



 **frontier** Guided surgery  
user manual



[www.gmidental.com](http://www.gmidental.com)

## A CERCA DE ESTE MANUAL

This user manual of **gmi frontier guided surgery** is designed exclusively to provide instructions for use for guided surgery procedures of **gmi frontier** implant system, and is not intended to describe diagnosis methods or procedures, treatment planning or the location of the implants, nor does it replace clinical training or clinical judgement about the needs of each patient.

**gmi** recommends appropriate and specific training as a prerequisite for the placement of implants and the associated treatment.

The methods illustrated and described in this manual reflect an ideal patient with the bone and soft tissue required for the placement of an implant. We do not intent to cover the wide range of adverse conditions that may negatively affect the success of the surgery or rehabilitation.

**The experience and judgement of the clinician in relation to any particular case must always be above the recommendations made in this or any other gmi manual.**



## Table of contents

---

- gmi frontier guided surgery kit .....	4
- Kit content .....	5
- Accessories .....	9
- Sequence of use .....	10
- How to select the working sequence according to the diameter of the implant .....	16
- How to select twist drills and how to use them .....	16
- Specifications	
- Fixing lateral pins .....	17
- Sleeves for lateral pins .....	17
- Ferule sleeves .....	17

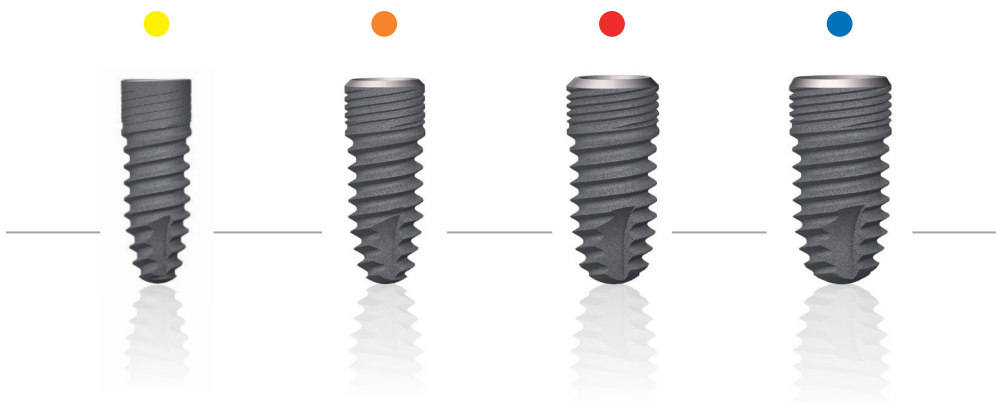
KYCOF3015 - gmi frontier guided surgery kit

KYCOF3046 - Complete gmi frontier guided surgery kit

**gmi frontier guided surgery** kit consists of a sterilizable box by autoclave made of technical plastic, containing all necessary instruments to perform guided surgery procedures for **gmi frontier** implant system:

Colour	Ø (mm)	PL	L (mm)
	Ø3.30	RP	8 / 10 / 11.5 / 13 / *15
	Ø3.75		8 / 10 / 11.5 / 13 / *15
	Ø4.25		8 / 10 / 11.5 / 13 / *15
	*Ø4.75	WP	8 / 10 / 11.5 / 13

\* With the complete kit ref. KYCOF3046



Ref. KYCOF3015



Ref. KYCOF3046



## Kit content

*\* Instruments included in the complete kit ref. KYCOF3046*

### • Lance drill:

It allows initial marking of the osteotomy on the bone crest.

Description	Reference	Un.
Lance drill	KYFOC6064	1



### • Gingival punches:

Circular scalpels that allow incision in the soft tissue when using the flapless technique.

Available in two diameters of  $\varnothing 4,0$  and  $\varnothing 5,0$  mm

Description	Reference	Un.
HP gingival punch $\varnothing 4.10$ mm	KYFOC6065	1
*HP gingival punch $\varnothing 5.10$ mm	KYFOC6066	1



### • Countersink drills:

They allow to prepare the coronal part of the osteotomy to adapt it to the geometry of the implant.

Description	Reference	Un.
DLC countersink drill $\varnothing 3.30$ mm	KYLOC6096	1
DLC countersink drill $\varnothing 3.75$ mm	KYLOC6097	1
DLC countersink drill $\varnothing 4.25$ mm	KYLOC6098	1
*DLC countersink drill $\varnothing 4.75$ mm	KYLOC6099	1



## Kit content

\* Instruments included in the complete kit ref. KYCOF3046

### • Twist drills:

They allow to enlarge the osteotomy to adapt it to the diameter and length of the selected implant.



