intrauma®

EN

Carmelo

MultiAx System
Titanium Plates
Silver Coated

Dates and images

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Welcome to Intrauma

Intrauma is located in Italy, Val di Susa, Rivoli, just 10 km from the heart of Turin.

Its strategic location and proximity to the main motorway arteries and Caselle Torinese airport make it easily accessible, as well as being able to manage logistics dynamically and efficiently.
Intrauma also has other offices distributed throughout Italy with purely commercial functions, thanks to which it is able to promptly meet any urgent customer needs.

In 2011, Intrauma opened its US subsidiary based in Hoboken, New Jersey.
The opening of a representative office on US soil makes it possible to better serve distributors on the American continent, bringing advantages in terms of logistics.
As of September 2021, the US office moved to Miami FL in order to efficiently manage the Central and South American market.

CARMELO System.

MultiAx System
Titanium Plates
Silver Coated

1.7 Series (Micro), for small dogs and cats (up to 5 Kg)
2.5 Series (Mini), for small dogs and cats (5 to 15 Kg)

/ CARMELO System

The New Intrauma Carmelo System which is suitable for Intra and Extra-articular Condylar fractures, Periprosthetic fractures, as well as Maxillofacial, Pelvis and Acetabular ones.

The Screws allow to create fixed angles and also give the possibility to choose angulations up to 15° in each direction around the central axis of plate conical threaded holes.

The Plates are made of Titanium and are Silver Coated to prevent bacterial colonization and infection in open fractures.

The Carmelo system provides 2 series of internal fixators:

1.7 series (Micro), developed for small dogs up to 5 Kg and cats, accommodates Ø1.7mm Multiax screws into conical threaded holes and Ø1.5mm Reduced Head Cortical screws into compression holes on the plates.

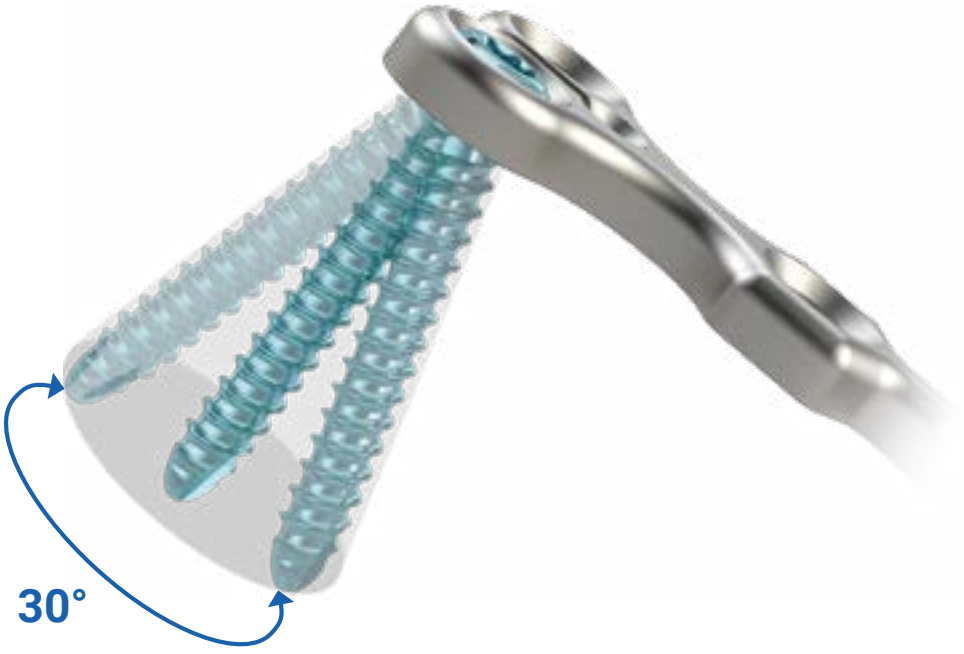
This plate Series has small holes that fit Ø1.0mm K-wires for temporary stabilization and dedicated Micro plate benders that allows to contour the implant on 3 different planes.

2.5 Series (Mini), developed for small dogs and cats from 5 to 15Kg, accommodates Ø2.5mm Multiax screws into conical threaded holes and Ø2.0mm or Ø2.7mm Reduced Head Cortical screws into compression holes on the plates.

