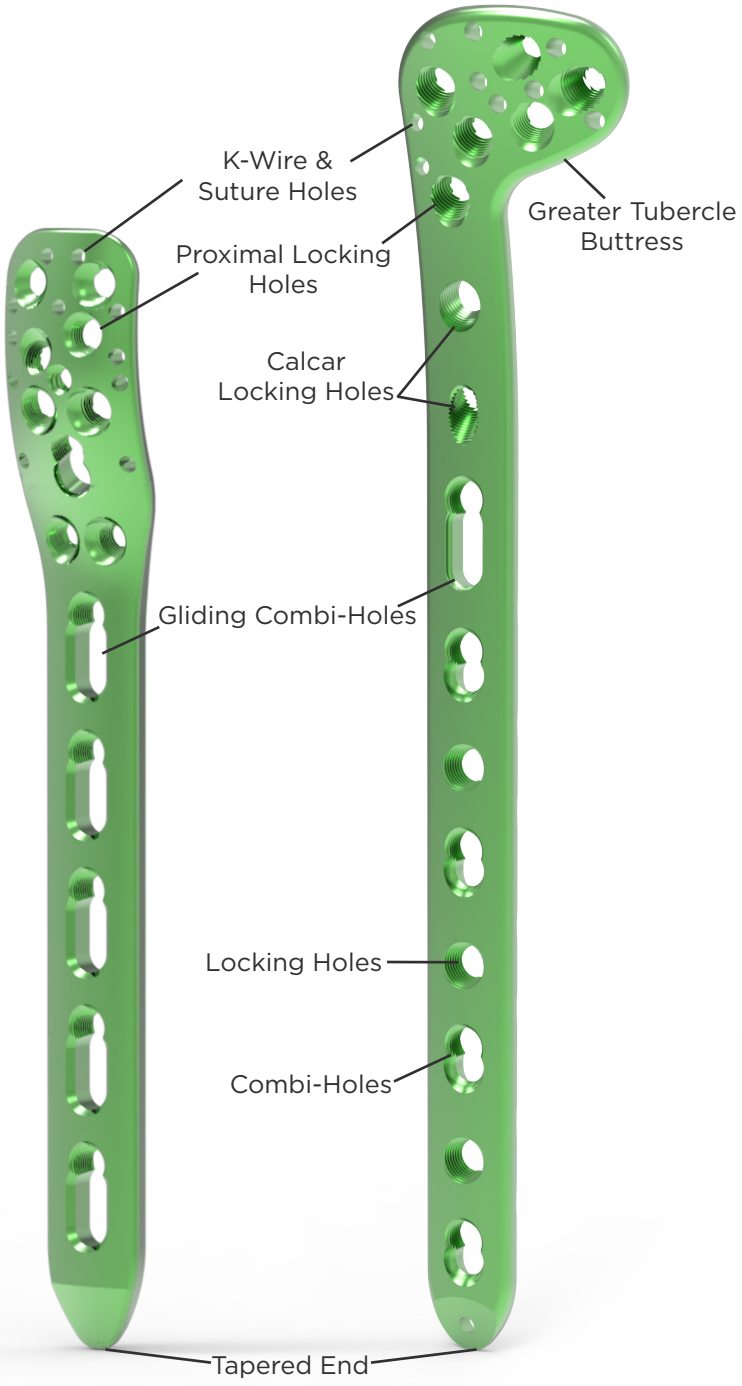
L&C Proximal Humeral Locking Plate

» Designed to address complex dislocated two-, three- and four-part fractures of the proximal Humerus

L&C Proximal Humeral Greater Tubercle Locking Plate

» Designed to address complex fractures of the proximal humerus

» Greater Tubercle Buttress support for fracture stabilising



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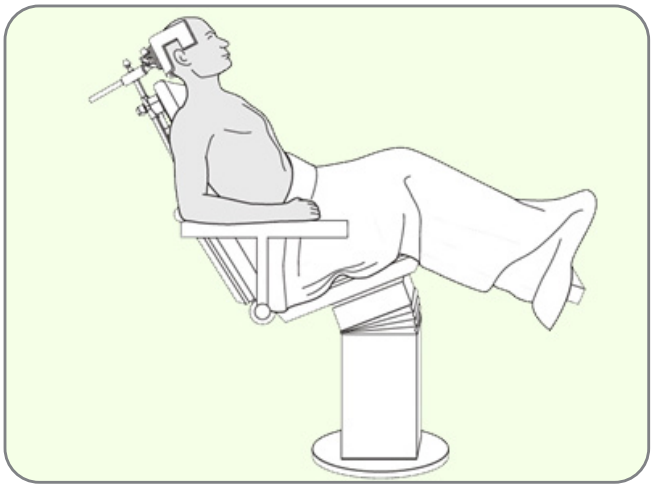
Surgical Technique

Preparation & Plate Length Selection

Preoperative radiographic assessment is required to determine plate length. Additionally, the Plate can be contoured to mould to the bone using the supplied Plate Benders (112100002/3).

Patient Positioning

A “beach-chair” reclined position is recommended, providing easy access to the shoulder.



Incision

The standard location for incision lies proximally in the interval between the deltoid and pectoral muscles. The incision begins from the coracoid process, slightly convex towards the medial side. This extends distally to the insertion of the deltoid muscle, found laterally on the humeral shaft.

Note: For longer plates, the incision may need to extend distally between the biceps and the brachialis towards the anterolateral aspect of the elbow flexion crease.

Warning: Take care not to damage the anterior circumflex humeral artery or the axillary nerve. This can be avoided by ensuring the deltoid is split no more than 4cm distal to its origin and that all dissection remains lateral to the intertubercular groove.

Reduce the Fracture

Perform an appropriate incision to treat the fracture.

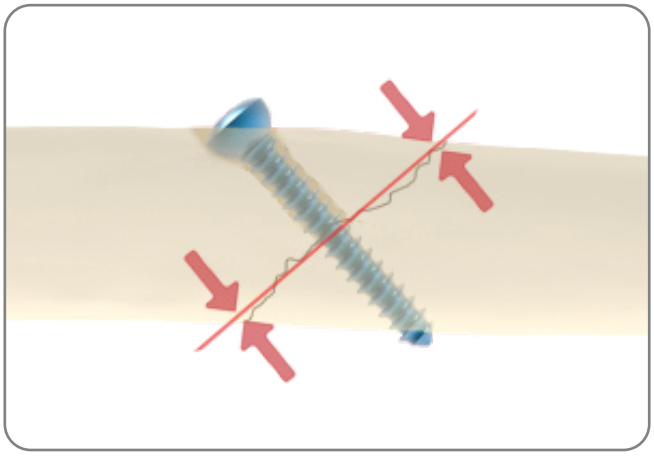
Reduce the fracture using the image intensifier, K-Wires* and/or Reduction Forceps (112100011/3). K-Wire bending and manipulation can be achieved using the supplied K-Wire Bender (112200010). Ensure that the reduction instrumentation will not interfere with plate placement.

* **Note:** 1.4mm (511415) and 2.0mm (522015) K-Wires are available for fracture reduction.

Reduction Using Lag Screws

Depending on the fracture pattern, independent lag Screws may be required before the Plate is fixed. 4.5mm Cortex Screws should be used as lag Screws.

1. Reduce the fracture and use the 3.5mm Drill Bit (112100015) with the 3.5mm sleeve of the Universal 3.5/2.5mm Drill Guide (112100005) to drill perpendicularly to the fracture line, taking care not to drill beyond the fracture line.
2. Use the 2.5mm sleeve of the Universal 3.5/2.5mm Drill Guide (112100005) to drill the far cortex using the 2.5mm Drill (112100016).
3. The Countersink (112100014) should then be used to improve bone load transfer.
4. Measurement for Screw length can then be obtained using the Depth Gauge (112100001).
5. Insert Ø3.5mm Cortex Screw of appropriate length to provide interfragmentary compression.



Compression Screws

Cannulated Compression Screws (Ø3.0 - Ø7.3mm) are available for interfragmentary compression and fracture fixation.

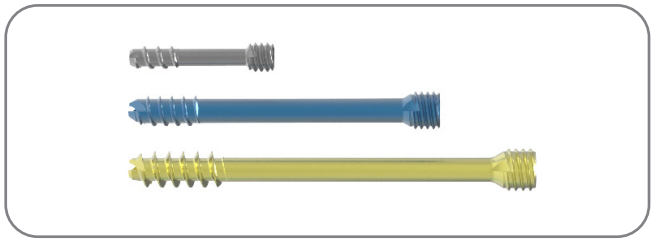
Please refer to the Austofix Cannulated Compression Screws Surgical Technique.

