

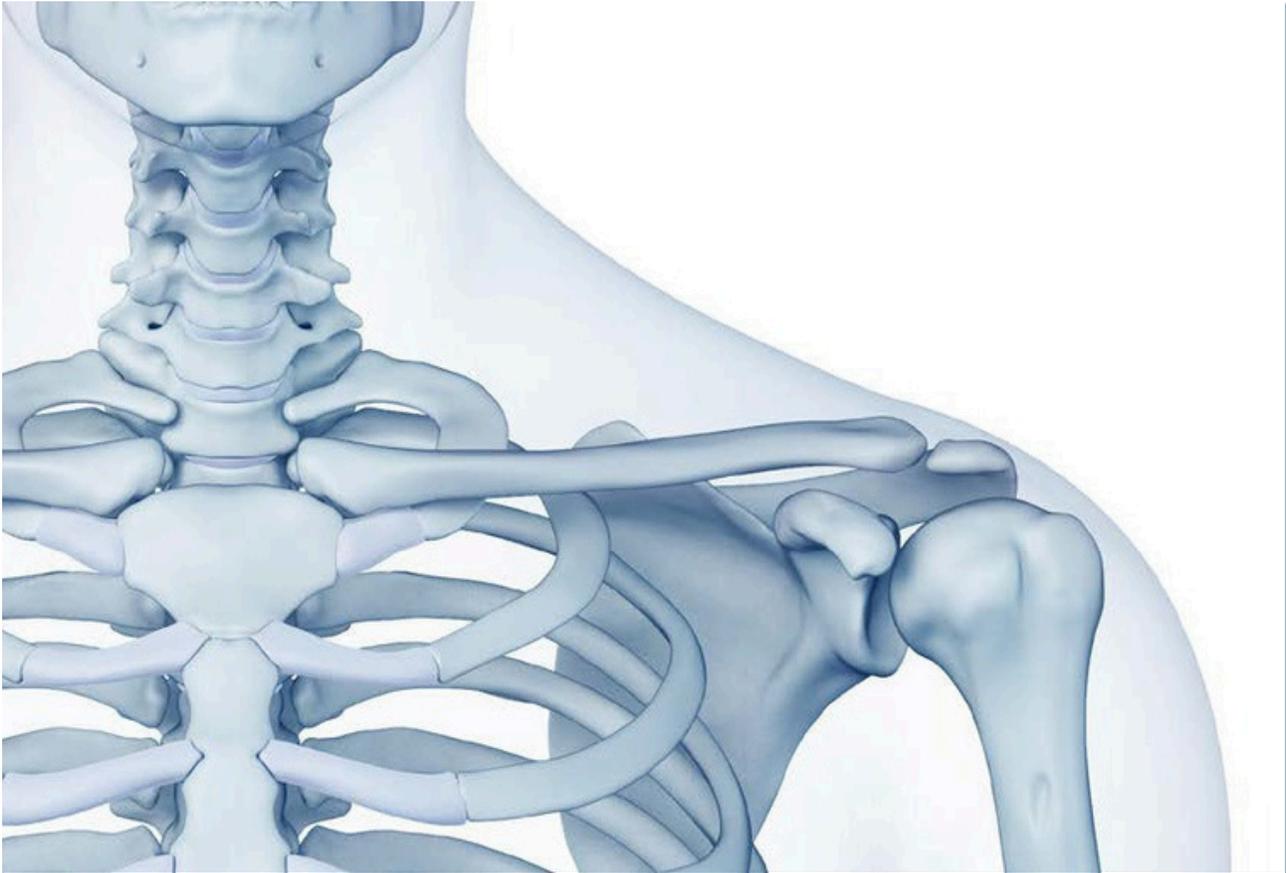
summa
ortho

CLAVICLE SYSTEM

Surgical Technique

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	Product Information



SUMMA Clavicle Plate

The SUMMA Clavicle System is a locking plate system for clavicle fractures. The Clavicle Plate provides an optimized fit for the clavicle bone. And the SUMMA Clavicle System also offers a variety of screws to help provide flexible surgical technique for users.

Indications

The SUMMA Clavicle System is indicated for the fixation of single, segmental and comminuted fractures, osteotomies, mal-unions, and non-unions of the clavicle.

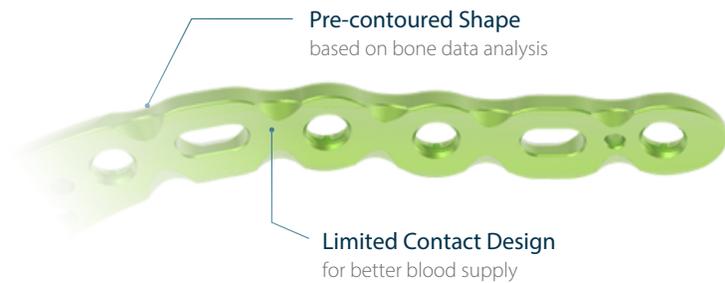
Material

Titanium 6Al 4V Alloy, ASTM F-136

Features

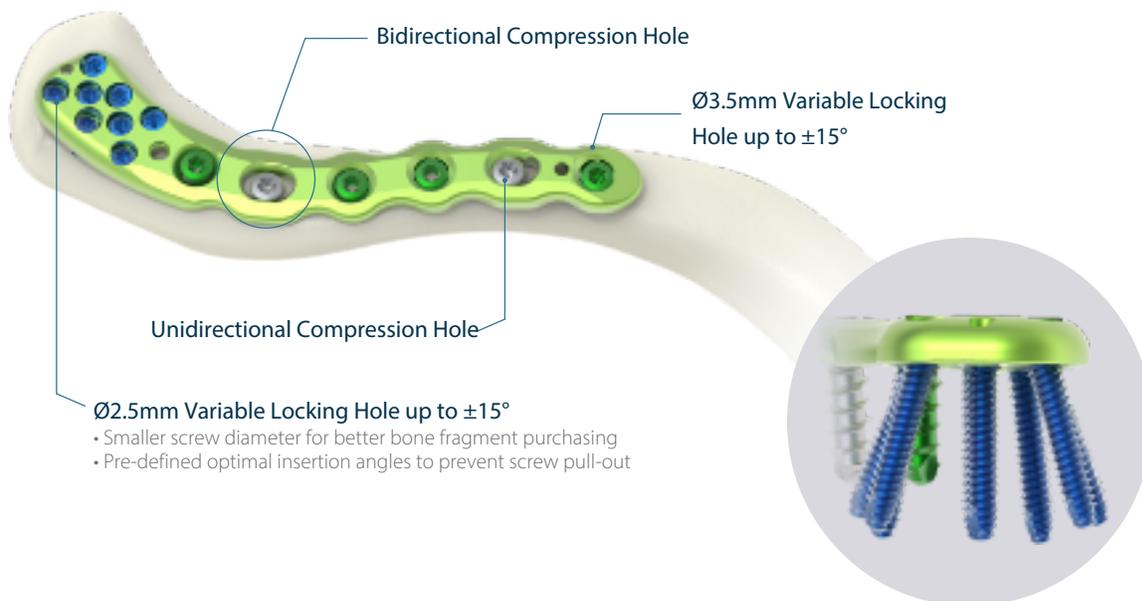
General Features

- Anatomically Pre-contoured
- Variable Locking up to $\pm 15^\circ$
- Left & Right Plate Variations for anatomical fitting
- Plate Thickness 3.5 mm
- $\varnothing 2.5$ mm & $\varnothing 3.5$ mm Locking Screws
- Lateral, Midshaft & Hook Plates available