This plate Series has small holes that fit Ø1.2mm K-wires for temporary stabilization and dedicated Mini plate benders that allows to contour the implant on 3 different planes.

/ The implant

Plate – made by Titanium, with threaded conical and compression holes.
Multiax Screw – made by Titanium with threaded rounded head that allows an orientation in every direction in a conical area of 15°.



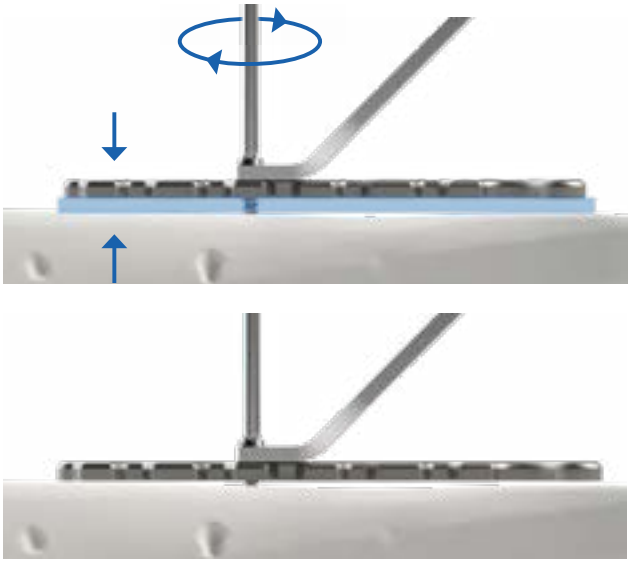
The instruments.

/ Drill Guide

Allows insertion of screws with an angle of ±15° in every direction; screws should be angled in a conical area for a total of 30°.

/ Compression Fork

Should be used to move close plate and bone before complete screws insertion.



/ Neutral use

The seat of this side of the eyelet copies the spherical head of the screw.

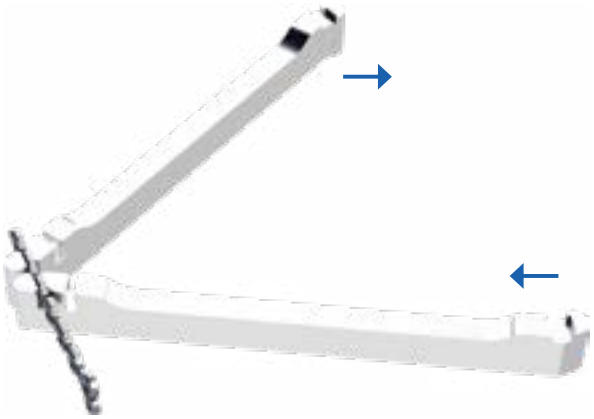
/ Compression use

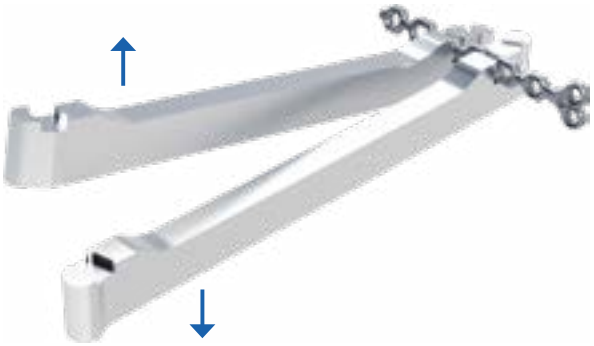
To make longitudinal compression between two bone fragments. The almost vertical wall of this side of the eyelet acts as a sled, the screw tends to move towards the other extremity of eyelet itself.

