



Distraction

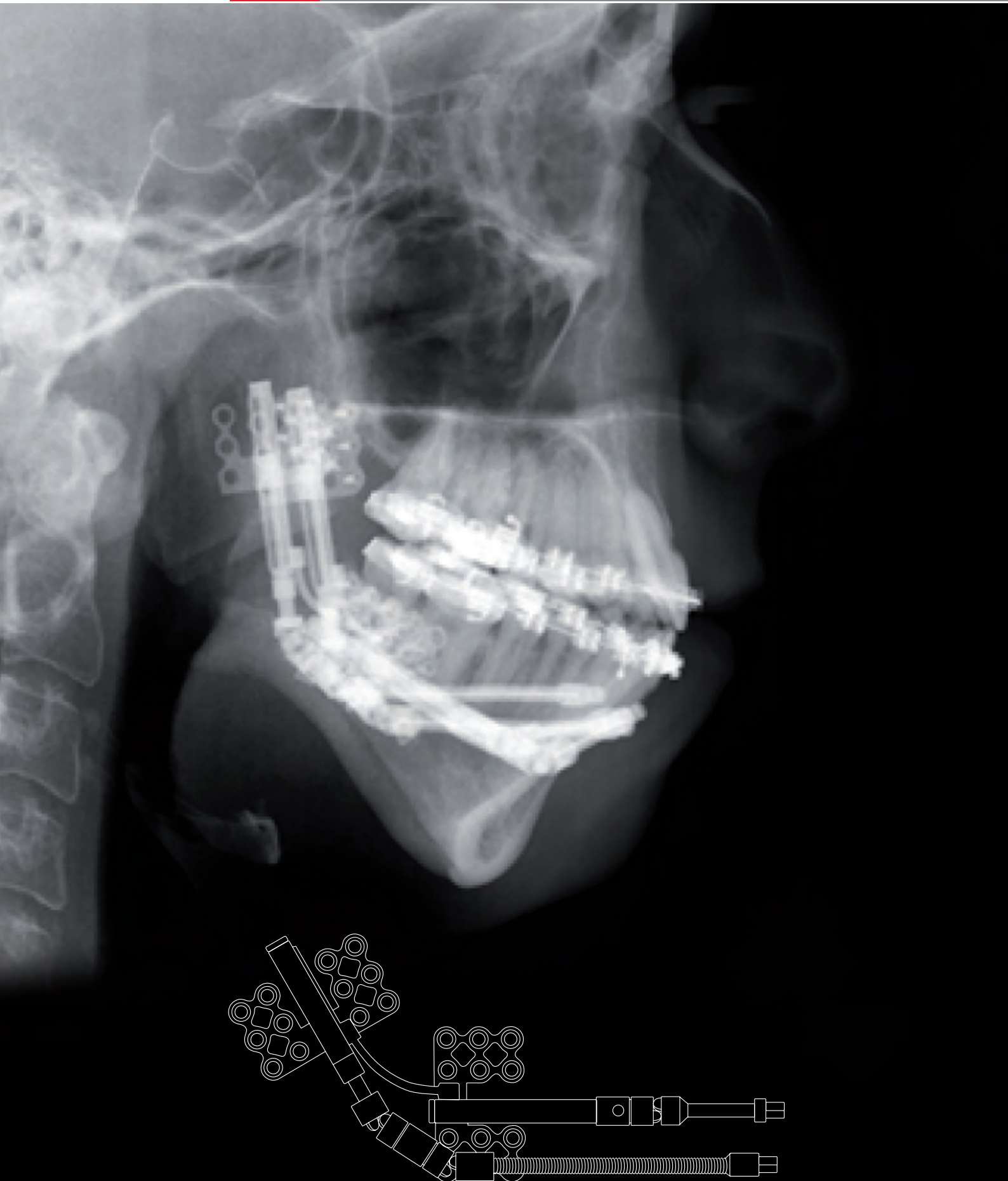
Sophisticated solutions in CMF surgery



Oral and maxillofacial surgery is our passion! Its further development, together with our customers, is our ambition. Every day we work on developing innovative products and services which meet the highest demands on quality, and which contribute to the wellbeing of the patient.

Table of content

	Pages
Distraction in cranio-maxillofacial surgery	5 – 7
Vertical alveolar distraction	8 – 11
Mandibular distraction	12 – 27
Maxillary distraction	28 – 35
Transversal distraction	36 – 41
Midface and cranial distraction	42 – 47
External distraction	48 – 53
Distraction activators	54 – 57
Instruments for distractor placement	58 – 59
Screws, drill bits and screwdriver blades	60 – 63
Instrument for vector determination	64
Storage	65
Distraction protocol	67 – 68
Portfolio overview	70 – 71



Distraction in craniomaxillofacial surgery

A ingenious way to make bones grow

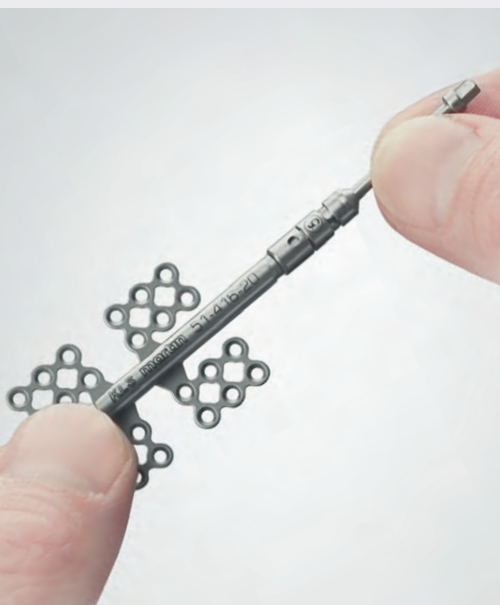
The insights regarding bone lengthening gained by the Russian surgeon Gavril Ilizarov in the 1950s are standard knowledge today and have made their way into clinical practice in many fields of cranio-maxillofacial surgery practice.

From its early beginnings, KLS Martin has closely monitored and stimulated latest tendencies in distraction techniques. It is not surprising that the company is considered a worldwide technology leader in designing and manufacturing clinically approved distraction devices providing the most complete product range for cranio-maxillofacial indications. Scientific evidence of their use has been shown in numerous publications quoting KLS Martin distractors as suitable tools for numerous surgeon's daily work and for patient's benefit.

Today as the indications are pretty much determined our ambition needs to go beyond: smaller and flatter but simultaneously rigid internal devices are there in order to improve patient comfort. New technical features such as the anti-relapse ratchet or the remote-release activator help to ensure clinical safety and to allow longer consolidation periods thus reducing symptoms of clinical relapse.

With the help of this overview brochure you will find all necessary information in a comprehensive and very condensed way.

Product features – maximum benefit



Timetable of a distraction

Osteotomy



Latency period (3 - 7 days)



Distraction (~ 1 mm per day)



Consolidation period (mineralization) (8 - 12 weeks)



Removal of the distractor



Subsequent treatment, remodelling (prosthetic treatment)

The general rules and guidelines of Distraction Osteogenesis
have to be followed.

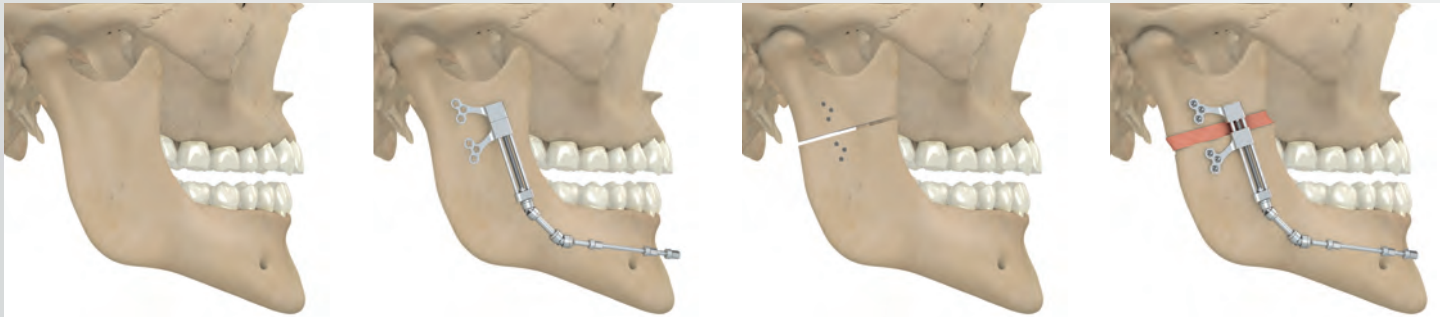
Distraction osteogenesis is based on the body's own ability to cause a fracture to heal and is described as the process of new bone formation between osteotomized bone segments that are gradually separated by incremental traction. Precisely, the process is initiated when distraction forces are applied to the callus formed between the two bone parts, and continues as long as these tissues are stretched; generally at a rate of 1 mm per day. The traction generates tension that stimulates new callus formation and in this way bone is lengthened continuously.

Distraction osteogenesis offers many advantages over conventional methods of treatment:

- No need for bone grafts.
- Not only the bone but also the soft tissue is distracted, so that the new bone is permanently stabilized.
- The results of the distraction can be reproduced.
- Simple surgical procedure which does not essentially differ from standard osteosynthesis techniques used in CMF surgery.



Example of an operative approach:



The surgical procedure is divided into the following steps, independent of the selected distraction system:

Exposing of the bone to be distracted, if possible by intraoral approach with vestibular incision.

Adaptation of the distractor to the bone and the required distraction vector and marking of the position by pre-drilling of at least two screw holes on each side of the osteotomy line.

Removal of the distractor and osteotomy. It is recommended to separate the bone completely.

Final fixation of the distractor with monocortical screws and intraoperative function test of the distractor.

Closing of the wound and starting of the distraction after a latency period of 3 to 7 days.

Alveolar ridge distraction

Based on Ilizarov's technique and the pioneering work of Hidding and Zöller, vertical distraction of the alveolar ridge by especially designed distraction devices has become a state-of-the-art method for the successful treatment of such bone defects. It is considered a highly valuable technique in cases of premature tooth loss due to periodontal disease or injury, as it improves the basis for substance meaning more support and better fixation of dental implants.

The TRACK distractor family is a proven system that provides a complete range of individual devices for the treatment of smaller partial defects of the maxillary and mandibular alveolar ridge up to the highly atrophic edentulous mandible with numerous clinical cases already treated all over the world. The distraction process naturally varies from patient to patient. As a rule, the entire distraction process – from insertion to removal of the device – can be completed within a period of 3 - 4 months.



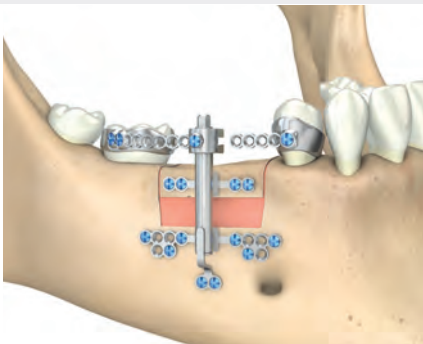
Vertical alveolar distraction TRACK distractors



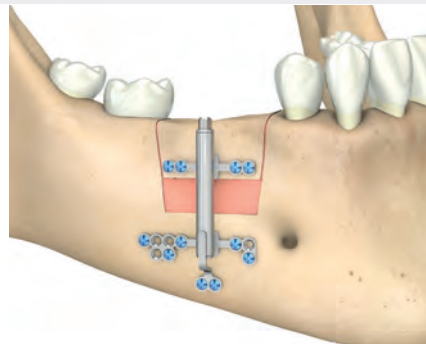
TRACK 1.0
1:1 scale



TRACK 1 Plus
5:1 scale



TRACK 1.0 with optional support plate 51-525-40-09



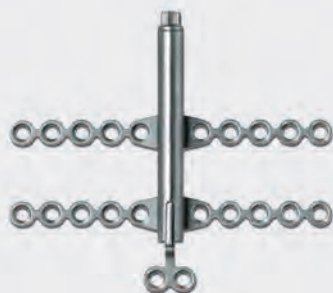
TRACK 1 Plus

TRACK 1.0

Distractors	Item number
Distraction length 15 mm	51-525-15-09
Distraction length/turn 0.3 mm	
Optional	
Support plate for TRACK 1.0, TRACK 1 Plus	51-525-40-09
Recommended screws	
1.0 x 4 mm to 1.0 x 6 mm	
Emergency: 1.2 x 5 mm	
Patient screwdrivers	
Straight	51-525-85-07
Combination straight and angled	51-525-90-07
Micro	51-525-95-07

TRACK 1 Plus

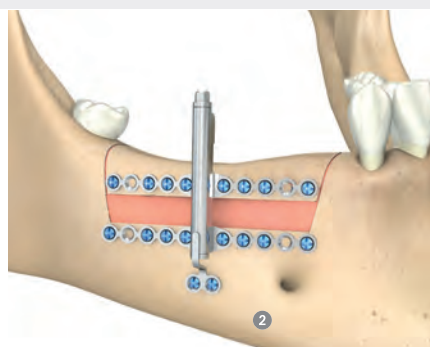
Distractors	Item number
Distraction length 12 mm	51-524-12-09
Distraction length 15 mm	51-524-15-09
Distraction length/turn 0.3 mm	
Recommended screws	
1.5 x 5 mm to 1.5 x 7 mm	
Emergency: 1.8 x 5 mm	
Drill-Free: 1.5 x 5 mm	
Patient screwdrivers	
Straight	51-525-85-07
Combination straight and angled	51-525-90-07
Micro	51-525-95-07



TRACK 1.5
1:1 scale



TRACK 2.0
1:1 scale



TRACK 1.5

TRACK 1.5

Distractors	Item number
Distraction length 15 mm	51-520-15-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04
Micro	51-525-95-07



TRACK 2.0

TRACK 2.0

Distractors	Item number
Distraction length 15 mm	51-530-15-09
Distraction length/turn 0.5 mm	

Recommended screws transport plate ①
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
Recommended screws base plate ②
2.0 x 4 mm to 2.0 x 7 mm
Emergency: 2.3 x 5 mm
Drill-Free: 2.0 x 5 mm

Patient screwdrivers	
Straight	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04
Micro	51-520-95-07



For additional product information, please refer to the brochure “Alveolar Ridge Distraction – Product Overview”.

Note:
For all TRACK distractors, no separate activator is needed.

Mandibular distraction

The different anatomical forms of mandibular microsomias and asymmetries frequently make high demands on the variability and adaptability of the distractors used. Prefabricated distractor models are sometimes too static and therefore cannot meet the requirements of specific clinical tasks. The Zurich mandibular distractors are suitable for distraction of the ascending mandibular ramus as well as of the mandibular body in infants and young adults in case of congenital or acquired mandibular defects and hypoplasia.

The Zurich II concept is suitable for similar indications but takes a completely different path: It is based entirely on a modular principle, whereby all system components can be combined with one another.

Additionally, transport distraction represents an interesting therapeutic option for patients with mandibular continuity defects as a result of trauma or resection or defects from malignant tumors after radiation.



Mandibular distraction

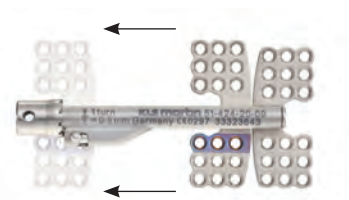
Micro Zurich II distractors

Early intraoral distraction therapy for babies and infants aged up to one year requires distractors with an especially small profile to ensure that the distractor can be reliably covered with soft tissue. The Micro Zurich II product line has been designed with exactly this goal in mind.