Lateral Plate

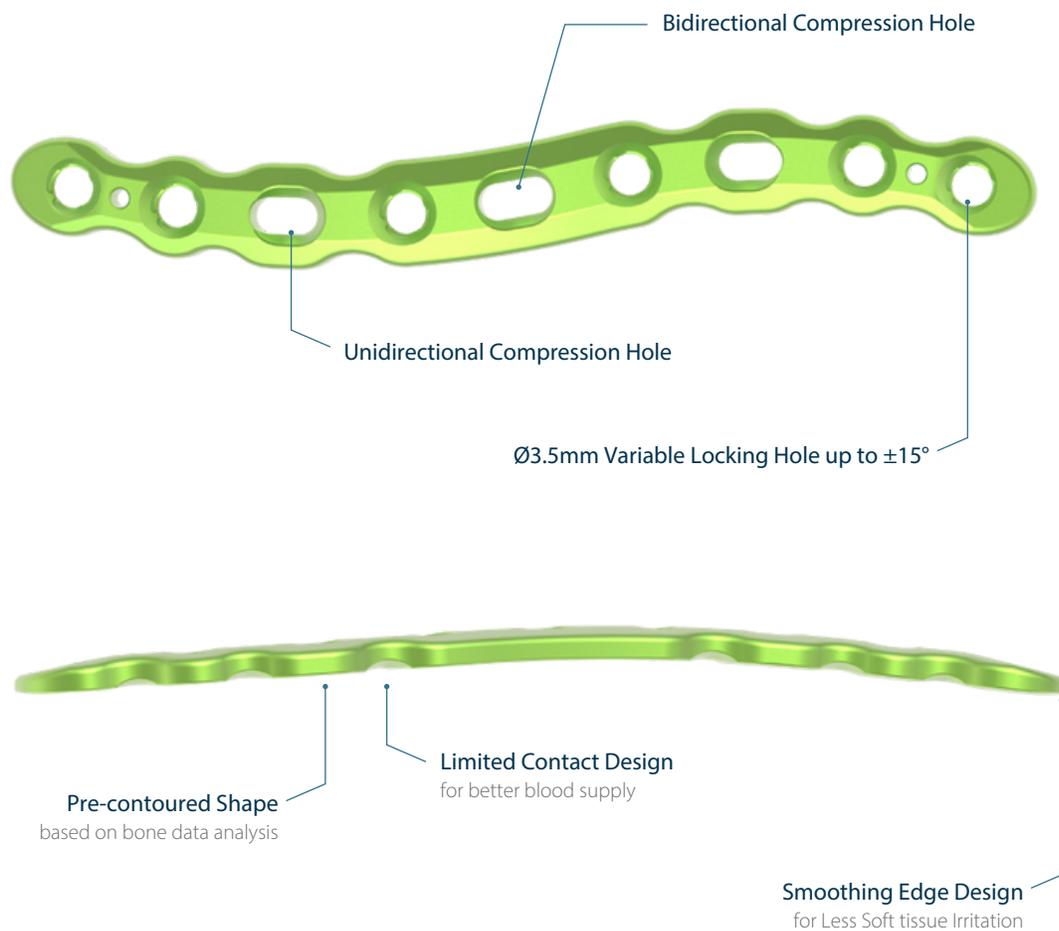
- Fracture of the lateral clavicle



Features - continued

Midshaft Plate

- Fractures of the clavicle shaft
- Fracture of the clavicular midshaft



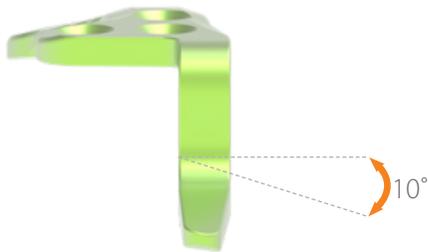
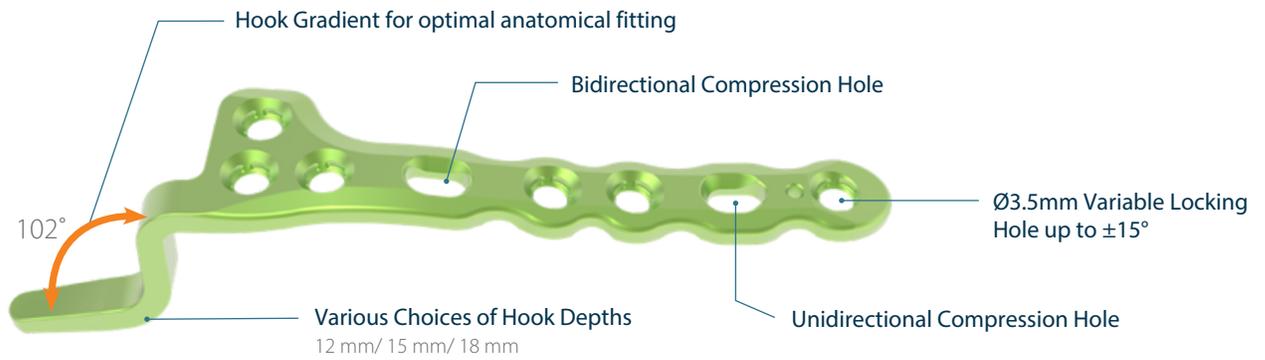
Two Variations of Curvatures for Better Fitting

- Increased Curvature
- Decreased Curvature

Features - continued

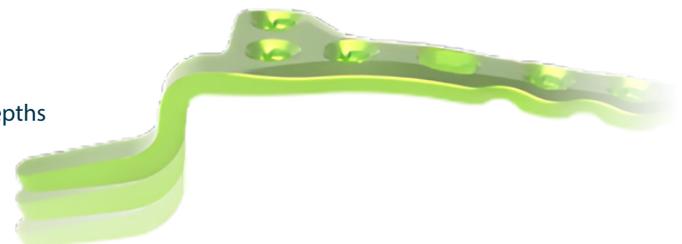
Hook Plate

- Acromioclavicular joint dislocation
- Fractures of the lateral clavicle



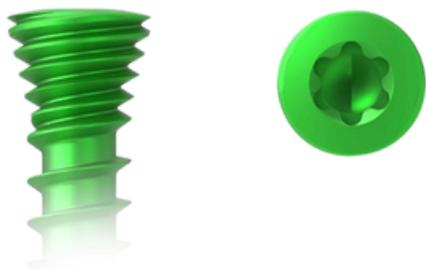
Hook Depths

- 12 mm
- 15 mm
- 18 mm



Features - continued

STARIX Screw with T10



- Prevents Cam-out
- Allows Higher Torque Application
- Self-Retaining function
- Locking & Non-Locking Variations available

