



Arnaud-Marchac Distraction System
for craniofacial procedures



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Developed in cooperation with

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Paris, France

The Arnaud-Marchac Distraction System

The treatment of faciocraniosynostosis pursues a double goal: prevention of functional impairment (brain, vision, airways), and morphological correction of the deformity (exorbitism, maxillary retrusion). While fronto-facial monobloc advancement is by far the most satisfying craniofacial procedure because it allows the simultaneous correction of the frontal and facial retrusions, its morbidity is higher due to the large retrofrontal dead space created by the osteotomization (and subsequent full mobilization) of the anterior skull base and the critical connection between this dead space and the nasal fossae, even though additional measures might be able to reduce the infection risks.

Cranial expansion by means of distraction is now frequently used as a primary procedure in order to reduce risk and increase efficacy.

In a combined fronto-facial advancement (monobloc), combined distraction is performed with two cranial and two temporal zygomatic distractors.

The KLS Martin distractors **Arnaud Cranio-orbital** and **Marchac Temporal** are perfectly suitable to achieve a parallel treatment in just one step.

Indications

Cases in which a facial advancement (Le-Fort-III) or a fronto-facial (monobloc) advancement is necessary.

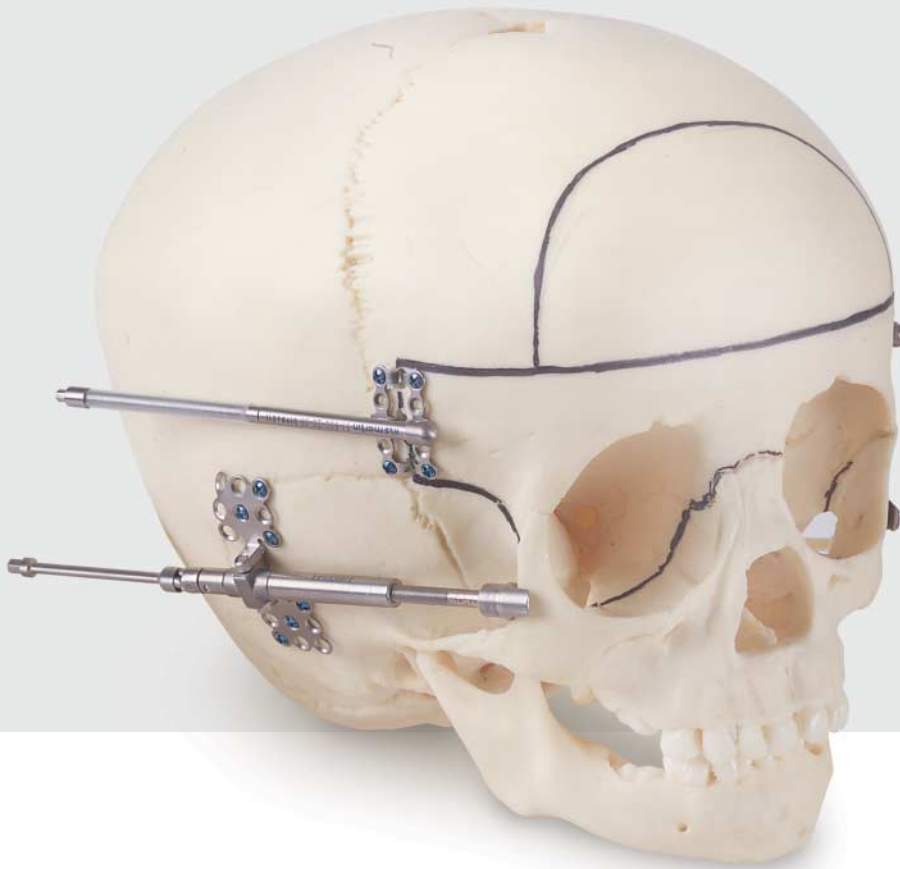
Contraindications

Poor general condition as a standard contraindication to any major surgery; infection of the bones or scalp; immune deficiency; previous radiation. This procedure is recommended only for experienced craniofacial teams including a plastic craniofacial surgeon and a neurosurgeon (monobloc procedure). It should also be mentioned that this device will not correct further growth lack, as naturally occurs in treated and untreated craniosynostosis.

