KLS martin GROUP

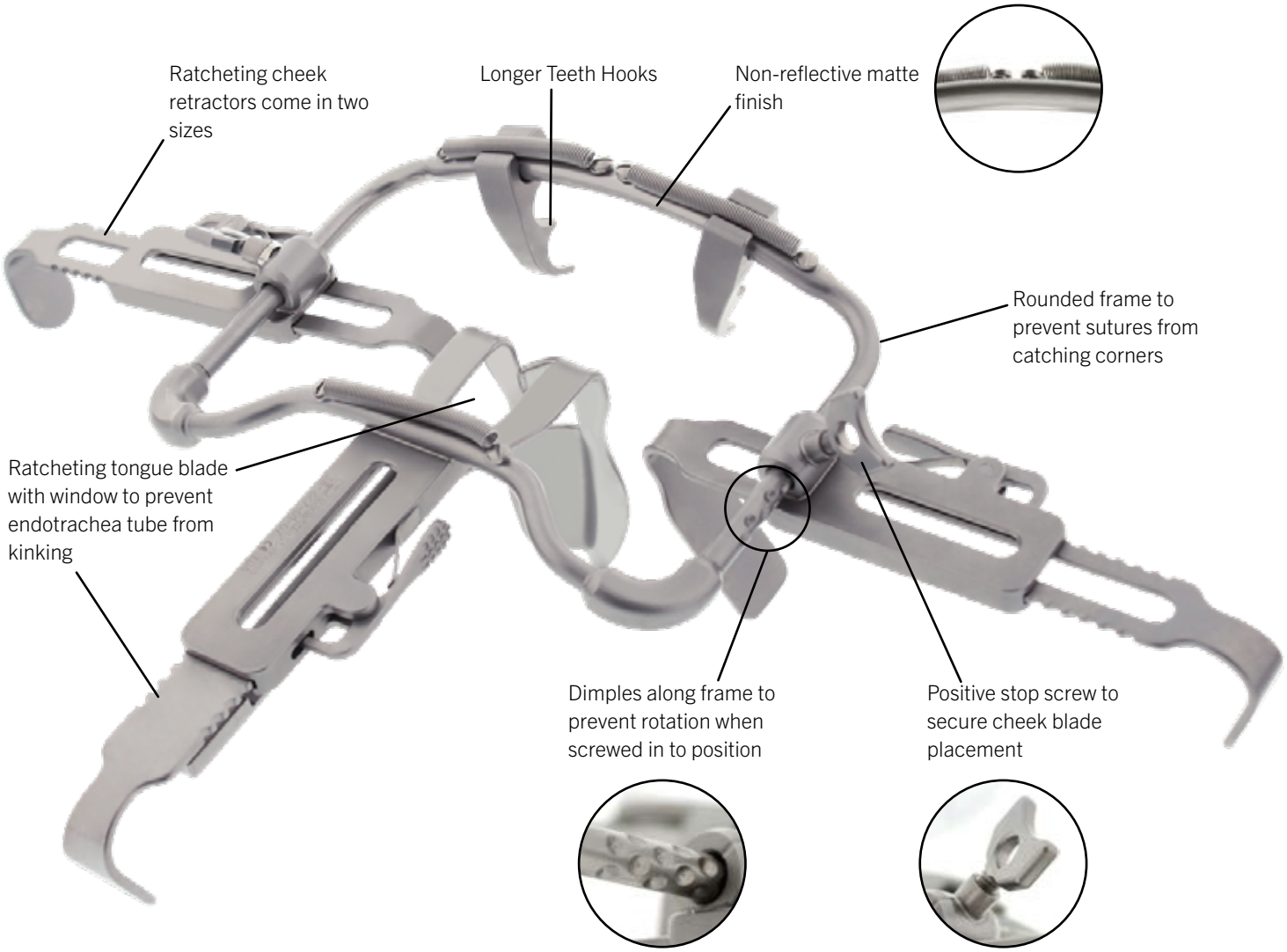
Odonata

The Atlanta Cleft Retractor

www.klsmartinnorthamerica.com

Retractor Benefits

- Easy assembly for technicians
- Easier Placement in the mouth
- More in-situ flexibility



Complete Set
38-227-00-07

Cheek and Tongue Blade Benefits

1/1

38-227-02-07
Small blade
27 x 53 mm

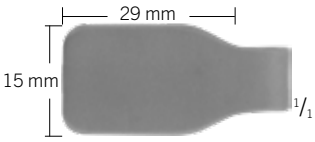
1/1

38-227-03-07
Medium blade
30 x 58 mm

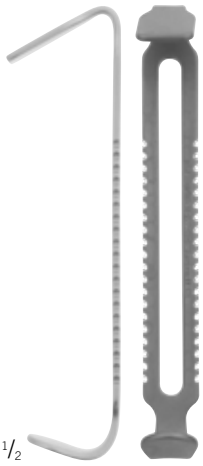
1/1

38-227-04-07
Large blade
33 x 68 mm

1/2

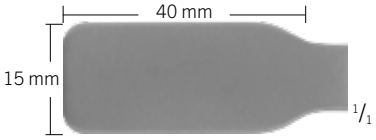


1/1

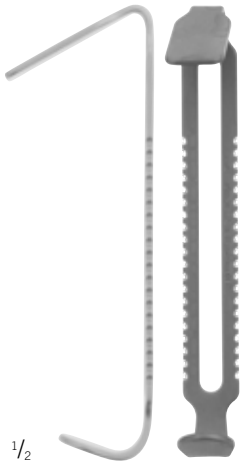


1/2

38-227-05-07
Small blade



1/1



1/2

38-227-06-07
Large blade

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91-600-06-68 · REV 01 · 2021.02 · Odonata The Atlanta Cleft Retractor

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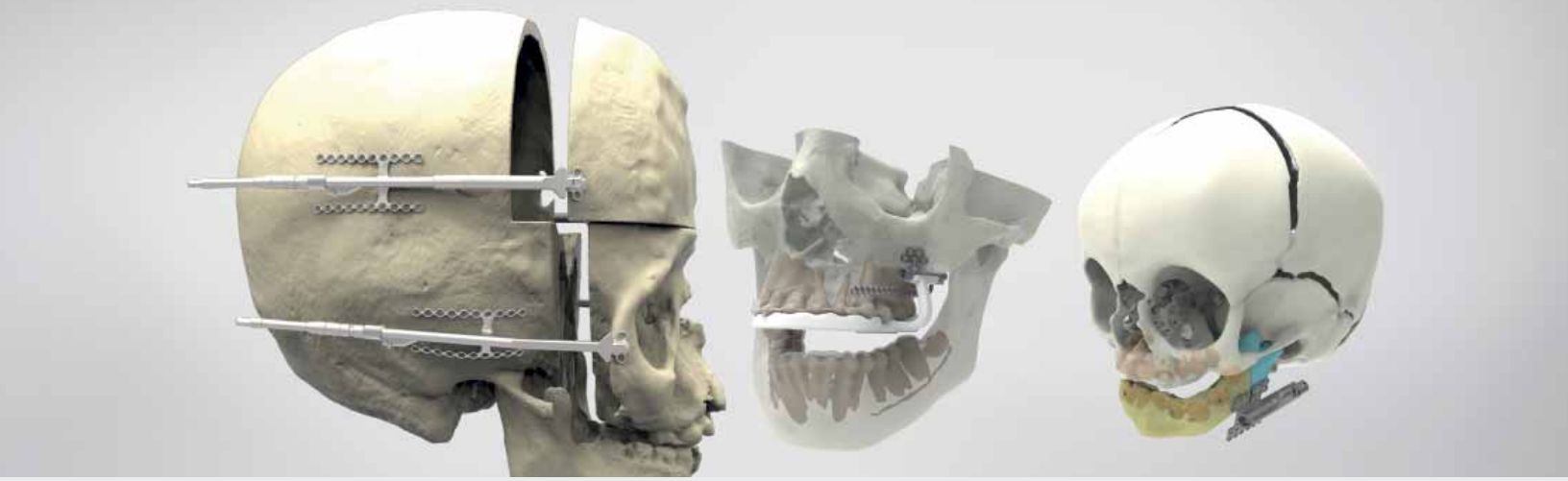
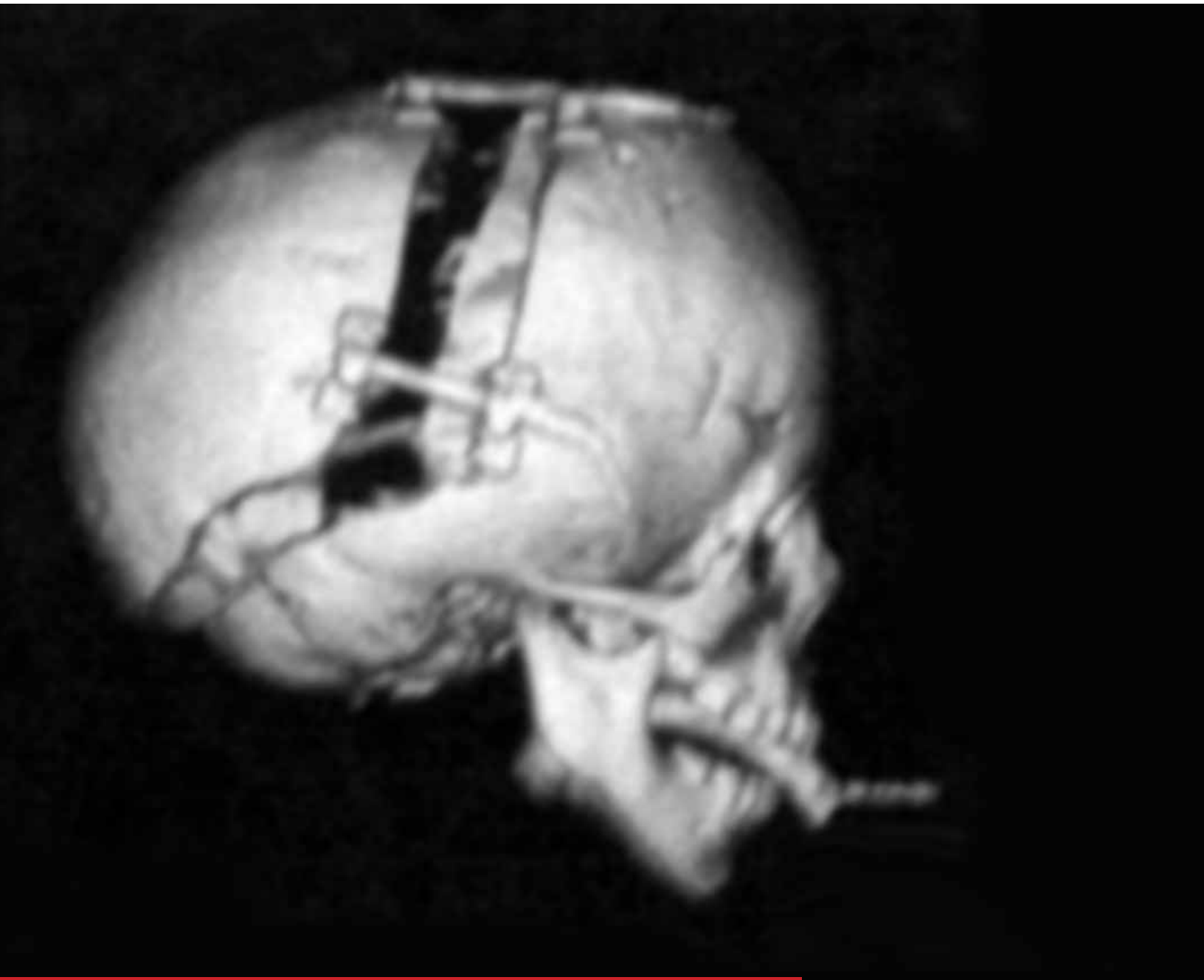