Variable Locking Interface with Locking Screw



- Poly-axial Screw Insertion
- Angle range: $\pm 15^\circ$
- Plate-Screw Locking Interface

Screw Options

with STARIX Pick-up

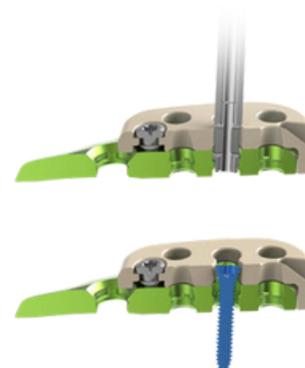


Locking
Ø 2.5 mm (T8)

Locking
Ø 3.5 mm (T10)

Non-Locking
Ø 3.5 mm (T10)

Drill Guide Block for Optimal Screw Insertion



Drill guide block ensures optimal screw insertion angles

1. Approach

Surgical Approach

Make a 3 – 5 cm horizontal incision over the superior clavicle. Subcutaneous dissection allows for the identification of the supraclavicular nerve branches.

Fracture Reduction

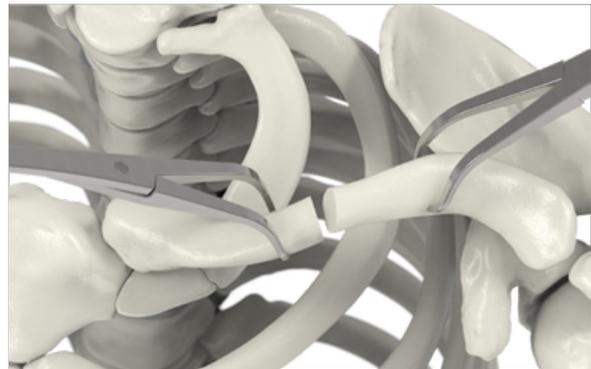
Reduce the fracture and use fluoroscopy to confirm the reduction. The use of reduction forceps (SO-111-154) can be very helpful in maintaining the reduction.

Plate Selection

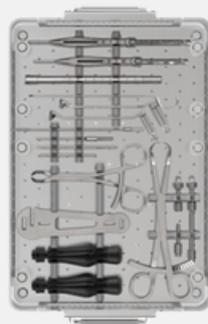
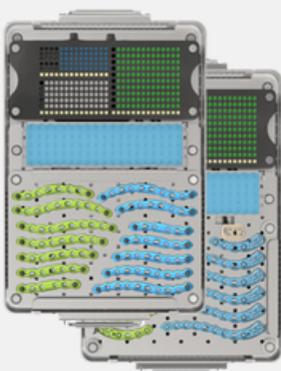
Select the appropriate plate to match the patient anatomy. The plates are precontoured to reduce the need of contouring. If contouring the plate is necessary, use the appropriate plate benders (SO-111-180).

Plate Placement

Place the plate onto the reduced clavicle and temporarily attach it to the bone using the guide pin (SO-111-068-3).



Required Set

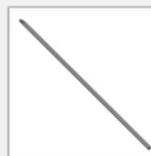


SUMMA Clavicle System

Required Instruments



Reduction Forceps
SO-111-154



Guide Pin
SO-111-068-3



Plate Bender
SO-111-180

2. Non-Locking Screw Insertion

1 Place the drill guide (SO-111-089) into the appropriate plate hole and prepare a hole using the drill bit (SO-112-35-703). If drilling bicortically, place a retractor (SO-111-197) under the clavicle to protect the neurovascular structures.



2 Measure for the screw length using the depth gauge (SO-111-086).



3 Select the appropriate screw length and insert using the STARIX T10 screwdriver (SO-113-HF-619).



Note: It is important to note that if an axial compression is desired, non-locking screws should be used in the compression holes before any circular holes on the same side of the fracture are filled.

Required Instruments



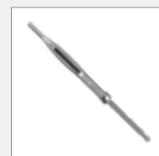
Drill Guide
SO-111-089



Drill Bits
SO-112-35-703



Clavicle Retractor
SO-111-197



Depth Gauge
SO-111-086



Bone Clamp
SO-111-134



Screwdriver Shaft
SO-113-HF-619



Screwdriver Handle
SO-111-092

Drilling Option for non-locking screw hole

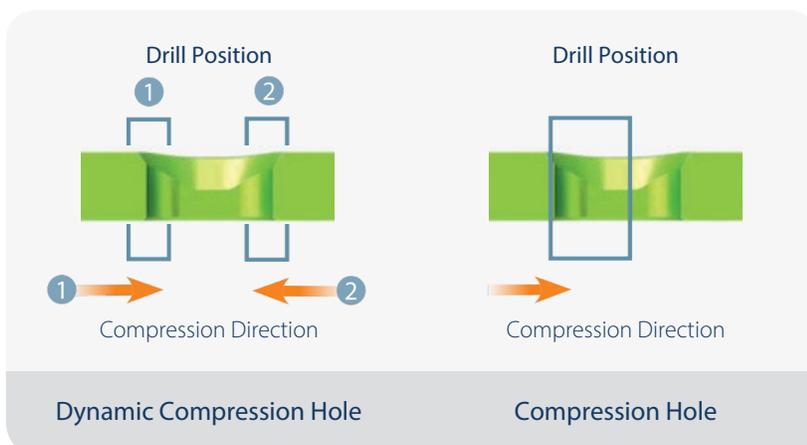
Use the drill sleeve or drill guide for an eccentric (compression) or neutral (buttress) insertion of the appropriate screw.

Neutral insertion

If the screw has to be inserted in a neutral position, locate the drill sleeve on the center of the oval hole.

Dynamic compression, eccentric insertion of a non-locking screw

To drill a hole for a dynamic compression, place the drill guide eccentrically at the edge of the dynamic compression portion of plate hole, without applying pressure.



3. Locking Screw Insertion

- 1 Place the drill guide (SO-111-089) into the appropriate plate hole and prepare a hole using the drill bit (SO-112-35-703). Read the corresponding screw length using the depth gauge (SO-111-086).

- 2 Select appropriate screw length and insert it using the STARIX T10 screwdriver (SO-113-HF-619).

- 3 Insert the remaining screws as needed to complete the repair.