Note: The Cannulated Compression Screw instrument set (SET-INS-CAN) is required for this approach.

Headless Cannulated Screws are also available for fixation of intra-articular and extra-articular fractures, and non-unions of small bones.

Please refer to the Austofix Headless Cannulated Screws Surgical Technique.

Note: The Headless Cannulated Screw instrument set (SET-INS-HLCANN) is required for this approach.



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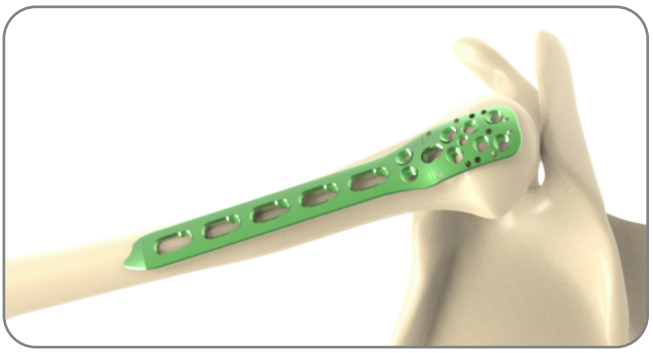
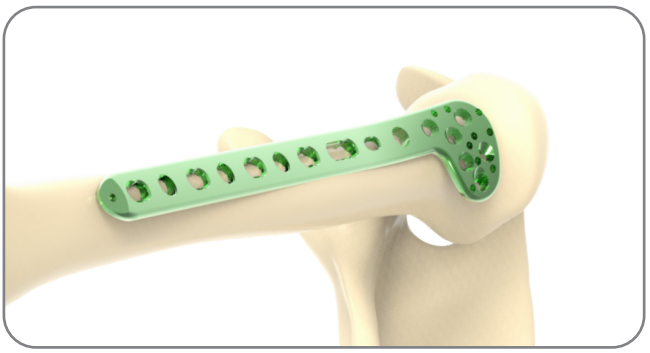
Contouring

If contouring is required, make sure to place the Plate Benders (112100002/3) on two consecutive holes to avoid distortion of the Threaded Holes. Bending Templates (Large: 112100008 & Small: 112100009) are included if desired.

Note: Do NOT bend the plate beyond what is required to contour with the bone. Reverse bending, over bending, using the incorrect instrumentation for bending or bending at the level of the holes may lead to plate failure.





Pre-Drilling

Determine whether Cortex Screws, Cancellous Screws or Locking Screws will be used. A combination may be used.

Use the table to determine which combination of Drill/Drill Sleeve is required for the desired Screw.

Position the Drill Sleeve as shown in the image on page 13 as required for compression or Locking. Drill.

Note: If a combination of Screws is used, a Cortex Screw should be inserted first to pull the plate to the bone.

Note: If a Locking Screw is used first, care should be taken to ensure that the plate is securely held to the bone to avoid spinning of the plate about the bone as the Locking Screw is tightened to the plate.

Screw	3.5mm Cortex	4.0mm Cancellous	3.5mm Locking
Drill	Ø2.5mm Drill (112100016)	Ø2.5mm Drill (112100016)	Ø2.8mm Drill (112200004)
Drill Sleeve/ Guide	2.5mm Drill Guide (112100020)	2.5mm Drill Guide (112100020)	2.8mm Threaded Drill Sleeve (112200002)
Driver	SW2.5 Hex Screwdriver (112100022)	SW2.5 Hex Screwdriver (112100022)	T15 Star Screwdriver (112200009)
Torque Limiter	-	-	Torque Limiter (112200001)

Note: The 2.8mm Threaded Drill Sleeve and the Ø2.8mm Drill have a **blue** laser marking for easy identification.

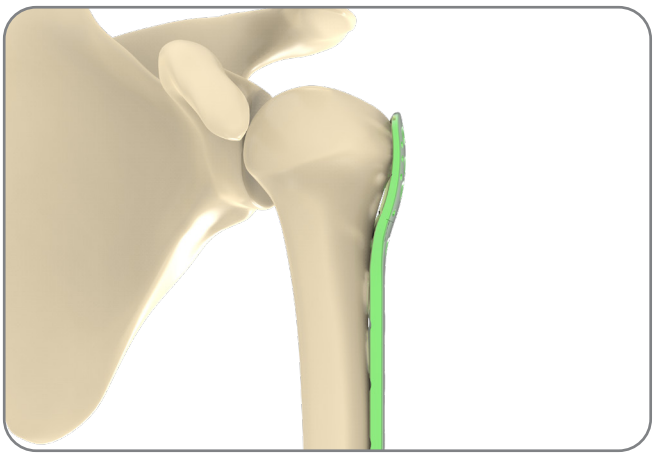
Position the Plate

Place the selected plate on the fractured bone and in a suitable position. If axial dynamic compression will be used ensure the middle of the plate is above the line of the fracture. The plate can be temporarily held in place using plate holding forceps. 2.0mm K-Wires (522015) can be used to assist with determining the optimal position of the plate. The 2.8mm Threaded Drill Sleeve (112200002) can also be used to aid in positioning the plate on the bone. Once positioned, a preliminary Cortex Screw should be inserted through the elongated slotted hole of the Gliding Combi-Holes.

Positioning of the Plate from an AP View

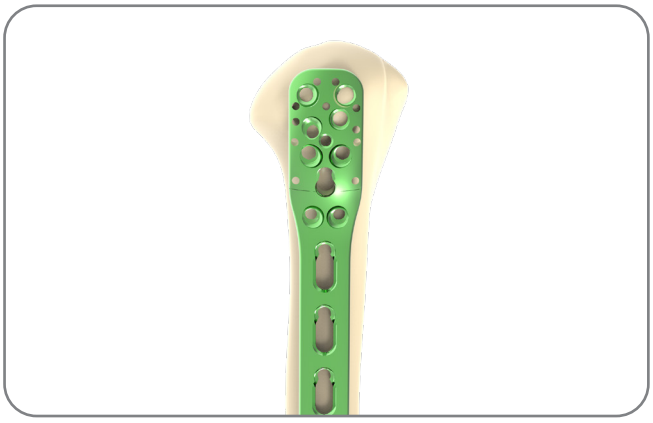
The plate should be placed approximately 8mm distal to the upper edge of the greater tuberosity.

Note: Placing the plate too high increases the risk of subacromial impingement, where placing the plate too low may prevent the optimal distribution of proximal Locking Screws into the humeral head.



Positioning of the Plate from a Lateral View

The plate is to be centred against the lateral aspect of the greater tuberosity. To avoid interfering with arterial blood supply, ensure that sufficient distance is maintained between the plate and the biceps tendon.



Considerations for Using Long Proximal Humeral Plates

The use of longer plates requires a plan for handling the deltoid insertion distally. The distal shaft of the plate can be placed slightly anteriorly and may require contouring for the proximal end of the plate.

Suture Reduction (Optional)

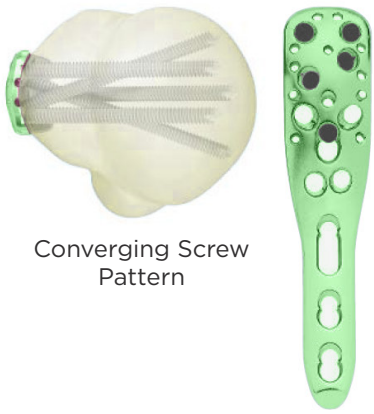
Sutures can be used through the K-Wire holes to reposition tuberosity fragments, further stabilising the construct and providing provisionary fixation. The sutures are then attached to the plate.

Insertion of Screws

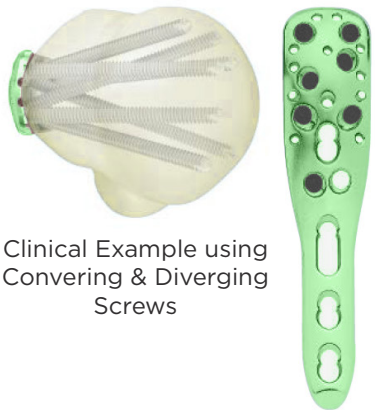
The combination of Locking, Cancellous and Cortex Screws for fixation should be determined. Where Locking and Cortex Screws are used, the Cortex Screws are to be inserted first to pull the plate to the bone. Variations in Locking Screw configurations are used to address complex fractures of the proximal humerus. For example, diverging Locking Screw patterns can be used to improve bone purchase and address displaced fractures, where a converging pattern may be used to stabilise fractures of the humeral surgical neck.

