

LeiLOX CBLO



Combines the advantages of TPLO and TTA

CBLO (CORA based leveling osteotomy) is a modern osteotomy technique to level the tibia plateau, similar to TPLO. However, CBLO addresses further challenges such as secondary (late) meniscal damage, overload of the caudal cruciate ligament, reduction of proximal anatomic axis shift and the secondary translation as well as misalignment of the joint.



Multiaxial Locking & Titanium

The screws can be locked in 90° angle with a 12° deviation in any direction. This allows you to angle the screws away from vital structures. The robust stardrive screw head can be locked firmly into the plate.

All LeiLOX CBLO Implants are made of Titanium by RITA LEIBINGER for the best biocompatibility.



Anatomically Shaped Limited Contact Dynamic Compression Plates

The LeiLOX CBLO plates are contoured to match the anatomic shape of the bone. This makes it easier to place the plate in an optimal position.

The plate features limited contact dynamic compression to minimize vascular damage to the plated bone segment.



Double Compression

Two precisely designed compression holes enable a very tight compression of the osteotomy. This allows you to use a standard cortical screw as the cranio-caudal holding screw (instead of a headless compression screw).

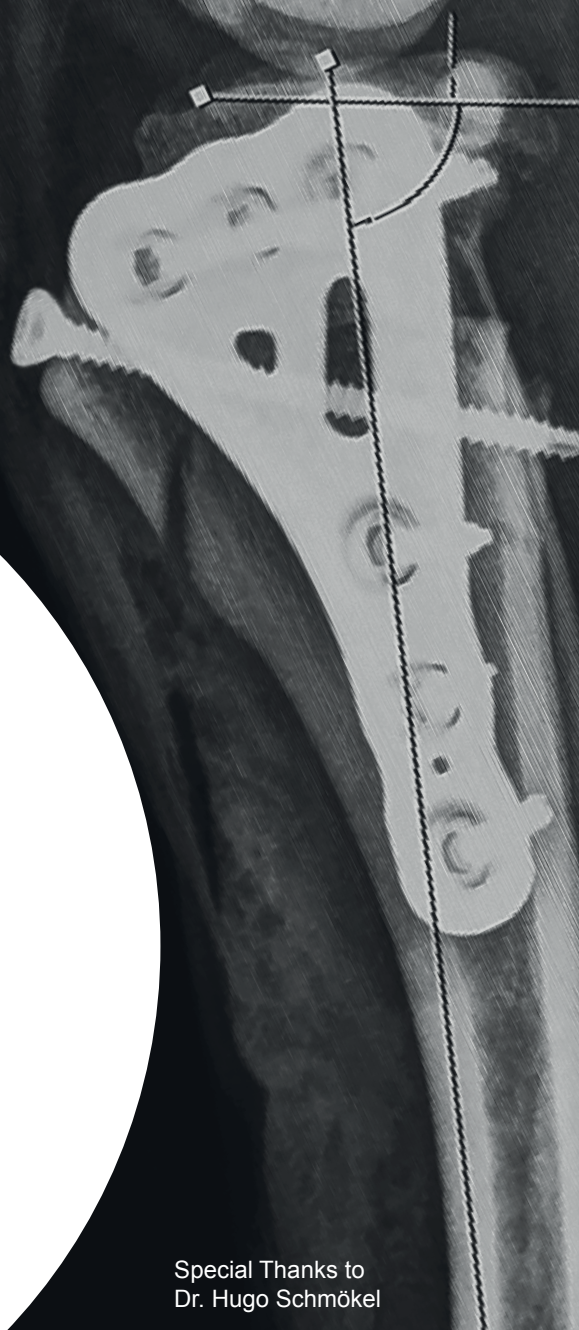


Interchangeable 2.0/2.4 & 2.7/3.5mm Screws

Because the screw heads are identical, all Stainless Steel 2.0/2.4 respectively 2.7/3.5 LeiLOX plates (TPLO and fracture systems) work with 2.0mm as well as 2.4mm screws respectively 2.7mm as well as 3.5mm screws in all plate sizes. This offers flexibility and saves on inventory cost.