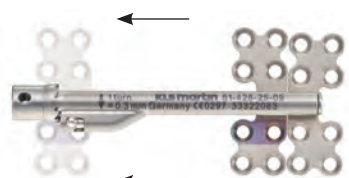
Micro Zurich II Distractors, end-driven

The posterior plate stays in place, while the anterior plate moves forward

End-driven	
(Mesh design, with anti-relapse ratchet)	
15 mm	51-424-15-09
20 mm	51-424-20-09
25 mm	51-424-25-09
30 mm	51-424-30-09
Distraction length/turn 0.3 mm	
Recommended screws	
1.0 x 4 mm to 1.0 x 7 mm	
Emergency: 1.2 x 5 mm	
Patient screwdriver	
Straight	51-430-95-07



End-driven	
(Cloverleaf design, with anti-relapse ratchet)	
15 mm	51-428-15-09
20 mm	51-428-20-09
25 mm	51-428-25-09
30 mm	51-428-30-09
Distraction length/turn 0.3 mm	
Recommended screws	
1.5 x 4 mm to 1.5 x 7 mm	
Emergency: 1.8 x 5 mm	
Drill-Free: 1.5 x 5 mm	
Patient screwdriver	
Straight	51-430-95-07



1:1 scale

Activators
See pages
54 - 57

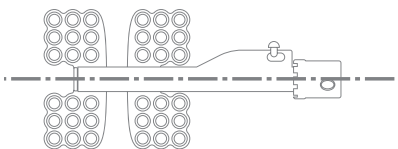


For additional product information, please refer to the brochure "Zurich II Distraction Concept".

Product features



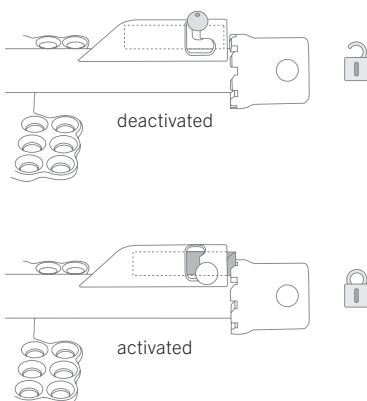
Symmetrical design



The symmetrical design allows you to use the same distractor on the left or on the right side. This reduces your stock-keeping needs and lowers the amount of capital tied up in distractors held in stock. The fixing plates can be cut to size intraoperatively to adapt them to individual anatomical requirements.

The plates available include the well-known cloverleaf plates and mesh designs. The distractors can be installed in place with the plates down or up.

Anti-relapse ratchet



Some distractors of the Zurich II and Micro Zurich II product lines feature an anti-relapse ratchet that prevents backward rotation of the distractor and consequential relapse of the distracted bone area. This stop can be deactivated intraoperatively for function test performance.

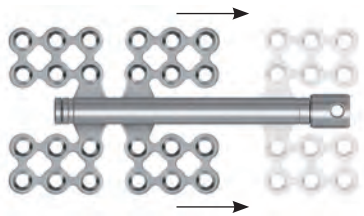
Mandibular distraction Zurich II distractors



Zurich II distractors, end-driven

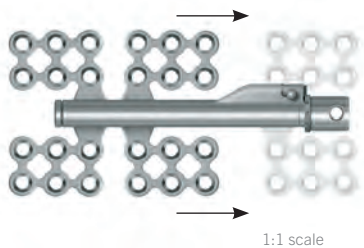
The posterior plate stays in place, while the anterior plate moves forward

End-driven (Mesh design)	
15 mm	51-416-15-09
20 mm	51-416-20-09
25 mm	51-416-25-09
30 mm	51-416-30-09



End-driven (Mesh design, with anti-relapse ratchet)	
15 mm	51-426-15-09
20 mm	51-426-20-09
25 mm	51-426-25-09
30 mm	51-426-30-09

Distraction length/turn 0.5 mm

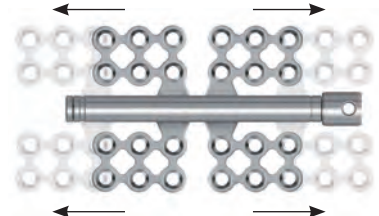


1:1 scale

Zurich II distractors, middle-driven

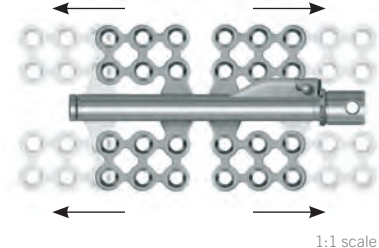
Both plates move from central position bilaterally

Middle-driven (Mesh design)	
15 mm	51-415-15-09
20 mm	51-415-20-09
25 mm	51-415-25-09
30 mm	51-415-30-09



Middle-driven (Mesh design, with anti-relapse ratchet)	
15 mm	51-425-15-09
20 mm	51-425-20-09
25 mm	51-425-25-09
30 mm	51-425-30-09

Distraction length/turn 0.5 mm



1:1 scale

Activators
See pages
54 - 57



Recommended screws

1.5 x 4 mm to 1.5 x 7 mm

Emergency: 1.8 x 5 mm

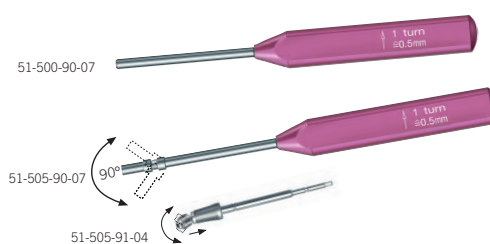
Drill-Free: 1.5 x 5 mm

Patient screwdrivers

Straight 51-500-90-07

Angled 51-505-90-07

Combination straight and angled for handle 25-402-99-07 51-505-91-04



For additional product information, please refer to the brochure "Zurich II Distraction Concept".

Mandibular distraction

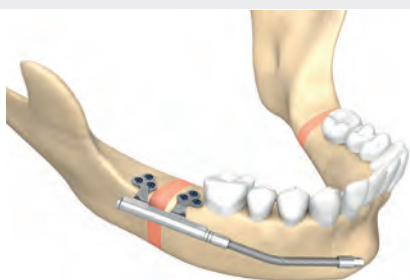
Zurich pediatric ramus distractors



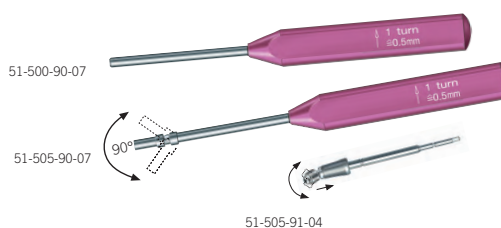
Zurich Pediatric Ramus, Cloverleaf design
(flexible activator)
1:1 scale



Zurich Pediatric Ramus, Cloverleaf design
(rigid activator)
1:1 scale



Zurich pediatric ramus, cloverleaf design (flexible activator)



Zurich pediatric ramus cloverleaf design (flexible activator)

Distractors incl. activator	Item number
15 mm, left	51-515-15-09
20 mm, left	51-515-20-09
25 mm, left	51-515-25-09
15 mm, right	51-516-15-09
20 mm, right	51-516-20-09
25 mm, right	51-516-25-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

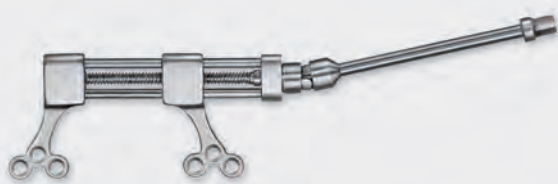
Zurich pediatric ramus Cloverleaf design (rigid activator)

Distractors incl. activator	Item number
15 mm, left	51-511-15-09
20 mm, left	51-511-20-09
25 mm, left	51-511-25-09
15 mm, right	51-513-15-09
20 mm, right	51-513-20-09
25 mm, right	51-513-25-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

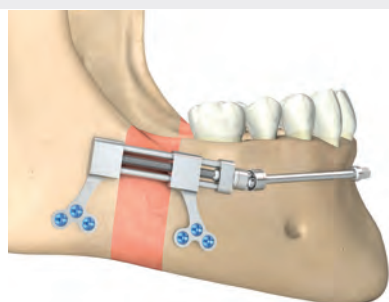
Horizontal and ramus distractors



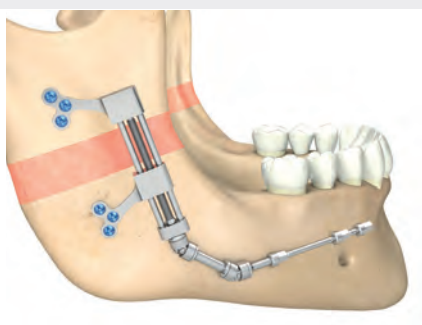
Horizontal Distractor
1:1 scale



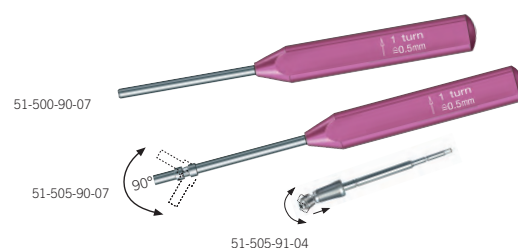
Ramus Distractor
1:1 scale



Horizontal distractor



Ramus distractor



Horizontal distractor

Distractors incl. activator	Item number
10 mm	51-500-10-09
15 mm	51-500-15-09
20 mm	51-500-20-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

Ramus distractor

Distractors incl. activator	Item number
15 mm	51-510-15-09
20 mm	51-510-20-09
25 mm	51-510-25-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

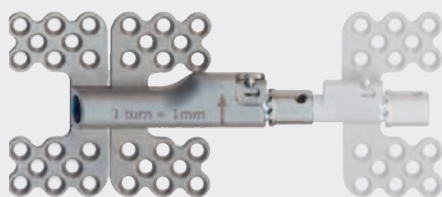
- Low-profile distractors
- Symmetrical design – no right or left versions
- Fixation optionally with the plates downwards or upwards (for fixation in the oblique line)
- Cardanic activators offer flexible intraoral activation.
- Activation arm is already included.



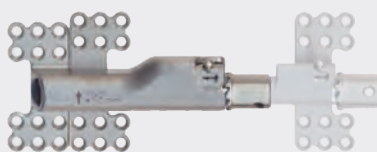
For additional product information, please refer to the brochure "Zurich II Distraction Concept".

Mandibular distraction

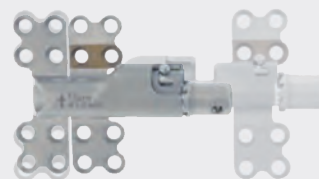
HyperDrive mandibular distractor



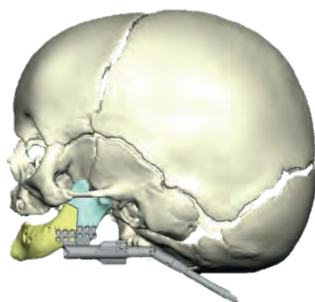
30 mm, 51-526-30-09
Standard version
1:1 scale



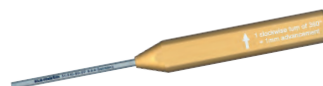
30 mm, 51-528-30-09
Micro version, for patients under 12 months
1:1 scale



20 mm, 51-351-20-09
Standard version
1:1 scale



51-510-90-07



HyperDrive mandibular distractor

HyperDrive mandibular distractors

Distractors w/o activators with anti-relapse ratchet	Item number	
	STERILE R	
30 mm standard	51-526-30-09	51-526-30-71
30 mm micro	51-528-30-09	51-528-30-71
20 mm standard	51-351-20-09	51-351-20-71

Distraction length/turn 1.0 mm

Recommended screws (for 30 mm standard and 20 mm standard)
1.5 x 4 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

Recommended screws (for 30 mm micro)
1.0 x 4 mm to 1.0 x 7 mm
Emergency: 1.2 x 5 mm

Patient screwdrivers	
Straight	51-510-90-07

Activators
See pages
54 - 57

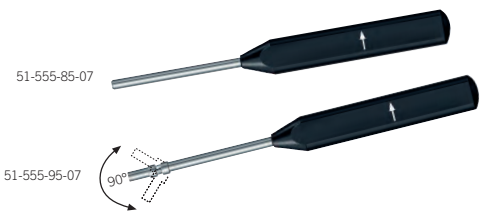
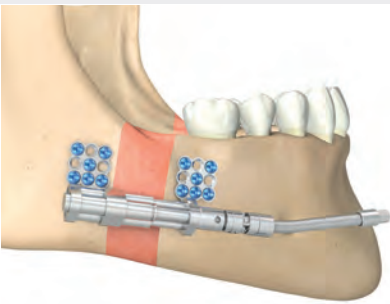
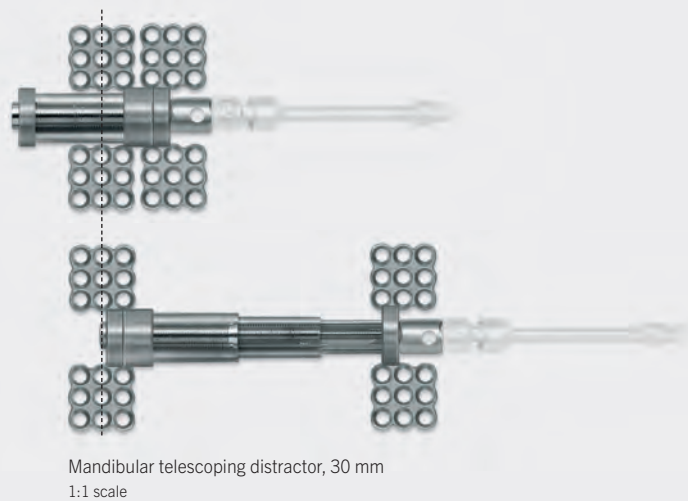
The HyperDrive mandibular distractor is designed for mandibular distraction in the neonatal and infant population and thus available in three different versions, with the micro version being available for patients under 12 months of age. It is truly a one-stop-shop for mandibular distraction needs

The HyperDrive body contains a very compact distraction mechanism that allows for greater distraction capability per mm of initial length. The 30 mm HyperDrive is shorter in initial length than a standard 20 mm device. This limits lateral dissection and is ideal for patients in need of a large movement without much initial space to work in. The enclosed gearing limits soft tissue interference.



For additional product information, please refer to the brochure "Zurich II Distraction Concept".

Mandibular telescoping distractor



Mandibular telescoping distractor

Mandibular telescoping distractor

Distractors w/o activators	Item number
20 mm	51-350-20-09
30 mm	51-350-30-09
Distraction length/turn 0.35 mm	

Recommended screws
1.5 x 4 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

Patient screwdrivers	
Straight	51-555-85-07
Angled	51-555-95-07

Activators
See pages
54 - 57

Using intraoral distractors for the therapy of serious mandibular micrognathias or asymmetries poses the basic problem of how to accommodate the relatively large spindle of the distractor in the patient’s mouth.

The telescopic mandibular distractor provides the solution. Just like a car antenna, this distractor extends continuously in various phases, reaching its full volume only at the end of the distraction process.



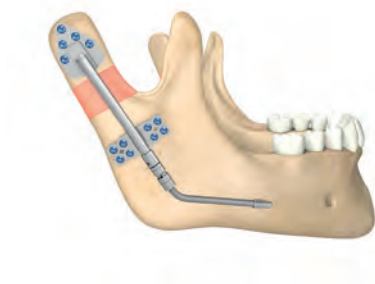
For additional product information, please refer to the brochure “Zurich II Distraction Concept“.