The configuration of Locking Screws is up to the surgeon based on clinical indications. Examples of possible Locking Screw combinations can be seen below:

Diverging Screw Pattern



Converging Screw Pattern



Clinical Example using Convering & Diverging Screws

The order of Screw insertion depends on the fracture type and the level of successful reduction of the fracture.

Insertion of Proximal Screw First

Insert the proximal Locking Screws first if initial reduction of proximal fragments is necessary.

Note: The height of the plate will need to be assessed using image intensification before insertion of the screws.

Insertion of Distal Screw First

Insert a distal Cortex Screw first if reduction of a distal shaft fragment is required.

Note: A final height adjustment must be made prior to the insertion of the remaining screws into the plate's distal shaft. Proximal Locking Screws can then be inserted.

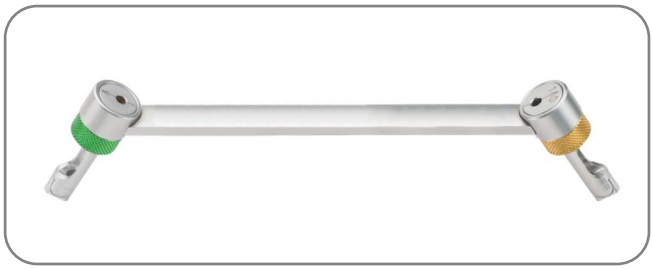
Drill Guides

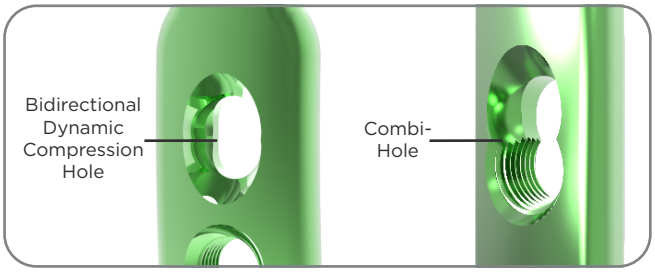
The Small Frag Instrument Set contains four different drill guides. Please follow the guide below to ensure the drill guides are used appropriately.

Drill Guide, LC-L&C 2.5/3.5mm (112100004)

The Limited Contact Locking & Compression (LC-L&C) Drill Guide is only used with plates with limited contact features and bidirectional **Dynamic Compression Holes**. The sleeve tips are designed to seat precisely within the hole to allow accurate neutral or compression drilling.

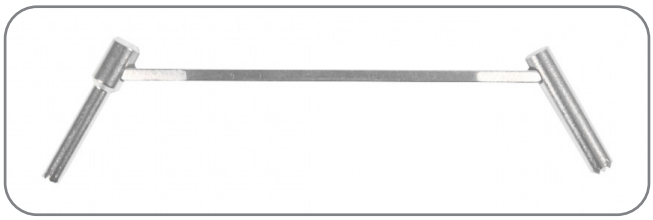
Warning: The LC-L&C Drill Guide 2.5/3.5 (112100004) is **not** suitable for use with the 3.5mm L&C Standard Small Frag Plates listed in this Surgical Technique as no **bidirectional Dynamic Compression** Holes are present. Please use the Universal Drill Guide 3.5/2.5mm (112100020) to drill through **Combi-Holes**.





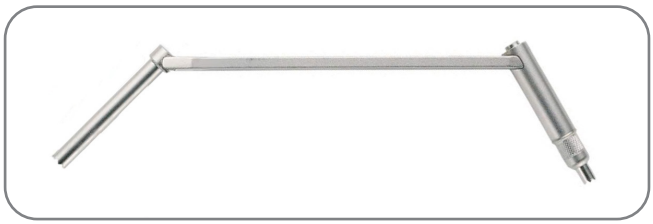
Drill Sleeve, Double 2.5/3.5mm (112100005)

The Double Drill Sleeve is a standard drill sleeve used predominantly for inserting Screws outside of the plate to capture fragments. The larger diameter drill sleeve can additionally be used as a tap sleeve.



Drill Guide, Universal 3.5/2.5mm (112100020)

The Universal Drill Guide can be used for insertion of Cortex and Cancellous Screws (**not** Locking Screws) through all holes including **Combi-Holes** found in the Small Fragment plating range. The spring-loaded tip allows for greater control over Screw angle within the plate hole. The drill guide also contains a larger diameter tap sleeve if tapping is required. Please refer to the Drilling section (page 13) for more information on using this drill guide.



Drill Sleeve, Threaded 2.8mm (112200002)

The Threaded Drill Sleeve is used within the threaded portion of the **Combi-Holes** and the threaded **Locking Holes** for perpendicular insertion of Locking Screws for angular stability.

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Drilling

Using the Universal Drill Guide 3.5/2.5mm

Neutral Screw Position

Advance the spring-loaded Universal Drill Guide 3.5/2.5mm (112100020) through the Dynamic Compression slot of the plate. Press the Drill Guide against the bone, allowing the inner sleeve to retract. This will guide the rounded end of the outer sleeve to the Neutral drilling position.

Dynamic Screw Position

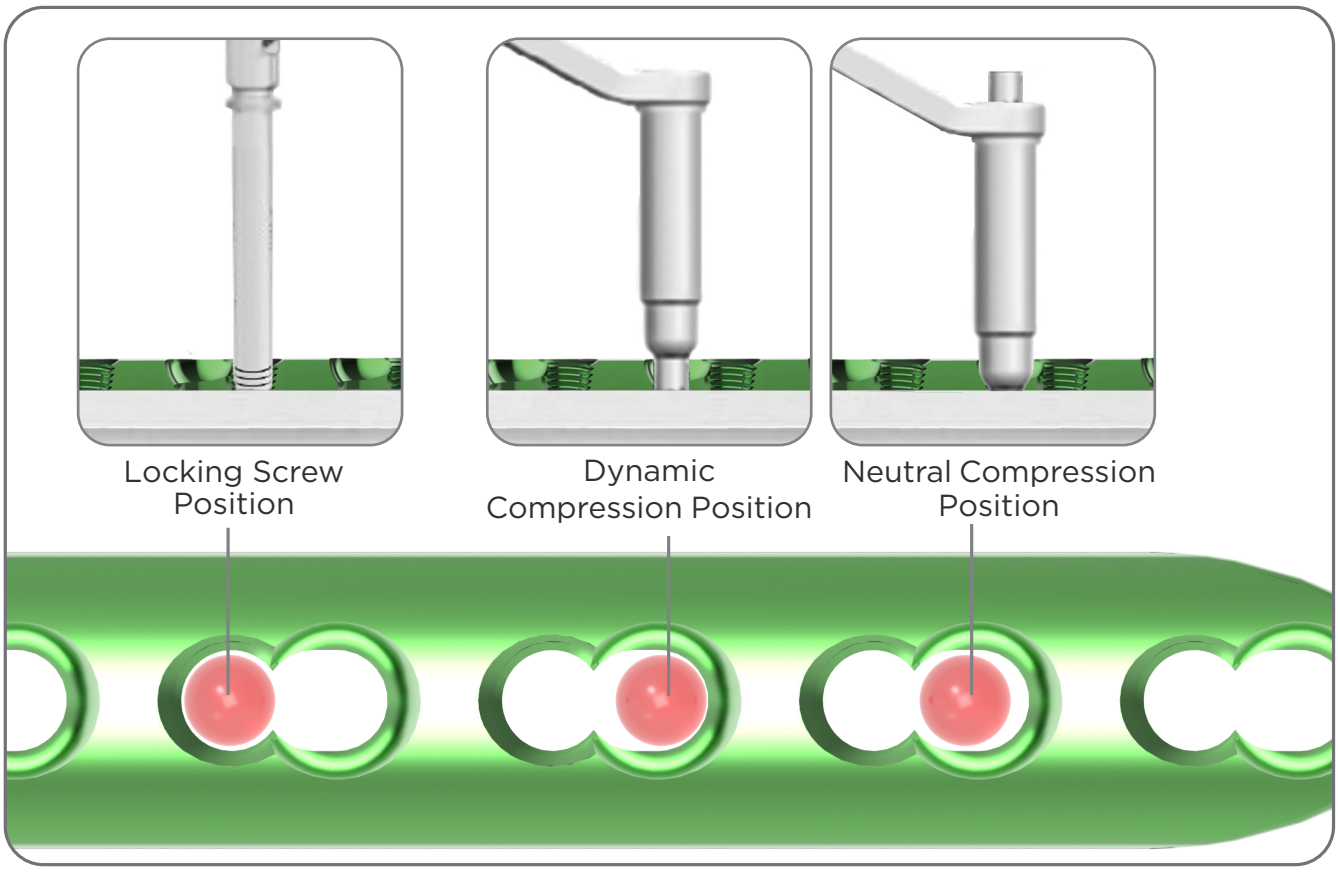
Place the inner sleeve of the Universal Drill Guide 3.5/2.5mm (112100020) against the edge of the Dynamic Compression slot of the plate. Without exerting pressure on the Drill Guide, the inner sleeve will remain in the Dynamic position. Dynamic Compression will occur once the Cortex/Cancellous Screws are tightened (page 15).