LeiLOX

CBLO Locking System



Special Thanks to
Dr. Hugo Schmökel

LeiLOX CBLO

R RITA
LEIBINGER
MEDICAL

CBLO Surgery Protocol

Pre-operative Planning

Proper positioning is essential for accurate planning. Orthogonal radiographs are taken with the stifle positioned at 90 degrees and the tarsus at 90 degrees for the lateral projection. The AP projection must have the stifle and tarsus included for the attending surgeon to assess limb alignment. The patient is best sedated for radiographs to assure optimal positioning.



The distal mid-diaphyseal line (FA) as well as the Tibia Plateau (TP) are determined. The proximal axis (PA) is determined from the intersection point on the tibia plateau with the angle α (normally $80^\circ = 90^\circ - 10^\circ$ (post-operative required TP angle)). The intersection point of FA and PA is the CORA. The angle β is then the correction. The required saw blade is determined by a circle CORA as the centre point. Draw and measure a line (D1) from the insertion of the patella tendon to the point at which the saw blade crosses the cranial cortex. Draw and measure a second line (D2) from the joint line at a point where the

MCL crosses the joint to the location where the saw blade crosses the caudal cortex. With these D1 and D2 measurements the osteotomies can be positioned correctly during the surgery.

Determine the correction

Based on the measured correction angle and the selected saw blade select the appropriate correction in the Leibinger LeiLOX CBLO Rotation Chart in the field "Rotation". (see table at the end of this text)

Placement of the patient

The dog is placed in a dorsal recumbency with the affected limb suspended from a stand. Make sure that the dog's paws are not fixed too tightly, since the affected limb will be put against the table later in the surgery. CBLO is performed through a medial skin incision. The internal structures of the joint should be examined, this is accomplished arthroscopically or with a medial open mini arthrotomy. Most importantly, the caudal horn of the medial meniscus must be examined closely and torn meniscus parts excised if present. Next, the insertion of the sartorius muscle is reflected from the medial tibia to expose the MCL. Limited reflection of the popliteal muscle and protection of the popliteal artery with gauze packing or Hohmann retractor is optional. D1 and D2 measurements are marked distal to the insertion of the patella tendon (D1) and distal to the joint line at the MCL (D2). The surgeon may choose to use a jig or can perform the osteotomy without a jig if he/she has experience performing a CBLO without a jig. The use of a jig is advised when performing a leveling osteotomy.



Jigs-Placement

The proximal pin of the jig is inserted about 3-4mm below the joint surface caudal to the MCL. The pin must be absolutely parallel to the joint surface. The Jig is slid over the proximal pin. The Jig can be used as a guide for placing the distal pin. Both pins must

be parallel to each other. The Jig must be in a right angle to the pins. After the positions are correct, the screws as well as the grub screws can be tightened.



Osteotomy

The appropriate saw blade determined in the pre-operative planning is positioned at D1/D2 and a circular osteotomy begins. The osteotomy is stopped when 1/3 to 1/2 complete. Move the saw circularly so that it won't stick. The pre-operatively determined correction measurements (in mm) should be marked for example by a small chisel and mallet.



At the insertion point of the patella a 2.0mm pin can be preplaced without crossing the osteotomy.



The osteotomy is completed, and rotation achieved.

The rotation is made with the pin so that the marks are aligned. The osteotomy is then stabilized with the pin. Carefully avoid a rotation or valgus mistake. The preplaced pin is directed across the osteotomy under the

medial cortex to exit the caudal cortex of the tibia distal to the osteotomy.