Distraction Devices

Standard Order Catalog

www.klsmartinnorthamerica.com



First described by Codivila in 1905 and truly developed by Russian orthopedic surgeon Gavriil Ilizarov in 1954:

“Distraction osteogenesis is a biological process of new bone formation between the surfaces of bone segments that are gradually separated by incremental traction. Specifically, this process is initiated when distraction forces are applied to the callus tissues that connect the divided bone segments, and continues as long as these tissues are stretched. The traction generates tension that stimulates new bone formation parallel to the vector of distraction.” (Samchukov et al., 1998a, 1998b)

Ilizarov introduced this technique for long bone applications. His steps for orthopedic distraction are the basis for craniofacial distraction.

Distraction in craniomaxillofacial surgery

KLS Martin® is dedicated to developing innovative surgical products. We are proud to be the leader in the field of distraction osteogenesis. Distraction applications and devices continue to evolve quickly. Although this overview has been updated to include the most current information, new devices and applications are being researched all the time.

Please contact your local representative for more detailed information and the current status of all available distraction products.

Advantages of the technique

Distraction Osteogenesis as a procedure option offers several advantages over conventional osteotomy and graft use:

- No need for a second surgery site for bone harvesting
- Regeneration of surrounding bone rather than relying on the turnover of graft materials
- Allows initial healing of the wound prior to a controlled growth of hard and soft tissue

Timetable of a distraction
Osteotomy
▼
Latency period (1 - 7 days)
▼
Distraction (~1 - 2 mm per day)
▼
Consolidation period (mineralization) (6 - 10 weeks)
▼
Removal of the distractor
▼
Subsequent treatment, remodelling (prosthetic treatment)

Summary

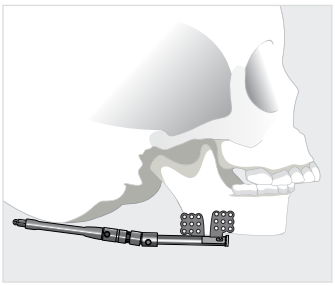
Since the 1990s, KLS Martin® has been a world leader in distraction osteogenesis design. Collaborative efforts between our customers, engineers, and product experts have resulted in many innovative devices.

This catalog represents the most common device patterns used in North America. Additional cutting edge and classic designs are available in the Special Order catalog.

Indications/Contraindications

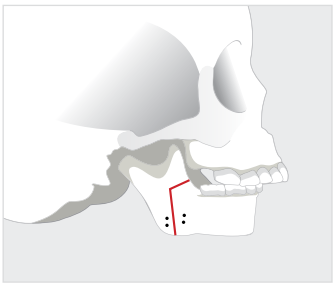
Details concerning indications/contraindications can be found in the product insert for the corresponding distractor at https://ifu.klsmartinnorthamerica.com.

Example of an operative approach:

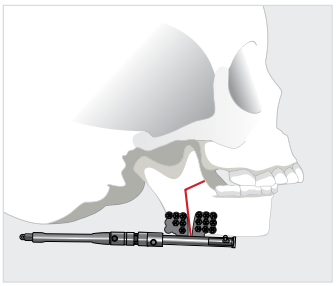


Exposure of the bone to be distracted.

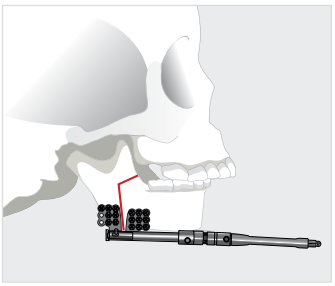
Adaptation of the distractor to the bone in the required distraction vector. Marking of the position by pre-drilling of at least two screw holes on each side of the osteotomy line.



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



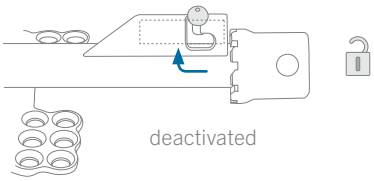
Final fixation of the distractor with cortical screws and an intraoperative test of the function of the distractor. Inspect the entire osteotomy and ensure activation is free of any resistance.

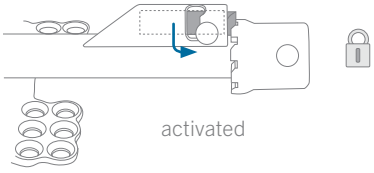


Alternative placement with the activation arm exiting anterior.

Most devices feature bilateral footplates that allow for positioning on either side of the mandible and for options in activation arm exit direction.

The surgical procedure is divided into the above steps, regardless of the selected distraction system:





Some distractors feature an anti-relapse ratchet that reliably prevents backward rotation of the distractor drive screw. Consequently, it eliminates the risk for relapse due to the device being reversed and ensures the caregiver turns the activation arm the correct way. The ratchet can be deactivated intraoperatively to test device functionality.