Description	Reference	Un.
DLC drill ø2.00 L8.00 mm	KYFOC6067	1
DLC drill ø2.00 L10.00 mm	KYFOC6068	1
DLC drill ø2.00 L11.50 mm	KYFOC6069	1
DLC drill ø2.00 L13.00 mm	KYFOC6070	1
<b>*DLC drill ø2.00 L15.00 mm</b>	<b>KYFOC6071</b>	<b>1</b>
DLC drill ø2.80 L8.00 mm	KYFOC6072	1
DLC drill ø2.80 L10.00 mm	KYFOC6073	1
DLC drill ø2.80 L11.50 mm	KYFOC6074	1
DLC drill ø2.80 L13.00 mm	KYFOC6075	1
<b>*DLC drill ø2.80 L15.00 mm</b>	<b>KYFOC6076</b>	<b>1</b>
DLC drill ø3.00 L8.00 mm	KYFOC6077	1
DLC drill ø3.00 L10.00 mm	KYFOC6078	1
DLC drill ø3.00 L11.50 mm	KYFOC6079	1
DLC drill ø3.00 L13.00 mm	KYFOC6080	1
<b>*DLC drill ø3.00 L15.00 mm</b>	<b>KYFOC6081</b>	<b>1</b>
DLC drill ø3.50 L8.00 mm	KYFOC6082	1
DLC drill ø3.50 L10.00 mm	KYFOC6083	1
DLC drill ø3.50 L11.50 mm	KYFOC6084	1
DLC drill ø3.50 L13.00 mm	KYFOC6085	1
<b>*DLC drill ø3.50 L15.00 mm</b>	<b>KYFOC6086</b>	<b>1</b>
DLC drill ø4.00 L8.00 mm	KYFOC6087	1
DLC drill ø4.00 L10.00 mm	KYFOC6088	1
DLC drill ø4.00 L11.50 mm	KYFOC6089	1
DLC drill ø4.00 L13.00 mm	KYFOC6090	1
<b>*DLC drill ø4.00 L15.00 mm</b>	<b>KYFOC6091</b>	<b>1</b>
<b>*DLC drill ø4.50 L8.00 mm</b>	<b>KYFOC6092</b>	<b>1</b>
<b>*DLC drill ø4.50 L10.00 mm</b>	<b>KYFOC6093</b>	<b>1</b>
<b>*DLC drill ø4.50 L11.50 mm</b>	<b>KYFOC6094</b>	<b>1</b>
<b>*DLC drill ø4.50 L13.00 mm</b>	<b>KYFOC6095</b>	<b>1</b>



## Kit content

*\* Instruments included in the complete kit ref. KYCOF3046*

### • Mounters:

They allow to remove the implant from the container and place it in the ferule sleeve in a guided way until its final position.

Version for RP and WP implants.

Description	Reference	Un.
RP implants mounter	KYL0F6100	8
*WP implants mounter	KYL0F6101	2



### • Mounters extraction wrench:

It allows to disassemble the carrier from the ferule sleeve manually or using the HEX-4.0 adapter for the TI ratchet wrench.

Description	Reference	Un.
Mounters extraction wrench	KYL0C6051	1



### • Adapters:

Once coupled to the carrier by the internal hexagon HEX-3.0 (for hand-piece version) or the external hexagon HEX-4.0 (for ratchet version) they allow the final tightening of the implant.

Description	Reference	Un.
Short HEX-4.00 mm adapter TI wrench	KYL0C6052	1
Long HEX-4.00 mm adapter TI wrench	KYL0C6053	1
Short implant carrier HEX-3.00 mm HP wrench	KYL0F0155	1
Long implant carrier HEX-3.00 mm HP wrench	KYL0F0156	1



## Kit content

### • Screwdrivers:

Hexagonal tips of HEX-1.20 mm that allow to tighten / loosen the mounter screws.

Long and short version for hand-piece with ratchet adapter.

Description	Reference	Un.
Medium HEX-1.20 mm HP wrench	KYLOC0004	1
Long HEX-1.20 mm HP wrench	KYLOC0064	1



### • Pin drill:

It allows to drill the housing of the lateral pins through the sleeves.