Stabilization of the osteotomy with plate compression

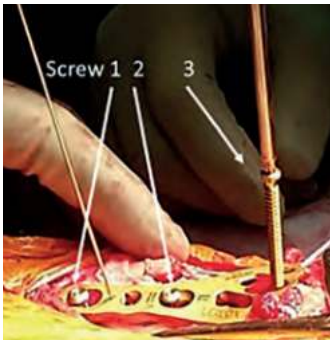
The CBLO is a leveling procedure but also advances the tibial crest cranially. Advancing the tibial crest cranially increases the structural moment arm of the tibia and therefore quadriceps force on the osteotomy. To increase the stability, the osteotomy



should be compressed. The osteotomy should also be compressed to induce faster healing. If the distal part of the plate lies completely on the tibial surface without pressing the proximal tibia laterally, the osteotomy can be compressed using the plate.

The LeiLOX CBLO plate can be placed on the desired position and pre-fixed by a 1mm positioning Pin in the plate shaft

Sequence of the screws with platecompression



Compression

Locking

Compression



In large dogs it is advised to place 2 cranial screw to counteract the quadriceps force. In giant breed dogs the placement of a second plate should be considered.



- The first screws to be placed are 2 cortical screws in the 2 compression holes in the plate (marked as 1 and 2 in the picture). Drill the holes with the matching compression drill guide facing distal. Place the screw but do not tighten yet.
- Place the proximal locking screws in the plate head (screws 3-5). Drill the hole with the matching locking drill guide and insert the screw one by one. Fully tighten the screws.

Note: the locking mechanism of the LeiLOX CBLO plate is designed multi-axial. In case there is a risk of the screws ending in the joint when drilling in a 90-degree angle, just change the angle of the drill guide facing distal. The stabilizing pin as well as the positioning pin are removed

- Tighten the compression screws 1 and 2
- Finalize the plate fixation with the locking screw 6
- To counteract the pull of the quadriceps muscle a screw should be placed in the same location as the pin through the crest in a caudo-distal direction.

Image: Big dogs, stabilized with a 3.5mm broad plate and two cranial screw

Original-Author (English version):
Dr. Hugo Schmökel
Dr.med.vet. PhD, ECVS



LeiLOX CBLO Rotation Chart

CBLO.leibinger.vet



Correction Angle		5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°
Radians		0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.24	0.25	0.26	0.27	0.28	0.29	0.30
Saw blade	9mm	0.8	0.9	1.1	1.3	1.5	1.6	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.8	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.5	4.7	4.8	5.0	5.1	5.3
	12mm	1.0	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0
	15mm	1.3	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.4	4.7	5.0	5.2	5.5	5.7	6.0	6.2	6.5	6.7	7.0	7.3	7.5	7.8	8.0	8.3	8.5	8.8
	18mm	1.6	1.9	2.2	2.5	2.8	3.1	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6	5.9	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5
	21mm	1.8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.8	5.1	5.5	5.8	6.2	6.6	6.9	7.3	7.7	8.0	8.4	8.7	9.1	9.4	9.8	10.2	10.5	10.9	11.2	11.6	11.9	12.3
	24mm	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4	5.8	6.3	6.7	7.1	7.5	7.9	8.3	8.7	9.2	9.6	10.0	10.4	10.8	11.2	11.6	12.0	12.4	12.8	13.2	13.6	14.0
	27mm	2.4	2.8	3.3	3.8	4.2	4.7	5.2	5.6	6.1	6.6	7.0	7.5	8.0	8.4	8.9	9.4	9.8	10.3	10.8	11.2	11.7	12.1	12.6	13.1	13.5	14.0	14.4	14.9	15.3	15.8
	30mm	2.6	3.1	3.7	4.2	4.7	5.2	5.8	6.3	6.8	7.3	7.8	8.4	8.9	9.4	9.9	10.4	10.9	11.4	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5
33mm	2.9	3.5	4.0	4.6	5.2	5.8	6.3	6.9	7.5	8.0	8.6	9.2	9.8	10.3	10.9	11.5	12.0	12.6	13.2	13.7	14.3	14.8	15.4	16.0	16.5	17.1	17.6	18.2	18.7	19.3	

2.0 / 2.4 CBLO Set

Contents:

- 1 CBLO Implants and Instruments Tray with Lid
- 2 of each CBLO Plate
- 3 of each Cortical Screw (8-18mm // 8-22mm, 42 total)
- 5 of each Locking Screw (6-24mm // 6-30mm, 115 total)
- 2 Drills (1.5 & 1.8mm)
- 5 K-Wires
- 2x2 Locking Drill Guides
- 2 Compression Drill Guides
- 1 TPLO Jig
- 1 Screwdriver Handle
- 1 Screwdriver Shaft T8
- 1 Depth Gauge



142-4200-00

Tray without content

142-4200-10

2.0 / 2.4 LeiLOX CBLO Locking Plate



LeiLOX CBLO Locking Plate, 2.0 mm, left, 35 mm, titanium

142-2320-10



LeiLOX CBLO Locking Plate, 2.0 mm, right, 35 mm, titanium

142-2320-00



LeiLOX CBLO Locking Platte, 2.4 mm, left, 40 mm, titanium

142-2324-10



LeiLOX CBLO Locking Plate, 2.4 mm, right, 40 mm, titanium

142-2324-00

2.0 / 2.4 Non-Locking Screws Titanium

2.0 / 2.4 Locking Screws Titanium

2.0 LeiLOX Locking Screw Titanium

for LeiLOX Locking Systems, Star Drive T8
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
06	242-220-06
08	242-220-08
10	242-220-10
12	242-220-12
14	242-220-14
16	242-220-16
18	242-220-18
20	242-220-20
22	242-220-22
24	242-220-24
26	242-220-26 <i>optional</i>
28	242-220-28 <i>optional</i>
30	242-220-30 <i>optional</i>

2.4 LeiLOX Locking Screw Titanium

for LeiLOX Locking Systems, Star Drive T8
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
06	242-224-06
08	242-224-08
10	242-224-10
12	242-224-12
14	242-224-14
16	242-224-16
18	242-224-18
20	242-224-20
22	242-224-22
24	242-224-24
26	242-224-26
28	242-224-28
30	242-224-30
32	242-224-32 <i>optional</i>
34	242-224-34 <i>optional</i>
36	242-224-36 <i>optional</i>
38	242-224-38 <i>optional</i>
40	242-224-40 <i>optional</i>

2.0 Cortical Screw (Non-Locking) Titanium

Star Drive T8
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
08	245-520-08
10	245-520-10
12	245-520-12
14	245-520-14
16	245-520-16
18	245-520-18

2.4 Cortical Screw (Non-Locking) Titanium

Star Drive T8
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
08	245-524-08
10	245-524-10
12	245-524-20
14	245-524-14
16	245-524-16
18	245-524-18
20	245-524-20
22	245-524-22



2.7/3.5 CBLO Implant Set

Contains:

- 1 CBLO Implants and Lid
- 1 Instruments Tray with Lid
- 1 Screwrack CBLO 2.7
- 1 Screwrack CBLO 3.5
- 2 of each CBLO Plate
- 3 of each 2.7mm Cortical Screw (16-34mm)
- 3 of each 3.5mm Cortical Screw (16-34mm)
- 5 of each 2.7mm Locking Screw (16-46mm)
- 5 of each 3.5mm Locking Screw (16-60mm)