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

Mandible, Neonate - Infant
Micro Zürich

all -71 and -81 stock numbers packaged sterile STERILE R

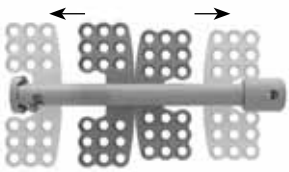
Distractor bodies only unless noted

Micro Zürich

Middle-driven w/ ratchet †	
Distraction length	
20 mm	51-423-21-71
Sizer:	51-423-21-81
Recommended screws:	1.0 mm - 1.2 mm
1 turn of 360°:	0.6 mm
Patient screwdriver:	51-423-95-07

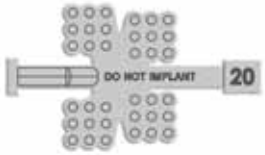
End-driven w/ ratchet †	
20 mm	51-424-21-71
25 mm	51-424-26-71
30 mm	51-424-31-71
Sizer:	51-424-31-81
Recommended screws:	1.0 mm - 1.2 mm
1 turn of 360°:	0.3 mm
Patient screwdriver:	51-430-95-07

device



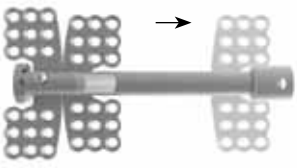
51-423-21-71 *1:1*

sizer

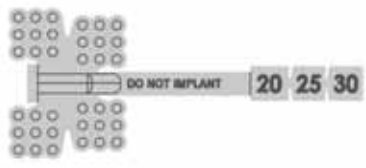


patient screwdriver

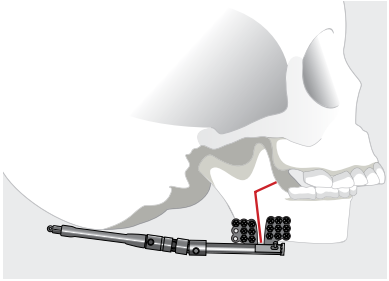
51-423-95-07



51-424-21-71 *1:1*



51-430-95-07



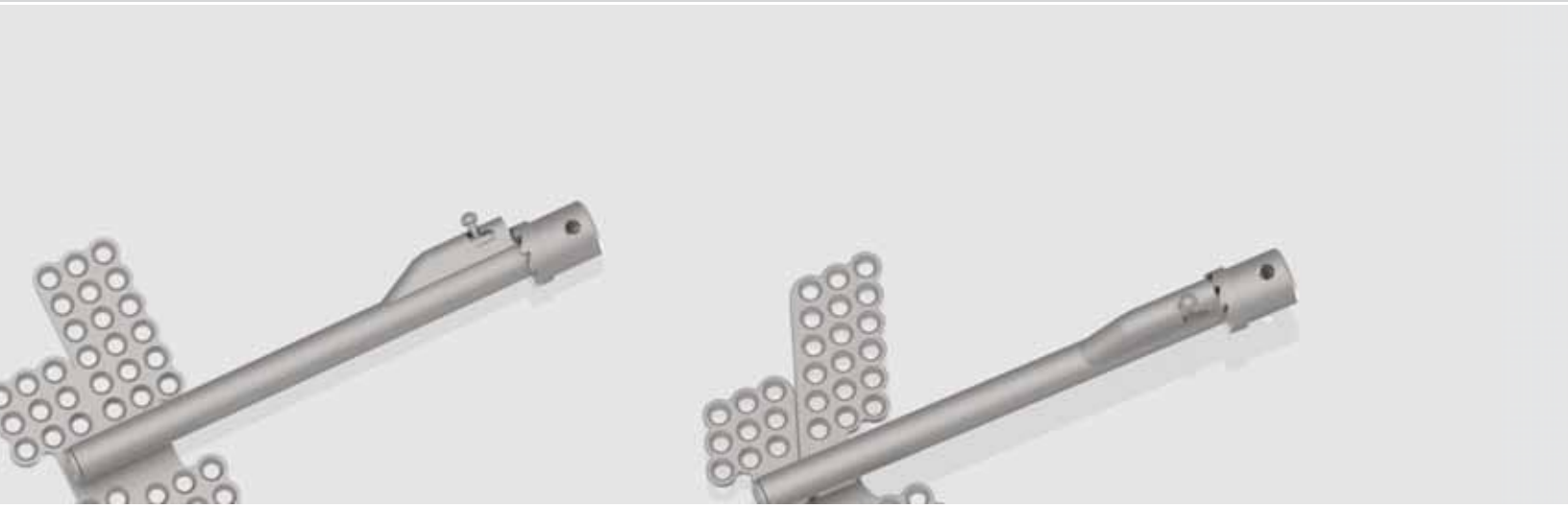
- Designed for mandibular distraction in the neonatal and infant population
- The Micro Zürich body and footplates offer the lowest profile on the market
- Enclosed Micro Zürich body and gearing
- Features the anti-reverse ratchet mechanism on the opposite end so that it is buried from the start
- Universal for left and right sides

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

For additional product information, please refer to brochure *Micro Zürich Distractor.*

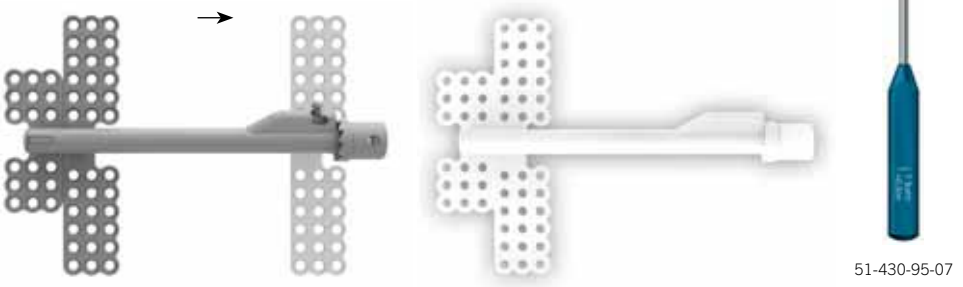
† ratchet system on Zürich distractors patent-pending



device sizer patient screwdriver

Micro Zürich II, Urata

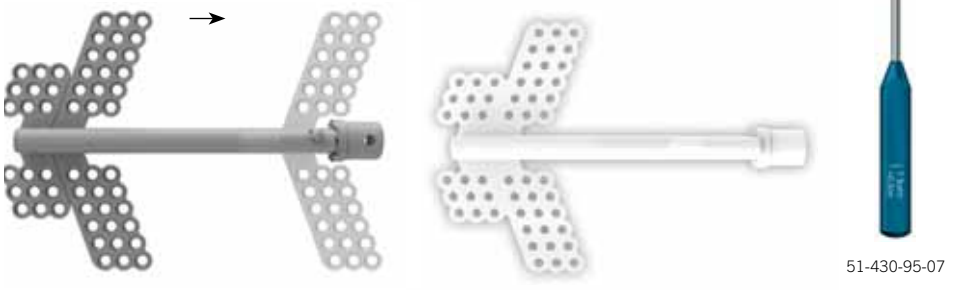
End-driven w/ ratchet †	
Distraction length	
30 mm	51-440-30-71
Sizer:	51-440-30-81
Recommended screws:	1.0 mm - 1.2 mm
1 turn of 360°:	0.3 mm
Patient screwdriver:	51-430-95-07



51-430-95-07

Micro Zürich II, Lypka

End-driven w/ ratchet †	
Distraction length	
20 mm	51-429-30-71
Sizer:	51-429-30-81
Recommended screws:	1.0 - 1.2 mm
1 turn of 360°:	0.3 mm
Patient screwdriver:	51-430-95-07



51-430-95-07

- Designed for mandibular distraction in the neonatal and infant population
- The Micro Zürich body and footplates offer the lowest profile on the market
- Enclosed Micro Zürich body and gearing
- Universal for left and right sides
- The proximal foot plate design allows the surgeon more screws holes and the ability to customize the contour to avoid premature contact with the mastoid region in a posterior arm exit situation
- The 51-429-30-71 has angled plates designed to fit the commonly-used inverted-L osteotomy

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

Mandibular Distraction HyperDrive™

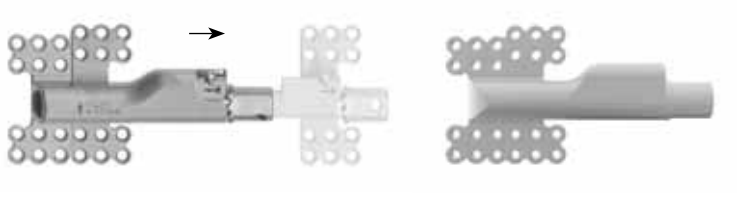
all -71 and -81 stock numbers packaged sterile STERILE R

Distractor bodies only unless noted

device **sizer** **patient screwdriver**

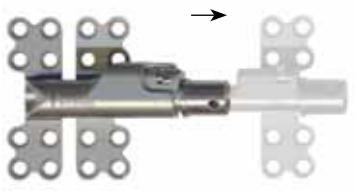
HyperDrive

End-driven w/ ratchet †	
Distraction length	
30 mm	51-528-30-71
Sizer:	51-528-30-81
Recommended screws:	1.0 mm - 1.2 mm
1 turn of 360°:	1.0 mm
Patient screwdriver:	51-510-90-07



51-510-90-07

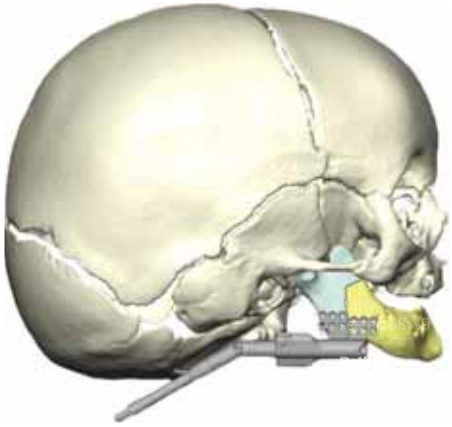
20 mm	51-351-20-71
Recommended screws:	1.5 mm - 1.8 mm
1 turn of 360°:	1.0 mm
Patient screwdriver:	51-510-90-07