Description	Reference	Un.
Pin drill $\varnothing$ 1.50 mm	KYF0C6060	1



### • Lateral pins:

Elements that allow to fix temporarily the ferule in patient's mouth by anchoring in the tissues.

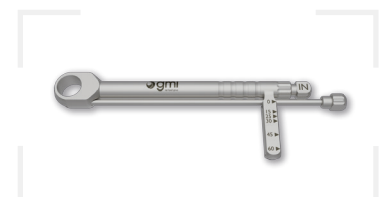
Description	Reference	Un.
Lateral pin	KYLOC6059	3



### • TI ratchet wrench:

Once coupled to the adapter it allows to insert the implant at the recommended torque.

Description	Reference	Un.
TI ratchet wrench	KYLOF0113	1





## Accessories

### • Drilling guide sleeves:

Once fixed to the surgical drilling guide, they allow to guide the drilling sequence and the placement of the implant in the planned position.

Description	Reference	Un.
Sleeve ø5.10 mm	KYLOF6102	5



### • Sleeves for lateral pins:

Cylindrical pieces that are incorporated to the ferule to allow the placement of the lateral pins.

Description	Reference	Un.
Sleeve for lateral pin	KYLOF6061	5



## Sequence of use



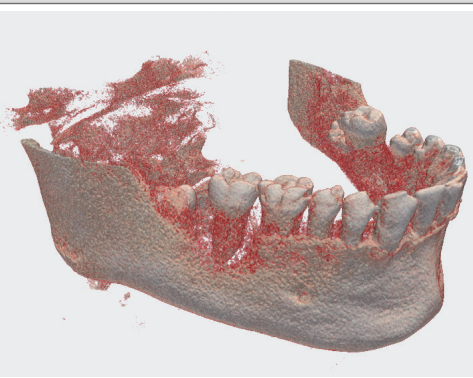
1

Get the morphology of the jaws of the patient to be treated through TAC and export it in DICOM format.

**1 Carga de datos**

Cargar carpeta con imagenes DICOM (DCM) presionando el boton Cargar DICOM. Cargar modelo STL escaneado presionando boton Cargar STL.

Cargar DICOM   Recortar   Cargar STL



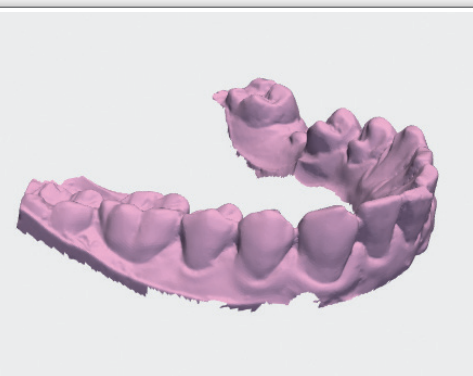
2

Import DICOM file into the implant planning software.

**1 Carga de datos**

Cargar carpeta con imagenes DICOM (DCM) presionando el boton Cargar DICOM. Cargar modelo STL escaneado presionando boton Cargar STL.

Cargar DICOM   Recortar   Cargar STL



3

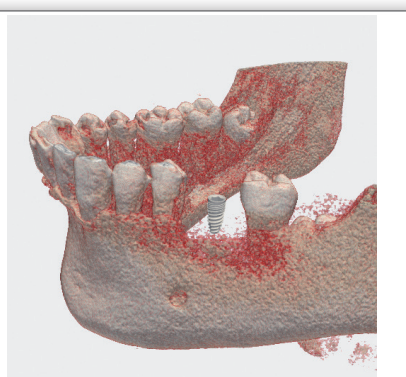
Import STL from intraoral scanner.

Frontier implant RP Ø3,30 L8 mm

11 Right maxilar central incisor

Implante seleccionado:

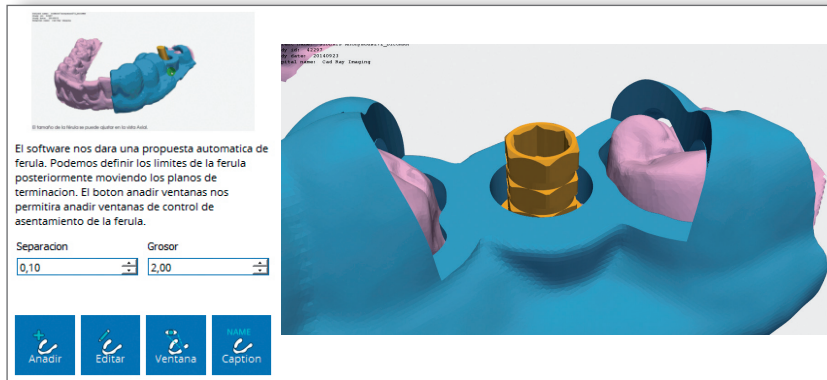
GMI - Frontier | Frontier implant RP Ø3,30 L8 mm - Ningun pilar seleccionado