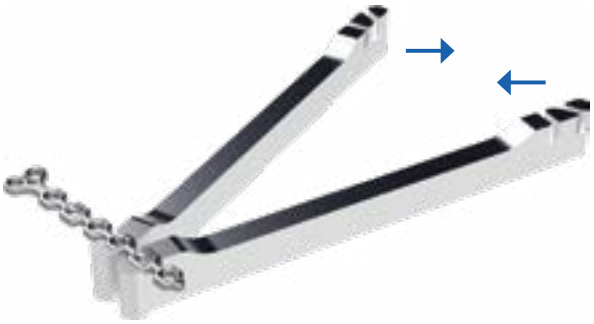
/ Plate Benders

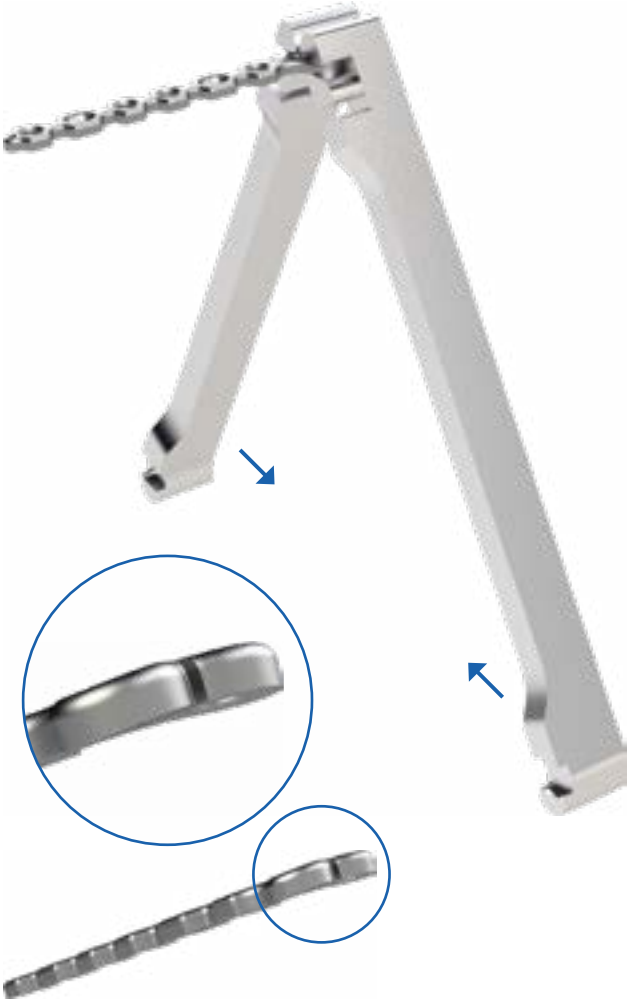
Dedicated Plate Benders allow, with a single instrument, to contour plates in 3 different planes.

The same Plate Benders allow also the contouring of the two winglets on T plates.









Mechanical Performance.

To evaluate some mechanical aspects of Carmelo-MultiAx System, several tests were conducted in collaboration with the biomechanics engineering department of the **Politecnico di Torino, Italy** on 2021.

The Interdepartmental Center **Polito^{BIO}Med Lab** aims to group the main skills of Politecnico in engineering and biomedical sciences to investigate the interaction between the biological world and the artificial systems, from nano-scale to macro-scale.

In all tests conducted, straight 8-hole plates (VPP2104) and Ø2.5mm MultiAx screws (VPV2524, L. 24mm) were used.

/ Test I: 4-Locking Break Out Strength

Summary - The test has been conducted by inserting a screw on the plate in an orthogonal position, with a closure of **0.8 ± 0.05 Nm** and **1 ± 0.05 Nm.**