Required Instruments



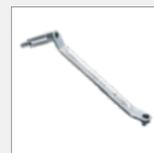
Drill Sleeve
SO -111-173



Drill Sleeve
SO -111-171



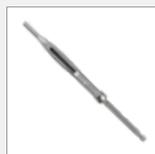
Drill Sleeve Handle
SO -111-157



Drill Guide
SO-111-089



Drill Bits
SO -112-35-703



Depth Gauge
SO -111-086



Screwdriver Shaft
SO -113-HF-619



Screwdriver Handle
SO-111-092



Bone Clamp
SO -111-134

Drilling Option for Locking Screws

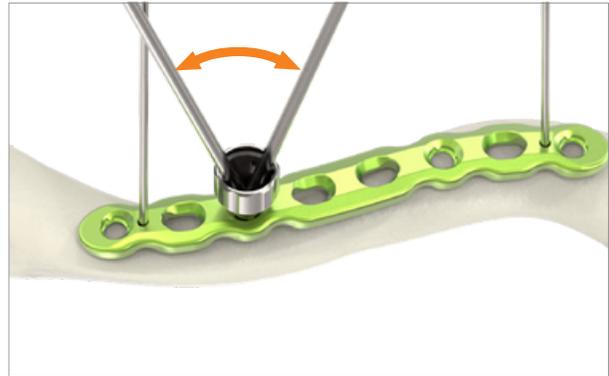
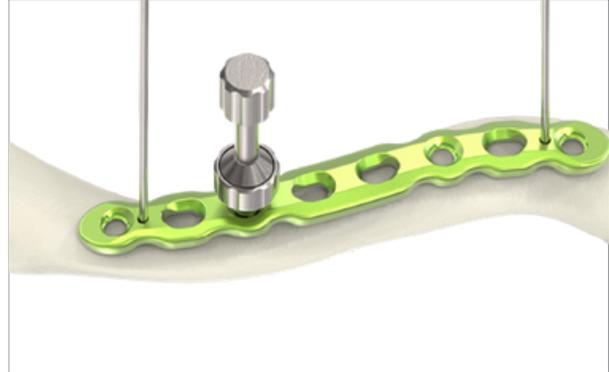
Use the drill sleeve or the drill guide for normal or variable angled insertion of the appropriate screw.

Normal insertion

Locate the drill sleeve for uni-direction (SO-111-173) on the center of locking hole.

Variable angled insertion

To drill a hole for an angled screw insertion, place the variable angle drill sleeve (SO-111-171) on the center of the locking hole. Insert the drill bit and adjust the drilling angle to the user preferred screw insertion angle. The variable angle drill sleeve enables the screw to be inserted at a user preferred angle within $\pm 15^\circ$ range.



Note: If necessary, assemble the drill sleeve handle (SO-111-157) with a variable drill sleeve for better visibility during the operation.



Required Instruments



Drill Sleeve
SO-111-173



Drill Sleeve
SO-111-171



Drill Sleeve Handle
SO-111-157

3. Locking Screw Insertion for Ø 2.5 mm Screws

1 Place the drill guide block (SO-111-196-X) onto the distal end of the plate so that the screw threads into the threaded plate hole and the pin seats into the Guide Pin hole.



2 Insert the drill sleeve (SO-111-101) into the desired hole. Leave the sleeve in place until after the screw is inserted.



3 Drill through the sleeve to the desired depth using the drill bit (SO-112-25-701). Remove drill sleeve and read the screw length using the depth gauge (SO-111-075).



4 Insert the 2.5 mm locking screw through the guide sleeve using the T8 STARIX driver (SO-113-HF-613).



Required Instruments



Drill Sleeve
SO-111-173



Drill Sleeve
SO-111-171



Drill Sleeve Handle
SO-111-157



Drill Bits
SO-112-35-703



Depth Gauge
SO-111-075



Drill Guide
SO-111-089



Screwdriver Shaft
SO-113-HF-619



Drill Guide Block Left
SO-111-196-L
Drill Guide Block Right
SO-111-196-R

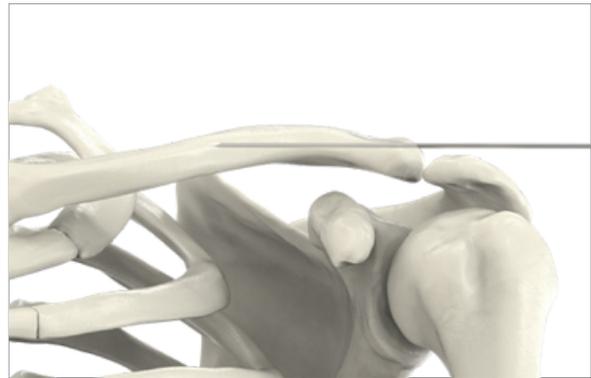
Plate fixation (Lateral hook plate)

Exposures

The clavicle and AC joint are exposed along the anterosuperior subcutaneous border. A 3 cm to 5 cm incision is centered over the fracture site ending just lateral to the AC joint.

Fracture/Dislocation Reduction

In the case of a fracture, the fracture is exposed and debrided of the interposed hematoma and soft tissues. The fracture is reduced and the AC joint is identified. In the case of a dislocation, re-align the AC Joint by manipulation, and temporarily fixate the joint with a guide pin (SO-111-068-3) if preferred.



Required Instruments



Drill Sleeve
SO-111-173



Drill Sleeve
SO-111-171



Drill Sleeve Handle
SO-111-157



Drill Bits
SO-112-35-703



Depth Gauge
SO-111-086



Drill Guide
SO-111-089



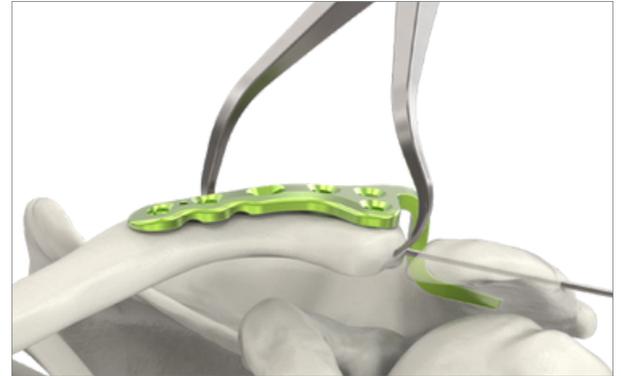
Clavicle Retractor
SO-111-197



Guide Pin
SO-111-068-3

Plate Selection and Positioning

Choose the appropriate length of the implant with a 12 mm hook, and pass the hook under the acromion. Place the shaft of the implant onto the superior aspect of the clavicle. If it is difficult to lower the shaft onto the reduced clavicle, then use an implant with 15 mm or 18 mm hook size. Once the plate shaft is placed on the clavicle, the end of the hook should be in contact with the underside of the acromion.