4

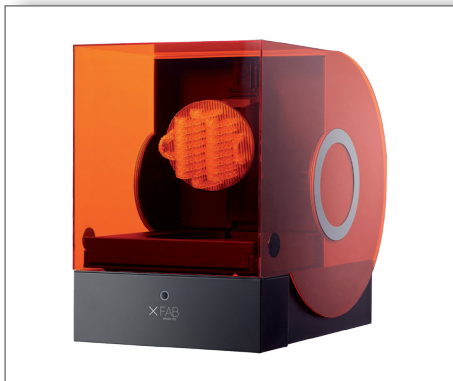
Plan de case by selecting the diameters and lengths of the **gmi frontier** implants, as well as their insertion axis and the desired depth.

## Sequence of use



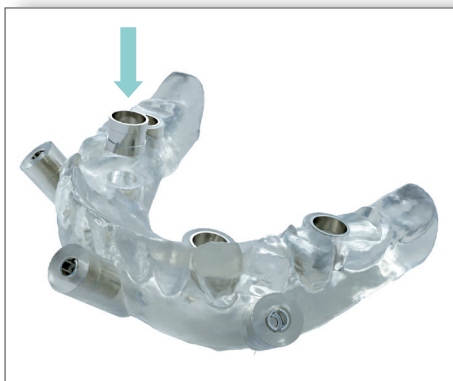
5

*Design the morphology of the surgical drilling guide, the housing of the drilling guide sleeves and the position of the lateral pins according to the planning.*



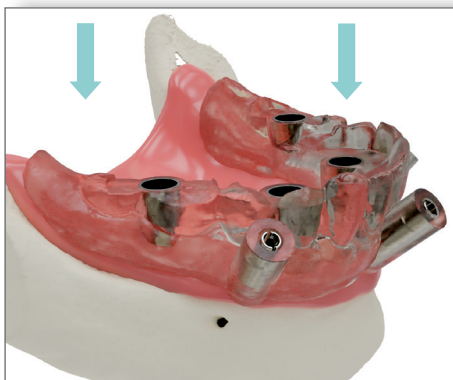
6

*Print the surgical drilling guide by 3D printing.*



7

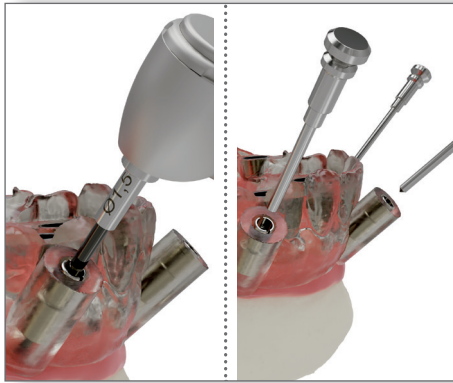
*Place and fix the drilling guide sleeves and the sleeves for lateral pins in the corresponding holders.*



8

*Place the drilling guide in the patient's mouth and check it seats correctly.*

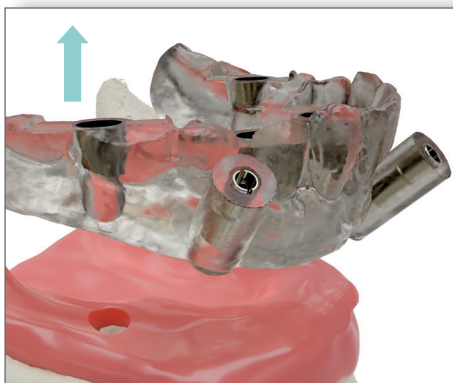
## Sequence of use



- 9** *Drill on the bone the housing of the lateral pins with the drill of  $\varnothing 1.50$  mm and fix the drilling guide.*



- 10** *For flapless surgery use the suitable gingival punch to make a circular incision depending on the implant to place\*.*