Special notes

Prior to implantation, a 3D-CT scan is fundamental and the production of a stereolithographic model is advisable in order to define the optimal position and vector of the distractor and to check the thickness of the temporal bone.

If necessary, one of the foot plates of the Marchac distractor can be removed.



*Intraoperative approach
for facial advancement (Le-Fort-III)*

Coronal incision, then undermine the temporal muscles and complete the Le-Fort-III osteotomy. Mobilize the face with Rowe forceps, then adapt the distractor(s), ensuring correct length of system components for use behind the inferior part of the lateral zygoma at the junction with the zygomatic arch.

Distraction protocol

- Distraction of 0.5 or 1.0 mm per day in one or two sessions
- Latency time: 3-7 days
- Stabilization/consolidation time: 3-6 months

Removal of the distractor

Thanks to the easily adaptable mesh plates, the distractor can be attached to the temporal bone monocortically. This ensures easy access when the device is to be removed. A stabilization/consolidation period of three months is necessary for Le-Fort-III, and six months for the monobloc procedure.

A limited bilateral incision is sufficient to remove the isolated temporal distractor in Le-Fort-III procedures. In monobloc procedures, however, a coronal incision is mandatory.

Case 1



Pre-op view I



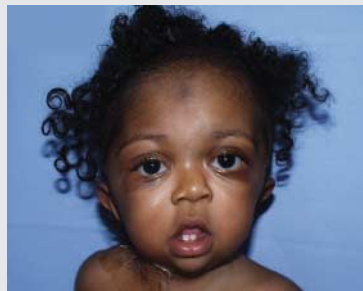
Pre-op view II



Lat x-ray view



Post-distr. view I



Post-distr. view II



AP x-ray view

Case 2



Pre-op view I



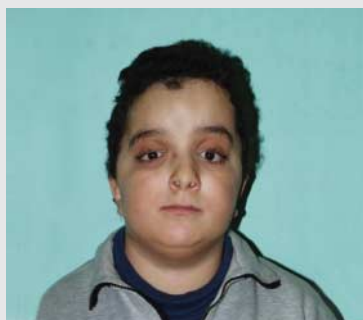
Pre-op view II



Lat x-ray view



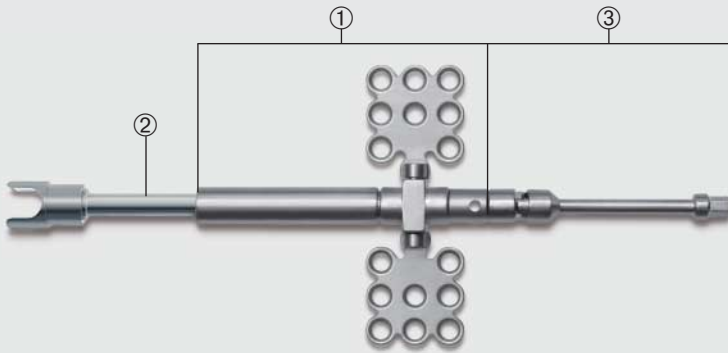
Post-distr. view I



Post-distr. view II



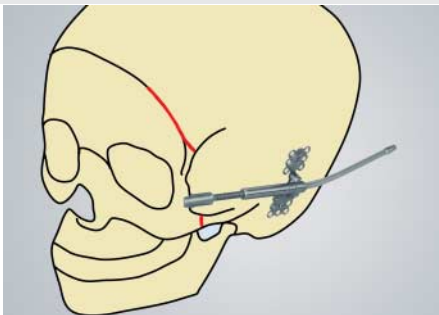
AP x-ray view



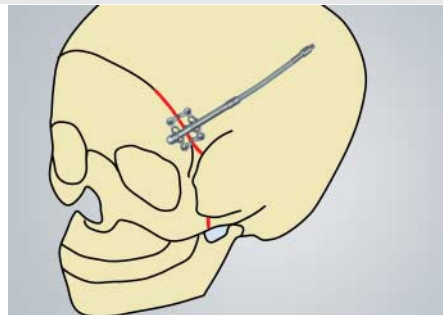
Marchac Temporal Distractor
1:1 scale



Arnaud Cranio-orbital Distractor
1:1 scale



Marchac Temporal Distractor



Arnaud Cranio-orbital Distractor

Marchac Temporal Distractor

① Distractors w/o activators	Item Number
25 mm, for babies	51-620-25-09
35 mm, for children and adults	51-620-35-09
Distraction length/turn 0.5 mm	