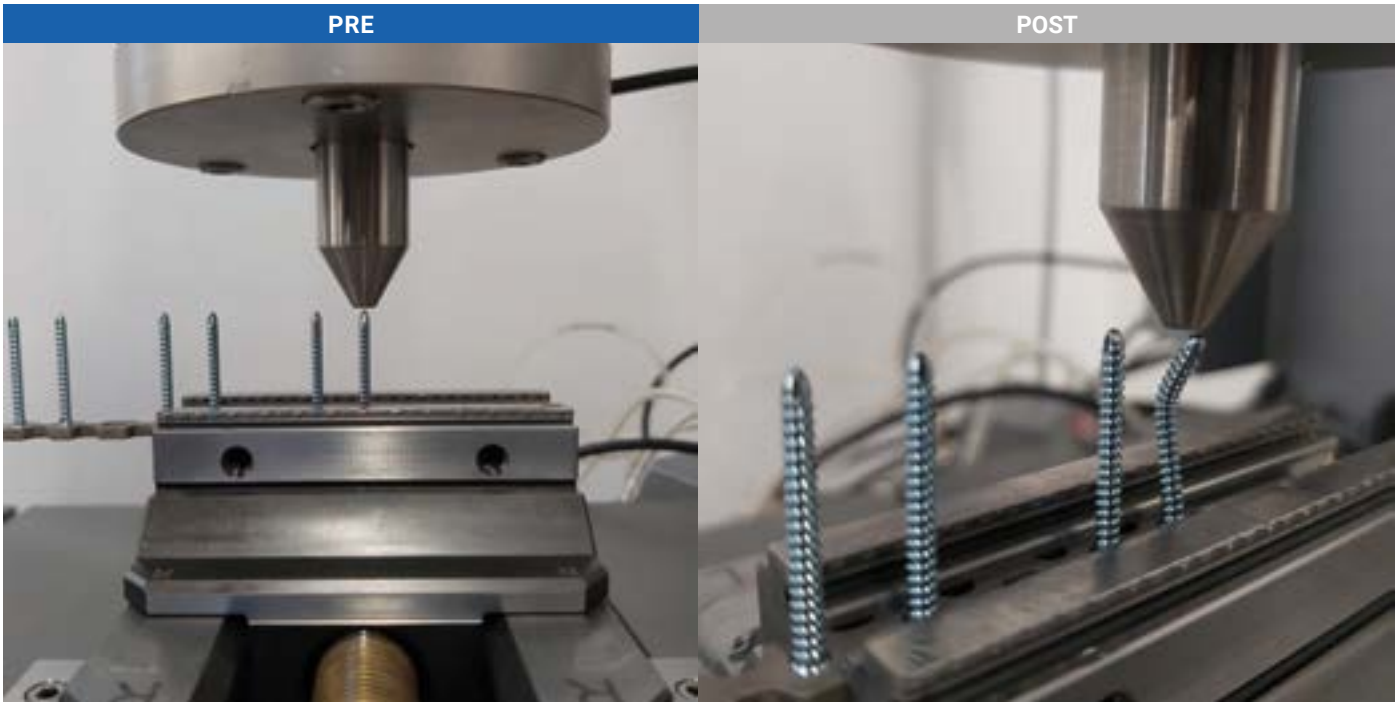
The load has been applied to the screw in an axial direction until its breaking. The purpose of the test was to evaluate only the axial tightness of the locking mechanism between the screw and the plate.

The test results of this campaign are reported and compared below:

	INTRAUMA Ø2.5mm	
	0,8 [Nm]	1 [Nm]
T1 - Force [N]	2206	2262
T2 - Force [N]	2392	2051
T3 - Force [N]	2232	2285
T4 - Force [N]	2302	2296
T5 - Force [N]	2288	2296
T6 - Force [N]	2289	2439
Average [N]	2285	2271

Please note: In all Carmelo tested screws, the final value was recorded following a screw failure and not a screw-plate failure, as showed in the following image.