Activators
see pp 38-39

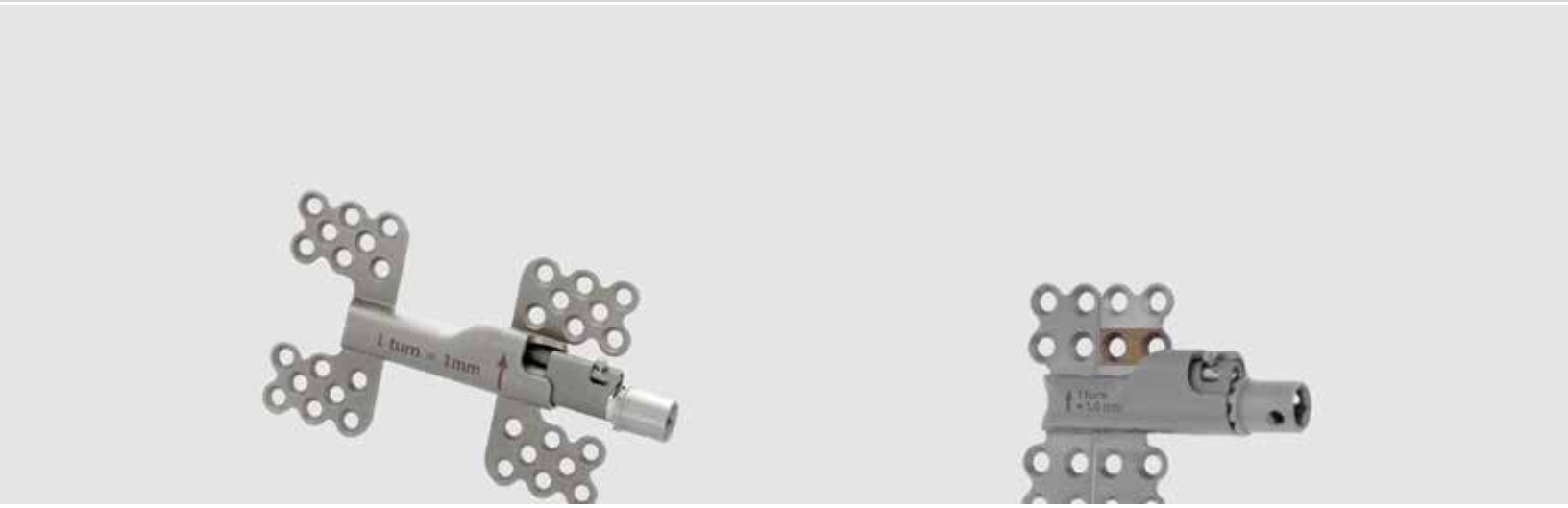
Patient screwdrivers
see pp 40-41

- Designed for mandibular distraction in the neonatal and infant population
- The Hyperdrive body is the most compact distraction mechanism on the market and allows for greater distraction capability per mm of initial length. For example, a 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
- Enclosed gearing limits soft tissue interference
- Hyperdrives are the only telescoping devices to feature an anti-reverse ratchet
- Universal for right and left sides



For additional product information, please refer to brochure *HyperDrive Mandibular Distraction.*

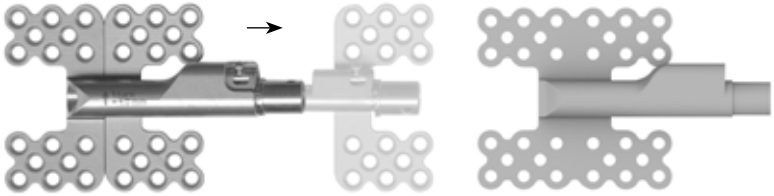
† ratchet system on Zürich distractors patent-pending



device sizer patient screwdriver

Zürich II, Hyperdrive

End-driven w/ ratchet †	
Distraction length	
30 mm	51-526-30-71
Sizer:	51-526-30-81
Recommended screws:	1.5 mm - 1.8 mm
1 turn of 360°:	1.0 mm
Patient screwdriver:	51-510-90-07



51-510-90-07

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

- Designed for mandibular distraction in the neonatal and infant population
- The Hyperdrive body is the most compact distraction mechanism on the market and allows for greater distraction capability per mm of initial length For example, a 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
- Enclosed gearing limits soft tissue interference
- Hyperdrives are the only telescoping devices to feature an anti-reverse ratchet
- Universal for right and left sides

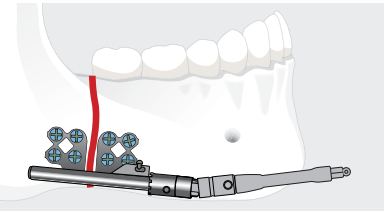
Mandible, Child to Adult
Zürich II Distractors

all -71 and -81 stock numbers packaged sterile STERILE R

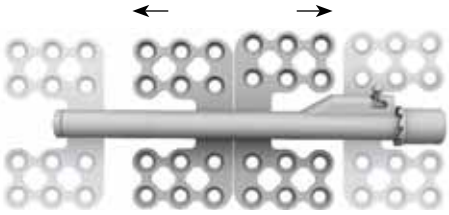
Distractor bodies only unless noted

Zürich II, Williams

Middle-driven w/ ratchet †	
Distraction length	
15 mm	51-425-15-71
20 mm	51-425-20-71
25 mm	51-425-25-71
30 mm	51-425-30-71
Sizer:	51-425-30-81
Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-500-90-07

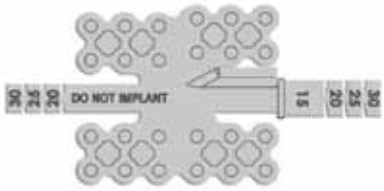


device



51-425-30-71 *1:1*

sizer



patient screwdriver

51-500-90-07

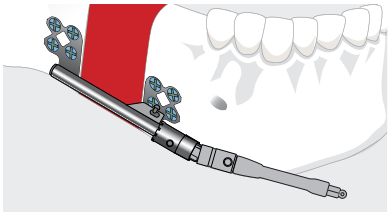
Activators
see pp 38-39

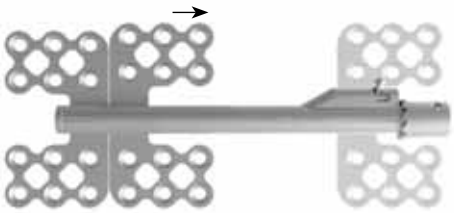
Patient screwdrivers
see pp 40-41

† ratchet system on Zürich distractors patent-pending

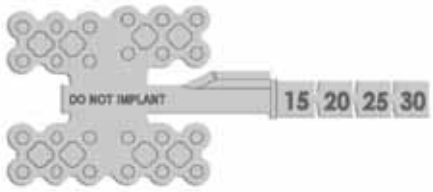
device **sizer** **patient screwdriver**

End-driven w/ ratchet †	
Distraction length	
15 mm	51-426-15-71
20 mm	51-426-20-71
25 mm	51-426-25-71
30 mm	51-426-30-71
Sizer:	51-426-30-81
Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-500-90-07





51-426-30-71 *1:1*



51-500-90-07

- Designed for distraction of the mandible
- Features the enclosed Zürich body, gearing and anti-reverse ratchet mechanism
- Universal for left and right sides

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

Transversal Maxillary Distraction

all -71 and -81 stock numbers packaged sterile STERILE R

Distractor bodies only unless noted

Rotterdam Palatal

Middle-driven w/ ratchet †	
Distraction length	
19 mm - 9 mm initial width	51-555-09-71
sizer:	51-555-09-81
19 mm - 13 mm initial width	51-555-13-71
sizer:	51-555-13-81
Distraction length/turn see distraction diagram	
Patient screwdriver	51-500-90-07
Patient activator	51-555-90-07

device

51-555-09-71 *1:1*

51-555-13-71 *1:1*

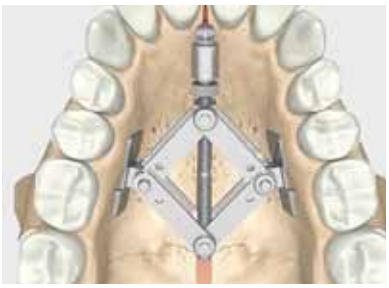
sizer

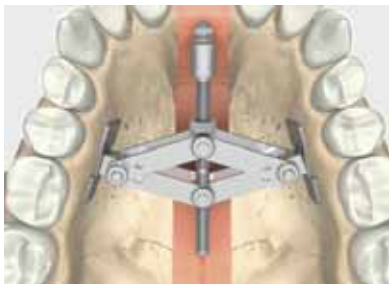
patient screwdriver

51-500-90-07

patient activator

51-555-90-07





- Designed for palatal widening
- Compact gearing allows for maximum expansion with a minimal initial footprint

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

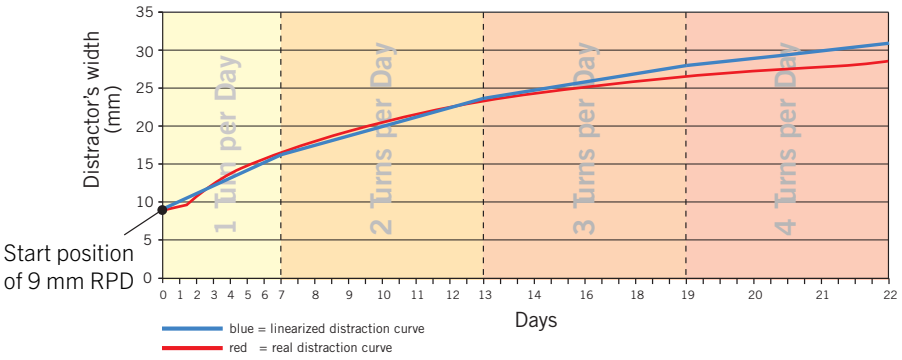
For additional product information, please refer to brochure *Rotterdam Palatal Distractor.*

Distraction diagram

Showing the width of a 9 mm Rotterdam Palatal Distractor in relation to active distraction time.