Confirm that the correct anatomic alignment of the clavicle and acromion has been restored without impinging on the rotator cuff. Use the C-arm to verify that full shoulder motion, particularly in abduction and external rotation, can be achieved without impinging on the humeral head by the hook. The plate length must ensure appropriate fixation on the medial side of the fracture.

After confirming the correct plate position under the image intensifier, the plate can be fixed temporarily using a guide pin. Drill the wire through the drill sleeve in the distal hole to fix the distal part of the plate.

Plate Fixation

The most lateral oblong hole may be used as an adaptation hole to determine the proper placement of the plate and to give primary fixation.

After the final position of the hook is determined the remaining holes can be filled as necessary. It is recommended to place a minimum of 3 screws bi-cortically which are medial to the fracture or the AC separation.

Required Instruments



Drill Sleeve
SO -111-173



Drill Sleeve
SO -111-171



Drill Sleeve Handle
SO -111-157



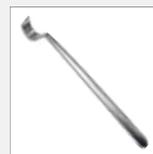
Drill Bits
SO-112-35-703



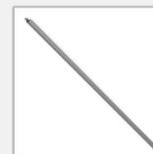
Depth Gauge
SO -111-086



Drill Guide
SO-111-089



Clavicle Retractor
SO -111-197



Guide Pin
SO-111-068-3



Reduction Forceps
SO-111-154

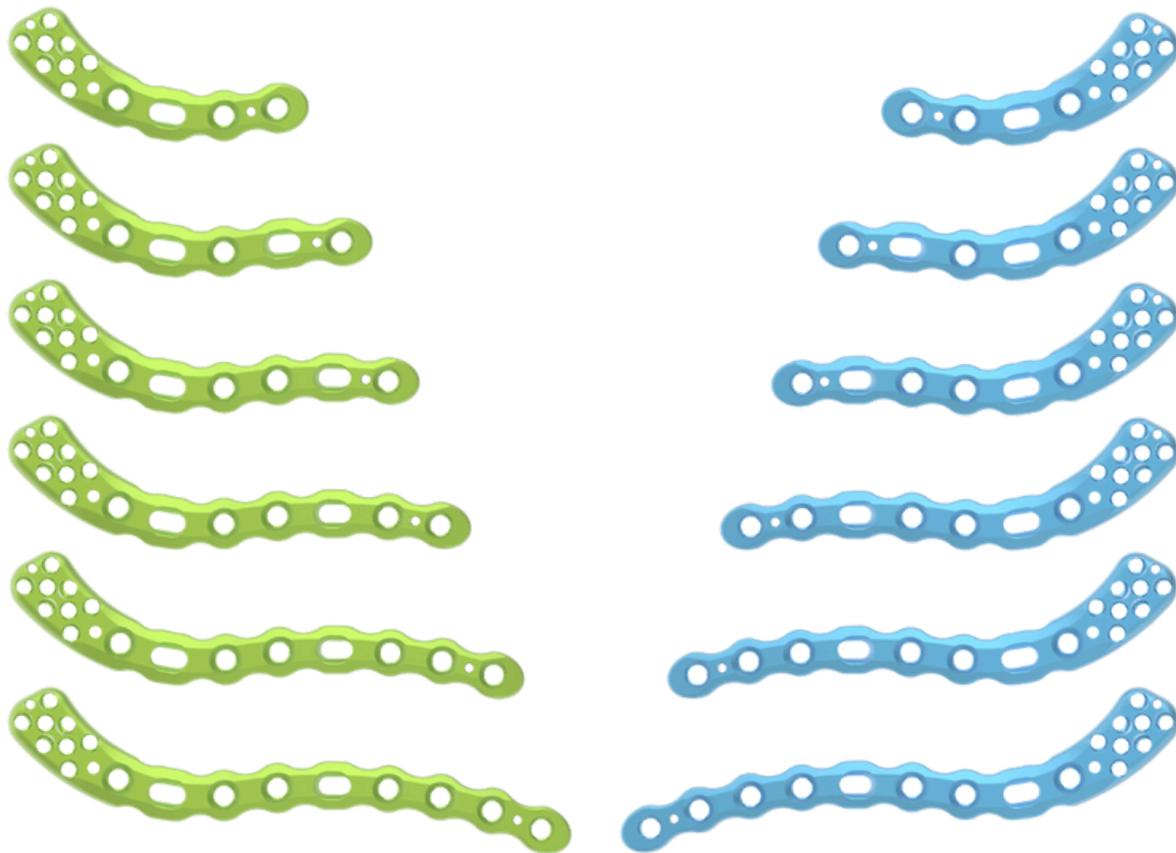


| 3. Plate and Screw Removal

If the plate and screws need to be removed, make an incision over the clavicle. Use the appropriate screwdriver to remove each screw.