Mandibular distraction

Ramus transport distractor



Ramus transport distractor
1:1 scale



Ramus transport distractors



Optionally: use of the consolidation plate



Ramus transport distractors

End-driven distractors w/o activators	Item number
20 mm	51-421-20-09
25 mm	51-421-25-09
30 mm	51-421-30-09
Distraction length/turn 0.5 mm	

To order separately	
Consolidation plate	51-422-12-09

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

Activators
See pages
54 - 57



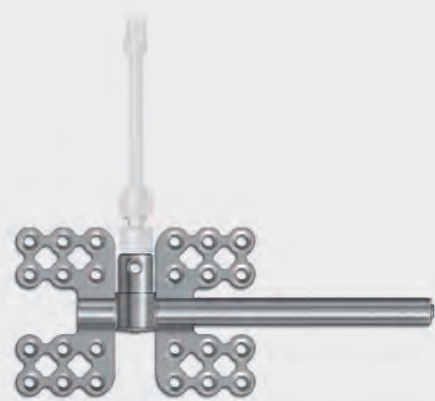
For additional product information,
please refer to the brochure
"Zurich II Distraction Concept".

The ramus transport distractor has a completely symmetrical design and therefore can be used on both sides. Thanks to the availability and modular use of activators, together with the two alternative posterior attachments provided, the surgeon can respond flexibly and individually to any anatomical challenge.

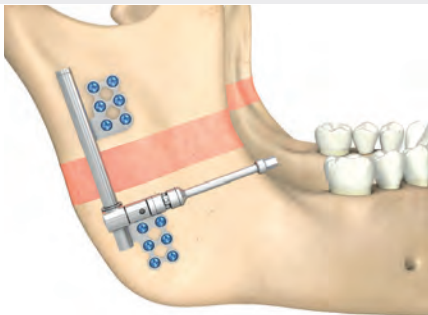
A special retention plate (item number 51-422-12-09) is optionally available for increased patient convenience during the consolidation phase.

In case of using the retention plate, the distractor is detached from the posterior plate and removed. The retention plate is then attached from the front (caudally) and firmly locked in place. The posterior plate remains firmly connected to the condyle at any time.

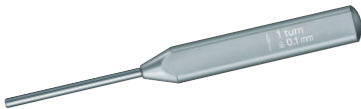
Right Angle Driven (RAD)



Right Angle Driven (RAD)
1:1 scale



Intraoral fixation of a distractor with 90° activation



51-560-90-07

Right Angle Driven (RAD)

Distractors w/o activators	Item number
20 mm, left	51-612-20-09
25 mm, left	51-612-25-09
20 mm, right	51-613-20-09
25 mm, right	51-613-25-09
Distraction length/turn 0.1 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	51-560-90-07

Activators

See pages
54 - 57

Distraction of the ascending ramus is very demanding for intraoral distractors. Here, the surgeon normally prefers intraoral activation, however this is especially hard to accomplish because of the lack of space.

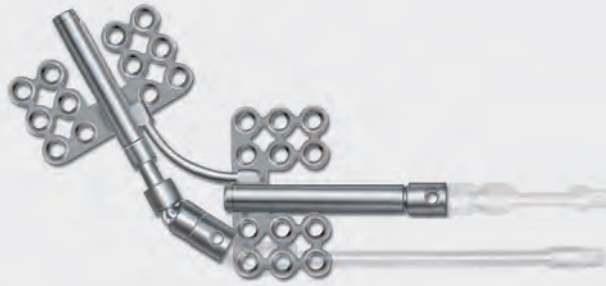
Due to the offset activator providing 90-degree access, these distractors facilitate intraoral activation.



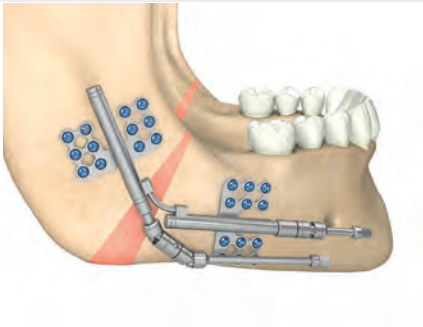
For additional product information, please refer to the brochure “Zurich II Distraction Concept”.

Mandibular distraction

Zurich Wood distractor



Zurich Wood distractor
1:1 scale



Zurich Wood distractor

Zurich Wood distractor

Distractors w/o activators	Item number
20 x 20 mm, left	51-300-20-09
20 x 20 mm, right	51-301-20-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

Activators
See pages
54 - 57

Mandibular micrognathias frequently affect both the mandibular body and the ascending ramus. Bidirectional distractors offer surgeons an opportunity to treat both sectors in a targeted but independent way.

As opinions differ with regard to the question whether single or double osteotomy is indicated in the mandibular angle, the KLS Martin range of distractors offers solutions that satisfy the demands of both parties.

Zurich Wood distractors are a combination of two Zurich distractors. Their design reflects a very frequent type of mandibular micrognathias and asymmetries in which both the mandibular body and the ascending ramus are affected.

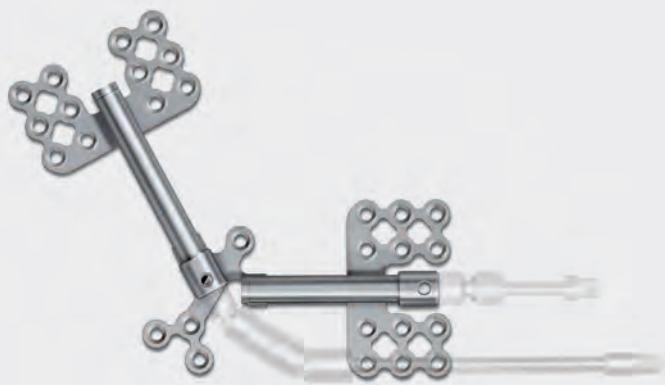
However, the entire range of activators contained in the Zurich modular distractor line can be used in addition to supplement or modify the two activators as required.

Zurich Wood distractors require only one osteotomy line to be performed in the mandibular angle region.

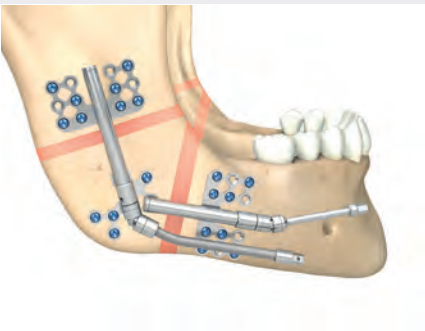


For additional product information, please refer to the brochure "Zurich II Distraction Concept".

Zurich bidirectional distractor



Zurich bidirectional distractor
1:1 scale



Zurich bidirectional distractor

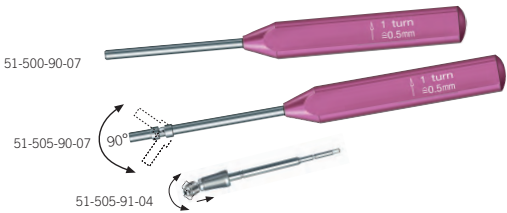
Zurich bidirectional distractor

Distractors w/o activators	Item number
15 x 20 mm, left	51-310-20-09
15 x 20 mm, right	51-311-20-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

Activators
See pages
54 - 57



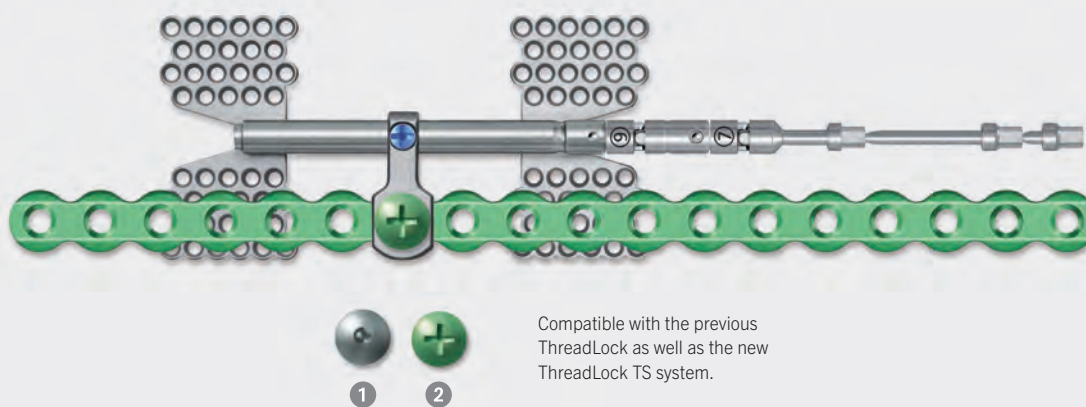
By means of a double osteotomy, the gonial angle will be clearly identified and formed. Individual bone formation of both, the ascending ramus and the mandibular body are guaranteed applying the two different activation spindles.



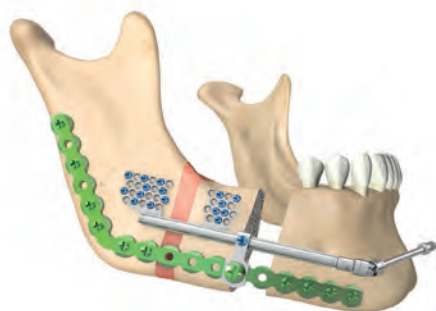
For additional product information, please refer to the brochure “Zurich II Distraction Concept”.

Mandibular distraction

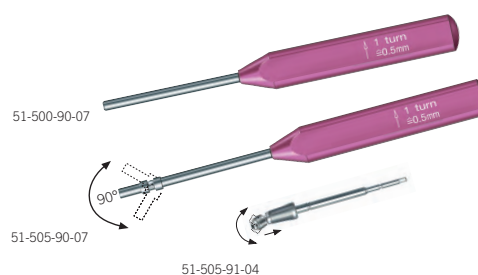
ThreadLock transport distractor



ThreadLock transport distractor
fixed on a 2.7-mm ThreadLock TS reconstruction plate
(to be ordered separately)
1:1 scale



ThreadLock transport distractor



ThreadLock transport distractor

Distractors w/o activators	Item number
50 mm	51-700-50-09*
Distraction length/turn 0.5 mm	

Recommended screws	
1.5 x 4 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
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

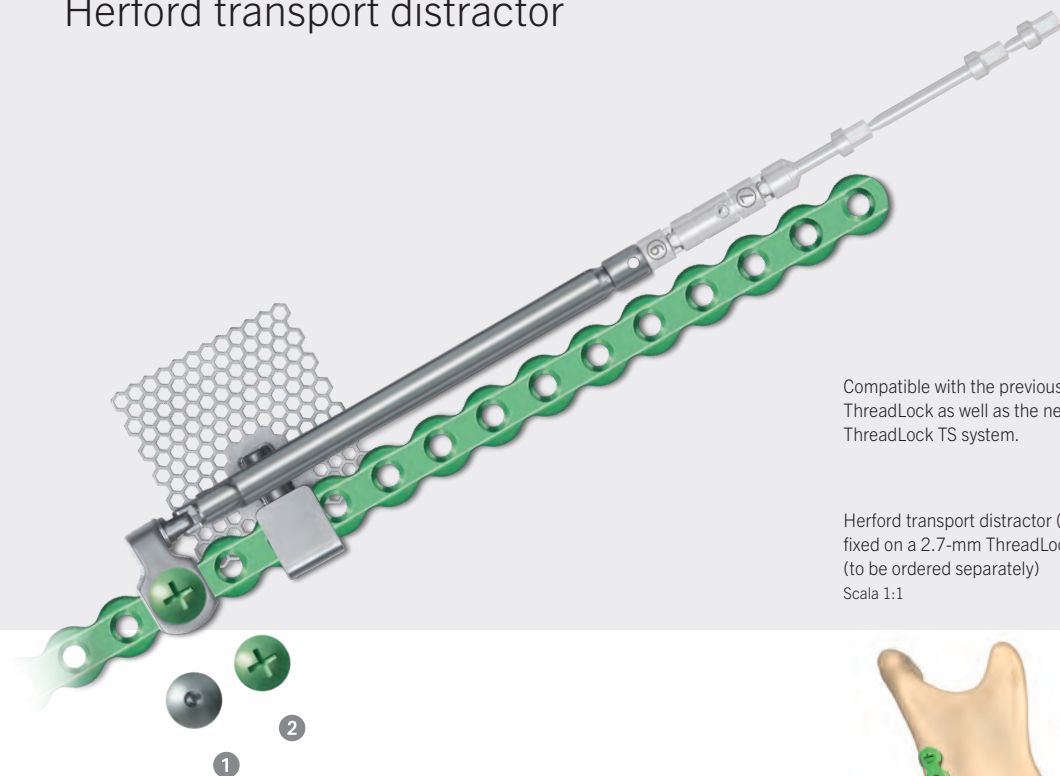
* including	
1x distractor incl. the following fixation screws	
① 1x Centre Drive® fixing screw 2.7 x 6 mm for ThreadLock recon plates (2.7 mm)	
② 1x maxDrive® fixing screw 2.7 x 6 mm for ThreadLock recon plates (2.7 mm)	

Activators
See pages
54 - 57



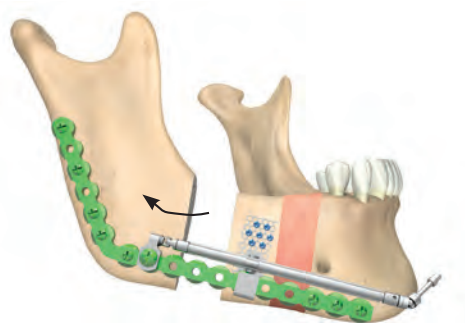
For additional product information on ThreadLock TS, please refer to the brochure „ThreadLock TS - Multidirectional Locking Plate System“.

Herford transport distractor



Compatible with the previous ThreadLock as well as the new ThreadLock TS system.

Herford transport distractor (plate guided)
fixed on a 2.7-mm ThreadLock TS reconstruction plate
(to be ordered separately)
Scala 1:1



Herford transport distractor (plate guided)

Herford transport distractor (plate guided)

Distractors w/o activators	Item number
40 mm, left	51-710-40-09 *
60 mm, left	51-710-60-09 *
40 mm, right	51-711-40-09 *
60 mm, right	51-711-60-09 *
Distraction length/turn 0.5 mm	

Recommended screws	
1.5 x 4 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
Angled	51-505-90-07
Combination straight and angled for handle	25-402-99-07
	51-505-91-04

* including	
1x distractor incl. the following fixation screws	
①	1x Centre Drive® fixing screw 2.7 x 6 mm for ThreadLock recon plates (2.7 mm)
②	1x maxDrive® fixing screw 2.7 x 6 mm for ThreadLock recon plates (2.7 mm)

Activators
See pages
54 - 57



For additional product information on ThreadLock TS, please refer to the brochure „ThreadLock TS - Multidirectional Locking Plate System“.

Maxillary distraction

KLS Martin maxillary distractors are designed for the treatment of moderate to severe maxillary deficiency and hypoplasia in children and adolescents. Treatment of maxillary hypoplasia has traditionally involved conventional Le Fort I osteotomies and advancement. Le Fort I advancement with distraction osteogenesis has emerged as viable, stable treatment modality correction of severe maxillary hypoplasia in cleft, syndromic, and noncleft patients.

Hence, intraoral distractors such as the Maxillary Telescoping, Zurich Pediatric Maxillary or TS-MD allow an advancement of the midface at the LeFort I level.

Furthermore, the Liou Cleft Distractor is an intraoral system for the horizontal transport distraction of the maxillary alveolar ridge. The distractor allows segment transport in unidirectional way, enabling reconstruction of defects resulting from e.g. alveolar cleft in cleft lip and palate patients, removal of alveolar fistula and congenital or acquired deficiency of the alveolar ridge.



Maxillary distraction

Zurich pediatric maxillary distractor



Zurich pediatric maxillary distractor
(flexible activator)
1:1 scale



Zurich pediatric maxillary distractor
(with detached activator)
2:1 scale

Zurich pediatric maxillary distractor

Distractors with flexible activators ($t^* = 0.6 \text{ mm}$)	Item number
15 mm, left	51-550-15-09
15 mm, right	51-551-15-09
Distraction length/turn 0.5 mm	

Distractors with rigid activators ($t^* = 0.6 \text{ mm}$)	
15 mm, left	51-552-15-09
15 mm, right	51-553-15-09
Distraction length/turn 0.5 mm	

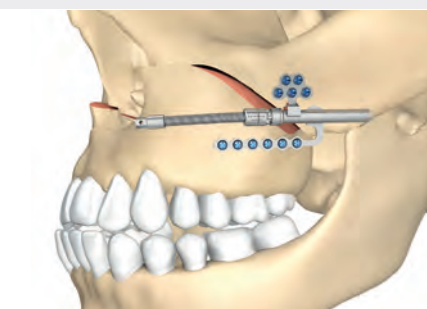
Distractors w/o activators ($t^* = 1.0 \text{ mm}$)	
15 mm, left	51-556-15-09
20 mm, left	51-556-20-09
15 mm, right	51-557-15-09
20 mm, right	51-557-20-09
Distraction length/turn 0.5 mm	

Recommended screws
1.5 x 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
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

* thickness of the plate

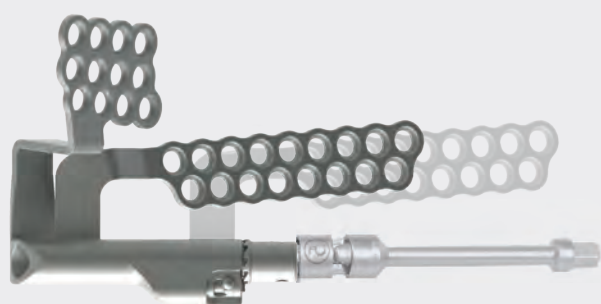
Activators
See pages
54 - 57



Zurich pediatric maxillary distractor (flexible activator)



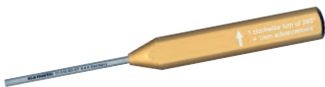
HyperDrive maxillary distractor



HyperDrive maxillary distractor
1:1 scale



HyperDrive maxillary distractor



51-510-90-07

HyperDrive maxillary distractors

Distractors w/o activators with anti-relapse ratchet	Item number
30 mm , left	51-351-21-09
30 mm, right	51-351-22-09
Distraction length/turn 1.0 mm	
Recommended screws	
2.0 x 4 mm to 2.0 x 7 mm	
Emergency: 2.3 x 5 mm	
Drill-Free: 2.0 x 5 mm	
Recommended screws	
2.3 x 4 mm to 2.3 x 7 mm	
Emergency: 2.5 x 5 mm	
Patient screwdrivers	
Straight	51-510-90-07

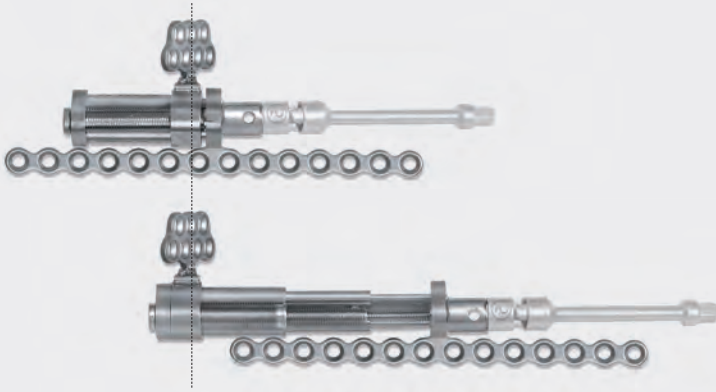
Activators
See pages
54 - 57

Advantages of the HyperDrive maxillary distractor:

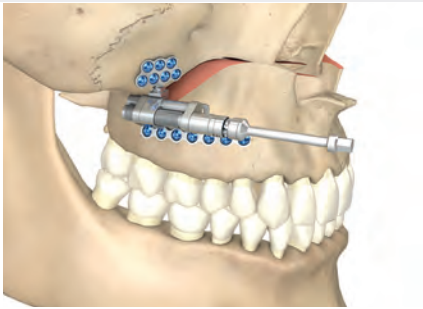
- Telescoping body allows for greater distraction capability per mm of initial length.
- Low profile telescoping distractor.
- Enclosed gearing limits soft tissue interference.
- Features an anti-relapse ratchet.
- The distance per turn is simple and easy to remember: 1 mm per complete rotation.

Maxillary distraction

Maxillary telescoping distractor



Maxillary telescoping distractor, 30 mm, right
1:1 scale



Maxillary telescoping distractor



Maxillary telescoping distractor

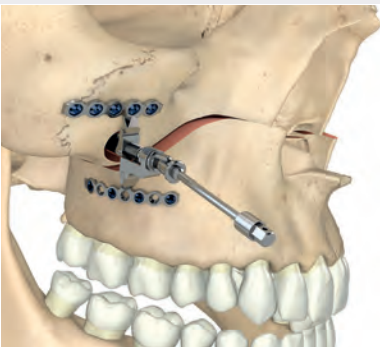
Distractors w/o activators	Item number
30 mm, left	51-360-30-09
30 mm, right	51-361-30-09
Distraction length/turn 0.35 mm	

Activators
See pages
54 - 57

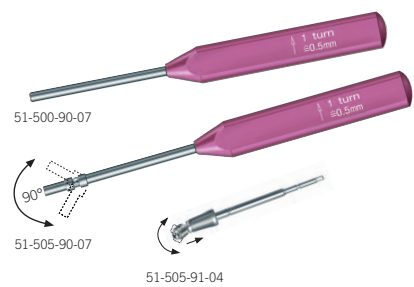
Recommended screws
1.5 x 4 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

Patient screwdrivers	
Straight	51-555-85-07
Angled	51-555-95-07

TS-MD distractor



TS-MD distractor



TS-MD distractor

Distractors incl. activator	Item number
20 mm	51-540-20-09
25 mm	51-540-25-09
30 mm	51-540-30-09
Distraction length/turn 0.5 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	51-500-90-07
Angled	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

The TS-MD distractor is designed for the treatment of moderate to severe maxillary deficiency and hypoplasia.

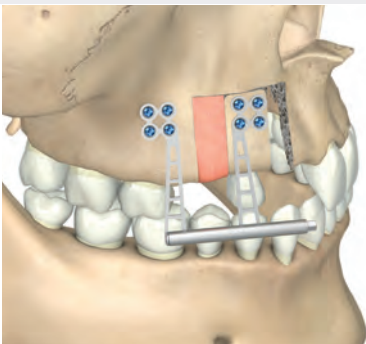
The distraction spindle is placed in the maxillary sinus which is large enough even at the age of 8 years to provide room for it. The anatomy of the maxillary sinus causes no limitation in the choice of the vector of distraction, which is indicated by the position of the distraction spindle.

Maxillary distraction

Liou Cleft distractor



Liou Cleft distractor
1:1 scale



Liou Cleft distractor

Liou Cleft distractor

Distractors incl. activator	Item number
20 mm, left	51-650-20-09
20 mm, right	51-651-20-09
Distraction length/turn 0.3 mm	

Note:
For all Liou Cleft distractors, no activator is needed.



Recommended screws	
1.5 x 4 mm or 1.5 x 5 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	51-525-90-07



The Liou Cleft distractor is an intraoral system for the horizontal transport distraction of the maxillary alveolar ridge. The distractor allows segment transport in unidirectional way, enabling reconstruction of defects resulting from:

- alveolar cleft in cleft lip and palate patients
- removal of alveolar fistula
- congenital or acquired deficiency of the alveolar ridge

The distractor itself consists of a distractor body and the osteosynthesis plates attached to this: the base plate and transport plate.

It is activated via the activation point by placing the patient screwdriver (e.g. item number 51-525-85-07) directly onto the external hex and making a corresponding rotation. When the distractor is activated, the transport plate or the transport segment attached to this moves from posterior to anterior, while the base plate remains in the posterior position.

Transversal distraction

Transversal discrepancies are among the most frequent cranio-facial disorders in cranio-maxillofacial surgery. Bone-borne devices offer clear advantages in comparison to tooth-borne solutions, as they allow simultaneous treatment by the orthodontic team leading to a significant reduction of the overall treatment time.

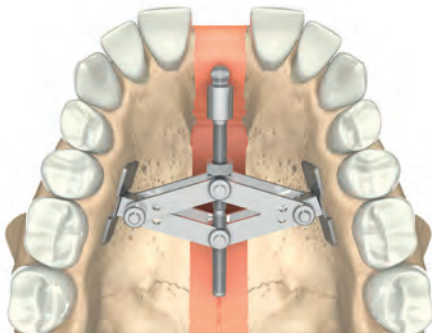
KLS Martin has done pioneering work in transversal distraction osteogenesis. With the RPE transversal distractor, the Rotterdam Midline, the Bologna Midline and the Rotterdam Palatal distractors the company offers four important bone-borne strategies which make sure the surgeon has the complete choice of bone-borne solutions for a reliable skeletal base for adequate positioning of teeth.



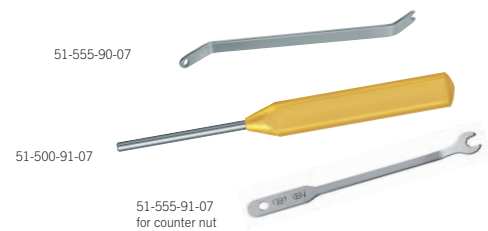
Transverse maxillary distraction Rotterdam palatal distractor



Rotterdam palatal distractor
1:1 scale



During distraction period

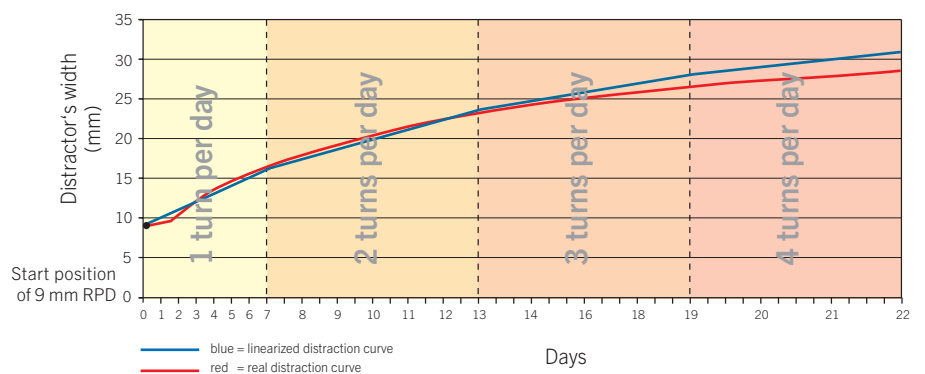


Rotterdam palatal distractor

Distractors	Item number
9 mm initial width (19 mm distraction length)	51-555-09-09
13 mm initial width (19 mm distraction length)	51-555-13-09
Distraction length/turn see distraction diagram	
Screws are not required!	
Patient screwdrivers	
Hockey stick-like	51-555-90-07
Straight	51-500-91-07

Distraction diagram

showing the width of a 9-mm Rotterdam palatal distractor
in relation to active distraction time

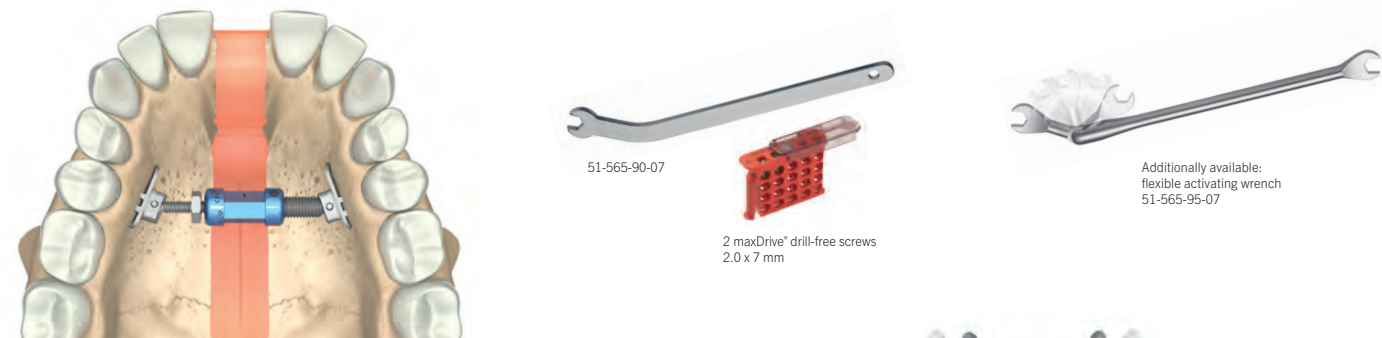


For additional product information, please refer
to the brochure "Transversal Distraction Overview".

Rapid Palatal Expander (RPE)



Rapid Palatal Expanders (RPEs)



RPE distractor

Rapid Palatal Expander (RPE)

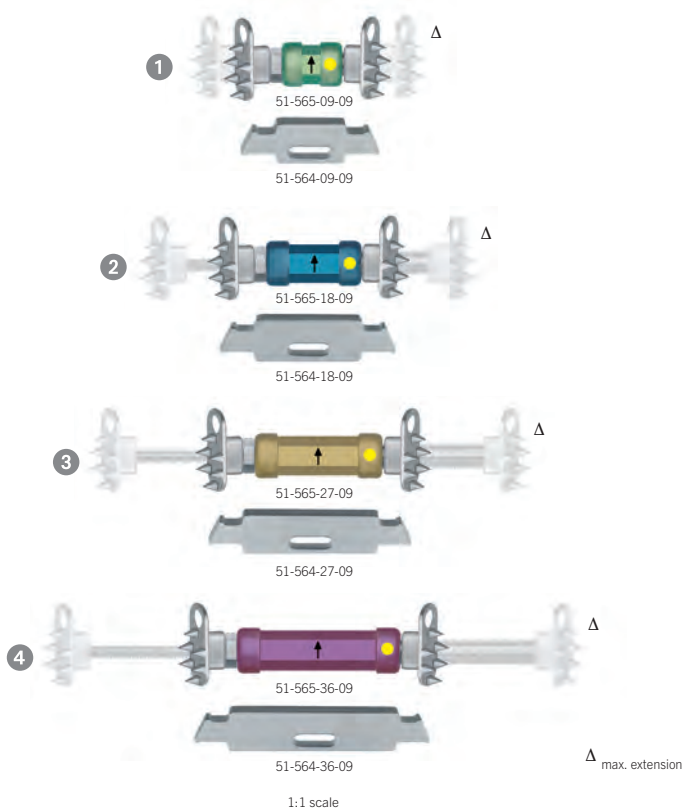
Distractors	Item number	STERILE R
1 9 mm distraction length	51-565-09-09*	51-565-09-71 **
2 18 mm distraction length	51-565-18-09*	51-565-18-71 **
3 27 mm distraction length	51-565-27-09*	51-565-27-71 **
4 36 mm distraction length	51-565-36-09*	51-565-36-71 **
Recommended distraction length		
1 - 2 color codes = 0.33 - 0.66 mm/day		
(one complete turn = 1.0 mm)		

Measuring templates	
Size I	51-564-09-09
Size II	51-564-18-09
Size III	51-564-27-09
Size IV	51-564-36-09

Recommended screws
Drill-Free: 2.0 x 7 mm

Patient screwdriver	
Activating wrench	51-565-90-07
Flexible activating wrench	51-565-95-07

* distractor including activating wrench 51-565-90-07 and 2 maxDrive® drill-free screws 2.0 x 7 mm
 ** sterile packed distractor, including activation wrench 51-565-90-07 and 2 maxDrive® drill-free screws 2.0 x 7 mm

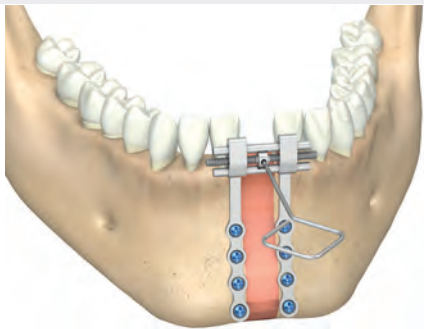


Transverse mandibular distraction

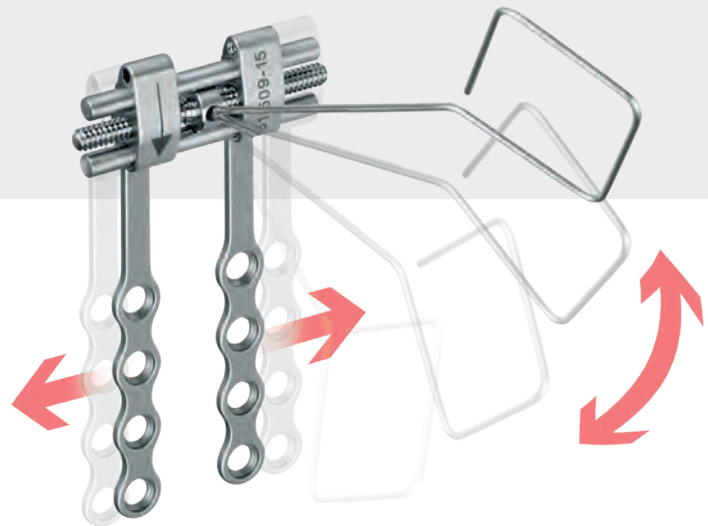
Rotterdam midline distractor



Rotterdam midline distractor
1:1 scale



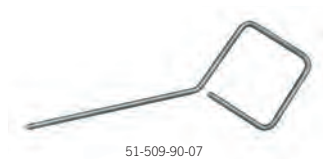
Rotterdam midline distractor



Rotterdam midline distractor

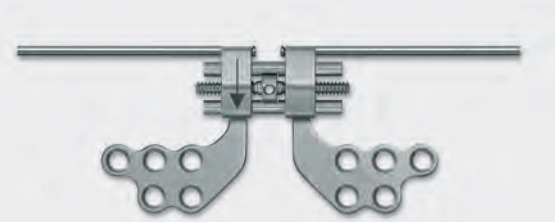
Distractors	Item number
15 mm	51-509-15-09*
Recommended distraction length	
2 activ. of 90° = 0.5 mm	
4 activ. of 90° = 1.0 mm	
Recommended screws	
2.0 x 4 mm to 2.0 x 11 mm	
Emergency: 2.3 x 5, 7, 9 mm	
Drill-Free: 2.0 x 5, 7 mm	
Patient screwdriver	
Activating wire	51-509-90-07
*including activating wire	

Transverse mandibular hypoplasia with crowding of the anterior teeth and a V-shape of the mandible is frequently seen in patients with Class I and II malocclusions and Class III patients requiring decompensation before orthognathic surgery. The surgical technique of widening the symphyseal area of the mandible by means of distraction is a successful treatment option for such indications. The Rotterdam Midline Distractor is a totally bone-borne distractor, based on a simple hyrax-appliance, that will be placed and activated.

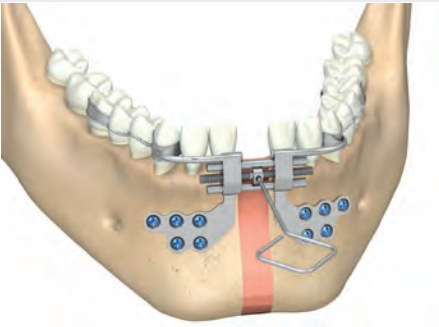


For additional product information, please refer to the brochure "Transversal Distraction Overview".

Bologna midline distractor



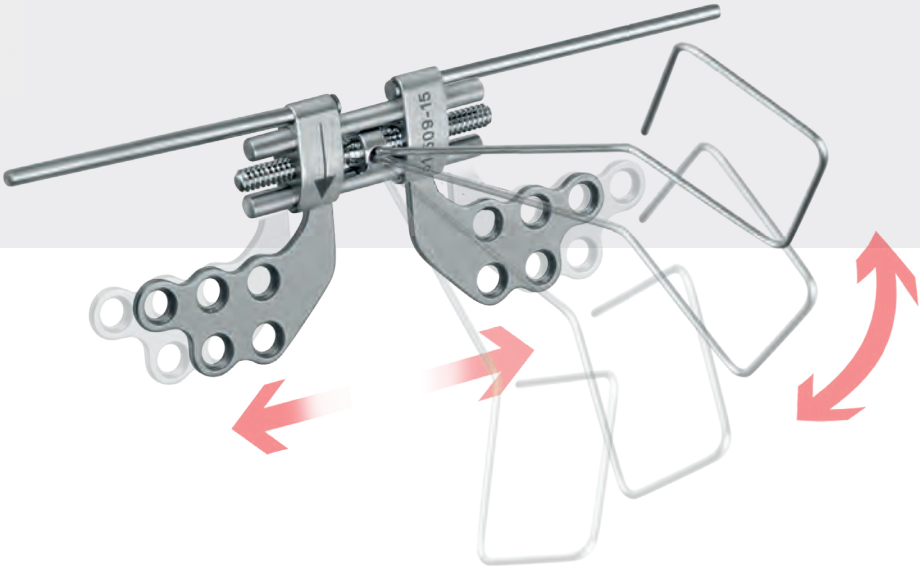
Bologna midline distractor
1:1 scale



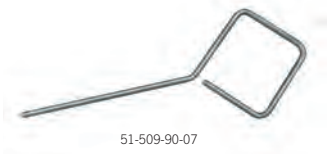
Bologna midline distractor

Bologna midline distractor

Distractors	Item number
15 mm	51-508-15-09*
Recommended distraction length	
2 activ. of 90° = 0.5 mm	
4 activ. of 90° = 1.0 mm	
Recommended screws	
2.0 x 4 mm to 2.0 x 7 mm	
Emergency: 2.3 x 5, 7 mm	
Drill-Free: 2.0 x 5, 7 mm	
Patient screwdriver	
Activating wire	51-509-90-07
*including activating wire	



The Bologna midline distractor offers the combination of bone-borne and tooth-borne anchorage. The attached steel bar enables a stable fixation with the dental anchoring and in this way allows a parallel bone and dental arch widening. Therefore force transmittance can be guaranteed.



For additional product information, please refer to the brochure “Transversal Distraction Overview”.

Midface and cranial distraction

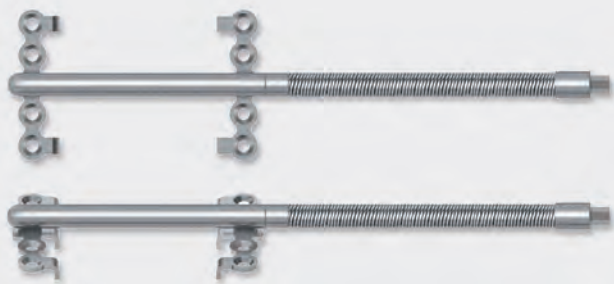
In traditional craniofacial remodeling, there are creative techniques used to increase the volume and shape of existing bone, but generating bone and tissue through gradual distraction offers a reliable method to achieve treatment goals.

Cranial vault expansion and fronto-facial advancement by distraction osteogenesis has the big advantage of producing new autologous bone of correct shape in their locations, which is alive and vascularized.

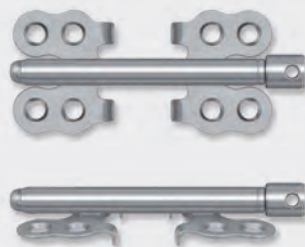
The technique, although not simple and not risk free, is much less technically challenging and exposes patients to lower risk for the most serious complications compared to single-stage vault expansion or monobloc advancement. Less soft tissue dissection and less devascularization of bone are required thus minimizing bone resorption and epidural dead space seen in traditional cranial remodeling. As the expansion is gradual, wound closure is not under tension resulting in less risk of problems with healing.



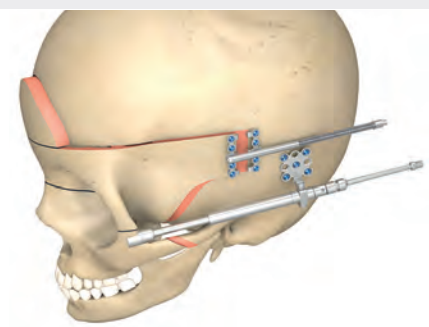
Midface and cranial distraction Arnaud cranio-orbital distractors



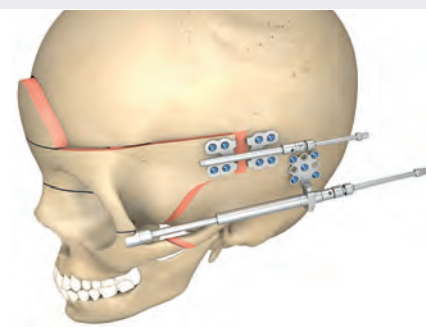
Arnaud cranio-orbital distractor 1.5
1:1 scale



Arnaud cranio-orbital distractor 2.0
1:1 scale



Arnaud cranio-orbital distractor 1.5



Arnaud cranio-orbital distractor 2.0

Arnaud cranio-orbital distractor

Arnaud 1.5

Distractor incl. activator	Item number
20 mm	51-630-20-09
30 mm	51-630-30-09
Distraction length/turn 0.3 mm	

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

Patient screwdrivers	
Straight 0.3 mm	51-525-85-07

Arnaud 2.0

Distractor incl. activator	Item number
20 mm	51-632-20-09
30 mm	51-632-30-09
Distraction length/turn 0.6 mm	

Recommended screws	
Standard screws: 2.0 x 4 mm to 2.0 x 5 mm	
Emergency: 2.3 x 5 mm	
Drill-Free: 2.0 x 5 mm	

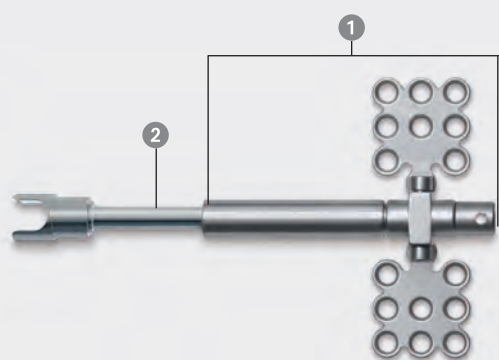
Patient screwdrivers	
Straight 0.6 mm	51-423-95-07

Activators
See pages
54 - 57

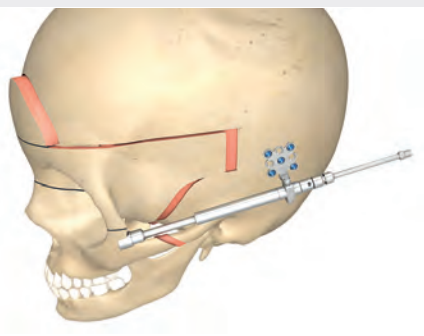


For additional product information,
please refer to the brochure "Cranial Distraction".

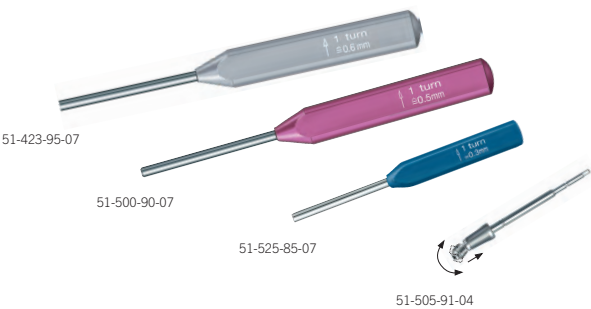
Marchac temporal distractors



Marchac temporal distractor
1:1 scale



Marchac temporal 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	

Activators
See pages
54 - 57

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

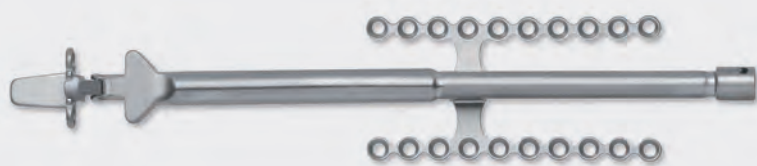


For additional product information,
please refer to the brochure "Cranial Distraction".

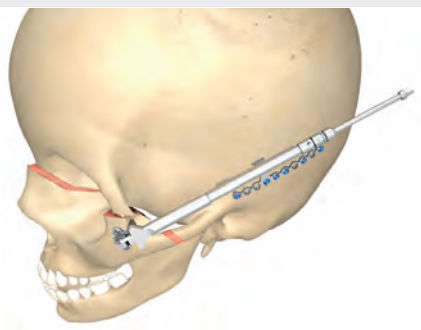
Recommended screws
1.5 x 3.5 mm to 1.5 x 7 mm
Emergency: 1.8 x 5 mm
Drill-Free: 1.5 x 5 mm

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

Midface and cranial distraction Kawamoto distractors



Kawamoto distractor
1:1 scale



Kawamoto distractor

Kawamoto distractor

Distractor w/o activators	Item number
Straight, 30 mm	51-402-30-09
Bent, 30 mm	51-403-30-09
Distraction length/turn 0.5 mm	

Activators
See pages
54 - 57

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

Patient screwdrivers	
Straight 0.5 mm	51-500-90-07
Straight 0.5 mm	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

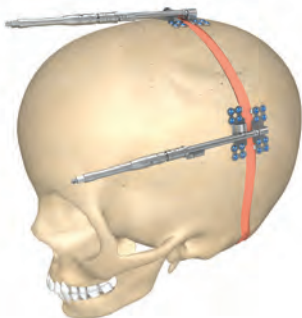


For additional product information,
please refer to the brochure "Cranial Distraction".

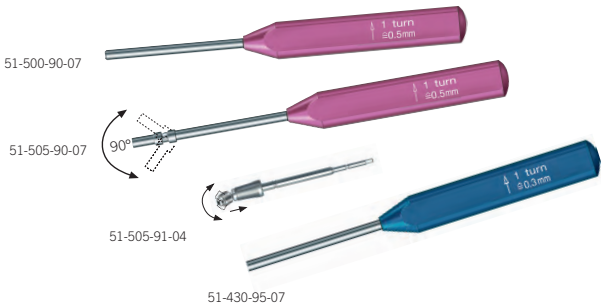
Posterior cranial vault distractors



Posterior cranial vault distractor
1:1 scale



Posterior cranial vVault distractors



Posterior cranial vault distractor

Distractors w/o activators	Item number
Small spindle, 30 mm, with ratchet	51-405-42-09
Distraction length/turn 0.3 mm	

Activators
 See pages
 54 - 57

Distractors w/o activators	
Large spindle, 30 mm, with ratchet	51-563-30-09
Distraction length/turn 0.5 mm	

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

Patient screwdrivers	
Straight 0.3 mm	51-430-95-07
Straight 0.5 mm	51-500-90-07
Angled 0.5 mm	51-505-90-07
Combination straight and angled for handle 25-402-99-07	51-505-91-04

The posterior cranial vault distractor is especially designed for the distraction of the posterior part of the skull. For optimal adaptation to the convex cranium, the osteosynthesis plates are not fully rigidly attached to the slide but are slightly movable.

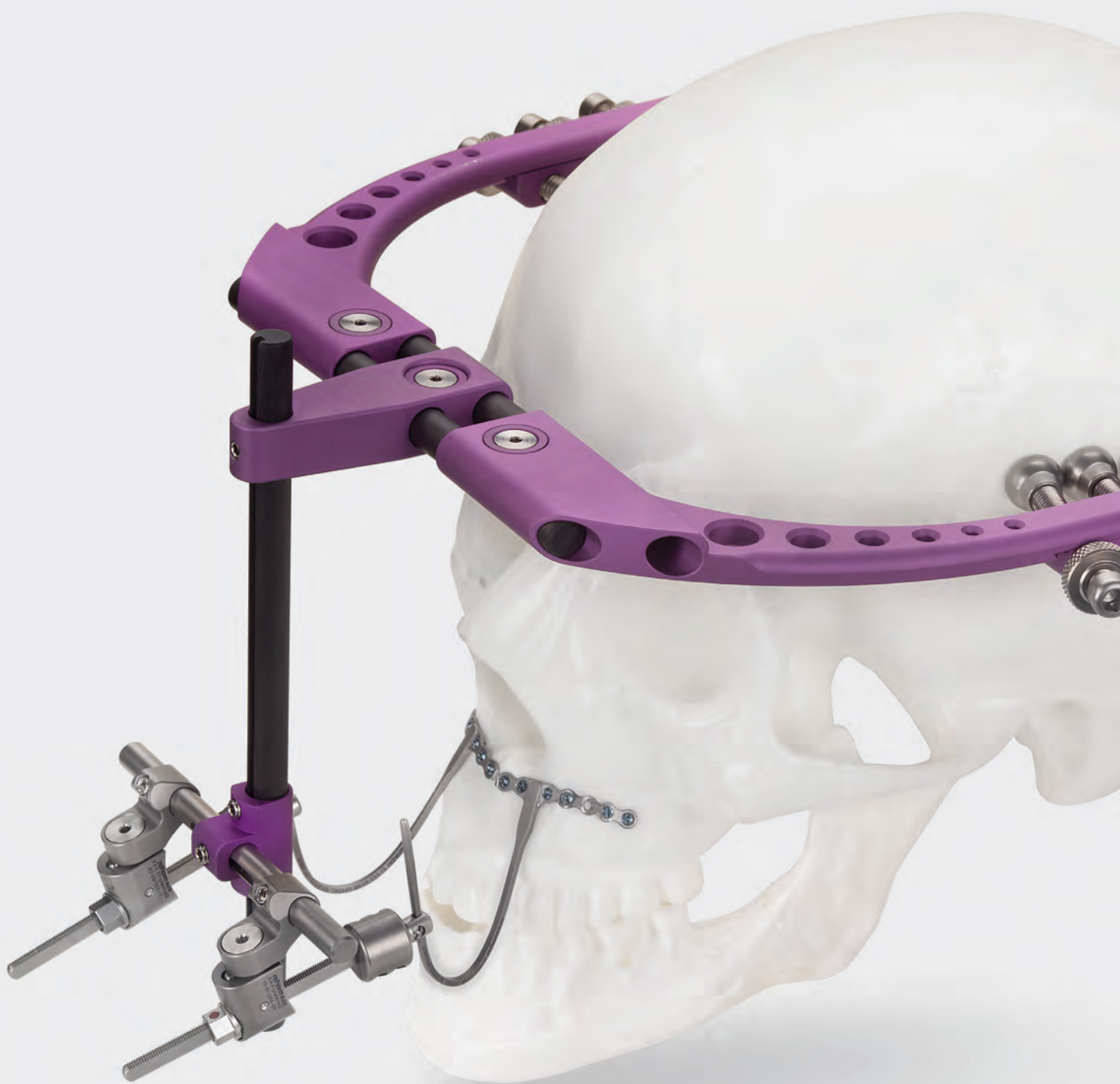


For additional product information, please refer to the brochure "Cranial Distraction".

External distraction

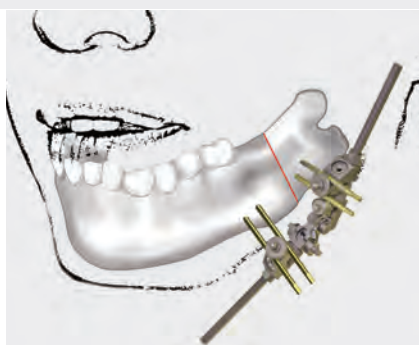
Cases of mandibular micrognathia or asymmetry are usually complex, as the minor growth is affecting both, mandibular body and ascending ramus. Especially in growing bone an external distractor is often the method of choice, as its bicortical pins find a better fixation in the soft, not completely ossified bone.

Most patients showing midfacial hypoplasia are usually preoperated. Often, a large amount of scar tissue formation is limiting the success of any distraction procedure ending up in compromising results. In these cases, the RED II is definitely offering a state-of-the-art technology. It is efficient in bringing the bone segments in the desired position and simultaneously to keep them there for bone consolidation. As all important components are external, the distraction vector can be altered or corrected at any time. A wide selection of accessories is at your disposition to match any clinical task.

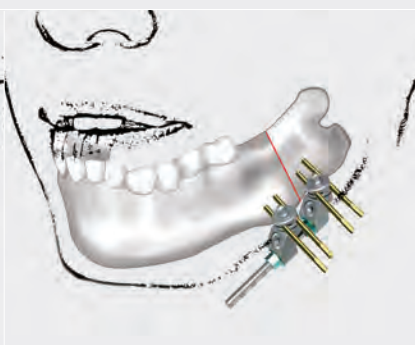


External mandibular distraction 3D Xternal distractor

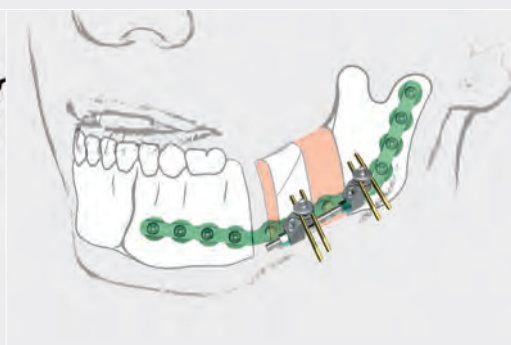
3D Xternal distraction system
reduced illustration



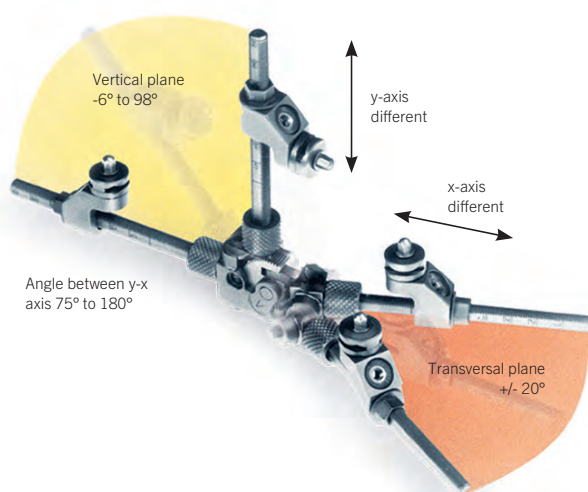
Multidirectional distraction



Unidirectional distraction



Transport distraction



3D Xternal distraction system

3D X basic set	51-601-00-09
Distraction length/turn 0.5 mm	

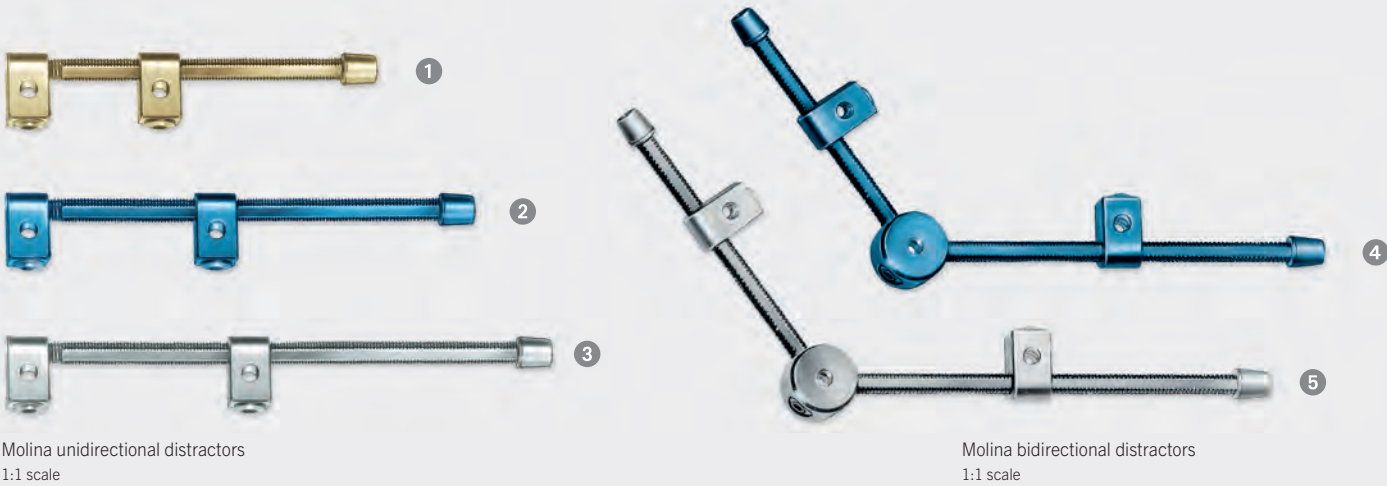
to order separately	
Pin 2.0 x 52 mm, steel (4 each)	51-620-50-05
Pin 2.7 x 62 mm, steel (4 each)	51-627-60-05
Pin 2.0 x 42 mm, titanium (2 each)	51-606-40-09
Pin 2.7 x 62 mm, titanium (2 each)	51-608-60-09

Instruments	
Patient screwdriver, hexagonal	51-600-75-07
Angular adjustment driver	51-600-80-07
Pin driver	51-600-85-07



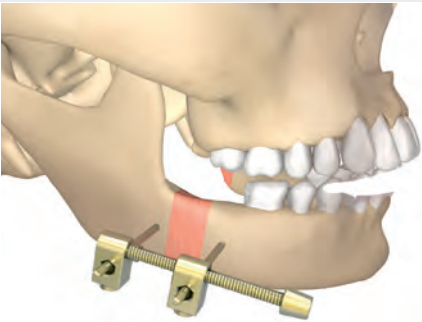
For additional product information,
please refer to the brochure „3DX Modular
External Distraction System“.

Molina distractors

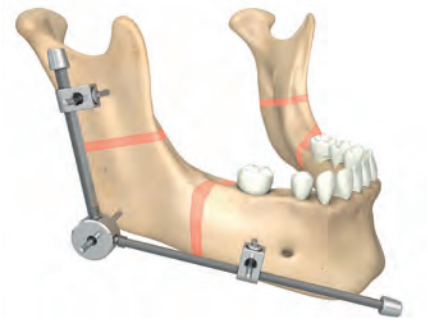
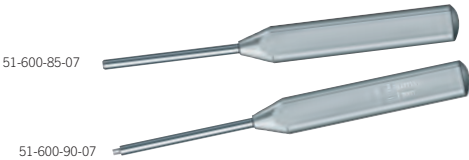


Molina unidirectional distractors
1:1 scale

Molina bidirectional distractors
1:1 scale



Molina unidirectional distractor



Molina bidirectional distractor

Molina unidirectional distracor

1 Distractor for babies and infants	Item number
28 mm	51-600-28-09
Distraction length/turn 0.5 mm to order separately	
Pins, 2 x 42 mm (2 each)	51-606-40-09
Pin, 2 x 121 mm (1 each)	51-606-12-09
Pins, 2.7 x 62 mm (2 each)	51-608-60-09
2 Distractor for children	Item number
43 mm	51-600-43-09
Distraction length/turn 0.5 mm to order separately	
Pins, 2.7 x 62 mm (2 each)	51-608-60-09
3 Distractor for adults	Item number
53 mm	51-600-53-09
Distraction length/turn 0.5 mm to order separately	
Pins, 3.2 x 62 mm (2 each)	51-610-60-09
Patient screwdrivers	
Screwdriver for pins	51-600-85-07
Activator and fixation-SD	51-600-90-07

Molina bidirectional distractor

4 Distractors for children	Item number
56 x 40 mm, left	51-601-56-09
56 x 40 mm, right	51-602-56-09
Distraction length/turn 0.5 mm to order separately	
Pins, 2.7 x 62 mm (2 each)	51-608-60-09
5 Distractors for adults	Item number
76 x 40 mm, left	51-601-76-09
76 x 40 mm, right	51-602-76-09
Distraction length/turn 0.5 mm to order separately	
Pins, 3.2 x 62 mm (2 each)	51-610-60-09
Patient screwdrivers	
Screwdriver for pins	51-600-85-07
Activator and fixation-SD	51-600-90-07

External midface distraction RED II system



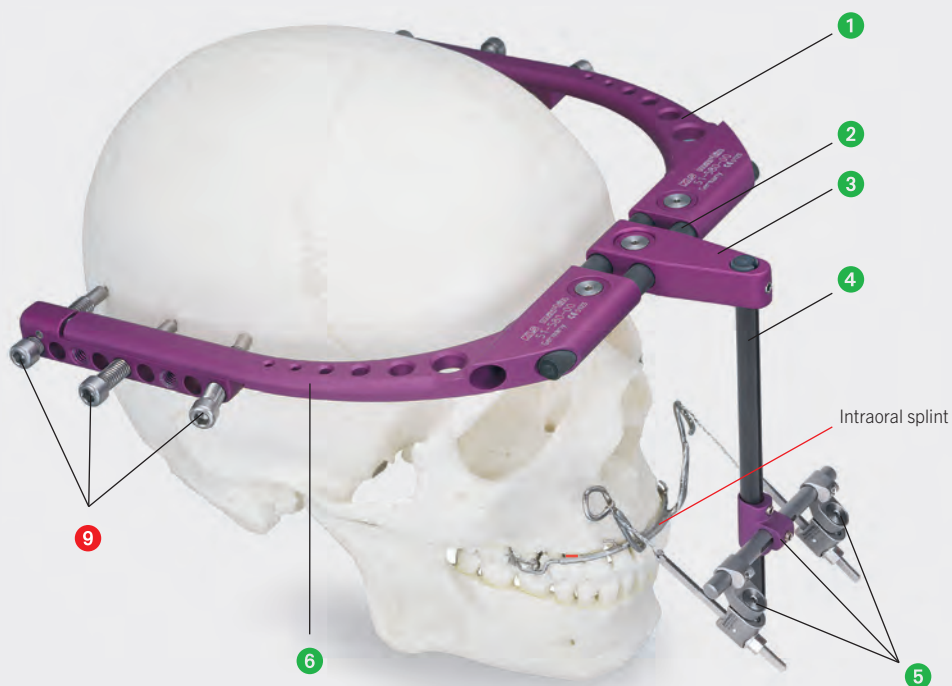
Developed in cooperation with

Dr. J. Polley, M.D. and
Dr. A. Figueroa, D.D.S., M.S.

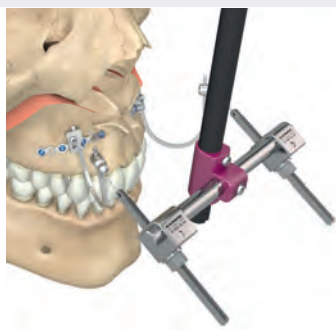
Features

Most patients showing midfacial hypoplasia are usually preoperated. Often, a large amount of scar tissue formation is limiting the success of any distraction procedure ending up in compromising results. The RED II is efficient in bringing the bone segments in the desired position and simultaneously to keep them there for bone consolidation. As all important components are external, the distraction vector can be altered or corrected at any time. A wide selection of accessories is at your disposition to match any clinical task.

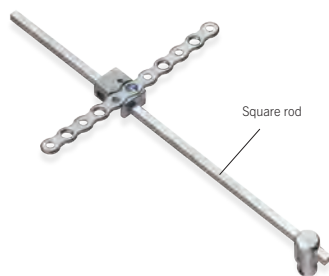
- Completely adjustable for any midfacial hypoplasia patient
- Possibility to perform Le-Fort-I, II, III and monobloc distraction procedures
- Force application only on the affected treatment region
- External distractor – definition and correction of all vectors at any time
- Unlimited distraction distances
- Very strong distraction force, excellent retention potential
- Easy and quick assembly in the OR as well as removal in the office or clinical setting
- Ability to treat patients with severe skeletal deficiencies who are not amenable to, or would receive comprised results with conventional orthognathic surgery
- No bone grafting required – no uncalculable recidiva involved.



RED II System
reduced illustration



Leipzig retention plate in situ



Leipzig retention plate



RED II system

Item No.	Qty.	Description
51-580-00-04		RED II Distraction system, complete assembly (prepared for LeFort I procedures)

Consisting of:			
1	51-580-01-04	1	Distraction segment, left
2	51-575-15-04	2	Carbon rods, 120 mm, horizontal
3	51-580-05-04	1	Center part
4	51-575-16-04	1	Carbon rod, 150 mm, vertical
5	51-580-45-04	1	Horizontal cross bar assembly, complete with horizontal cross bar + holder + 2 spindle units
6	51-580-02-04	1	Distraction segment, right
7	51-580-85-07	1	Patient screwdriver

To order separately:			
8	51-575-90-07	1	Adjustment screwdriver, hexagonal
9	51-575-10-09	1 Pack	Fixation screws 45 mm, 10/each
	or		
	51-575-12-09	1 Pack	Fixation screws 55 mm, 10/each

The connection to the occlusal level can be achieved by either an intraoral splint (manufactured by the hospital's orthodontic team) or the Leipzig retention plates (2 pieces recommended). Retention plate to be fixed with 1.5 mm screws, 5 - 7 mm.

Item No.	Description
51-582-50-04	Retention plate 1.5 (1.5 mm square rod)
51-582-55-04	Retention plate 1.8 (1.8 mm square rod)



For further information on the RED II distractor especially for system preparation for LeFort III and Monobloc procedures, please refer to the brochure "RED II System - Rigid External Distraction".

Distraction activators

Conventional removable activators

Most KLS Martin distraction devices 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.

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.
1 	Activation arm, flexible, incl. cardanic element, 30 mm	51-400-30-09
2 	Activation arm, flexible, incl. cardanic element, 40 mm	51-400-40-09
3 	Activation arm, flexible, incl. cardanic element, 50 mm	51-400-50-09
4 	Activation arm, rigid, incl. cardanic element, 25 mm	51-401-25-09
5 	Activation arm, rigid, incl. cardanic element, 35 mm	51-401-35-09
6 	Activation arm, rigid, incl. cardanic element, 45 mm	51-401-45-09
7 	Activation arm, rigid, incl. cardanic element, 50 mm, clipable	51-401-50-09
	Additional	Item No.
8 	Direct drive activator	51-401-90-09
9 	Single cardanic extension for activation arm	51-401-91-09
10 	Rigid extension 20 mm for activation arm	51-401-92-09
1/1 	Trocator tip for activation arm	51-401-93-09

* Removal of activator

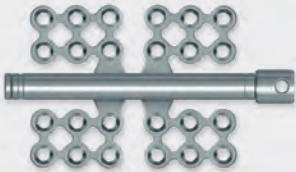
During the consolidation period – once the active distraction process has been completed – activators are basically no longer needed and a source of inconvenience for the patient.

The activators on this page can easily be removed by using special disconnection forceps (item number 51-400-01-07, see page 59).



The following example illustrates the principle of combining different activator components:

Zurich II Distractor,
Mesh design, middle-driven



Rigid extension 20 mm
for activation arm



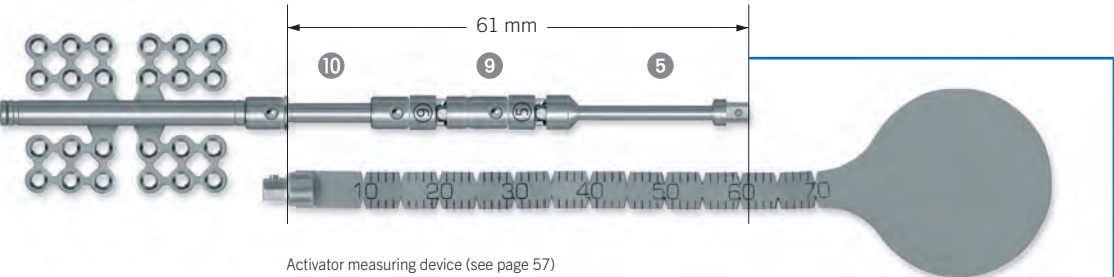
Single cardanic extension
for activation arm



Activation arm, rigid,
incl. cardanic element, 35 mm



Example: Total activator length 61 mm
1:1 scale



Activator measuring device (see page 57)

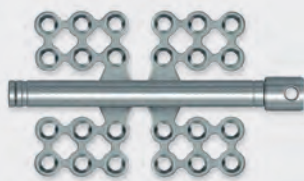
Possible combinations

L (mm)	System	L (mm)	System
16	8 + 9	49	5 + 10
20	8 + 10	51	4 + 9 + 10
22	4	54	2 + 10
27	1	56	1 + 9 + 10
32	5	55	6 + 9
33	8 + 9 + 10	59	3 + 9
35	4 + 9	59	6 + 10
37	2	60	7 + 9
39	1 + 9	61	5 + 9 + 10
39	4 + 10	64	3 + 10
42	6	64	7 + 10
44	1 + 10	66	2 + 9 + 10
45	5 + 9	71	6 + 9 + 10
47	7	76	3 + 9 + 10
47	3	77	7 + 9 + 10
49	2 + 9		



Maximum safety and patient comfort thanks to remote release activators

Distractor, Mesh design, middle-driven

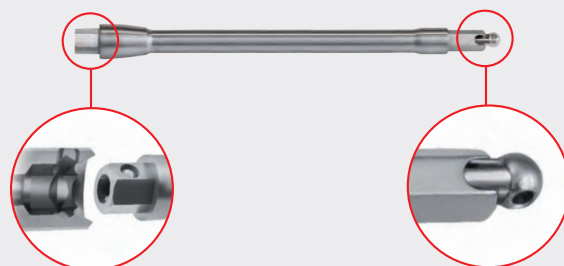


Example: Activator length 53 mm
1:1 scale

Single cardanic extension for activation arm



Remote release activator, rigid, 53 mm



During the consolidation phase – once the active distraction process has been completed – distraction activators are basically no longer needed. Quite the contrary, they are not only a constant source of inconvenience to the patient but also involve elevated risk of infection right at the percutaneous point. Conventional distraction activators are disconnected from the distractor body with the aid of a special forceps. This usually requires that the operation situs has to be opened again to access the connection point between distractor and activator. Mainly in difficult accessible anatomical regions this can be both time-consuming and difficult and moreover the patient is exposed to additional stress.

Especially for such cases we developed an alternative, a new generation of activators:

The remote release activators.

The special and completely new feature about these 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 connection point between the distractor and activator no longer needs to be exposed.

Remote Release Activators fit to all standard couplings that are designed for removable activators, such as almost all distractors specified in this brochure. They provide an alternative option in addition to the conventional activators. **As standard remote release activators are provided without cardanic element, they must be combined with the cardanic element item number 51-401-91-09 to reduce the risk of breakage.** If one choses an additional cardanic element, it will stay with the distractor after removal of the Remote Release Activator.

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.

Coupling procedure

The coupling procedure is exactly the same up to step 3. Once the ball and socket is lowered, the activator can be easily plugged in place. To lock it, rotate the release lug back by 90° and push it in. This causes the internal ball to rise, thus locking the activator in place.

Remote release activators

	Activators	Item No.
	Remote release activator, flexible, 33 mm	51-411-33-09
	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
	Single cardanic extension for activation arm	51-401-91-09

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

Instruments for distractor placement

1.0 mm micro

(For all distractors fixed with 1.0 mm screws)



51-525-80-07

15.5 cm / 6"

Plate-holding forceps,
curved



Lindorf

25-435-10-07

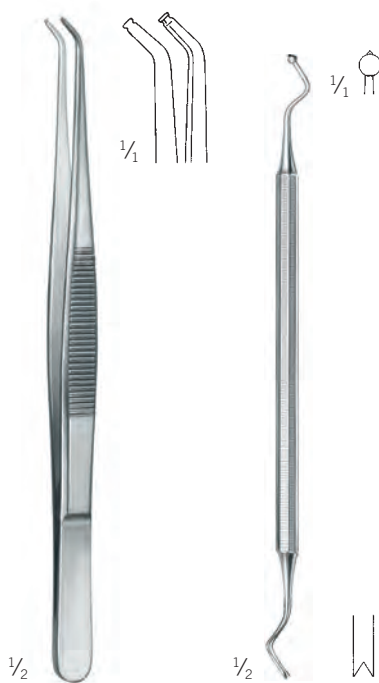
16 cm / 6 1/4"

Plate-holding instrument



1.5 mm micro

(For all distractors fixed with 1.5 mm screws)



25-441-16-07

18 cm / 7"

Plate-holding forceps,
curved



Lindorf

25-435-15-07

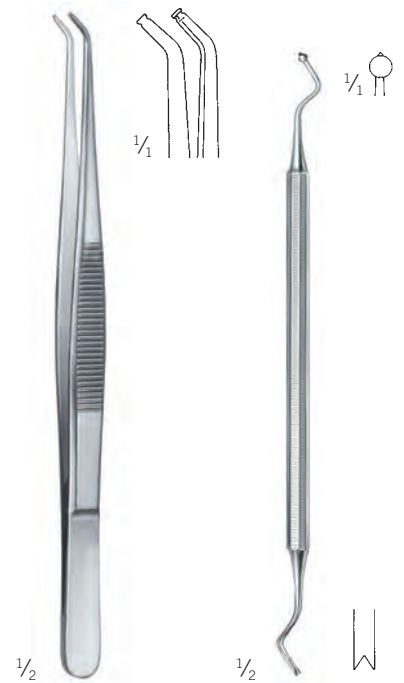
18 cm / 7"

Plate-holding instrument



2.0 mm Mini

(For all distractors fixed with 2.0 mm screws)



25-441-18-07

18 cm / 7 1/4"

Plate-holding forceps,
curved



Lindorf

25-435-20-07

16 cm / 6 1/4"

Plate-holding instrument



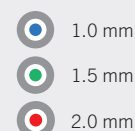
51-400-01-07

15.5 cm / 6"

Activation arm
disconnection forceps



Icon explanations



TC GOLD TC Instruments with
hard-metal inserts

51-400-04-07

18 cm / 7"

Activator
measuring device

For all sizes



25-486-13-07

13 cm / 5"

Modeling pliers
2 items recommended



TC GOLD



51-400-03-07

15.5 cm / 6"

Body holding forceps



51-400-02-07

18 cm / 7"

Cutter



51-400-04-07

18 cm / 7"

Activator
measuring device



51-400-01-07

15.5 cm / 6"

Activation arm
disconnection forceps



Screws, drill bits and screwdriver blades

Centre Drive® 1.0 mm



Micro screws

self-retaining

	Ø x Length	Centre Drive®
	1.0 x 3 mm	25-660-03-09
	1.0 x 4 mm	25-660-04-09
	1.0 x 5 mm	25-660-05-09
	1.0 x 6 mm	25-660-06-09
	1.0 x 7 mm	25-660-07-09

Emergency screws

self-retaining

	Ø x Length	Centre Drive®
	1.2 x 3 mm	25-661-03-09
	1.2 x 5 mm	25-661-05-09

Screwdriver blades for 1.0-mm screws

for screwdriver handle 25-402-99-07

	Centre Drive®	
	25-428-98-07	

Drill bits for 1.0-mm screws

with J-notch attachment

	Ø x Length	Stop	Item No.
	0.7 x 50 mm	3 mm	25-454-03-91
	0.7 x 50 mm	5 mm	25-454-05-91
	0.7 x 50 mm	7 mm	25-454-07-91

maxDrive® hex head 1.2 mm



Drill-Free hex head screws

	Ø x Length	Thread length	maxDrive®
	1.2 x 7 mm	5 mm	50-347-07-09
	1.2 x 9 mm	7 mm	50-347-09-09

Screwdriver blades for 1.2-mm screws

for screwdriver handle 25-402-99-07

	maxDrive®	
	25-489-97-07	

Note:

Hex head screws lessen the difficulty of removal if there is bony overgrowth or the screw head is difficult to see during removal. Although hex head screws are drill free, predrilling may be required depending on the specific patient's bone.

The following applies to distractors with ratchet:

The clearance of the distractor must be checked in the extended state. It must be ensured that the hex head screws do not collide with the ratchet device.



51-525-85-07

Patient screwdriver
for hex head screws



Icon explanations

-  **St** Steel
-  **Ti** Titanium
-  **1** Units/pack
-  **Centre Drive®**
-  **maxDrive®**
-  **maxDrive® Hex Head**
-  **J-notch attachment**

Centre Drive® 1.5 mm



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

maxDrive® 1.5 mm



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	Centre Drive®
1.8 x 3.5 mm	25-666-03-09
1.8 x 5 mm	25-666-05-09
1.8 x 7 mm	25-666-07-09

Emergency screws

self-retaining



Ø x Length	maxDrive®
1.8 x 3.5 mm	25-876-03-09
1.8 x 4 mm	25-876-04-09
1.8 x 5 mm	25-876-05-09
1.8 x 7 mm	25-876-07-09

Drill-Free screws

self-retaining



Ø x Length	Centre Drive®
1.5 x 4 mm	25-668-04-09
1.5 x 5 mm	25-668-05-09
1.5 x 6 mm	25-668-06-09
1.5 x 7 mm	25-668-07-09

Drill-Free screws

self-retaining



Ø x Length	maxDrive®
1.5 x 4 mm	25-878-04-09
1.5 x 5 mm	25-878-05-09
1.5 x 6 mm	25-878-06-09
1.5 x 7 mm	25-878-07-09

Screwdriver blades for 1.5-mm screws

for screwdriver handle 25-402-99-07



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

Drill bits for 1.5-mm screws

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



1/2

25-402-99-07
Screwdriver handle

Screws, drill bits and screwdriver blades

maxDrive® hex head 1.5 mm



Drill-Free hex head screws

	Ø x Length	Thread length	maxDrive®
	1.5 x 7 mm	5 mm	50-348-07-09
	1.5 x 9 mm	7 mm	50-348-09-09

Screwdriver blades for 1.5-mm screws

for screwdriver handle 25-407-03-04

	maxDrive®	
	25-438-97-07	

Note:

Hex head screws lessen the difficulty of removal if there is bony overgrowth or the screw head is difficult to see during removal. Although hex head screws are drill free, predrilling may be required depending on the specific patient's bone.

The following applies to distractors with ratchet:

The clearance of the distractor must be checked in the extended state. It must be ensured that the hex head screws do not collide with the ratchet device.



1/2

51-500-90-07

Patient screwdriver
for hex head screws



Icon explanations

-  **St** Steel
-  **Ti** Titanium
-  **1** Units/pack
-  **Centre Drive®**
-  **maxDrive®**
-  **maxDrive® Hex Head**
-  **J-notch attachment**

Centre Drive® 2.0 mm



maxDrive® 2.0 mm



Micro screws

self-retaining



Ø x Length	Centre Drive®
2.0 x 4 mm	25-662-04-09
2.0 x 5 mm	25-662-05-09
2.0 x 6 mm	25-662-06-09
2.0 x 7 mm	25-662-07-09
2.0 x 9 mm	25-662-09-09
2.0 x 11 mm	25-662-11-09

Micro screws

self-retaining



Ø x Length	maxDrive®
2.0 x 4 mm	25-872-04-09
2.0 x 5 mm	25-872-05-09
2.0 x 6 mm	25-872-06-09
2.0 x 7 mm	25-872-07-09
2.0 x 9 mm	25-872-09-09
2.0 x 11 mm	25-872-11-09

Emergency screws

self-retaining



Ø x Length	Centre Drive®
2.3 x 5 mm	25-663-45-09
2.3 x 7 mm	25-663-47-09
2.3 x 9 mm	25-663-49-09

Emergency screws

self-retaining



Ø x Length	maxDrive®
2.3 x 4 mm	25-873-44-09
2.3 x 5 mm	25-873-45-09
2.3 x 7 mm	25-873-47-09
2.3 x 9 mm	25-873-49-09

Drill-Free screws

self-retaining



Ø x Length	Centre Drive®
2.0 x 5 mm	25-669-05-09
2.0 x 7 mm	25-669-07-09

Drill-Free screws

self-retaining



Ø x Length	maxDrive®
2.0 x 5 mm	25-879-05-09
2.0 x 6 mm	25-879-06-09
2.0 x 7 mm	25-879-07-09
2.0 x 9 mm	25-879-09-09

Screwdriver blades for 2.0-mm screws

for screwdriver handle 25-402-99-07



Centre Drive®	maxDrive®
25-434-98-07	25-491-97-07

Drill bits for 2.0-mm screws

with J-notch attachment



Ø x Length	Stop	Item No.
1.5 x 50 mm	5 mm	25-449-05-91
1.5 x 50 mm	7 mm	25-449-07-91
1.5 x 50 mm	9 mm	25-449-09-91
1.5 x 50 mm	11 mm	25-449-11-91



1/2

25-402-99-07
Screwdriver handle

Instrument for vector determination



51-400-05-09
Parallelization instrument
(one instrument to be used per distractor)

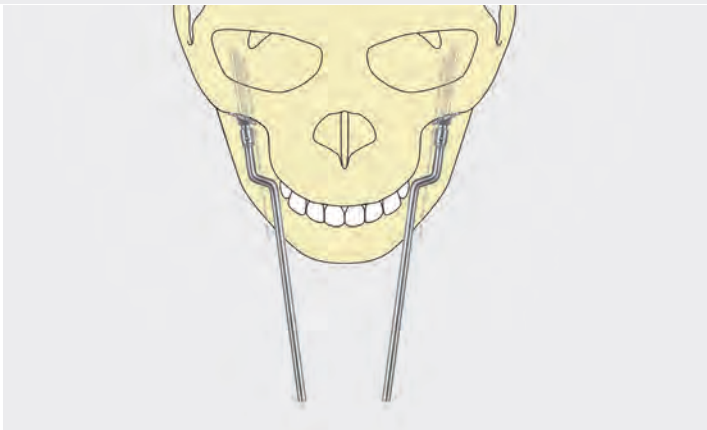


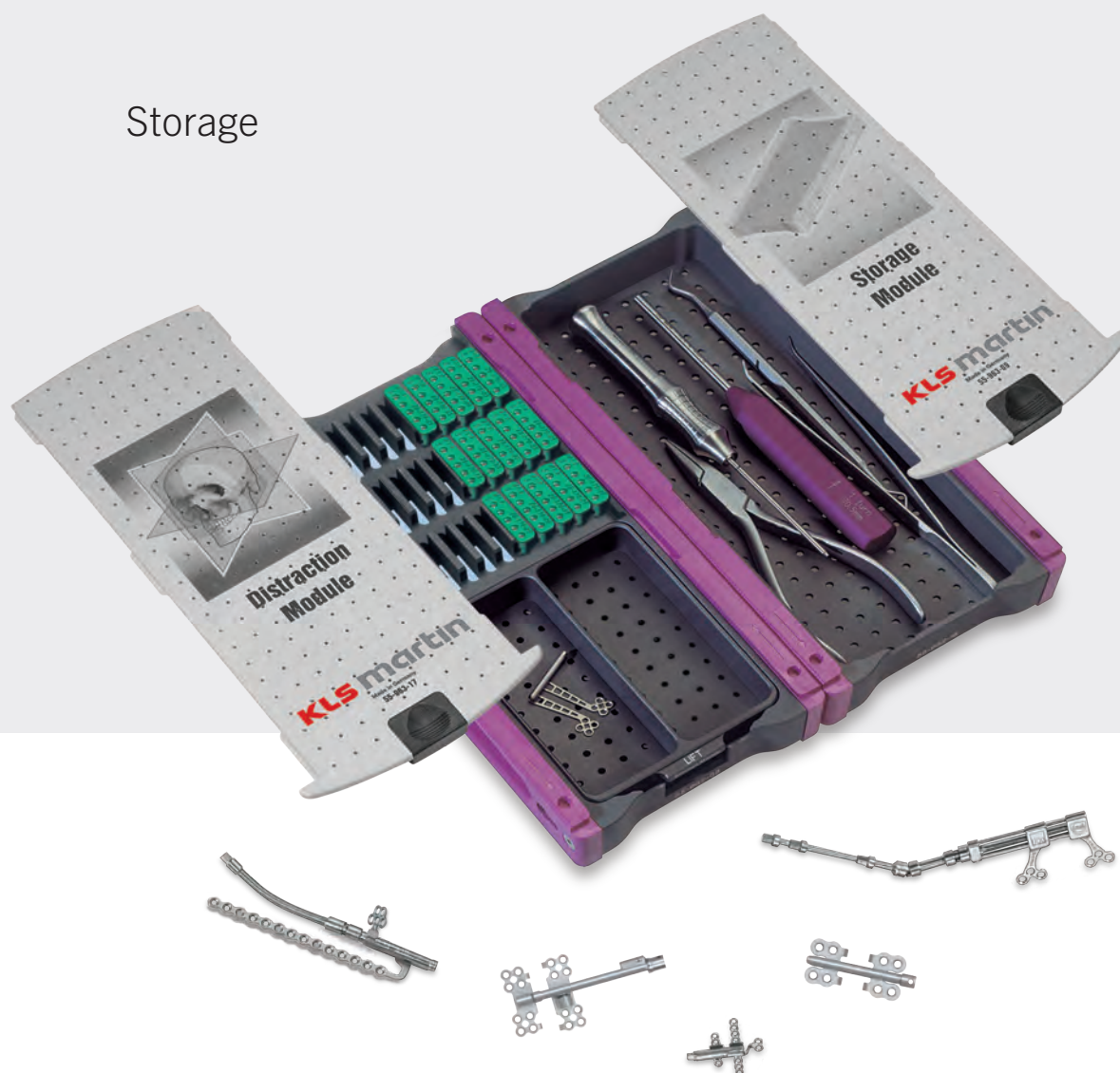
Figure: Problem of vector parallelism: A V-type alignment of 2 distractors can lead to complications, especially where great distraction lengths are involved.

For bilateral distractions in particular, vector parallelism is a factor of great importance. As a rule, both distractors should be aligned as parallel to the distraction vector as possible. Unfortunately, this is easier said than done. The positioning instrument enables users to detect deviations at a very early stage and correct them at once.

The instrument can be plugged onto the universal coupling as it is done with an activator.

In this way the instrument facilitates correct distractor alignment, thus helping to reduce complications.

Storage



Storage

Illustrated items	Item number
Insert module, purple	55-962-08-04
Storage module, purple	55-962-18-04
Lid for distraction module	55-963-17-04
Lid for storage module	55-963-09-04
Insert empty, 2 sections (double height)	55-964-20-04

Alternative items	Item number
Screw storage module, purple	55-962-28-04
Twin insert module, purple	55-962-38-04
Lid for screw storage module	55-963-08-04
Lid for 3D X system	55-963-20-04
Insert empty, universal (low height)	55-964-17-04
Insert for TRACK distractors (low height)	55-964-23-04
Insert empty, 2 sections (low height)	55-964-24-04
Insert empty, 3 sections (low height)	55-964-25-04
Insert for complete 3D X devices (double height)	55-964-33-04
Insert for 3D X single components (double height)	55-964-34-04

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



Distraction protocol

Please note: the following recommendations are based on the experiences of the members of the S.O.R.G.* Distraction Section. The values listed are average values and might differ depending on each specific case and the treatment following distraction.

Indications for DOG	Latency period	Distraction per day	Retention period
Orthognathic cases	3 - 7 days	0.5 - 1 mm/day	3 months
Mandibular/maxillary widening	3 - 7 days	0.2 - 1 mm/day	3 months
Alveolar ridge distraction	3 - 7 days	0.5 - 1 mm/day	3 months
LeFort III	1 - 5 days	0.5 - 1 mm/day	3 - 6 months
Monobloc	0 - 15 days	0.3 - 1 mm/day	3 - 12 months
Transversal	7 days	0.3 - 0.5 mm/day	3 months

Comments

Intra-operative antibiotic treatment
Complete osteotomy
Stable and controlled vector
Pay attention to parallel vectors in case of bilateral distraction

DOG-Contraindications

Compromized vascularity
Insufficient volume and quality of bone
Irradiated patient (> 40 Gy)
Heavy smoking
Non compliant patient

* S.O.R.G. – Strasbourg Osteosynthesis Research Group
www.sorg-group.com

Patient chart

Patient name		Type of distractor	
Surgeon in charge		Distractor location 1	
Day of surgery		Distractor location 2	
Observe latency period			
Start of distraction		Next check (date)	
End of distraction			
Rotations/activations per day	L R		

Further doctor's orders

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rotations	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Left															
Right															

Please note

Always comply fully with your doctor's instructions.
Observe arrow direction when operating the distractor.
Be sure to follow a soft diet during the entire distraction period.
Careful oral hygiene is indicated during the entire treatment.
Smoking can impair distraction results. So never smoke during treatment.

Left X ☐ ☐

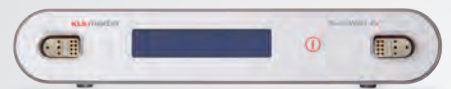
Example

CMF surgery

SonicWeld Rx®

Resorbable implants for use in craniomaxillofacial osteosynthesis

- Resorb x®
- Resorb xG



It is the face that makes humans unique and unmistakable –
“There is nothing that more closely reflects the life of an individual than the human face*.”

Our objective is to simplify craniofacial surgery with specially designed implant systems that ensure optimum satisfaction for both surgeon and patient. Together with renowned users we translate new ideas into innovative products and are constantly enhancing them.

Our range of products includes everything necessary for modern craniofacial surgery. We not only set standards but we also go beyond to take advantage of modern technology in the development of solutions customized for the individual patient.

KLS Martin – your competent and reliable partner for both everyday challenges and special challenges.



* © Kurt Haberstich (*1948)

Distractors

Devices for use in correction of malformations

- Cranial distraction
- Midface distraction
- Mandibular distraction



Individual Patient Solutions

Custom-made solutions for use in craniomaxillofacial surgery

- IPS Implants®
- IPS CaseDesigner®
- IPS Gate®



LevelOne Fixation

Titanium implants and instruments for use in craniomaxillofacial osteosynthesis

- Traumatology
- Reconstruction
- Orthognatic surgery



App for CMF products

All important information about the CMF portfolio at one glance:

<https://cmf.klsmartin.com/en/>

CMF

KLS Martin Group

KLS Martin Australia Pty Ltd.

Sydney · Australia
Tel. +61 2 9439 5316
australia@klsmartin.com

KLS Martin do Brasil Ltda.

São Paulo · Brazil
Tel. +55 11 3554 2299
brazil@klsmartin.com

KLS Martin Medical (Shanghai) International Trading Co., Ltd

Shanghai · China
Tel. +86 21 5820 6251
info@klsmartin.com

KLS Martin India Pvt Ltd.

Chennai · India
Tel. +91 44 66 442 300
india@klsmartin.com

KLS Martin Italia S.r.l.

Milan · Italy
Tel. +39 039 605 67 31
info@klsmartin.com

KLS Martin Japan K.K.

Tokyo · Japan
Tel. +81 3 6410 8471
japan@klsmartin.com

KLS Martin SE Asia Sdn. Bhd.

Penang · Malaysia
Tel. +604 261 7060
malaysia@klsmartin.com

KLS Martin de México, S.A. de C.V.

Mexico City · Mexico
Tel. +52 55 7572 0944
mexico@klsmartin.com

KLS Martin Nederland B.V.

Huizen · Netherlands
Tel. +31 35 523 45 38
info@klsmartin.com

KLS Martin SE & Co. KG

Moscow · Russia
Tel. +7 499 792 76 19
russia@klsmartin.com

KLS Martin Taiwan Ltd.

Taipei · Taiwan
Tel. +886 2 2325 3169
taiwan@klsmartin.com

KLS Martin SE & Co. KG

Dubai · United Arab Emirates
Tel. +971 4 454 16 55
middleeast@klsmartin.com

KLS Martin UK Ltd.

Reading · United Kingdom
Tel. +44 118 467 1500
info.uk@klsmartin.com

KLS Martin LP

Jacksonville · Florida, USA
Tel. +1 904 641 77 46
usa@klsmartin.com

KLS Martin SE Asia Sdn. Bhd.

Hanoi · Vietnam
Tel. +49 7461 706-0
vietnam@klsmartin.com

KLS Martin SE & Co. KG

A company of the KLS Martin Group

KLS Martin Platz 1 · 78532 Tuttlingen · Germany
PO Box 60 · 78501 Tuttlingen · Germany
Tel. +49 7461 706-0 · Fax +49 7461 706-193
info@klsmartin.com · www.klsmartin.com