Locking Sleeve & Locking Screw Position

Insert the 2.8mm Threaded Drill Sleeve (112200002) into threaded hole. Carefully drill the Locking Screw hole using the 2.8mm Drill (112200004).

Note: The 2.8mm Threaded Drill Sleeve and the Ø2.8mm Drill have a **blue** laser marking for easy identification.

Note: For further information on Locking Screws and Spacers see pages 15-16.

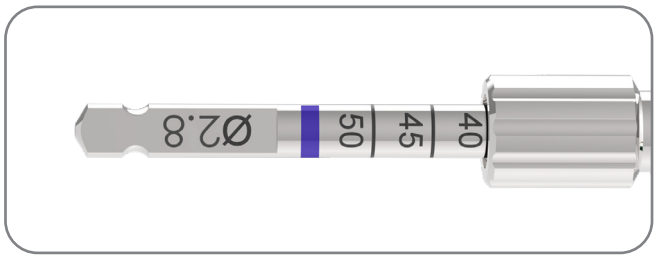


Determine Screw Length

Locking Screw length can be determined by reading the depth measurement directly from the calibrated Ø2.8mm Drill (112200004).

Note: When drilling close to the subchondral bone, use image intensification to verify the final position.

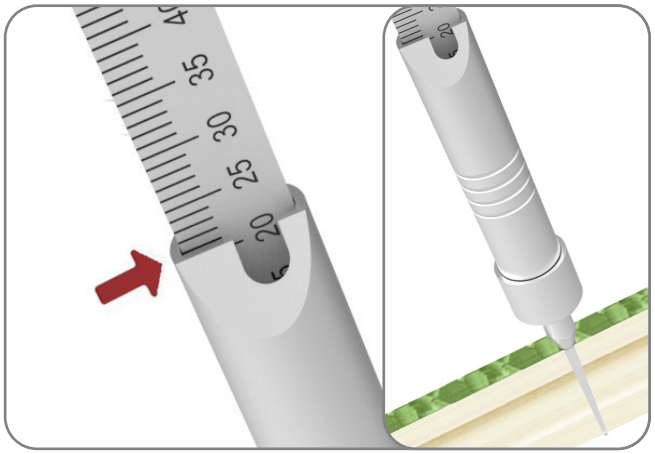
Warning: Take care not to drill through the joint surface.



The 2.5/4.0mm Depth Gauge (112100001) is required to determine Cortex and Cancellous Screw length. The Depth Gauge can be inserted directly into the hole in the bone. Measurements marked on the Depth Gauge are used to determine the Screw length. The Depth Gauge can also be used as an alternative to determining Locking Screw length.

Insert the hook of the Depth Gauge to engage the dorsal Cortex of the bone.

Read the measurements from the barrel of the Depth Gauge. If the measurement is between graduations choose the smaller Screw length.



Screw Insertion

Select the appropriate Screw with the assembled Driver Tip and Handle.

Note: Use the table on page 9 to determine which Driver and Handle to use.

Note: If a combination of Cortex and Locking Screws are to be used then the Cortex Screw should be inserted first to generate interfragmentary compression.

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Cortex/Cancellous Screws

Neutral Screw Position

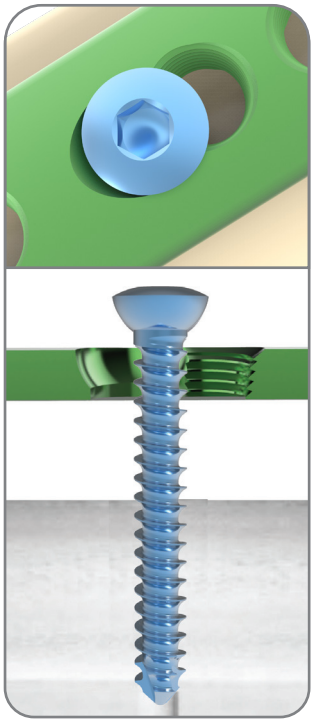
Use the Hex Screwdriver (112100022) to insert Cortex/Cancellous Screw to appropriate depth.

Alternatively, a Power Screwdriver (112100017) can be used.

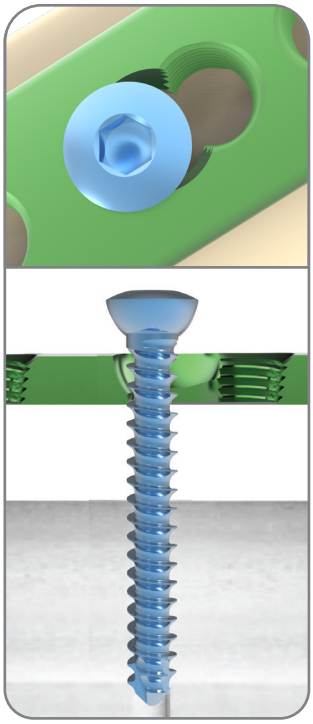
Dynamic Screw Position

Use the Hex Screwdriver (112100022) or Power Screwdriver (112100017) to insert Cortex/Cancellous Screw to appropriate depth. The Screwdriver's Holding Sleeve can be used to assist in Screw insertion. Ensure Dynamic Compression has been achieved.

Warning: If using power to insert Cortex/Cancellous Screws, complete Screw insertion by hand to avoid compromising the integrity of the plate and screw construct, and to avoid damage to patient soft tissue.



Neutral Screw Position



Dynamic Compression Position

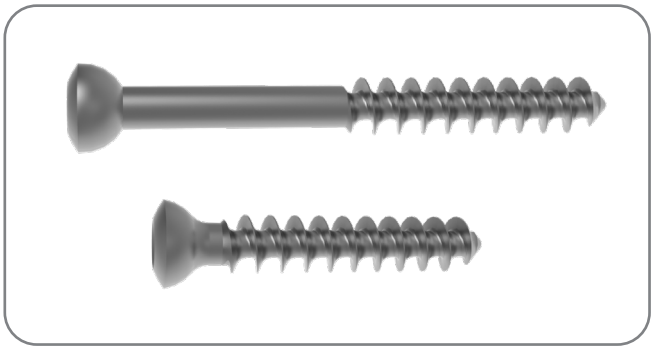
Partially Threaded vs Fully Threaded Cancellous Screws

Partially Threaded

- Used to compress the Plate to the bone and can be used to provide interfragmentary compression

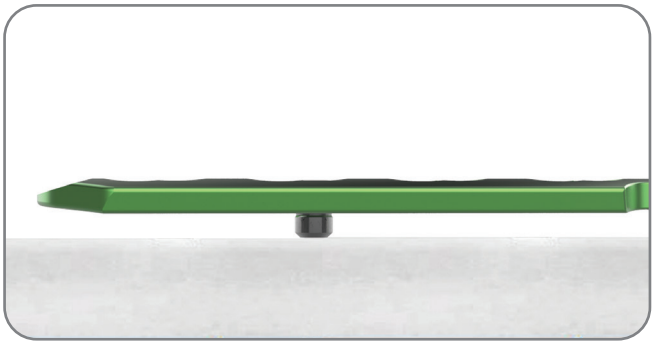
Fully Threaded

- Used to compress the Plate to the bone



Spacer

If minimal contact between the plate and bone is desired, a 3.5mm Spacer can be inserted using the SW2.5 Hex Driver (112100022). The Spacer ensures a distance of 2mm between the plate and bone when the Screws are later inserted. The Spacer can be removed after setting the Locking Screws.