Note: It is very important to note the opening length (number of turns) of the distractor during device placement in order to properly determine necessary turns per day.

1st interval: Closed distractor until 7 complete turns: 1 turn per day
2nd interval: From 7 turns (distractor is opened approx. 7 mm) until 13 complete turns: 2 turns per day
3rd interval: From 13 turns (distractor is opened approx. 14 mm) until 19 complete turns: 3 turns per day
4th interval: From 19 turns (distractor is opened approx. 17 mm) until maximum distraction length: 4 turns per day



Transversal Maxillary Distraction

all -71 and -81 stock numbers packaged sterile STERILE R

Distractor bodies only unless noted

Rapid Palatal Expander (RPE)

		Plates		Tips	
Distraction length		Closed	Open	Closed	Open
9 mm	51-567-09-71	18.0 mm	27.0 mm	22.0 mm	31.0 mm
18 mm	51-567-18-71	22.5 mm	40.5 mm	26.5 mm	44.5 mm
27 mm	51-567-27-71	27.5 mm	54.5 mm	31.5 mm	58.5 mm

Recommended screws:	2.0 mm
1 turn of 360°: 3 color codes:	1.0 mm
Articulating acitvation wrench:	51-567-95-07

- Designed for palatal widening

device

51-567-09-71

51-567-18-71

51-567-27-71

Shown at minimum and maximum extension

patient activation wrench

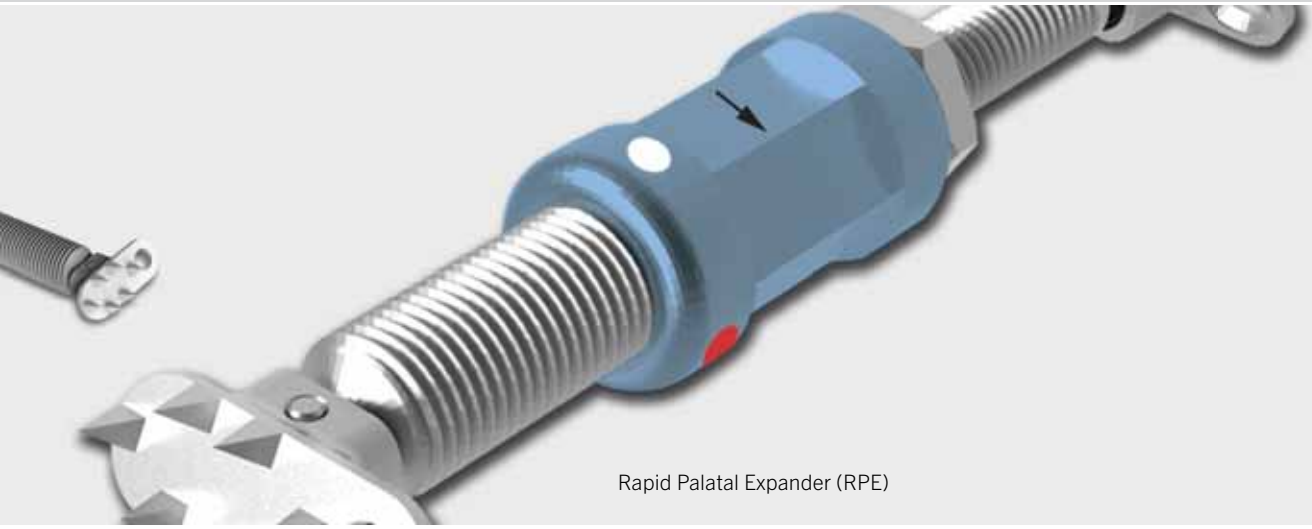
51-567-95-07

Articulating activation wrench

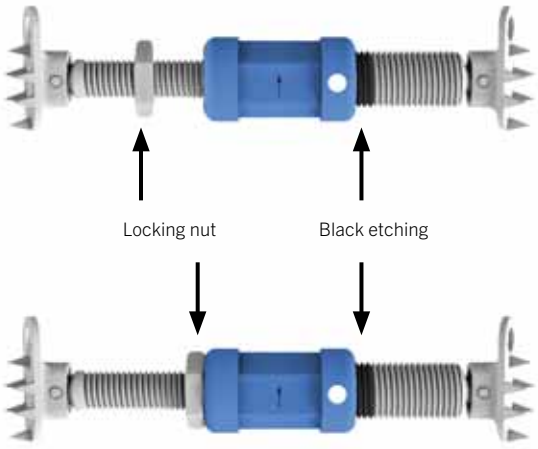
Activators
see pp 38-39

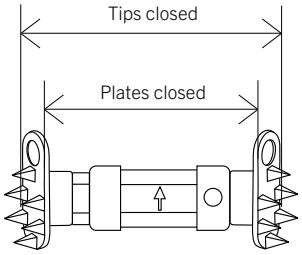
Patient screwdrivers
see pp 40-41

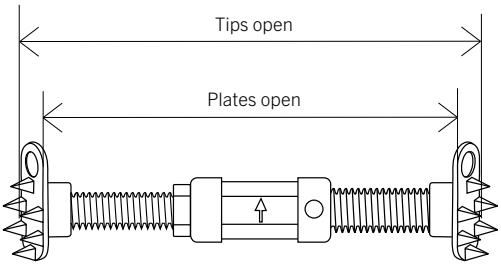
For additional product information, please refer to brochure *Rapid Palatal Expander.*



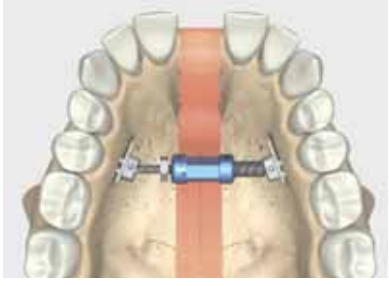
Rapid Palatal Expander (RPE)







- Black etching identifies when the device is approaching full extension
- Linear distance per turn for ease of use



Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

LeFort I & II

all -71 and -81 stock numbers packaged sterile STERILE R

Distractor bodies only unless noted

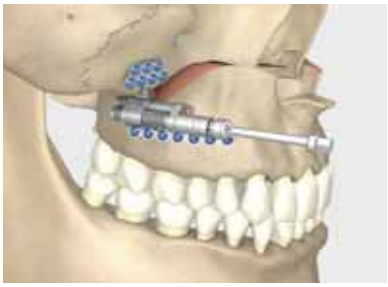
Maxillary Telescoping

Distraction length		
30 mm, left		51-360-30-71
sizer:	Left	51-360-30-81
30 mm, right		51-361-30-71
sizer:	Right	51-361-30-81

Recommended screws:	1.5 mm
1 turn of 360°:	0.35 mm
Patient screwdriver:	51-555-85-07

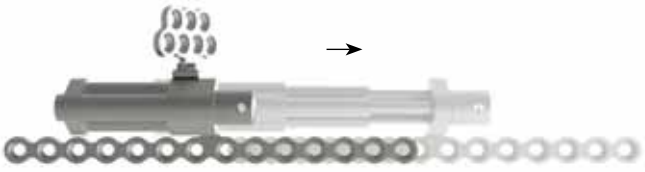
30 mm, left	51-360-40-09
30 mm, right	51-361-40-09

Recommended screws:	2.0 mm
1 turn of 360°:	0.35 mm
Patient screwdriver:	51-555-85-07

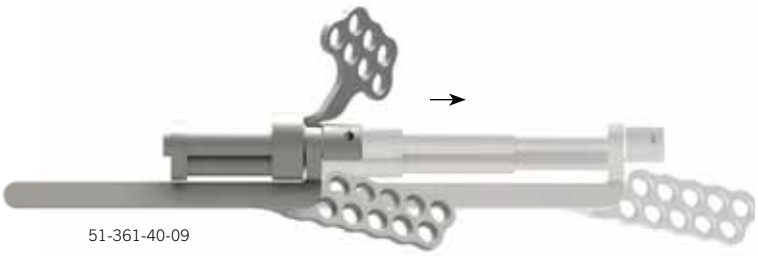


- Designed for advancing the midface at the LeFort I or II level. The telescoping gear has long activation potential, but a short body to lessen interference with the coronoid process
- The compact telescoping body is ideal for long advancements

device



51-361-30-71



51-361-40-09

sizer

51-360-30-81, left sizer

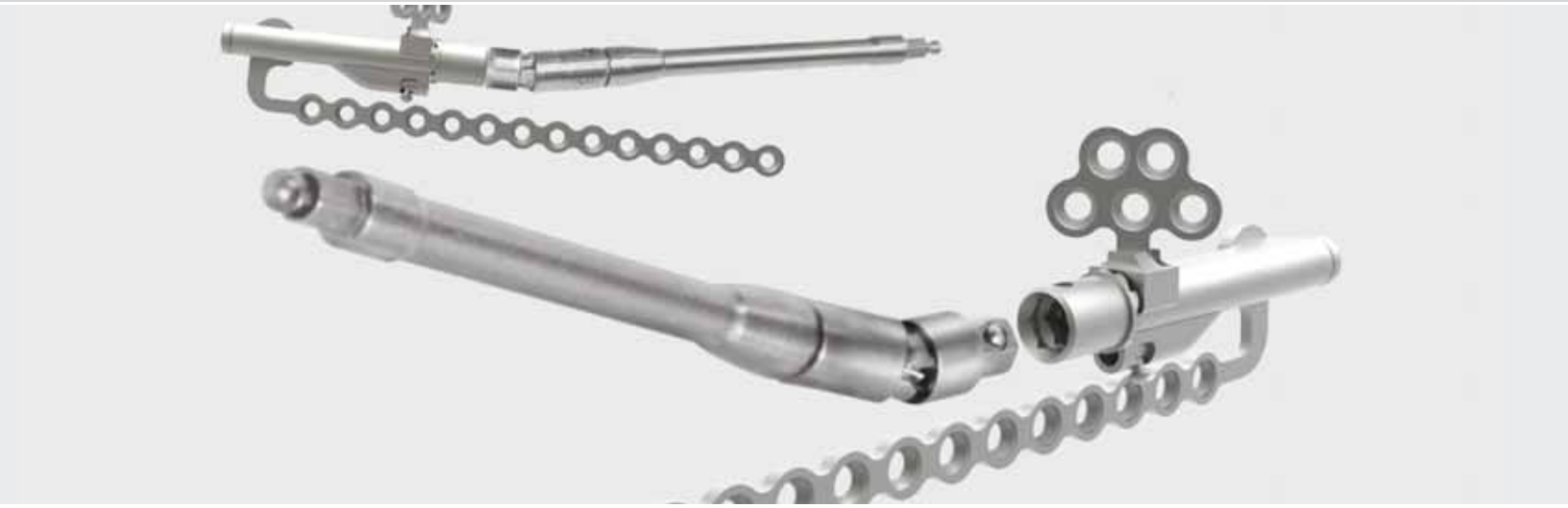
51-361-30-81, right sizer

patient screwdriver

51-555-85-07

Activators
see pp 38-39

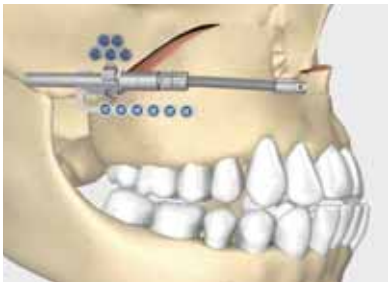
Patient screwdrivers
see pp 40-41



Zürich Maxillary

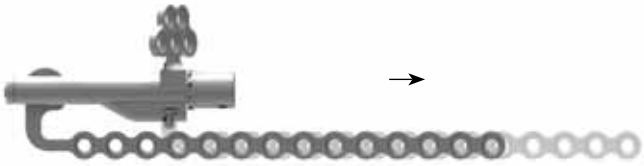
Distraction length		
15 mm, left		51-556-15-71
20 mm, left		51-556-20-71
sizer:	Left	51-556-20-81
15 mm, right		51-557-15-71
20 mm, right		51-557-20-71
sizer:	Right	51-557-20-81

Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-500-90-07



- Designed for advancing the midface at the LeFort I or II level

device



51-557-15-71

sizer

51-556-20-81, left sizer

51-557-20-81, right sizer

patient screwdriver

51-500-90-07

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

LeFort I & II, 3D

patient screwdriver

A Adjustable Midface

Distractor body	
Distraction length	
20 mm	51-401-20-09

Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver	51-500-90-07

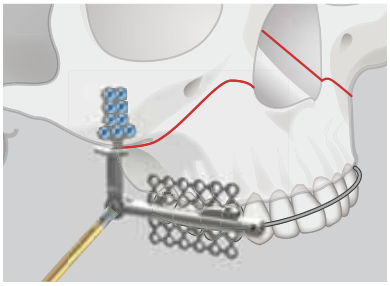
B

Buttress foot plate	
Short 2-hole	51-401-30-09
Short 3-hole, bi-directional	51-401-31-09

C

Buttress tube	
19 mm	51-402-19-09
22 mm	51-402-22-09

S/D blade for 1.5 mm mD screws	25-438-97-07



51-500-90-07

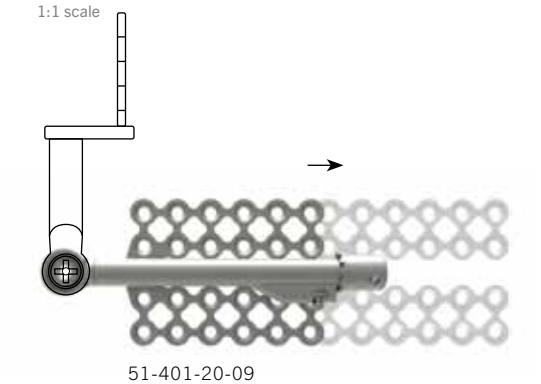
- Intraoral multivector distractor designed for advancement at the LeFort I level
- IPS Distraction Planning is strongly encouraged to ensure the proper placement and vector
- The inferior mesh may be fixed to the teeth or tooth-borne appliances
- The device, less the buttress plate, may be removed intraorally in the clinic

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

A

1:1 scale



51-401-20-09

Body tube

B

51-401-30-09

Buttress foot plate

51-401-31-09

Buttress foot plate

bi-directional

countersink on opposite side of plate

C

51-402-19-09

Buttress tube

19 mm

51-402-22-09

Buttress tube

22 mm

Activators
see pp 38-39

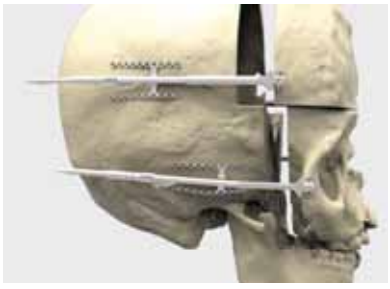
Patient screwdrivers
see pp 40-41

LeFort III and Monobloc

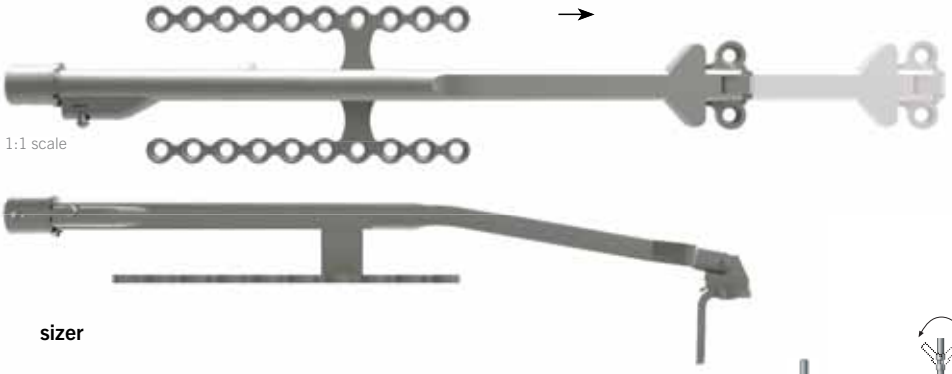
Kawamoto, Urata Style

Distraction length	
30 mm, flat, curved	51-541-30-71
sizer:	51-541-30-81

Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-500-90-07
	51-505-90-07

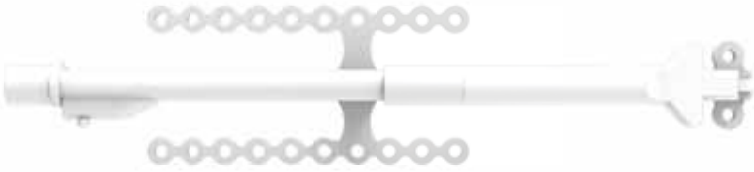


device



1:1 scale

sizer



51-541-30-81 *1:1*

patient screwdriver

51-500-90-07

51-505-90-07

- Designed for LeFort III and monobloc advancements. If performing a monobloc, two devices per side are recommended
- Device stepoff is ideal for positioning around the temporalis muscle
- Low-profile design maximizes patient comfort and ameliorates the removal process
- Features the enclosed Zürich body, gearing and anti-reverse ratchet mechanism

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

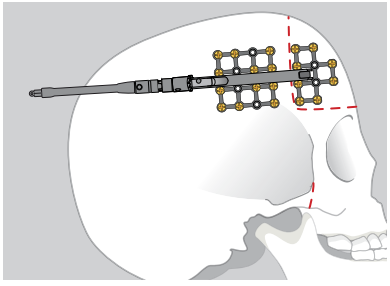
For additional product information, please refer to brochure *Kawamoto Midface Distractor.*

† ratchet system on Zürich distractors patent-pending

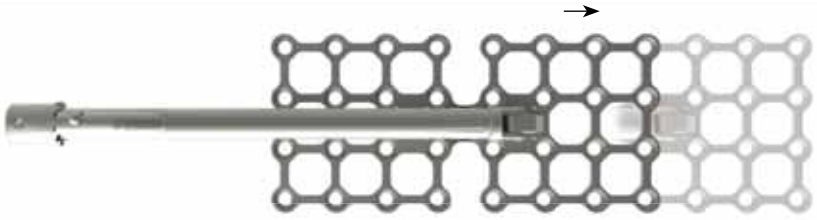
Modified Matthews-Tessier

Distraction length	
40 mm, t = 1.0 mm	51-405-41-71
sizer:	51-405-41-81

Recommended screws:	1.5 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-500-90-07
	51-505-90-07

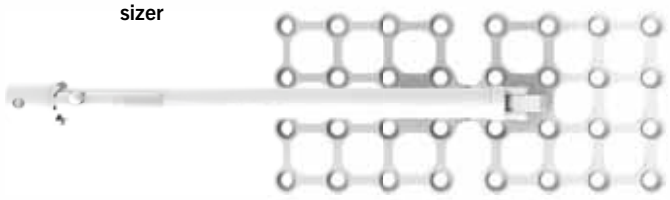


device



1:1 scale

sizer



51-405-41-81 *1:1*

patient screwdriver

51-500-90-07

51-505-90-07

- Designed for LeFort III and monobloc advancements. If performing a monobloc, two devices per side are recommended
- Features the enclosed Zürich body, gearing and anti-reverse ratchet mechanism
- Large footplates give a plethora of fixation options
- Features significant in-plane swivel to help with competing vectors or differential distraction
- Hooks on the footplates help take the load off of the screws and apply it directly to the bone

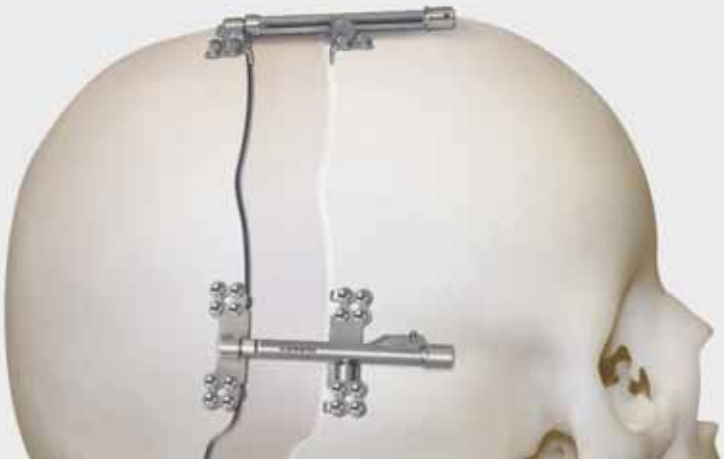
Activators
see pp 38-39

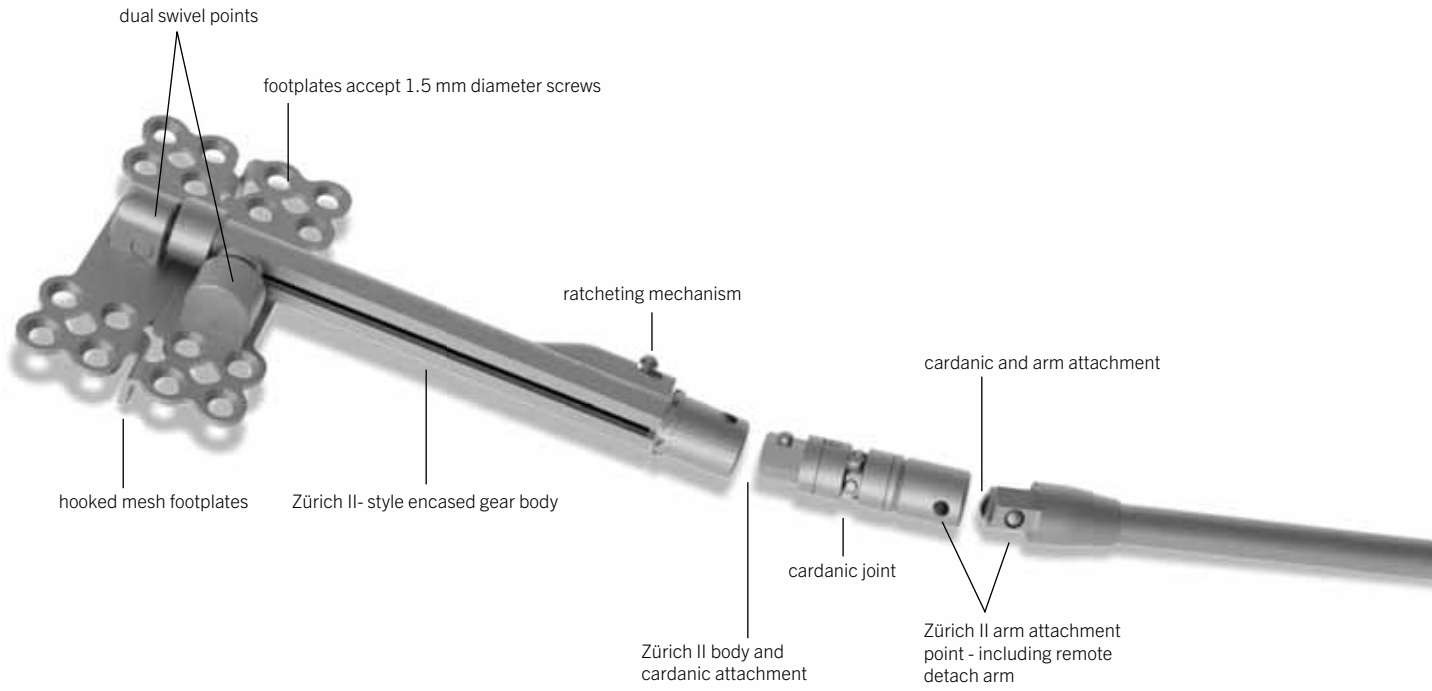
Patient screwdrivers
see pp 40-41

Cranial Vault

all -71 and -81 stock numbers packaged sterile
STERILE R

Distractor bodies only unless noted



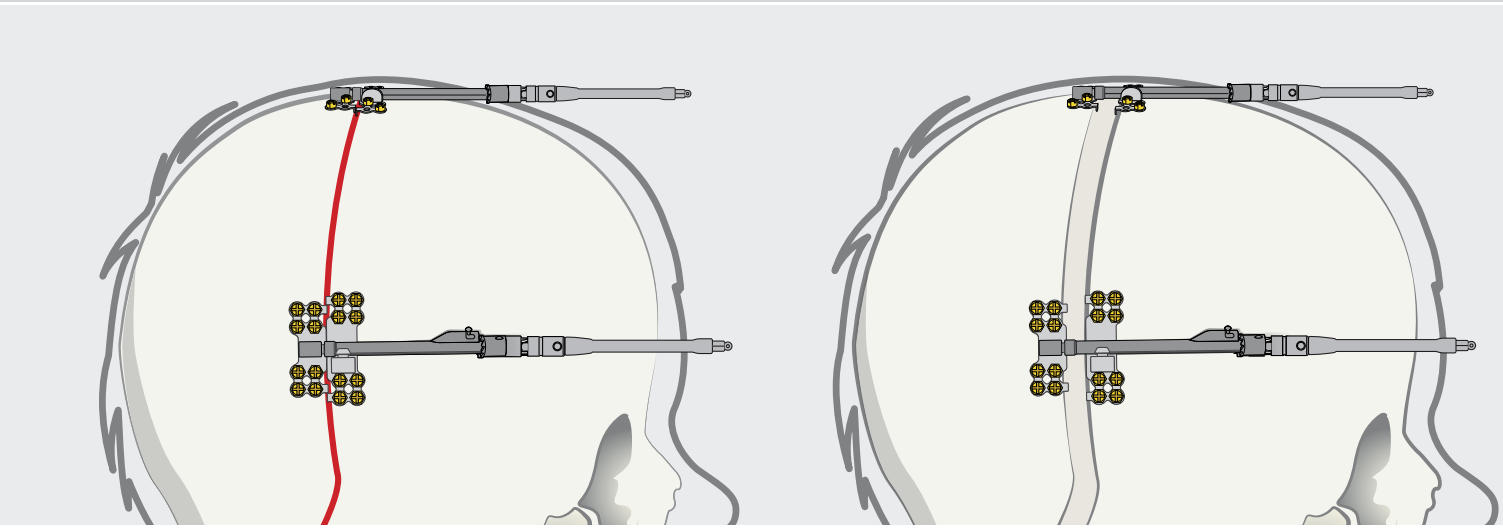


Ti Footplates are made of pure titanium in implant quality according to ASTM F 67.