② to order separately	
Spindle incl. pivot, 40 mm	51-623-40-09
Spindle incl. pivot, 50 mm	51-623-50-09
Spindle incl. pivot, 60 mm	51-623-60-09
Spindle incl. pivot, 70 mm	51-623-70-09

③ to order separately	
Activators see pages 8 + 9	

Recommended screws
1.5 x 3.5 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

Patient screwdrivers	
Straight	51-500-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

Arnaud Cranio-orbital Distractor

Distractor incl. activator	Item Number
20 mm	51-630-20-09
Distraction length/turn 0.3 mm	

Recommended screws
1.5 x 3.5 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

Patient screwdrivers	
Straight	51-525-85-07
Combination straight and angled for handle 25-402-99-07	51-525-91-04



1/2
Patient screwdriver
51-500-90-07
straight



1/2
Patient screwdriver
51-525-85-07
straight



1/2
Screwdriver handle
25-402-99-07



1/2
Patient screwdriver
51-505-91-04
for handle 25-402-99-07



1/2
Patient screwdriver
51-525-91-04
for handle 25-402-99-07

Icon explanations


- Steel
- Titanium
- Units/pack
- Centre Drive®
- maxDrive®
- J-Notch attachment

Centre Drive®




Micro Screws

self-retaining

	Ø x Length	Centre Drive®
	1.5 x 3.5 mm	25-665-03-09
1.5 x 4 mm	25-665-04-09	
1.5 x 5 mm	25-665-05-09	
1.5 x 6 mm	25-665-06-09	
1.5 x 7 mm	25-665-07-09	


Emergency Screws

self-retaining

	Ø x Length	Centre Drive®
	1.8 x 5 mm	25-666-05-09

Drill-Free-Screws

self-retaining

	Ø x Length	Centre Drive®
	1.5 x 5 mm	25-668-05-09

Screwdriver blades

for screwdriver handle 25-402-99-07


	Centre Drive®	maxDrive®
	25-430-98-07	25-489-97-07

maxDrive®




Micro Screws

self-retaining

	Ø x Length	maxDrive®
	1.5 x 3.5 mm	25-875-03-09
1.5 x 4 mm	25-875-04-09	
1.5 x 5 mm	25-875-05-09	
1.5 x 6 mm	25-875-06-09	
1.5 x 7 mm	25-875-07-09	


Emergency Screws

self-retaining

	Ø x Length	maxDrive®
	1.8 x 5 mm	25-876-05-09


Drill-Free-Screws

self-retaining

	Ø x Length	maxDrive®
	1.5 x 5 mm	25-878-05-09

Drill bits

with J-Notch attachment

	Ø x Length	Stop	Item No.
	1.1 x 50 mm	3.5 mm	25-452-03-91
1.1 x 50 mm	5 mm	25-452-05-91	
1.1 x 50 mm	7 mm	25-452-07-91	

Distraction activators











Conventional removable activators

The Marchac Temporal Distractors are delivered without activator allowing the choice of an individual activator that meets the anatomical requirements of the patient instead of using a predefined one.

This not only allows more flexibility but also leads to an increased patient comfort during the distraction procedure.

The whole range of activators includes rigid and flexible activators in different lengths. These activators can additionally be combined with different cardanic extensions to gain more flexibility.