142-4000-10

Tray without content

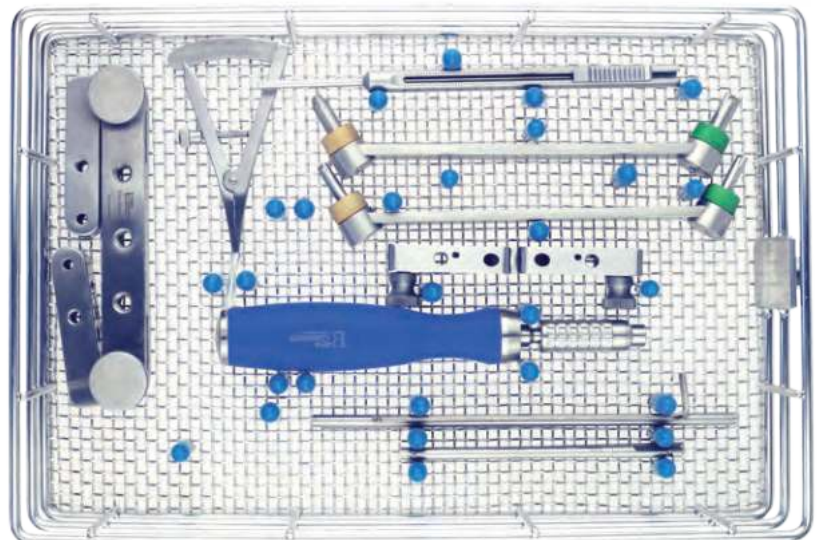
142-4000-01



TPLO/CBLO Instrument Set

Contains:

- 1 CBLO Instrument Tray
- 2 Drills (2.0 & 2.5mm)
- 3x2 K-Wires (1.0, 2.5 & 3.0mm)
- 2x2 Locking Drill Guides
- 2 TPLO Jigs
- 1 Screwdriver Handle
- 1 Screwdriver Shaft
- 1 Depth Gauge
- 1 Castroviejo Caliper
- 2 Compression Drill Guides



142-0100-01

Tray without content

142-0100-20

Sterilization Tray

for Trays, 310x190x130mm
blue (image)

150-5401-30

green

150-5402-30



CBLO Plates, Titanium



LeiLOX CBLO Plate, 2.7 mm,
left, 55 mm, titanium

142-2327-10



LeiLOX CBLO Plate, 2.7 mm,
right, 55 mm, titanium

142-2327-00



LeiLOX CBLO Plate, 3.5 mm,
left, 70 mm, titanium

142-2335-10



LeiLOX CBLO Plate, 3.5 mm,
right, 70 mm, titanium

142-2335-00



LeiLOX CBLO Plate, broad, 3.5 mm,
left, 78 mm, titanium

142-2335-60



LeiLOX CBLO Plate, broad, 3.5 mm,
right, 78 mm, titanium

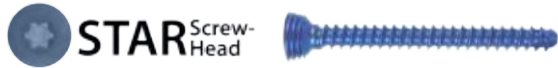
142-2335-50



2.7 / 3.5 Locking Screws Titanium

2.7 LeiLOX Locking Cortical Screw Titanium

For LeiLOX Locking Systems, Star Drive T10 self-holding (T10 Shaft from Rita Leibinger recommended) self-tapping with three flute cutting edge



Length (mm)	Product Code	
10	242-227-10	<i>optional</i>
12	242-227-12	<i>optional</i>
14	242-227-14	<i>optional</i>
16	242-227-16	
18	242-227-18	
20	242-227-20	
22	242-227-22	
24	242-227-24	
26	242-227-26	
28	242-227-28	
30	242-227-30	
32	242-227-32	
34	242-227-34	
36	242-227-36	
38	242-227-38	
40	242-227-40	
42	242-227-42	
44	242-227-44	
46	242-227-46	
48	242-227-48	<i>optional</i>
50	242-227-50	<i>optional</i>

3.5 LeiLOX Locking Cortical Screw Titanium

For LeiLOX Locking Systems, Star Drive T10 self-holding (T10 Shaft from Rita Leibinger recommended) self-tapping with three flute cutting edge



Length (mm)	Product Code	
10	242-235-10	<i>optional</i>
12	242-235-12	<i>optional</i>
14	242-235-14	<i>optional</i>
16	242-235-16	
18	242-235-18	
20	242-235-20	
22	242-235-22	
24	242-235-24	
26	242-235-26	
28	242-235-28	
30	242-235-30	
32	242-235-32	
34	242-235-34	
36	242-235-36	
38	242-235-38	
40	242-235-40	
42	242-235-42	
44	242-235-44	
46	242-235-46	
48	242-235-48	
50	242-235-50	
52	242-235-52	
54	242-235-54	
56	242-235-56	
58	242-235-58	
60	242-235-60	

2.7 / 3.5 Non-Locking Screws (CBLO)