Locking Screw Insertion

Locking Position

Before the insertion of the Locking Screw ensure the fracture is reduced as this cannot be done after the screw has been inserted.

Ensure the desired Screw is concentric to the Plate's threaded hole. Insert the Screw and tighten with the 1.5Nm Torque Limiter Screwdriver (112200001). Screw it down until the threaded screw head engages and is secure to the plate.

Warning: If using power to insert Locking Screws, always use a torque limiting attachment. This reduces the risk of the threads stripping from the head of the screw. The Star Screwdriver Shaft (112200003) can be used for insertion using power.

If a Locking Screw is used first ensure the Plate is securely held to the bone to avoid the plate moving.

Depending on the clinical requirements, no compression or dynamic compression will be generated. The number of Screws and Screw insertion configuration is to be determined by the surgeon.

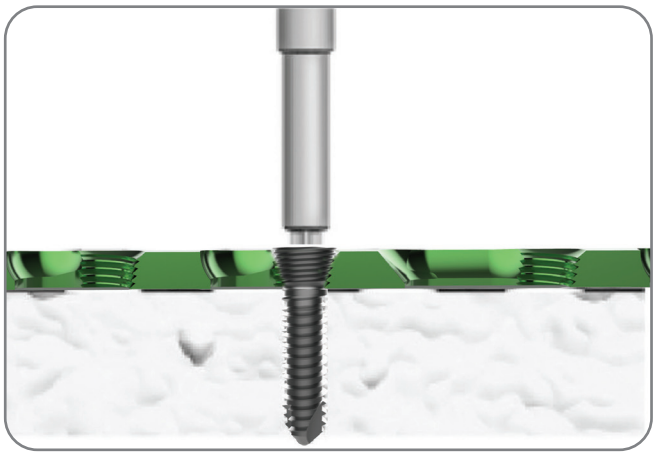
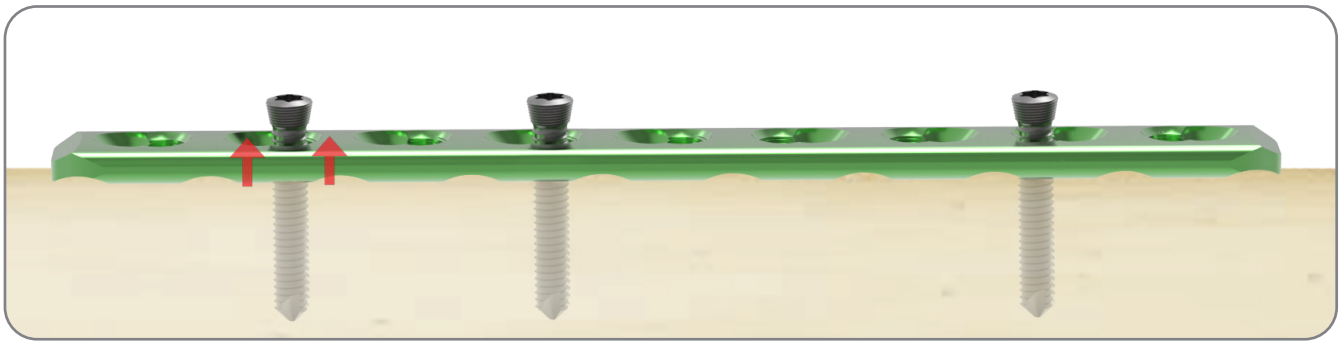


Plate Removal

To remove the Plate, unlock and partially unscrew all the Screws first using the appropriate Hex (112100022) or Star (112200009) Screwdriver for Cortex/Cancellous Screws and Locking Screws respectively. Continue to remove the Screws from the bone. This method prevents the simultaneous rotation of the plate when unlocking the final Locking Screw.

Note: The Easyout (112200005) can be used with the T-Handle with Quick Coupling (112100024) or a Power Drill if there are difficulties in the removal of Screws.



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Implants

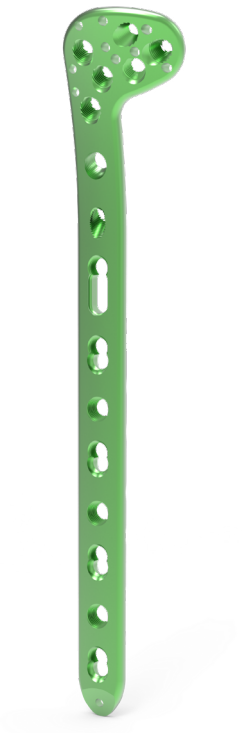
Plates

L&C Proximal Humeral Locking Plate	
Product Code	Number of Holes
1157-00-03110	3
1157-00-04128	4
1157-00-05146	5
1157-00-06164	6
1157-00-07182	7
1157-00-08200	8
1157-00-09218	9
1157-00-10236	10
1157-00-11254	11
1157-00-12272	12
1157-00-13290	13

Compatible Screw: 3.5mm Cortex Screw, 4.0mm Cancellous Screw, 3.5mm Locking Screw, 3.5mm Spacer
Compatible K-Wire: 2.0mm

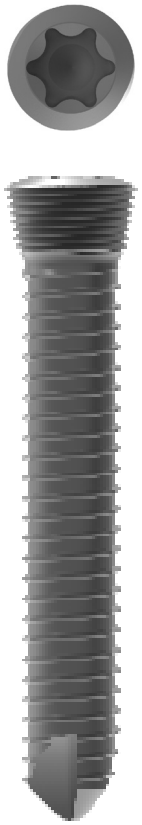
L&C Proximal Humeral Greater Tubercle Locking Plate		
Product Code	Number of Holes	L/R
1177-00-02066L	2	L
1177-00-03078L	3	L
1177-00-04090L	4	L
1177-00-06114L	6	L
1177-00-08138L	8	L
1177-00-10162L	10	L
1177-00-12186L	12	L
1177-00-14210L	14	L
1177-00-16234L	16	L
1177-00-02066R	2	R
1177-00-03078R	3	R
1177-00-04090R	4	R
1177-00-06114R	6	R
1177-00-08138R	8	R
1177-00-10162R	10	R
1177-00-12186R	12	R
1177-00-14210R	14	R
1177-00-16234R	16	R

Compatible Screw: 3.5mm Cortex Screw, 4.0mm Cancellous Screw, 3.5mm Locking Screw, 3.5mm Spacer
Compatible K-Wire: 2.0mm



Screws

Locking Screw - Self-tapping	
Length	3.5mm
10	1061-00-35010
12	1061-00-35012
14	1061-00-35014
16	1061-00-35016
18	1061-00-35018
20	1061-00-35020
22	1061-00-35022
24	1061-00-35024
26	1061-00-35026
28	1061-00-35028
30	1061-00-35030
32	1061-00-35032
34	1061-00-35034
35	1061-00-35035
36	1061-00-35036
38	1061-00-35038
40	1061-00-35040
42	1061-00-35042
44	1061-00-35044
45	1061-00-35045
46	1061-00-35046
48	1061-00-35048
50	1061-00-35050
55	1061-00-35055
60	1061-00-35060
65	1061-00-35065
70	1061-00-35070
75	1061-00-35075
80	1061-00-35080
85	1061-00-35085
90	1061-00-35090



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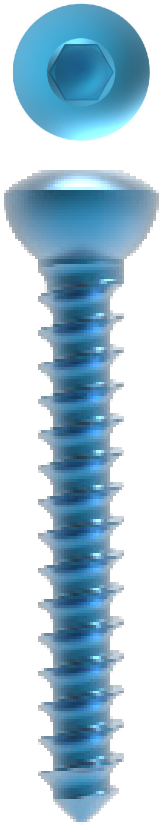
Cortex Screw - Self-tapping	
Length	3.5mm
12	1145-00-35012
14	1145-00-35014
16	1145-00-35016
18	1145-00-35018
20	1145-00-35020
22	1145-00-35022
24	1145-00-35024
26	1145-00-35026
28	1145-00-35028
30	1145-00-35030
32	1145-00-35032
34	1145-00-35034
36	1145-00-35036
38	1145-00-35038
40	1145-00-35040
42	1145-00-35042
44	1145-00-35044
46	1145-00-35046
48	1145-00-35048
50	1145-00-35050



Cancellous Screw - Partially-threaded	
Length	4.0mm
20	1146-00-40020
22	1146-00-40022
24	1146-00-40024
26	1146-00-40026
28	1146-00-40028
30	1146-00-40030
32	1146-00-40032
34	1146-00-40034
36	1146-00-40036
38	1146-00-40038
40	1146-00-40040
42	1146-00-40042
44	1146-00-40044
46	1146-00-40046
48	1146-00-40048
50	1146-00-40050
52	1146-00-40052
54	1146-00-40054
56	1146-00-40056
58	1146-00-40058
60	1146-00-40060

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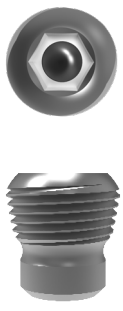
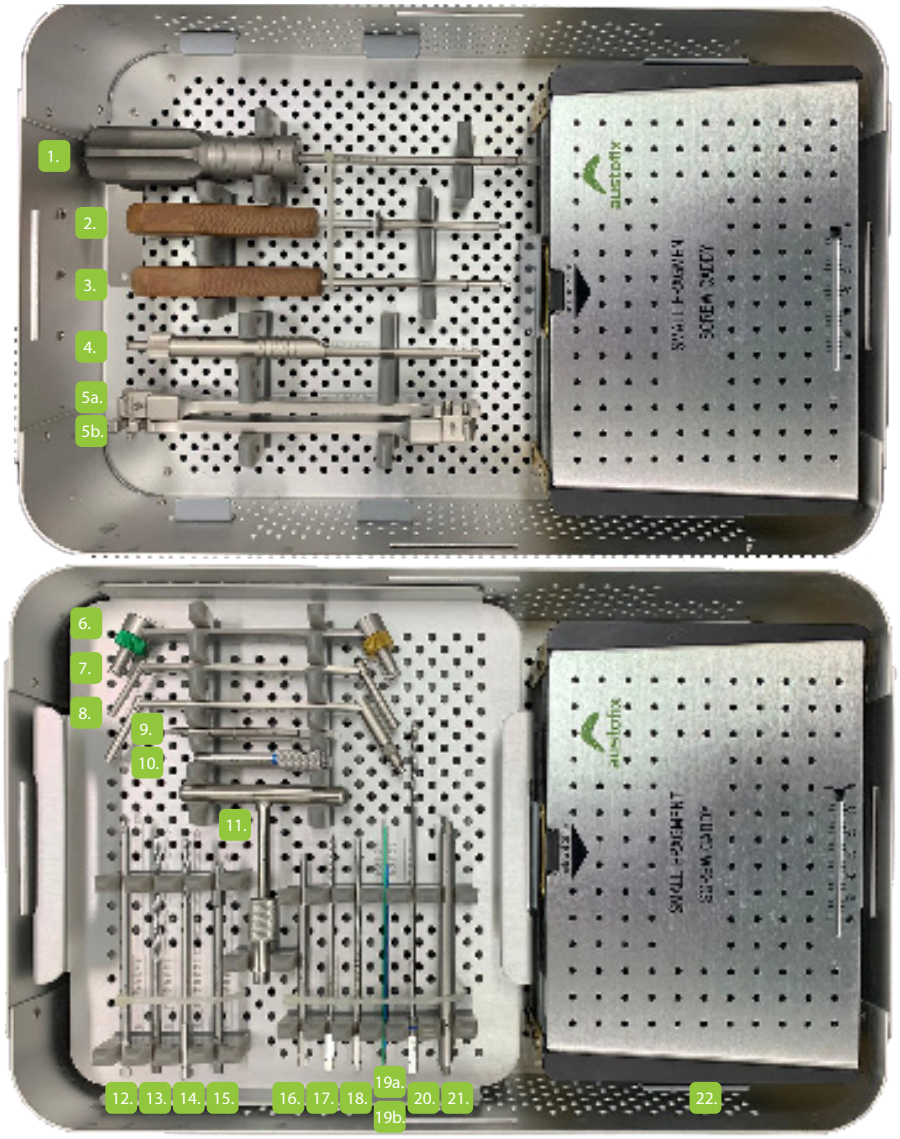
Cancellous Screw - Fully-threaded	
Length	4.0mm
12	1147-00-40012
14	1147-00-40014
16	1147-00-40016
18	1147-00-40018
20	1147-00-40020
22	1147-00-40022
24	1147-00-40024
26	1147-00-40026
28	1147-00-40028
30	1147-00-40030
32	1147-00-40032
34	1147-00-40034
36	1147-00-40036
38	1147-00-40038
40	1147-00-40040
42	1147-00-40042
44	1147-00-40044
46	1147-00-40046
48	1147-00-40048
50	1147-00-40050
52	1147-00-40052
54	1147-00-40054
56	1147-00-40056
58	1147-00-40058
60	1147-00-40060

Spacer	
Length	3.5mm
2	1060-00-35002



Instruments



Instruments							
#	Code	Description	Qty	#	Code	Description	Qty
1	112200001	Torque Limiter 1.5Nm	1	12	112200003	Screwdriver Shaft, 120mm (Star)	1
2	112100022	Screwdriver (Hex) with Holding Sleeve	1	13	112100015	Drill Bit 3.5mm	1
3	112200009	Screwdriver, 200mm (Star)	1	14	112100016	Drill Bit 2.5mm	2
4	112100001	Depth Gauge 2.5/4.0mm	1	15	112100014	Countersink, 100mm	1
5a.	112100002	Plate Bender (Left), 190mm	1	16	112100017	Screwdriver Shaft 100mm (Hex)	1
5b.	112100003	Plate Bender (Right), 190mm	1	17	112100018	Tap for Cortex Screw 3.5mm	1
6	112100004	Drill Guide, LC-L&C 2.5/3.5mm	1	18	112100019	Tap for Cancellous Bone Screw 4.0mm	1
7	112100005	Drill Sleeve, Double 2.5/3.5mm	1	19a.	112100008	Bending Template (Large) 10 x 118mm	1
8	112100020	Drill Guide, Universal 3.5/2.5mm	1	19b.	112100009	Bending Template (Small) 10 x 92mm	1
9	112200005	Easyout, 80mm	1	20	112200004	Drill Bit 2.8mm	2
10	112200002	Drill Sleeve, Threaded, 2.8mm (for 3.5)	2	21	112200010	K-Wire Bender	1
11	112100024	T-Handle with Quick Coupling, 90mm	1	22	112127000	Small Frag Screw Tray	1