Implants

Clavicle Superior Lateral Plates

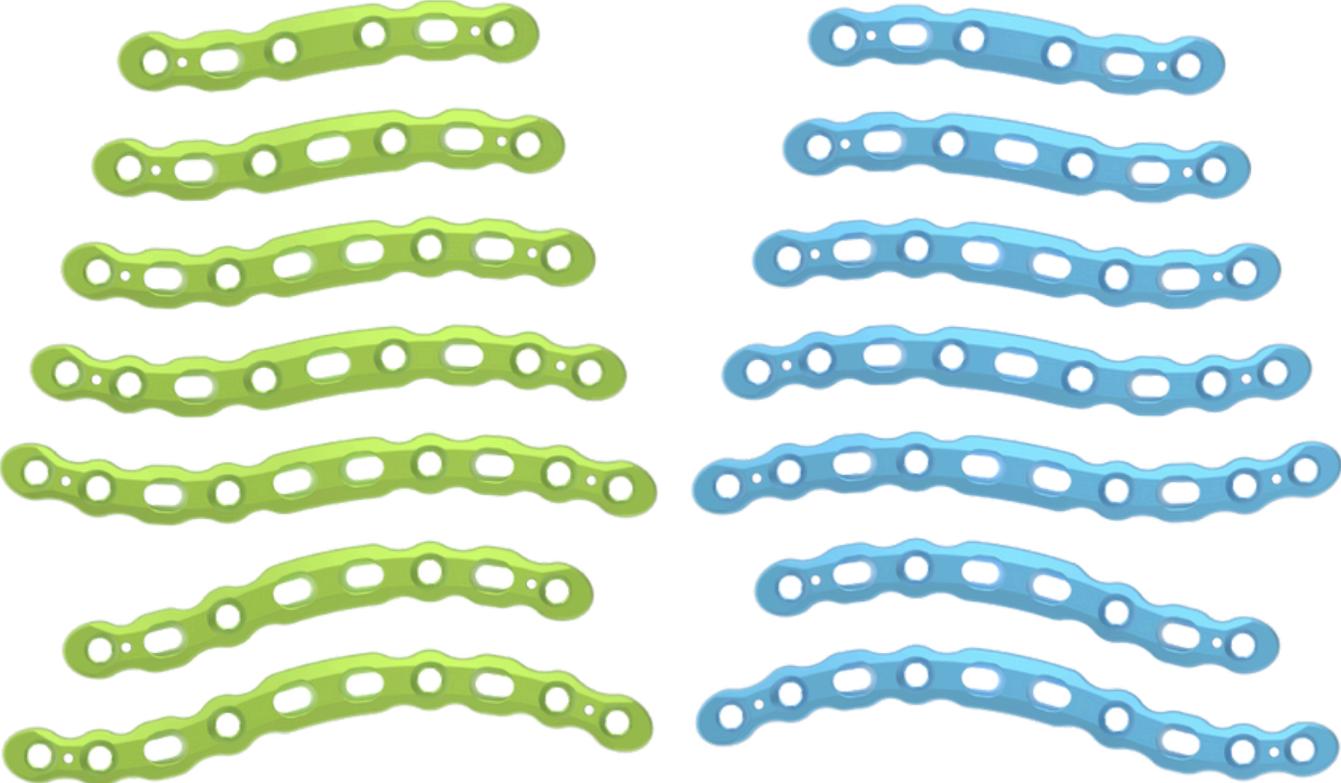


Left Plate	
Part Name	Holes
SO-35-SLCL-004-L	12
SO-35-SLCL-005-L	13
SO-35-SLCL-006-L	14
SO-35-SLCL-007-L	15
SO-35-SLCL-008-L	16
SO-35-SLCL-009-L	17

Right Plate	
Part Name	Holes
SO-35-SLCL-004-R	12
SO-35-SLCL-005-R	13
SO-35-SLCL-006-R	14
SO-35-SLCL-007-R	15
SO-35-SLCL-008-R	16
SO-35-SLCL-009-R	17

Implants

Clavicle Superior Midshaft Plates



Left Plate	
Part Name	Holes
SO-35-SMCL-006-L	6
SO-35-SMCL-007-L	7
SO-35-SMCL-008-L	8
SO-35-SMCL-009-L	9
SO-35-SMCL-010-L	10
SO-35-SMCL-008-LI	8
SO-35-SMCL-010-LI	10

Right Plate	
Part Name	Holes
SO-35-SMCL-006-R	6
SO-35-SMCL-007-R	7
SO-35-SMCL-008-R	8
SO-35-SMCL-009-R	9
SO-35-SMCL-010-R	10
SO-35-SMCL-008-RI	8
SO-35-SMCL-010-RI	10

Implants

Clavicle Lateral Hook Plates



SO -35-HPCL-005-LX

5 Holes



SO-35-HPCL-XXX-L2

Hook Depth=12mm



SO -35-HPCL-006-LX

6 Holes



SO-35-HPCL-XXX-L5

Hook Depth=15mm



SO -35-HPCL-007-LX

7 Holes



SO-35-HPCL-XXX-L8

Hook Depth=18mm



SO -35-HPCL-008-LX

8 Holes

Left Plate

Part Name	Holes	Hook Depth	Part Name	Holes	Hook Depth	Part Name	Holes	Hook Depth
SO-35-HPCL-005-L2	5	12mm	SO-35-HPCL-005-L5	5	15mm	SO-35-HPCL-005-L8	5	18mm
SO-35-HPCL-006-L2	6	12mm	SO-35-HPCL-006-L5	6	15mm	SO-35-HPCL-006-L8	6	18mm
SO-35-HPCL-007-L2	7	12mm	SO-35-HPCL-007-L5	7	15mm	SO-35-HPCL-007-L8	7	18mm
SO-35-HPCL-008-L2	8	12mm	SO-35-HPCL-008-L5	8	15mm	SO-35-HPCL-008-L8	8	18mm



SO -35-HPCL-005-LX
5 Holes



SO -35-HPCL-006-LX
6 Holes



SO -35-HPCL-007-LX
7 Holes



SO -35-HPCL-008-LX
8 Holes



SO-35-HPCL-XXX-L2
Hook Depth=12mm



SO-35-HPCL-XXX-L5
Hook Depth=15mm



SO-35-HPCL-XXX-L8
Hook Depth=18mm

Right Plate								
Part Name	Holes	Hook Depth	Part Name SO-35-	Holes	Hook Depth	Part Name	Holes	Hook Depth
SO-35-HPCL-005-R2	5	12mm	HPCL-005-R5 SO-	5	15mm	SO-35-HPCL-005-R8	5	18mm
SO-35-HPCL-006-R2	6	12mm	35-HPCL-006-R5	6	15mm	SO-35-HPCL-006-R8	6	18mm
SO-35-HPCL-007-R2	7	12mm	SO-35-HPCL-007-R5	7	15mm	SO-35-HPCL-007-R8	7	18mm
SO-35-HPCL-008-R2	8	12mm	SO-35-HPCL-008-R5	8	15mm	SO-35-HPCL-008-R8	8	18mm

Implants Screws



Ø2.5 Locking Screw

Ø2.5 Locking Screw	
Part Name	Length (mm)
SO-25L-SO-008-TA	8
SO-25L-SO-010-TA	10
SO-25L-SO-012-TA	12
SO-25L-SO-014-TA	14
SO-25L-SO-016-TA	16
SO-25L-SO-018-TA	18
SO-25L-SO-020-TA	20
SO-25L-SO-022-TA	22
SO-25L-SO-024-TA	24
SO-25L-SO-026-TA	26