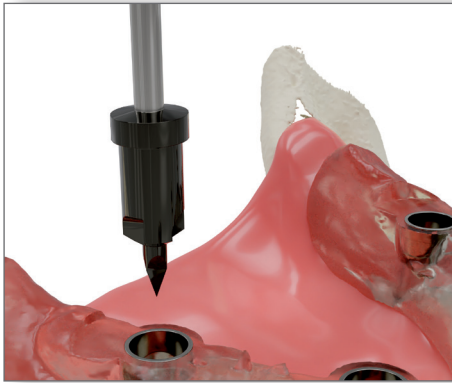
- 11** *Remove the drilling guide and the soft tissue cut with the gingival punch, with a suitable instrument.*



- 12** *Re-fix the drilling guide to the patient by the lateral pins.*

*\*See the selection table on page 16*

## Sequence of use



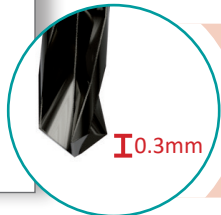
13

Use the lance-shaped drill to start the osteotomy and plan the crest to achieve a correct seating of the guide sleeve.



14

Select the suitable drilling sequence according to the type of bone, diameter and length of the implant to be placed\*. Use plenty of external cooling with saline solution at a low temperature, during all the drilling process.



Take into account that twist drills have an overdrilling of +0.3mm



15

Select the suitable countersink drill for the implant to be placed\*.



16

Open the secondary and primary packaging of the implant.

\*See the selection table on page 16

## Sequence of use



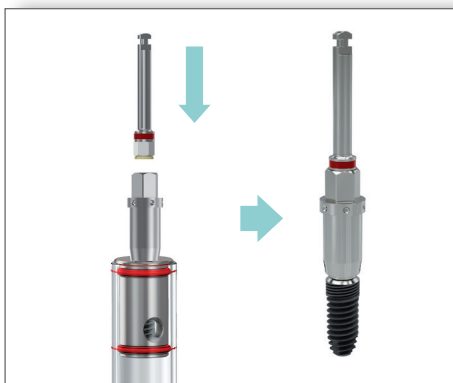
17

Select the suitable carrier for the implant platform, face the mouter hex to the implant and insert it totally.



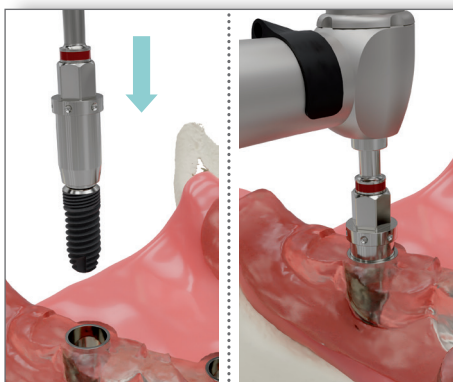
18

Thread the internal screw of the mouter to the implant using either the manual or hand-piece screwdrivers.



19

Gently remove the mouter-implant assembly from the packaging either manually or by using the short or long HEX-3.0 adapter.

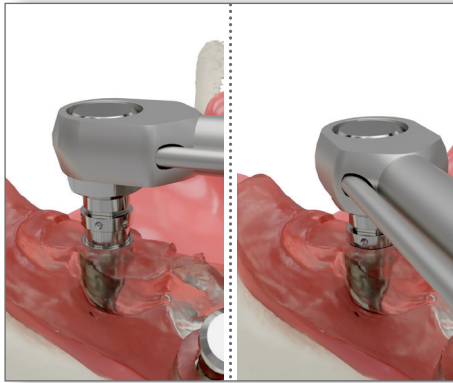


20

Insert the assembly in the sleeve of the surgical guide and make the initial threading in the bone bed.

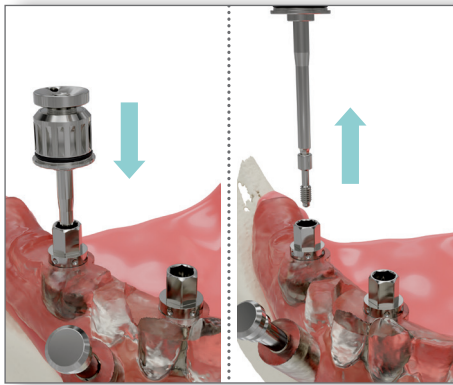


## Sequence of use



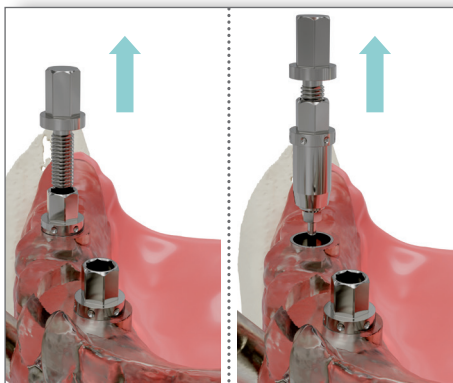
21

Use the HEX-3.0 adapter with hand-piece or the HEX-4.0 adapter coupled to the TI ratchet wrench to make the final threading of the implant until it stops with the drilling guide sleeve without exceeding the recommended tightening torque.