CBLO Screw Rack

2.7 Cortical Screw (Non-Locking) Titanium

Star Drive T10

self-holding (T10 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
16	245-527-16
18	245-527-18
20	245-527-20
22	245-527-22
24	245-527-24
26	245-527-26
28	245-527-28
30	245-527-30
32	245-527-32
34	245-527-34

3.5 Cortical Screw (Non-Locking) Titanium

Star Drive T10

self-holding (T10 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge



Length (mm)	Product Code
16	245-535-16
18	245-535-18
20	245-535-20
22	245-535-22
24	245-535-24
26	245-535-26
28	245-535-28
30	245-535-30
32	245-535-32
34	245-535-34

TPLO Saw Blades

with triangle connection

Leibinger TPLO Sawblades are coated with Titanium Nitride (TiN). Titanium Nitride (TiN) is one of the hardest and toughest materials in the medical field.

Product Code	Width
102-2100-09	09 mm
102-2100-12	12 mm
102-2100-15	15 mm
102-2100-18	18 mm
102-2100-21	21 mm
102-2100-24	24 mm
102-2100-27	27 mm
102-2100-30	30 mm
102-2100-33	33 mm



Screw Rack

Product Code	Description
150-0520-00	for 2.0 mm screws
150-0524-00	for 2.4 mm screws
150-0527-00	for 2.7 mm screws
150-0535-00	for 3.5 mm screws
150-4027-00	for 2.7mm screws (extended: 6-52mm)
150-4035-00	for 3.5 mm screws (extended: 6-70mm)

Screwdriver Shaft Star-Drive



Product Code	Description
128-2024-08	T8 for 2.0 / 2.4 mm screws, 100 mm long
128-2735-10	T10 for 2.7 / 3.5 mm screws, 100 mm long

Screwdriver Handle

Silicone, AO-Connection
sterilizable up to 134°C / 273°F



Product Code	Description
247-0103-00	compact, approve for 2.0/2.4 TPLO
247-0102-00	standard, approve for 2.7/3.5 TPLO

Torque Limiting Screwdriver Handle

Torque 3 Nm
Silicone, AO, sterilizable up to 134°C / 273°F



247-0104-00

K-Wire

Single Trokar
1.0 mm x 100 mm



Product Code	Dimensions (mm)
144-1010-10	1.0 x 100
144-1025-10	2.5 x 100
144-1030-10	3.0 x 100

Drill Bits



Product Code	Ø (mm)	Length (mm)
148-0080-15	1.5	70/30
148-0080-18	1.8	125/25
148-0080-20	2.0	85/70
148-0080-25	2.5	95/80

Product Code	Ø (mm)	Length (mm)
148-0081-15	1.5	85/60
148-0081-18	1.8	125/25
148-0081-20	2.0	100/75
148-0081-25	2.5	110/85

Depth Gauge

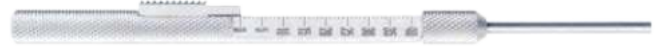
Compression Drill Guide

Locking Drill Guide

TPLO Jigs

Depth Gauge

Product Code	Description
164-1520-20	for 2.0/2.4 mm screws
164-2735-60	for 2.7/3.5 mm screws



Compression Drill Guide

Neutral / load

Product Code	Description
164-0071-15	for screws Ø 2.0 mm and drills Ø 1.5 mm
128-2418-24	for screws Ø 2.4 mm and drills Ø 1.8 mm
128-2720-27	for screws Ø 2.7 mm and drills Ø 2.0 mm
128-2535-35	for screws Ø 3.5 mm and drills Ø 2,5mm

Locking Drill Guide

Stainless Steel

Product Code	Description
164-2000-00	for 2.0 mm screws
164-2400-00	for 2.4 mm screws
164-2700-00	for 2.7 mm screws
164-3500-00	for 3.5 mm screws



TPLO Jig

Product Code	Description
128-4354-00	for 2.0/2.4 mm
128-4355-00	for 2.7 mm
128-4356-00	for 3.5 mm



Castroviejo

Caliper

17-3105-08