Ø3.5 Locking Screw

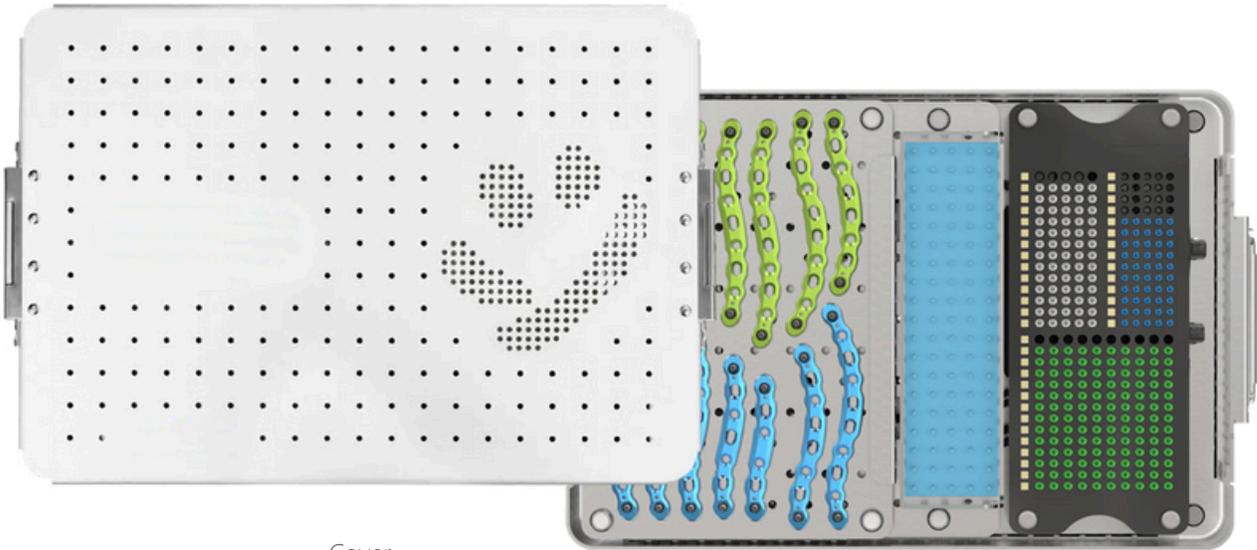
Ø3.5 Locking Screw	
Part Name	Length (mm)
SO-35L-SO-L10-TA	10
SO-35L-SO-L12-TA	12
SO-35L-SO-L14-TA	14
SO-35L-SO-L16-TA	16
SO-35L-SO-L18-TA	18
SO-35L-SO-L20-TA	20
SO-35L-SO-L22-TA	22
SO-35L-SO-L24-TA	24
SO-35L-SO-L26-TA	26
SO-35L-SO-L28-TA	28
SO-35L-SO-L30-TA	30
SO-35L-SO-L32-TA	32
SO-35L-SO-L34-TA	34



Ø3.5 Cortical Screw

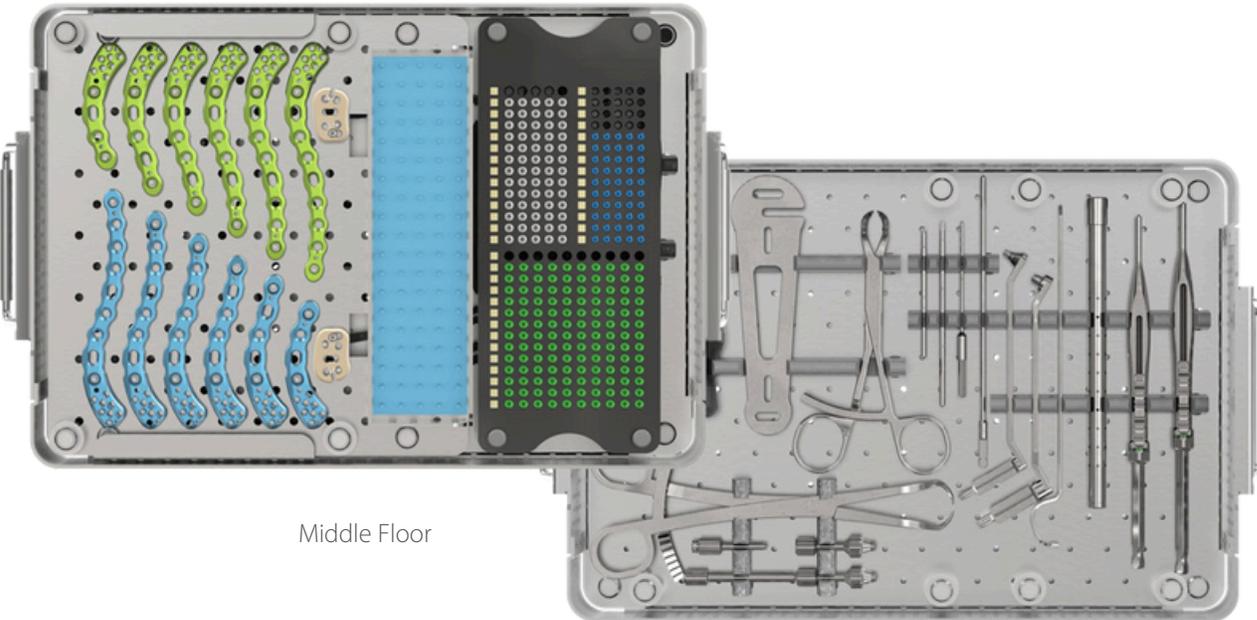
Ø3.5 Cortical Screw	
Part Name	Length (mm)
SO -35-SO -L10-T	10
SO -35-SO -L12-T	12
SO -35-SO -L14-T	14
SO -35-SO -L16-T	16
SO -35-SO -L18-T	18
SO -35-SO -L20-T	20
SO -35-SO -L22-T	22
SO -35-SO -L24-T	24
SO -35-SO -L26-T	26
SO -35-SO -L28-T	28
SO -35-SO -L30-T	30
SO -35-SO -L32-T	32
SO -35-SO -L34-T	34

Set Configuration



Cover

Top Floor



Middle Floor

Bottom Floor

Instruments

SUMMA Clavicle Kit [SO-112-108]					
NO	Category	Item No.	Description	Q'ty [EA]	Remark
1	Instruments	SO-111-092	Hand Body	2	
2		SO-113-HF-613	Driver (T8)	2	
3		SO-111-103	Drill Sleeve (V/A, Ø2.5)	1	
4		SO-111-101	Drill Sleeve (F/A, Ø2.5)	1	
5		SO-112-25-701	Drill Bits (Ø2.5)	2	
6		SO-111-075	Depth gauge (Ø2.5)	1	
7		SO-111-080	Drill Guide (Ø2.5)	1	
8		SO-111-068-3	Guide Pin Ø1.6	10	
9		SO-111-096	Guide Pin Dispenser	1	
10		SO-113-HF-619	Driver (T10)	2	
11		SO-111-171	Drill Sleeve (V/A, Ø3.5)	1	
12		SO-111-173	Drill Sleeve (F/A, Ø3.5)	1	

Instruments

SUMMA Clavicle Kit [SO-112-108]					
NO	Category	Item No.	Description	Q'ty [EA]	Remark
13	Instruments	SO-112-35-703	Drill Bits (Ø3.5)	2	
14		SO-111-086	Depth Gauge (Ø3.5)	1	
15		SO-111-157	Sleeve Handle	2	
16		SO-111-089	Drill Guide (Ø3.5)	1	
17		SO-111-180	Plate Bender	2	
18		SO-111-154	Reduction Forceps (Large)	2	
19		SO-111-196-L	Drill Guide Block Left	1	
20		SO-111-196-R	Drill Guide Block Right	1	
21		SO-111-197	Clavicle Retractor	1	
22		SO-111-134	Bone Clamp	2	
23		SO-112-108	SUMMA Clavicle Kit	1	