22

Untighten the screw from the mounter and remove it from the implant. If it cannot be easily removed unscrew and remove the internal screw of the mounter and use the extractor coupled to the HEX-4.0 adapter for ratchet if necessary.



23

Repeat the process for each implant to be placed.



## How to select the working sequence according to the diameter of the implant

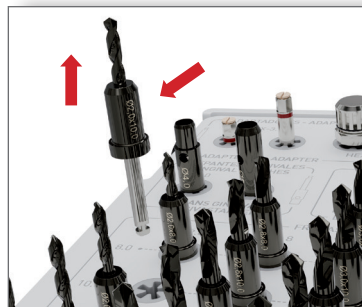
∅ Implant (mm)	Implant platform	Recommended work sequence
∅3.30	RP	Punch ∅4.00 - Lance - Drill ∅2.0 - ∅2.8 - (∅3.0)* - Countersink ∅3.30
∅3.75		Punch ∅4.00 - Lance - Drill ∅2.0 - ∅2.8 - ∅3.0 - (∅3.5)* - Countersink ∅3.75
∅4.25		Punch ∅5.00 - Lance - Drill ∅2.0 - ∅2.8 - ∅3.5 - (∅4.0)* - Countersink ∅4.25
∅4.75	WP	Punch ∅5.00 - Lance - Drill ∅2.0 - ∅2.8 - ∅3.5 - ∅4.0 - (∅4.5)* - Countersink ∅4.75

\* Optional for hard bones type I/II.

## How to select twist drills and how to use them



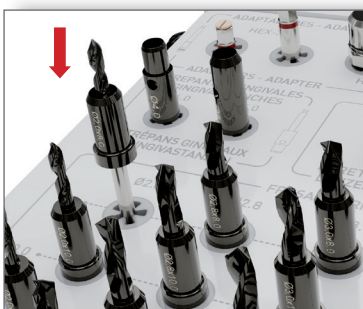
1- Select according to the drilling sequence and length.



2- Check that the selected drill corresponds to the required **length and diameter**.



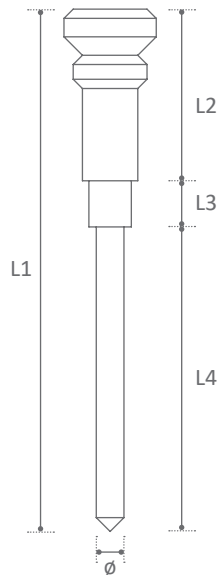
3- Insert the first drill into the surgical drilling guide sleeve until it stops.



4- Remove the drill and store it in its place in the kit. Go on with the drilling sequence.

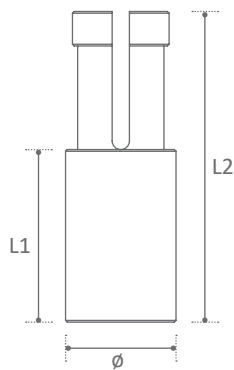
## Specifications

- Fixing lateral pins:



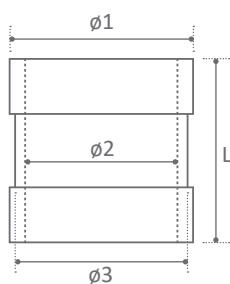
Reference	L1	L2	L3	L4	Ø
KYL0C6059	28.30 mm	9.30 mm	2.50 mm	16.50 mm	1.50 mm

- Sleeves for lateral pins:



Reference	L1	L2	Ø
KYL0F6061	5.00 mm	9.00 mm	3.20 mm

- Drilling guide sleeves:



Reference	L	Ø1	Ø2	Ø3
KYL0F6102	5.00 mm	5.90 mm	5.10 mm	5.60 mm

 **GMI**  
Dental Implantology, S.L.

Pol. Ind. El Segre  
C/ Enginyer Mies 705-B  
25191 Lleida (SPAIN)  
Tel. (+34) 973 184 350  
info@gmidental.com  
www.gmidental.com



Distributed by:

