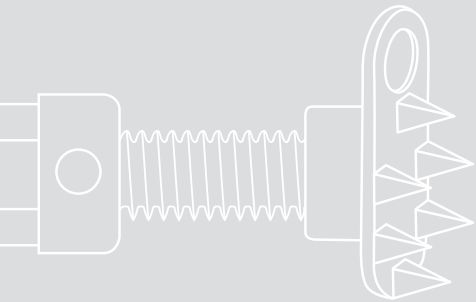
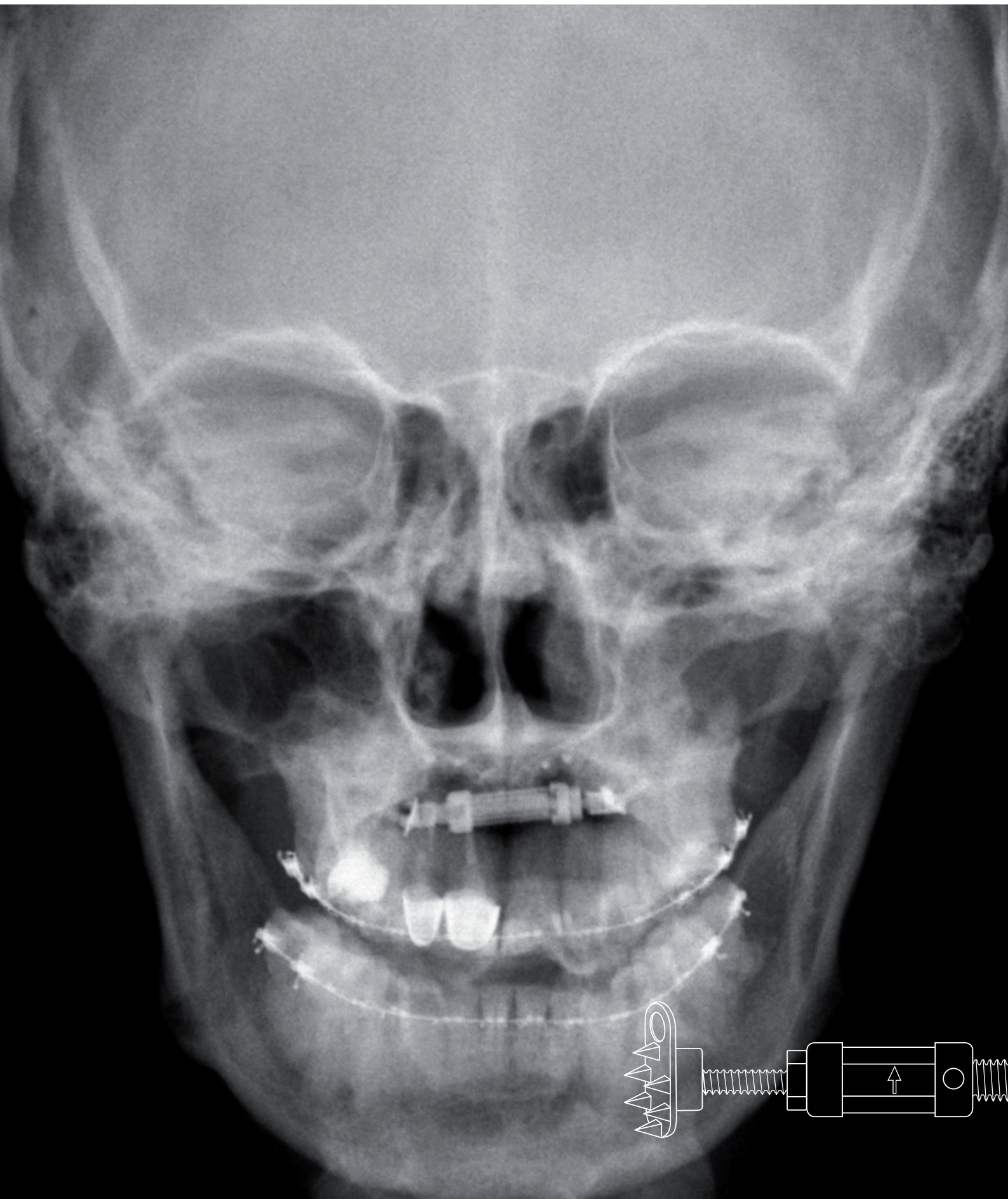