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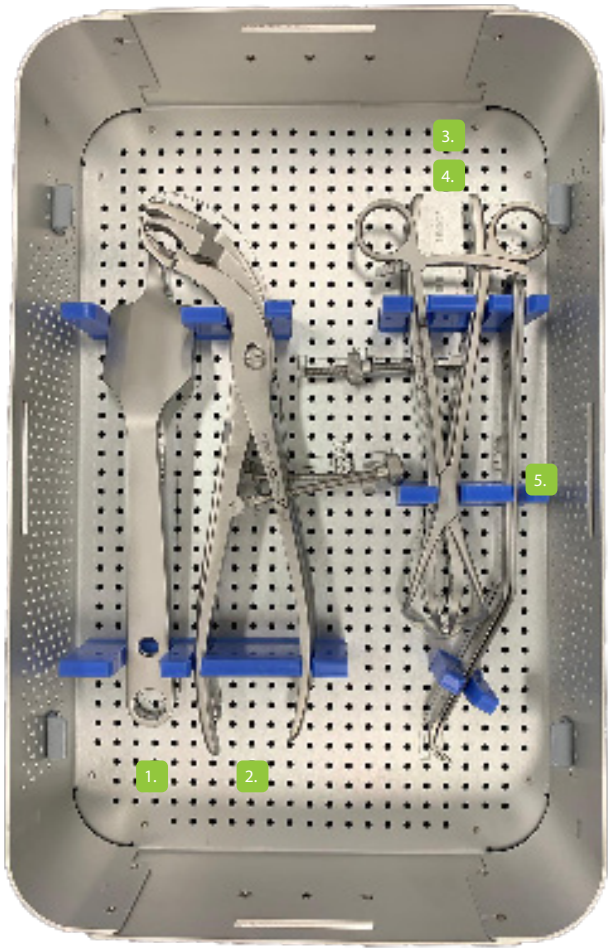
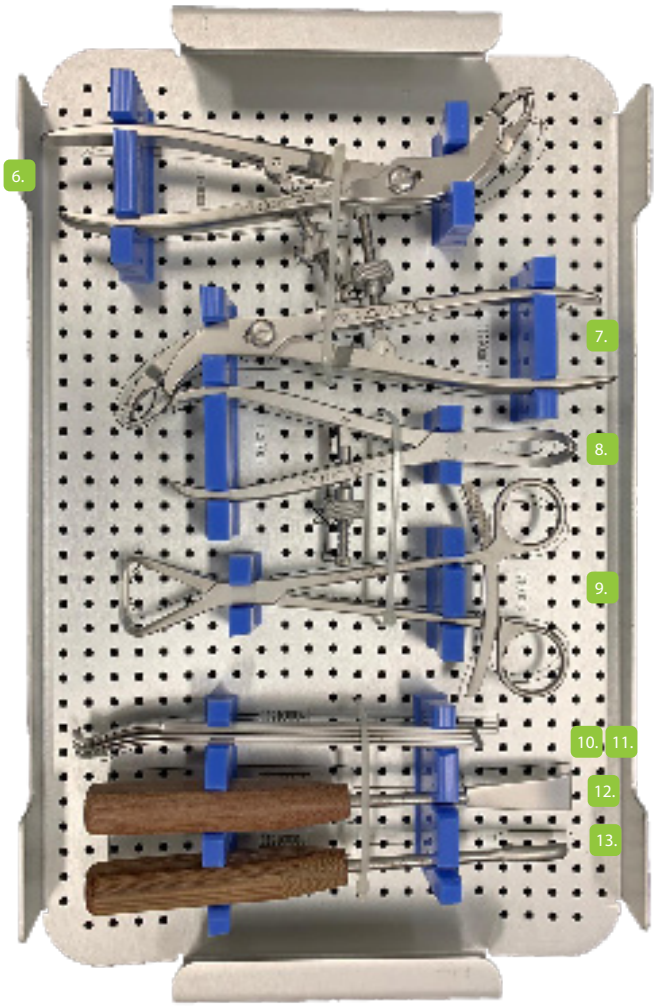
Optional Sets

Universal Trauma Set





Instruments			
#	**Code**	**Description**	**Qty**
1	113100017	Hohmann Retractor (Large) 43.5 x 267mm	2
2	113100019	Self-Centering Bone Holding Forceps (Speed Lock) 266mm	1
3	113100021	Reduction Forceps (Serrated Jaws) 220mm	2
4	113100022	Reduction Forceps (Point) 207mm	1
5.	113100018	Hohmann Retractor (Small) 16 x 267mm	1
6	112100010	Self-Centering Bone Holding Forceps (Speed Lock) 191.8mm	2
7	112200012	Self-Centering Bone Holding Forceps (Compression)	1
8	112100011	Reduction Forceps (Serrated Jaws) 158mm	1
9	112100013	Reduction Forceps (Points) 182mm	1
10	112100006	Hohmann Retractor (Large) 15.5 x 159mm	2
11	112100007	Hohmann Retractor (Small) 10.5 x 170mm	2
12	113100016	Periosteal Elevator (Large)191mm	1
13	112100012	Periosteal Elevator (Small) 190mm	1

Instrument Trays & Sets

Instrument Tray		
Code	**Description**	**Qty**
112128000	Small Frag Instrument Tray PPSU (Empty)	1
113122000	Universal Trauma Instrument Tray (Empty)	1

Instrument Set		
Code	**Description**	**Qty**
SET-INS-SML	Full Small Frag Instrument Set	-
SET-INS-UTRA	Full Universal Trauma Instrument Set	-

Single Use Items

Recommended K-Wires		
Code	**Description**	**Qty**
522015	2.0 x 150mm K-Wire	2
511415	1.4 x 150mm K-Wire	2

Optional K-Wires		
Code	**Description**	**Qty**
113210001	2.5 x 280mm K-Wire	2
611.112	1.1 x 120mm K-Wire	2
081.010	0.8 x 100mm K-Wire	2

Drill		
Code	**Description**	**Qty**
112100016	Drill Bit 2.5mm (for 3.5mm Cortex & 4.0mm Cancellous Screws)	1
112200004	Drill Bit 2.8mm (for 3.5mm Locking Screws)	1
112100015	Drill Bit 3.5mm	1

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MRI Safety

Austofix has not evaluated its devices for safety and compatibility in a Magnetic Resonance (MR) environment. However, the materials used in their manufacture are known to have minimal ferromagnetism, with minimal risk to patients in strong magnetic fields.

Austofix has performed a review of published, peer-reviewed data, which confirms that only minor rises in MRI-related heating are observed from devices manufactured from the same titanium and stainless-steel materials. Trauma devices are considered unlikely to produce injury to patients, including in the worst-case 3.0T systems.

The devices and materials observed in the literature experience forces too weak to cause significant displacement; the risk being further mitigated by their implantation in bone. Risks of imaging artifacts are known to MRI operators, and can be reduced by choosing appropriate pulse sequences and optimizing scanning parameters by using a large bandwidth, small field-of-view and appropriate echo train length.

Average temperature changes have been observed in studies at 0.48°C in titanium and 0.74°C in stainless-steel. Rises in temperature in clinical situations may depend on individual patient factors. It should be recommended that patients be thoroughly monitored when undergoing MR scanning, and that impaired patient thermoregulation be considered a contraindication for MRI procedures.

Sources:

Chen CA, Chen W, Goodman SB, et al. New MR Imaging Methods for Metallic Implants in the Knee: Artifact Correction and Clinical Impact. 2011, 1121-1127.

Gill A, Shellock FG. Assessment of MRI issues at 3-Tesla for metallic surgical implants: findings applied to 61 additional skin closure staples and vessel ligation clips. J Cardiovasc Magn Reson. 2012, 14(1):3.

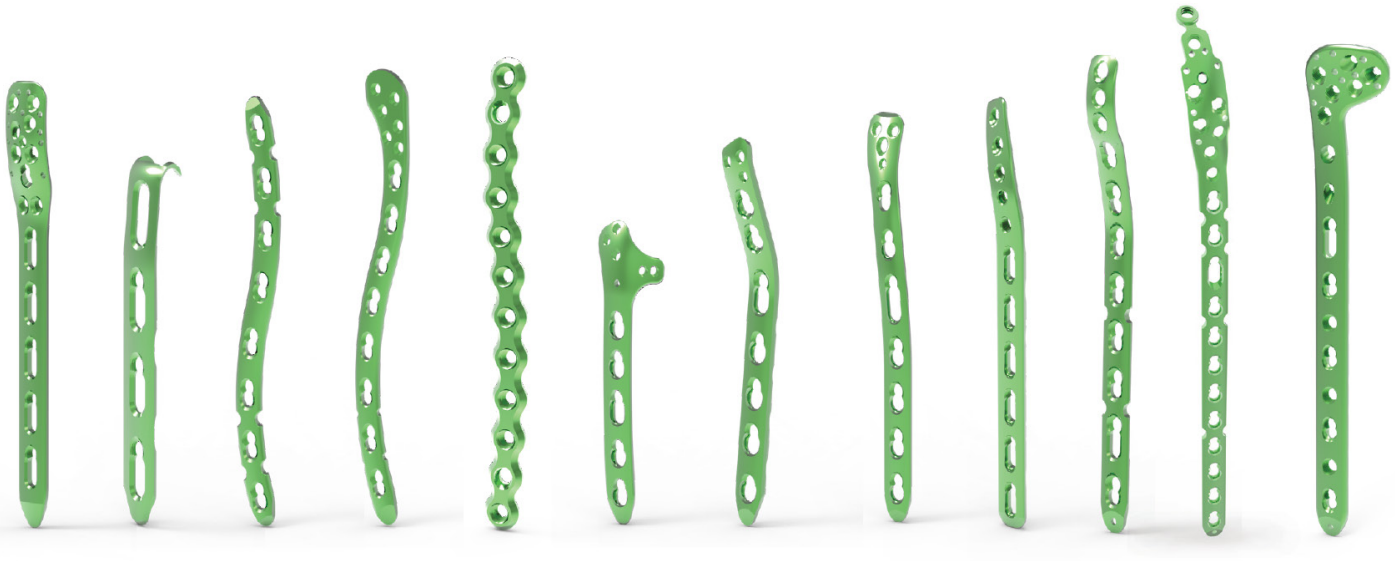
Shellock FG. Biomedical Implants and Devices: Assessment of Magnetic Field Interactions With a 3. 0-Tesla MR System. 2002, 721-732.

Zou Y, Chu B, Wang C, Hu Z. Evaluation of MR issues for the latest standard brands of orthopedic metal implants, Plates and screws. Eur J Radiol. 2015, 84(3):450-457.

Austofix Small Fragment Range

The Austofix Small Fragment Instrument Set and the Austofix Universal Trauma Set are compatible with the entire Austofix Small Fragment range of plates listed below.

For more information on the usage and technique of these plates or for product codes, see the relevant plate-specific Surgical Technique.



L&C Proximal Humeral Locking Plate

L&C Hook Locking Plate

L&C Superior Anterior Clavicle Locking Plate

L&C Superior Anterior Clavicle Lateral Extension Locking Plate

Clavicle Reconstruction Locking Plate

L&C Distal Lateral Dorsal Humeral Locking Plate (Buttress)

L&C Distal Medial Humeral Locking Plate

L&C Distal Lateral Dorsal Humeral Locking Plate

L&C Distal Humeral Extra-Articular Locking Plate

L&C Distal Humeral Middle Metaphyseal Locking Plate

L&C Olecranon Locking Plate

Proximal Humeral Greater Tubercle Locking Plate

Continued

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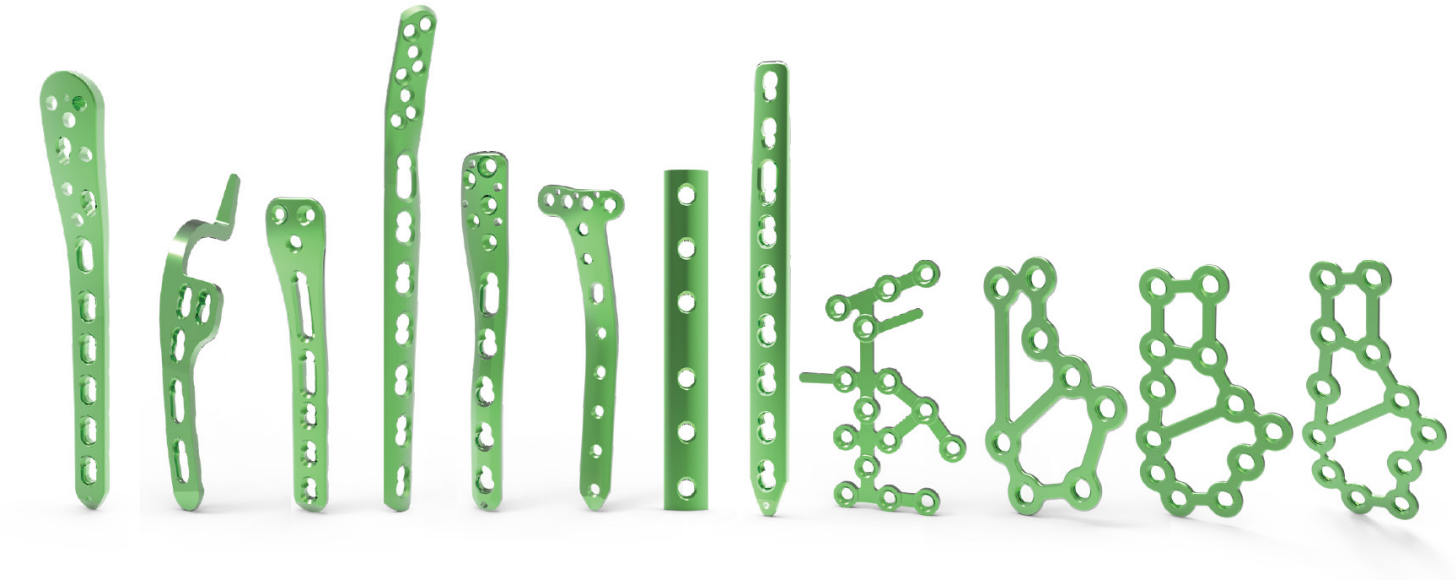


L&C Distal Medial Tibial Locking Plate

L&C Clavicle Hook Locking Plate

L&C Proximal Posterior Tibial Locking Plate

L&C Distal Posterior Lateral Fibula Locking Plate

L&C Distal Lateral Fibula Locking Plate

L&C Proximal Medial Tibial Locking T-Plate

1/3 Tubular Locking Plate

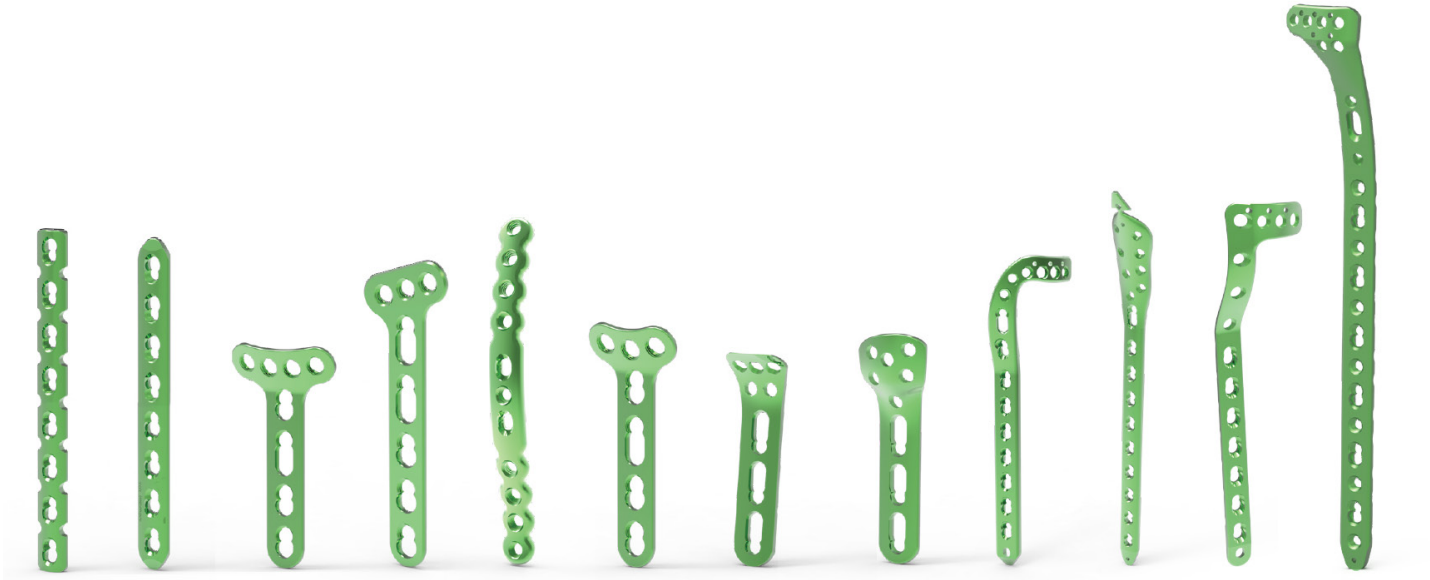
3.5mm L&C Metaphysis Locking Plate

Calcaneal Locking Plate I

Calcaneal Locking Plate II (53mm)

Calcaneal Locking Plate II (60mm)

Calcaneal Locking Plate II (68mm)



3.5mm L&C Reconstruction Locking Plate (Straight)

3.5mm LC-L&C Locking Plate (Narrow)

3.5mm L&C Locking T-Plate Right-Angle (Head 4 Hole)

3.5mm L&C Locking T-Plate Oblique-Angle (Head 3 Hole)

Clavicle Anterior Reconstruction Locking Plate

3.5mm L&C T-Plate Right-Angle (Head 3 Hole)

L&C Proximal Radius Arch Rising Locking Plate

L&C Proximal Radius Arch Cupped Locking Plate

L&C Anterolateral Distal Tibial Locking Plate

3.5mm L&C Distal Medial Tibial Locking Plate

L&C Proximal Lateral Tibial Locking Plate I

L&C Proximal Lateral Tibial Locking Plate

austofix

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Email: sales@austofix.com.au

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