*Conventional removable activators**

	Activation arms	Item No.
	Activation arm, flexible, incl. cardanic element, 30 mm	51-400-30-09
	Activation arm, flexible, incl. cardanic element, 40 mm	51-400-40-09
	Activation arm, flexible, incl. cardanic element, 50 mm	51-400-50-09
	Activation arm, rigid, incl. cardanic element, 25 mm	51-401-25-09
	Activation arm, rigid, incl. cardanic element, 35 mm	51-401-35-09
	Activation arm, rigid, incl. cardanic element, 45 mm	51-401-45-09
	Activation arm, rigid, incl. cardanic element, 50 mm, clipable	51-401-50-09
	Additional	Item No.
	Direct drive activator	51-401-90-09
	Single cardanic extension for activation arm	51-401-91-09
	Rigid extension 20 mm for activation arm	51-401-92-09

* Removal of activator

During the consolidation period – once the active distraction process has been completed – activators are basically no longer needed and a source of inconvenience for the patient.

The activators on this page can easily be removed by using a special disconnection forceps (item no. 51-400-01-07, see page 10)



Remote Release Activators



Uncoupling procedure



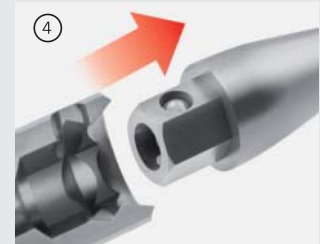
1. Pull out the release lug (some resistance needs to be overcome).



2. The release lug stands in exposed position by turning it clockwise or anti-clockwise by 90°.



3. This lowers the ball and socket of the universal coupling of the activator.



4. The activator can now be easily removed.

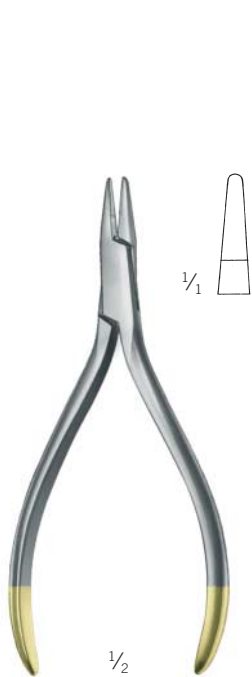
Remote Release Activators

	Activators	Item No.
	Remote Release Activator, flexible, 33 mm	51-411-33-09
	Remote Release Activator, flexible, 43 mm	51-411-43-09
	Remote Release Activator, flexible, 53 mm	51-411-53-09
	Remote Release Activator, rigid, 33 mm	51-410-33-09
	Remote Release Activator, rigid, 43 mm	51-410-43-09
	Remote Release Activator, rigid, 53 mm	51-410-53-09

The special and completely new feature about Remote Release Activators is that the mechanism of coupling and uncoupling is located at the point of activation with the patient screwdriver. Thereby the uncoupling of the activator can be initiated directly from the outside and the dissection of the way to the connection point between distractor and activator is not applicable anymore.

Each Remote Release Activator comes with a dedicated instruction for use providing all important information for handling the device.

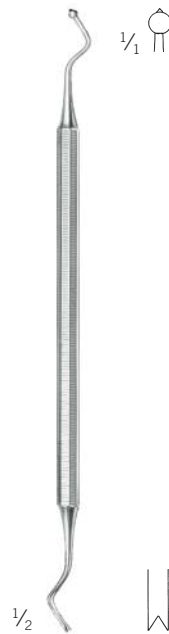
Instruments for
Arnaud-Marchac Distraction System



*Modeling
pliers*
25-486-13-07
13 cm/5"
2 items recommended



*Plate-holding
forceps*
25-441-16-07
18 cm/7"



*Plate-holding
instrument*
25-435-15-07
17 cm/6 5/8"



*Activator
measuring device*
51-400-04-07
10.5 cm/4 1/8"



*Activation arm
disconnection forceps*
51-400-01-07
15.5 cm/6"

Further literature on the distraction procedure

Literature/References

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“Double internal distraction with monobloc advancement in infants”. Proc. III
Int Congress on Distraction. Paris, 14-16 June 2001
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“Craniofacial distraction en bloc: A 3 year follow-up”.
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“Monobloc craniomaxillofacial distraction in a newborn with severe craniofacial synostosis: a preliminary report”.
J Craniofacial Surg. 1995, 6: 421-423
- Raposo de Amaral CM
Gradual bone distraction of the VII ISCFs.
Santa Fe, NM, USA, 1997

Please note that this brochure does not replace the instruction for use. The instructions will accompany the product and must be considered before use.

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