Rapid Palatal Expander (RPE)

*Bone-borne distractor
for transverse maxillary hypoplasia*





Rapid Palatal Expander

Bone-borne distractor for transverse maxillary hypoplasia



Rapid Palatal Expander (RPE)

Transverse maxillary hypoplasia in adolescents and adults is frequently seen in non-syndromal and syndromal patients including cleft palate patients. The hypoplasia may lead to arch length discrepancy and crowding, buccal corridors and posterior cross-bites. Uni- and bilateral transverse hypoplasia can be corrected by means of a surgically assisted rapid palatal expansion (SARPE). The treatment is a cooperation of orthodontic and surgical procedures and provides dental arch space for lining up the maxillary teeth.

The procedure also causes a substantial enlargement of the maxillary apical base and of the palatal vault and may therefore provide space for the tongue for improved swallowing and thus preventing relapse. In addition, a distinct subjective improvement in nasal airway associated with enlargement of the nasal valve towards normal values is seen with an increase of nasal volume in all compartments. It improves arch length and may reduce the need for premolar extraction as a measure to align the teeth. Widening the maxilla might reduce the unaesthetic buccal corridors, as seen in smiling.

Traditionally, transverse maxillary hypoplasia in adults is corrected with corticotomies and tooth-borne expanders. Tooth-borne distractors have some disadvantages as dental movements occur: periodontal problems, buccal root resorption, cortical fenestration, segmental tipping and tipping of the anchorage teeth.

In contrast, bone-borne distractors are positioned at a higher level in the palatal vault, consequently maxillary expansion is predominantly skeletal and forces are directed at the desired level. In addition, the forces are on the bone and no tooth tipping, fenestration, etc. are to be expected.

The KLS Martin Rapid Palatal Expander is an elegantly designed bone-borne distractor which is very versatile in both placement and activation.

Advantages

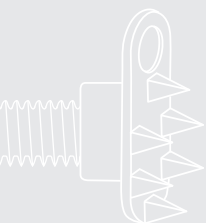
- Bone-borne distractor
- Forces are directly applied to the bone
- No tooth tipping and extrusion
- No orthodontic relapse expected after the expansion
- Shortened treatment time due to the opportunity for early orthodontic teeth alignment
- No periodontal ligament compression, buccal root resorption, and fenestration are to be expected
- Easily placed and activated
- Easy removal
- Available as a sterile product

Indications

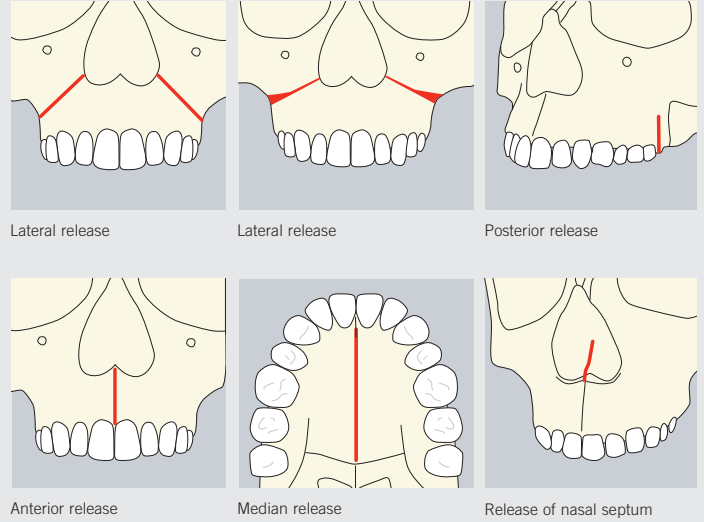
- Transverse uni- or bilateral maxillary hypoplasia in syndromal and non-syndromal patients
- Anterior dental crowdings and buccal corridors

Contraindications

- General or local health issues as immune deficiency, titanium allergy, irradiated maxilla, palatal defects
- Psycho-social inability to comply, suspected lack of patients collaboration
- Shallow palatal vault, might result in loosening



Schematic procedure step by step



*Preoperative X-ray**

1. Intraoperative approach

Osteotomies of the lateral, anterior and median bony supports of the maxilla. In case of posterior (parallel) expansion pterygomaxillary disjunction (posterior release) might additionally be performed. Release of nasal septum is discussed controversially among physicians.