INTRAUMA - CARMELO SYSTEM

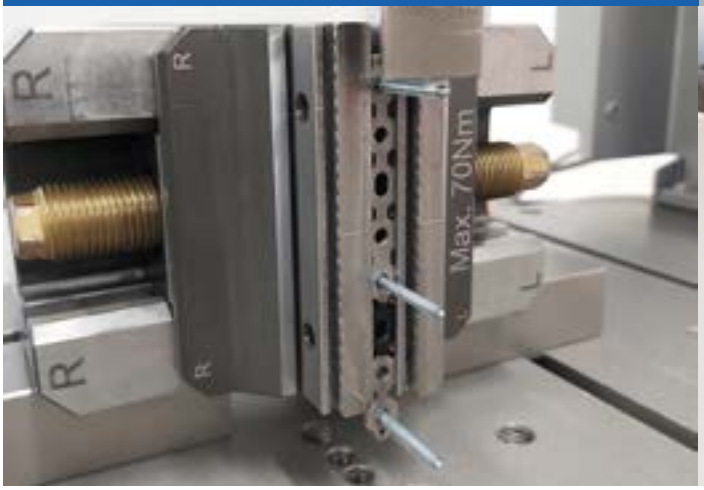


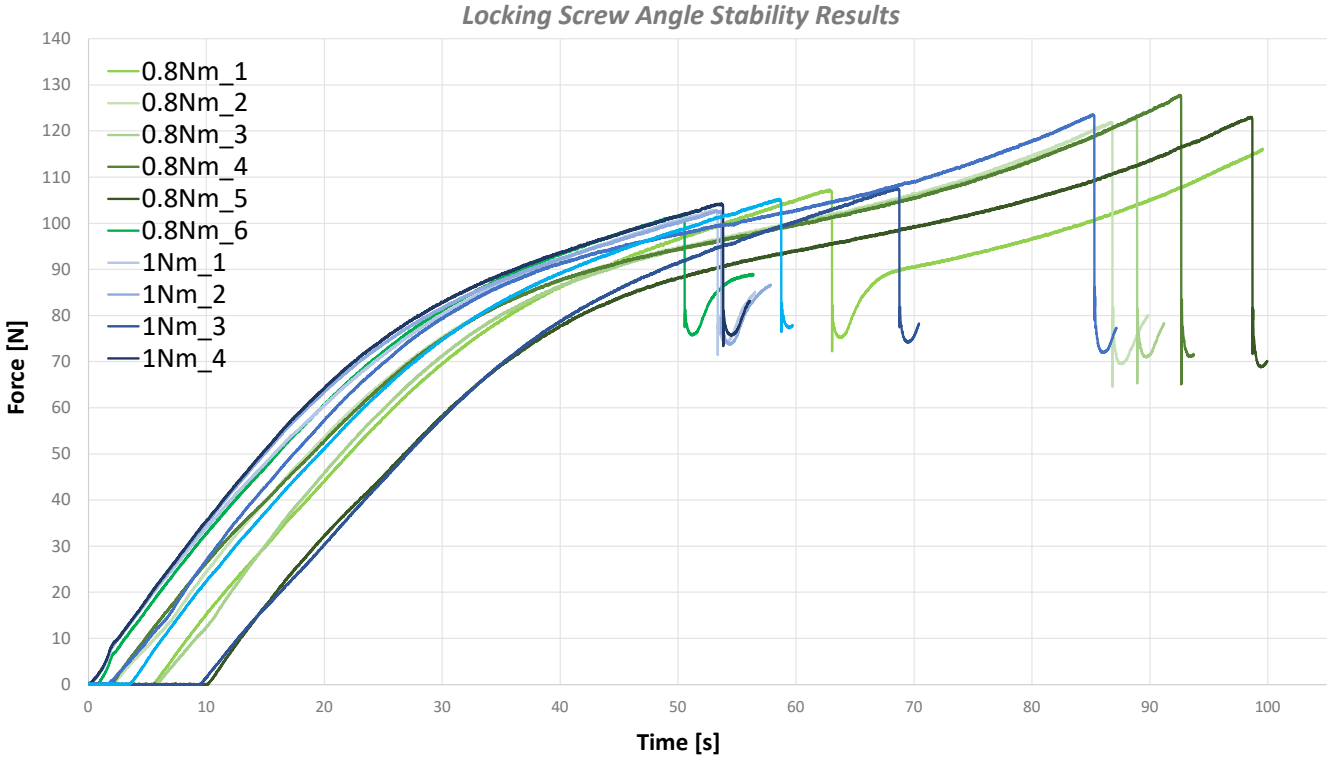
/ Test II:
Locking Screw Angle Stability

Summary - The test has been conducted by inserting a screw on the plate in an orthogonal position, with a closure of **0.8 ± 0.05 Nm** and **1 ± 0.05 Nm.**

An increasing load has been applied to the screw, parallel to the axis of the plate and positioned at 15mm from the axis of the plate.