Part List

SUMMA Clavicle Kit [SO-112-108]					
NO	Category	Item No.	Description	Q'ty [EA]	Remark
1	3.5 Locking Screw	SO-35L-SO-L10-TA	3.5mm Locking Screw, 10mm	10	Green
2		SO-35L-SO-L12-TA	3.5mm Locking Screw, 12mm	10	Green
3		SO-35L-SO-L14-TA	3.5mm Locking Screw, 14mm	10	Green
4		SO-35L-SO-L16-TA	3.5mm Locking Screw, 16mm	10	Green
5		SO-35L-SO-L18-TA	3.5mm Locking Screw, 18mm	10	Green
6		SO-35L-SO-L20-TA	3.5mm Locking Screw, 20mm	10	Green
7		SO-35L-SO-L22-TA	3.5mm Locking Screw, 22mm	10	Green
8		SO-35L-SO-L24-TA	3.5mm Locking Screw, 24mm	10	Green
9		SO-35L-SO-L26-TA	3.5mm Locking Screw, 26mm	10	Green
10		SO-35L-SO-L28-TA	3.5mm Locking Screw, 28mm	10	Green
11		SO-35L-SO-L30-TA	3.5mm Locking Screw, 30mm	10	Green
12		SO-35L-SO-L32-TA	3.5mm Locking Screw, 32mm	10	Green
13		SO-35L-SO-L34-TA	3.5mm Locking Screw, 34mm	10	Green
14	3.5 Non-locking Screw	SO -35-SO -L10-T	3.5mm Cortical Screw, 10mm	5	Silver
15		SO -35-SO -L12-T	3.5mm Cortical Screw, 12mm	5	Silver
16		SO -35-SO -L14-T	3.5mm Cortical Screw, 14mm	5	Silver
17		SO -35-SO -L16-T	3.5mm Cortical Screw, 16mm	5	Silver
18		SO -35-SO -L18-T	3.5mm Cortical Screw, 18mm	5	Silver
19		SO -35-SO -L20-T	3.5mm Cortical Screw, 20mm	5	Silver
20		SO -35-SO -L22-T	3.5mm Cortical Screw, 22mm	5	Silver
21		SO -35-SO -L24-T	3.5mm Cortical Screw, 24mm	5	Silver
22		SO -35-SO -L26-T	3.5mm Cortical Screw, 26mm	5	Silver
23		SO -35-SO -L28-T	3.5mm Cortical Screw, 28mm	5	Silver
24		SO -35-SO -L30-T	3.5mm Cortical Screw, 30mm	5	Silver
25		SO -35-SO -L32-T	3.5mm Cortical Screw, 32mm	5	Silver
26		SO -35-SO -L34-T	3.5mm Cortical Screw, 34mm	5	Silver
27	2.5 Locking Screw	SO-25L-SO-008-TA	2.5mm Locking Screw, 8mm	5	Blue
28		SO-25L-SO-010-TA	2.5mm Locking Screw, 10mm	5	Blue
29		SO-25L-SO-012-TA	2.5mm Locking Screw, 12mm	5	Blue
30		SO-25L-SO-014-TA	2.5mm Locking Screw, 14mm	5	Blue
31		SO-25L-SO-016-TA	2.5mm Locking Screw, 16mm	5	Blue

SUMMA Clavicle Kit [SO-112-108]					
NO	Category	Item No.	Description	Q'ty [EA]	Remark
32	2.5 Locking Screw	SO-25L-SO-018-TA	2.5mm Locking Screw, 18mm	5	Blue
33		SO-25L-SO-020-TA	2.5mm Locking Screw, 20mm	5	Blue
34		SO-25L-SO-022-TA	2.5mm Locking Screw, 22mm	5	Blue
35		SO-25L-SO-024-TA	2.5mm Locking Screw, 24mm	5	Blue
36		SO-25L-SO-026-TA	2.5mm Locking Screw, 26mm	5	Blue
37	Plate	SO-35-SMCL-006-L	Clavicle Superior Midshaft Plate Decreased, Left, 6 holes	2	Light Green
38		SO-35-SMCL-007-L	Clavicle Superior Midshaft Plate Decreased, Left, 7 holes	2	Light Green
39		SO-35-SMCL-008-L	Clavicle Superior Midshaft Plate Decreased, Left, 8 holes	2	Light Green
40		SO-35-SMCL-009-L	Clavicle Superior Midshaft Plate Decreased, Left, 9 holes	2	Light Green
41		SO-35-SMCL-010-L	Clavicle Superior Midshaft Plate Decreased, Left, 10 holes	2	Light Green
42		SO-35-SMCL-008-LI	Clavicle Superior Midshaft Plate Increased, Left, 8 holes	2	Light Green
43		SO-35-SMCL-010-LI	Clavicle Superior Midshaft Plate Increased, Left, 10 holes	2	Light Green
44		SO-35-SLCL-004-L	Clavicle Superior Lateral Plate, Left, 12 holes	2	Light Green
45		SO-35-SLCL-005-L	Clavicle Superior Lateral Plate, Left, 13 holes	2	Light Green
46		SO-35-SLCL-006-L	Clavicle Superior Lateral Plate, Left, 14 holes	2	Light Green
47		SO-35-SLCL-007-L	Clavicle Superior Lateral Plate, Left, 15 holes	2	Light Green
48		SO-35-SLCL-008-L	Clavicle Superior Lateral Plate, Left, 16 holes	2	Light Green
49		SO-35-SLCL-009-L	Clavicle Superior Lateral Plate, Left, 17 holes	2	Light Green
50		SO-35-SMCL-006-R	Clavicle Superior Midshaft Plate Decreased, Right, 6 holes	2	Light Blue
51		SO-35-SMCL-007-R	Clavicle Superior Midshaft Plate Decreased, Right, 7 holes	2	Light Blue
52		SO-35-SMCL-008-R	Clavicle Superior Midshaft Plate Decreased, Right, 8 holes	2	Light Blue
53		SO-35-SMCL-009-R	Clavicle Superior Midshaft Plate Decreased, Right, 9 holes	2	Light Blue
54		SO-35-SMCL-010-R	Clavicle Superior Midshaft Plate Decreased, Right, 10 holes	2	Light Blue
55		SO-35-SMCL-008-RI	Clavicle Superior Midshaft Plate Increased, Right, 8 holes	2	Light Blue
56		SO-35-SMCL-010-RI	Clavicle Superior Midshaft Plate Increased, Right, 10 holes	2	Light Blue
57		SO-35-SLCL-004-R	Clavicle Superior Lateral Plate, Right, 12 holes	2	Light Blue
58		SO-35-SLCL-005-R	Clavicle Superior Lateral Plate, Right, 13 holes	2	Light Blue
59		SO-35-SLCL-006-R	Clavicle Superior Lateral Plate, Right, 14 holes	2	Light Blue
60		SO-35-SLCL-007-R	Clavicle Superior Lateral Plate, Right, 15 holes	2	Light Blue
61		SO-35-SLCL-008-R	Clavicle Superior Lateral Plate, Right, 16 holes	2	Light Blue
62		SO-35-SLCL-009-R	Clavicle Superior Lateral Plate, Right, 17 holes	2	Light Blue



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