* Clinical photos by courtesy of Dr. Hamid-Reza Sarajian, Rotes Kreuz Krankenhaus, Kassel, Germany

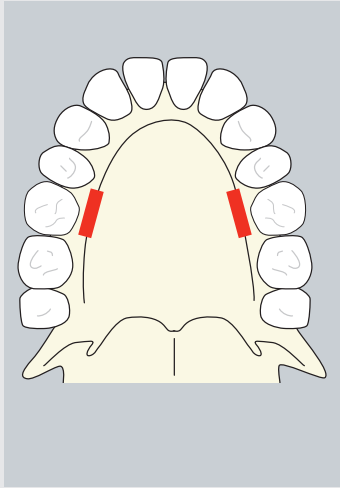


Fig. 1

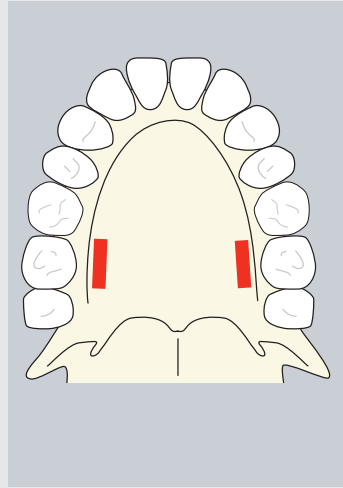


Fig. 2



2. First placement

The KLS Martin Rapid Palatal Expander (RPE) is positioned with the abutment plates on the mucosa over the roots of the second premolar (in case of anterior (3:2) expansion, Fig. 1) and first molars (in case of posterior expansion, Fig. 2). The activation rod is in the midline and must not interfere with the lower teeth in occlusion.

3. First activation*

The distractor is slightly activated. Thus the print of the plates is clearly visible on the mucosa. Now the palatal mucosa on the anterior and occlusal side directly around the abutment plates is incised. The distractor is deactivated and removed.

4. Final placement

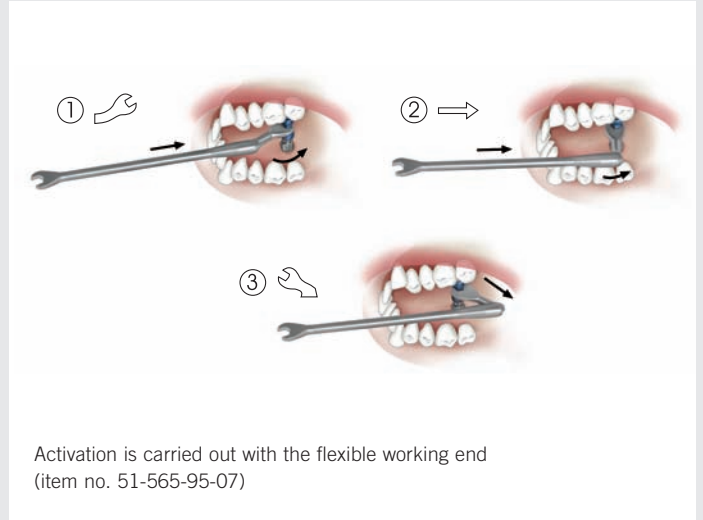
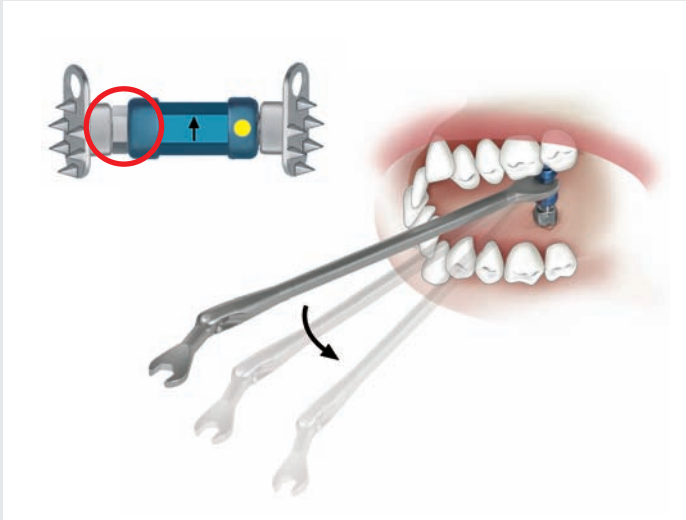
The area of palatal mucosa removed is slightly smaller than the abutment. Local haemostasis is performed. The RPE Distractor is placed again with the plates now on the bone. The distractor is slightly activated so the spikes penetrate the bone stabilizing the distractor. Make sure that the distractor is adequately placed with osteosynthesis holes of the abutment plates placed towards anterior.