INTRAUMA - CARMELO SYSTEM

PRE	POST
	



1.7 Series - Product Ranges
Titanium - Scale 1:1

VPP1800
T Plate
Length: 27.4mm - Thickness: 1.54mm
Holes: 4+1 cortical hole

VPP1801
T Plate
Length: 39.4mm - Thickness: 1.54mm
Holes: 6+1 cortical hole

VPP1802
Straight Plate
Length: 34.9mm - Thickness: 1.54mm
Holes: 4+1 cortical hole

VPP1806
Micro Cuttable Plate
Length: 132.5mm - Thickness: 1.54mm
Holes: 28

VPP1803
Straight Plate
Length: 43.8mm - Thickness: 1.54mm
Holes: 4+2 cortical holes

VPP1804
Straight Plate
Length: 53.8mm - Thickness: 1.54mm
Holes: 6+2 cortical holes

VPP1805
Straight Plate
Length: 59.7mm - Thickness: 1.54mm
Holes: 9+1 cortical hole

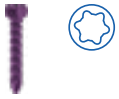
1.7 Series - Ordering information

/ SUPPORTS

Ref.	Description	L. mm	THK. mm	Holes
VPP1800	T Plate	27.4	1.54	4+1
VPP1801	T Plate	39.4	1.54	6+1
VPP1802	Straight Plate	34.9	1.54	4+1
VPP1803	Straight Plate	43.8	1.54	4+2
VPP1804	Straight Plate	53.8	1.54	6+2
VPP1805	Straight Plate	59.7	1.54	9+1
VPP1806	Micro Cuttable Plate	132.5	1.54	28

/ ■ MULTIAX SCREWS | Ø1.7MM

Ref.	L. mm
VPV1706	6
VPV1707	7
VPV1708	8
VPV1709	9
VPV1710	10
VPV1712	12
VPV1714	14
VPV1716	16
VPV1718	18
VPV1720	20



Ti6Al4V - ISO 5832-3

/ ■ CORTICAL SCREWS | Ø1.5MM

Ref.	L. mm
VPV1506	6
VPV1507	7
VPV1508	8
VPV1509	9
VPV1510	10
VPV1512	12
VPV1514	14
VPV1516	16

Ti6Al4V - ISO 5832-3

/ SCREW CASE

REF. VPS191
Ø1.5C - 1.7M Screw Case

1.7 Series - Ordering information

/ INSTRUMENTATION

REF. VPS125
Carmelo Micro Plate Bender

REF. VPS183
Carmelo Micro MultiAx Drill Guide

REF. VPS187
HL7 Hexalobular Screwdriver

REF. VPS187D
HL7 Hexalobular Screwdriver - Screwholder

REF. VS194
Ø1.5 Cortical Screw Drill Guide

REF. VS195
Drill Bit Ø1.2mm

REF. VS410
K-Wire Ø1.0mm L. 100mm

REF. VS13
Micro Series Depth Gauge

REF. VS181
Drill Bit Ø1.3mm

REF. VS188
Micro Series Screwdriver HL5
(**VS188A** - Rod 2 pcs / **VS188B** - Handle)

REF. VS188D
Micro Series Screwdriver HL5 - Screwholder

REF. VPS290
Compression Fork

/ TRIAL PLATES

Ref.	Description
VTVPP1800-1	T Trial Plate
VTVPP1802-5	Straight Trial Plate
VTVPP1803-4	Straight Trial Plate