5. Fixation of the distractor

Finally, the distractor is secured with the two additionally supplied drill-free screws in the holes of the distractor plates.

* Clinical photos by courtesy of Dr. Hamid-Reza Sarajian, Rotes Kreuz Krankenhaus, Kassel, Germany

Schematic procedure step by step



6. Tighten the locking nut

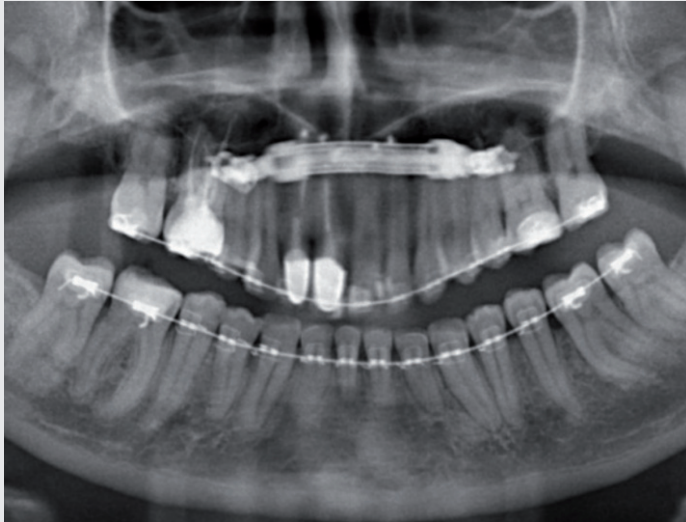
To avoid undesired movements of the distractor body during latency period, it is necessary to tighten the locking nut with the rigid working end of the patient activating wrench (item no. 51-565-95-07).

7. Latency period

Activation can begin 5 – 7 days after device placement based on the surgeon's treatment plan.

8. Distraction period

The distractor is easily activated with the patient activating wrench (item no. 51-565-90-07 or item no. 51-565-95-07). A rotation through 120° to the next color coding corresponds to a distraction travel of 0.33 mm. A rotation through 120 (– 240°) per day is recommended which corresponds to a distraction travel of 0.33 (– 0.66) mm per day**. The exact activation can easily be observed thanks to the differently colored dots on the module.



9. Consolidation period*

A 3 – 4 months consolidation period is recommended. Orthodontic tooth movements can already be performed early in the consolidation period.

*Treatment protocol**:*

- General anaesthesia, antibiotic prophylaxis.
- Corticotomies at lateral wall of the maxillary sinus and median alveolus and bony palate, simultaneous placements of fitted RPE (maximal size given by anatomy).
- Start oral hygiene protocol, with antiseptic mouth rinse, prolonged antibiotics if indicated.
- Latency period: 5 – 7 days, start distraction and patient instruction.
- Daily distraction 0.33 mm until desired width, use closure wheel.
- Consolidation period: 4 months.
- Removal of distractor under local anaesthesia.

* Clinical photos by courtesy of Dr. Hamid-Reza Sarajian, Rotes Kreuz Krankenhaus, Kassel, Germany

** The distraction varies according to surgeons' wishes, orthodontic protocols or patients' needs. The protocol can be altered during the period of active distraction.

Ordering details

① Δ

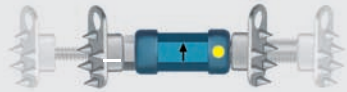


51-565-09-09



51-564-09-09

② Δ



51-565-18-09



51-564-18-09

③ Δ



51-565-27-09



51-564-27-09

④ Δ



51-565-36-09



51-564-36-09

1:1 scale

Δ max. extension



2 maxDrive® Drill-Free screws **
2.0 x 7 mm



51-565-90-07 **



Additionally available:
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



Icon explanations

- Ti** Titanium
- St** Steel
- Sic** Silicone
- 1** Packing unit

STERILE R Implants in sterile packaging

Rapid Palatal Expander (RPE)

Distractors	Ti 1	Item Number	STERILE R	Δ tips		Δ plates	
				closed	open	closed	open
① 9 mm distraction length		51-565-09-09*	51-565-09-71**	19,0 mm	28,0 mm	15,5 mm	24,5 mm
② 18 mm distraction length		51-565-18-09*	51-565-18-71**	23,5 mm	41,5 mm	20,0 mm	38,0 mm
③ 27 mm distraction length		51-565-27-09*	51-565-27-71**	28,0 mm	55,0 mm	24,5 mm	51,5 mm
④ 36 mm distraction length		51-565-36-09*	51-565-36-71**	32,5 mm	68,5 mm	29,0 mm	65,0 mm

Recommended distraction length

1-2 color codes = 0.33-0.66 mm/day (one complete turn = 1.0 mm)

Measuring Templates

Ti 1

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

Ti

maxDrive® Drill-Free: 2.0 x 7 mm

Patient screwdriver

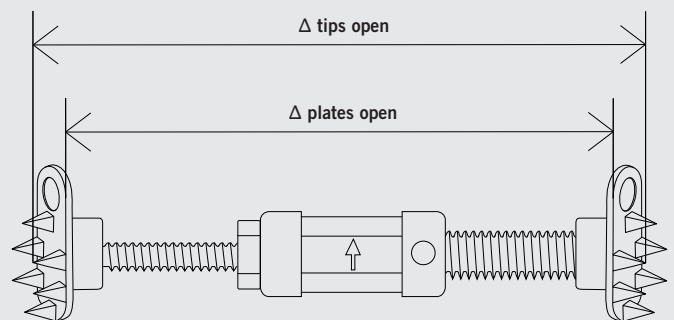
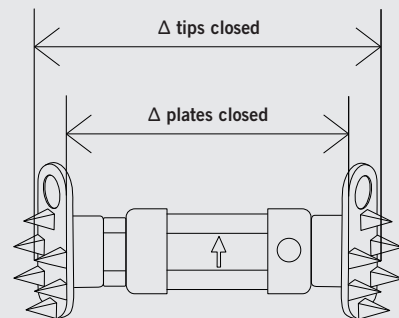
St 1

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

Screwdrivers and Blades for 2.0/2.3 mm maxDrive® screws

St 1

Screwdriver	25-407-03-04	Sic
Screwdriver flattened, for storage in Level One modules	25-407-04-04	Sic
Blade for screwdrivers 25-407-03-04 and 25-407-04-04	25-486-97-07	
Blade for KLS Martin angled screwdriver	50-917-20-07	



* 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

References

- Bays, R. A. & Greco, J. M.,
Surgically assisted rapid palatal expansion:
an outpatient technique with long-term stability.
J Oral Maxillofac Surg, 50 (2), 1992,
S. 110 – 115
- Günbay, T., et al.,
Transpalatal distraction using bone-borne
distractor: clinical observations and dental
and skeletal changes.
J Oral Maxillofac Surg, 66 (12), 2008,
S. 2503 – 2014
- Koudstaal, M. J., et al.,
Experience with the transpalatal distractor
in congenital deformities.
Mund- Kiefer- Gesichtschir, 10 (5), 2006,
S. 331 – 334
- Matteini, C. & Mommaerts, M. Y.,
Posterior transpalatal distraction with pterygoid
disjunction: a short-term model study.
Am J Orthod Dentofacial Orthop, 120 (5), 2001,
S. 498 – 502
- Mommaerts, M. Y.,
Bimaxillary transverse osteodistraction.
In: Bell, W. H. & Guerrero, C. A.,
Distraction osteogenesis of the facial skeleton.
BC Becker Inc, Hamilton, 2007,
S. 261 – 266
- Mommaerts, M. Y.,
Transpalatal distraction as a method of maxillary
expansion. *Br J Oral Maxillofac Surg*, 37 (4),
1999, S. 268 – 272
- Ramieri, G. A., et al.,
Transverse maxillary distraction with a
bone-anchored appliance: dento-periodontal
effects and clinical and radiological results.
Int J Oral Maxillofac Surg, 34 (4), 2005,
S. 357 – 363
- Sari, E., et al.,
Transpalatal distraction in a patient
with a narrow maxilla.
Angle Orthod, 77 (6), 2007,
S. 1126 – 1131
- Verlinden, C. R., et al.,
Complications in transpalatal distraction
osteogenesis: a retrospective clinical study.
J Oral Maxillofac Surg, 69 (3), 2011,
S. 899 – 905

Additional brochure



Distraction Devices
Overview



Complementary products



Angulus
Angled Screwdriver

Should any more questions remain ...
... just contact us!

KLS Martin is a pioneering company in distraction osteogenesis and has established in many individual indications its own specific product portfolio.

Besides these specific disciplines the KLS Martin product range also includes the complete spectrum of systems for traumatology, orthognathic surgery and reconstruction in today's oral maxillofacial surgery. The folder system "CMF Osteosynthesis" is the standard work to all osteosynthesis products.

You should also get to know SonicWeld Rx®: It is worldwide patented the only resorbable osteosynthesis program, which is entirely based on ultrasound technology to weld in resorbable pins.

Resorbable osteosynthesis can just be so easy!

*Of course you can also get in touch with us personally – via e-mail:
info@klsmartin.com or via our customer hotline: +49/7461-706-0*

KLS Martin Group

Karl Leibinger Medizintechnik GmbH & Co. KG
78570 Mühlheim · Germany
Tel. +49 7463 838-0
info@klsmartin.com

KLS Martin GmbH + Co. KG
79224 Umkirch · Germany
Tel. +49 7665 9802-0
info@klsmartin.com

Stuckenbrock Medizintechnik GmbH
78532 Tuttlingen · Germany
Tel. +49 7461 165880
verwaltung@stuckenbrock.de

Rudolf Buck GmbH
78570 Mühlheim · Germany
Tel. +49 7463 99516-30
info@klsmartin.com

KLS Martin France SARL
68000 Colmar · France
Tel. +33 3 8921 6601
france@klsmartin.com

Martin Italia S.r.l.
20871 Vimercate (MB) · Italy
Tel. +39 039 605 6731
italia@klsmartin.com

Martin Nederland/Marned B.V.
1271 AG Huizen · The Netherlands
Tel. +31 35 523 4538
nederland@klsmartin.com

KLS Martin UK Ltd.
Reading RG1 3EU · United Kingdom
Tel. +44 1189 000 570
uk@klsmartin.com

Nippon Martin K.K.
Osaka 541-0046 · Japan
Tel. +81 6 62 28 9075
nippon@klsmartin.com

KLS Martin L.P.
Jacksonville, FL 32246 · USA
Tel. +1 904 641 7746
usa@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
121471 Moscow · Russia
Tel. +7 499 792-76-19
russia@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
201203 Shanghai · China
Tel. +86 21 2898 6611
china@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
Dubai · United Arab Emirates
Tel. +971 4 454 16 55
middleeast@klsmartin.com

1923 | SURGICAL
2013 | INNOVATION
YEARS

Gebrüder Martin GmbH & Co. KG
A company of the KLS Martin Group
KLS Martin Platz 1 · 78532 Tuttlingen · Germany
Postfach 60 · 78501 Tuttlingen · Germany
Tel. +49 7461 706-0 · Fax +49 7461 706-193
info@klsmartin.com · www.klsmartin.com