2.5 Series - Product Ranges
Titanium - Scale 1:1

VPP2001

T Plate
Length: 42.8mm - Thickness: 2.54mm
Holes: 4+1 cortical hole

VPP2102

Straight Plate
Length: 52.3mm - Thickness: 2.54mm
Holes: 4+1 cortical hole

VPP2002

T Plate
Length: 52.3mm - Thickness: 2.54mm
Holes: 5+1 cortical hole

VPP2103

Straight Plate
Length: 71.9mm - Thickness: 2.54mm
Holes: 6+2 cortical holes

VPP2003

T Plate
Length: 72.8mm - Thickness: 2.54mm
Holes: 5+2 cortical holes

VPP2104

Straight Plate
Length: 81mm - Thickness: 2.54mm
Holes: 6+2 cortical holes

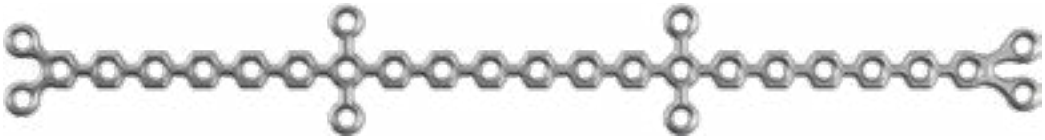
VPP2101

Straight Plate
Length: 53.5mm - Thickness: 2.54mm
Holes: 4+1 cortical hole

2.5 Series - Product Ranges
Titanium - Scale 1:1

VPP2105

Straight Plate
Length: 100mm - Thickness: 2.54mm
Holes: 8+2 cortical holes

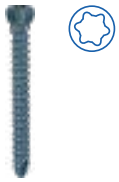


VPP2106

Mini Cuttable Plate
Length: 206mm - Thickness: 2.54mm
Holes: 28

/ MULTIAX SCREWS | Ø2.5MM

Ref.	L. mm
VPV2508	8
VPV2509	9
VPV2510	10
VPV2512	12
VPV2514	14
VPV2516	16
VPV2518	18
VPV2520	20
VPV2522	22
VPV2524	24
VPV2526	26



Ti6Al4V - ISO 5832-3

/ CORTICAL SCREWS | Ø2.7MM

Ref.	L. mm
VPV2708	8
VPV2709	9
VPV2710	10
VPV2712	12
VPV2714	14
VPV2716	16
VPV2718	18
VPV2720	20
VPV2722	22
VPV2724	24
VPV2726	26

Ti6Al4V - ISO 5832-3

2.5 Series - Ordering information

/ SUPPORTS

Ref.	Description	L. mm	THK. mm	Holes
VPP2001	T Plate	42.8	2.54	4+1
VPP2002	T Plate	52.3	2.54	5+1
VPP2003	T Plate	72.8	2.54	5+2
VPP2101	Straight Plate	53.5	2.54	4+1
VPP2102	Straight Plate	52.3	2.54	4+1
VPP2103	Straight Plate	71.9	2.54	6+2
VPP2104	Straight Plate	81	2.54	6+2
VPP2105	Straight Plate	100	2.54	8+2
VPP2106	Mini Cuttable Plate	206	2.54	28

/ CORTICAL SCREWS | Ø2.0MM

Ref.	L. mm
VPV2808	8
VPV2810	10
VPV2812	12
VPV2814	14
VPV2816	16
VPV2818	18
VPV2820	20
VPV2822	22
VPV2824	24
VPV2826	26

Ti6Al4V - ISO 5832-3

/ SCREW CASE

REF. VPS200

Ø2.0C - 2.7C - 2.5M Screw Case

2.5 Series - Ordering information

/ INSTRUMENTATION

REF. VPS225
Carmelo Mini Plate Bender

REF. VPS283
Carmelo Mini MultiAx Drill Guide

REF. S24
Hex Screwdriver 2mm

REF. VS24D
Hex Screwdriver 2mm - Screwholder

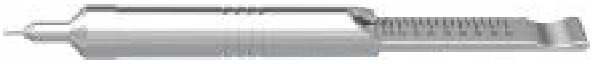
REF. VPS24HL
HL8 Hexalobular Screwdriver

REF. VS218
Ø2.0 - 2.7 Cortical Screw Drill Guide

REF. VS219
Drill Bit Ø1.5mm

REF. VS220
Drill Bit Ø2.0mm

REF. VS23
Mini Series Depth Gauge



REF. VPS290
Compression Fork

REF. VS411
K-Wire Ø1.2mm L. 100mm

/ TRIAL PLATES

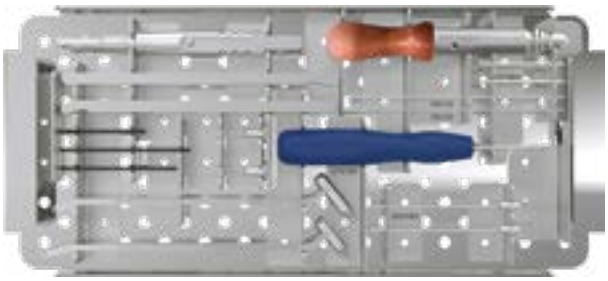
Ref.	Description
VTVPP2001-2-3	T Trial Plate
VTVPP2101	Straight Trial Plate
VTVPP2102-3	Straight Trial Plate
VTVPP2104-5	Straight Trial Plate

/ INSTRUMENTS BOX 1.7-2.5 SERIES

REF. VPS202

1.7 / 2.5 Series Carmelo Instruments Box

The tray is provided without instruments



/ NOTE

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