Ti Distractor bodies are made of titanium alloy (Ti-6Al-4V) according to ASTM F 136.

For additional product information, please refer to brochure *Cranial Vault Technique Guide.*

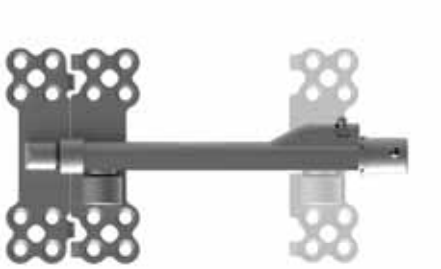
† ratchet system on Zürich distractors patent-pending



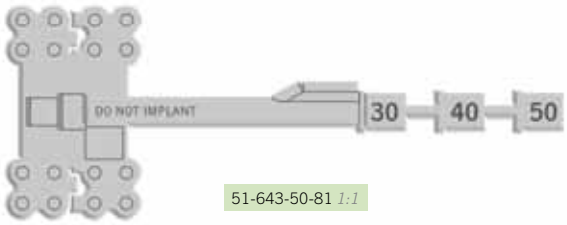
device **sizer** **patient screwdriver**

Cranial Vault

End-driven with ratchet†	
Distraction length	
30 mm, large spindle	51-563-30-71
40 mm, large spindle	51-563-40-71
50 mm	51-643-50-71
End-driven with opposite ratchet†	
30 mm	51-564-30-71
Universal sizer:	51-643-50-81
Recommended screws:	1.5 mm - 1.8 mm
1 turn of 360°:	0.5 mm
Patient screwdrivers:	51-500-90-07



51-563-30-71 *1:1*



51-643-50-81 *1:1*

51-500-90-07

- Designed for distraction of the cranial vault
- Features the enclosed Zürich body, gearing and anti-reverse mechanism
- Dual swivel points help with competing vectors, device placement on the curved cranium and differential distraction
- Hooked footplates help to distribute the load off of the screws and directly on to the bone, which is beneficial in cases with poor bone quality or thickness

Activators
see pp 38-39

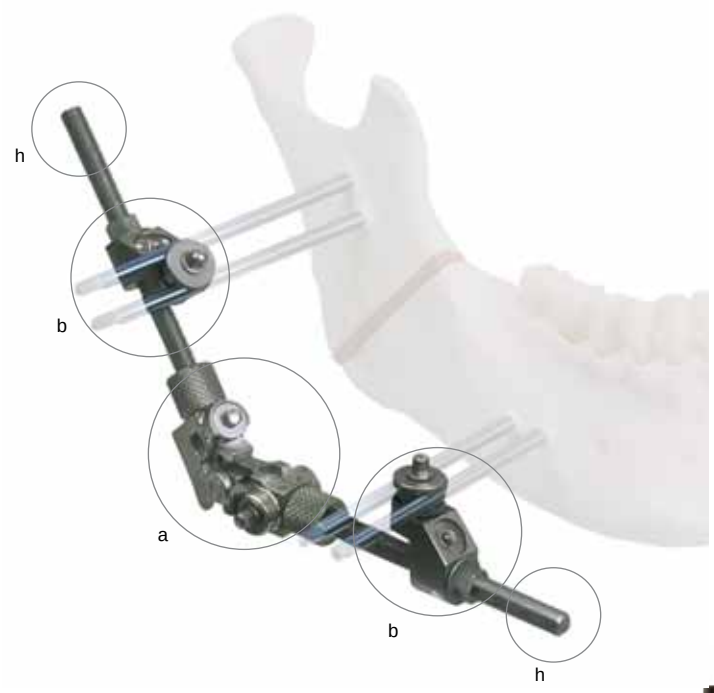
Patient screwdrivers
see pp 40-41

NOTE: It is recommended that at least one cardanic universal joint (51-401-91-71) is used with these distractors.

External Mandibular

all -71 and -81 stock numbers packaged sterile STERILE R

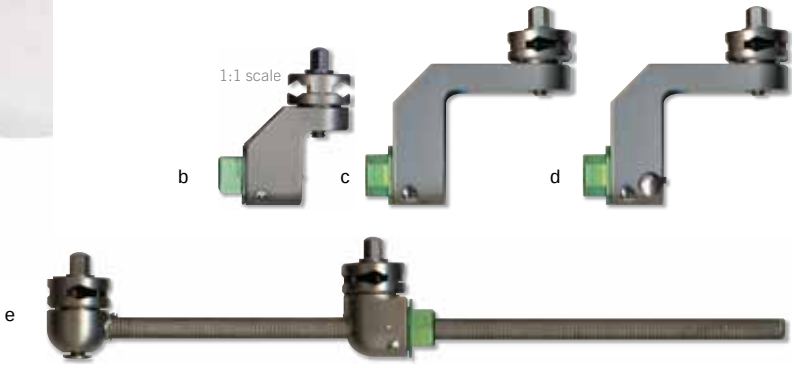
Distractor bodies only unless noted

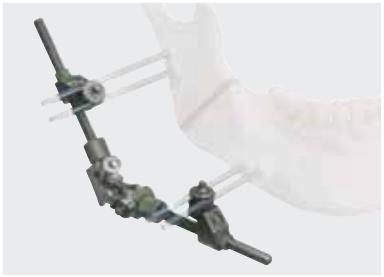


3DX®

Description		
a	3DX® basic set (complete)	51-601-00-09
b	3DX® pin holding clamp	51-601-02-09
c	3DX® pin holding clamp, limited bone	51-601-08-09
d	3DX® pin holding clamp, limited bone with locking slider	51-601-10-09
e	Gordon Style 3DX® distractor	51-601-90-09

Activation and Adjustment Drivers		
1 turn of 360°:	0.5 mm advancement	51-600-75-07
1 turn of 360°:	6° angulation change	51-600-80-07





Multidirectional distraction

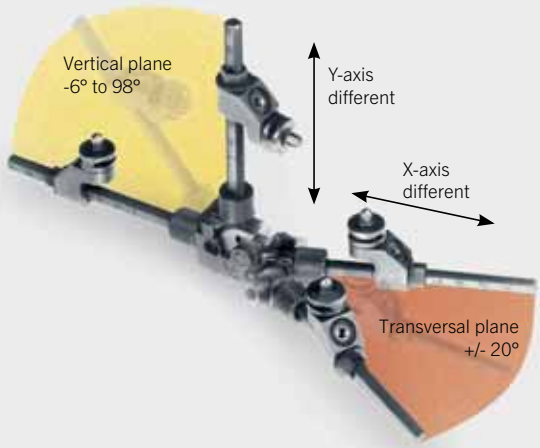
Unidirectional distraction

Transport distraction

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

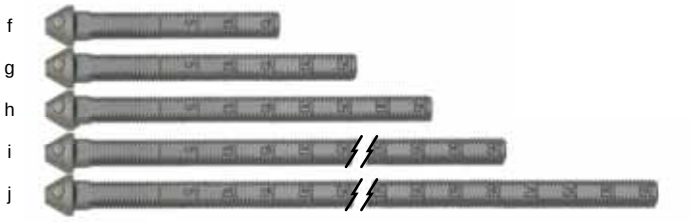
For additional product information, please refer to brochure *3DX®ternal Distraction System.*



patient screwdriver

3DX® distraction arms

Length		
f	15 mm	51-601-15-09
g	25 mm	51-601-25-09
h	35 mm	51-601-35-09
i	65 mm	51-601-65-09
j	85 mm	51-601-85-09

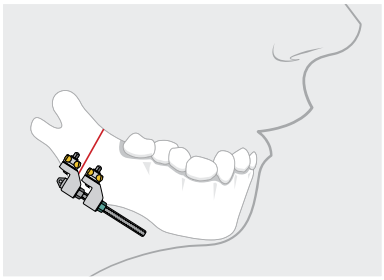


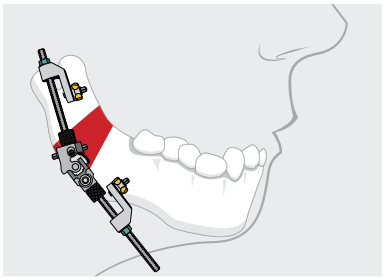
Consolidation bar attachment

Designation/Unit		
k	Carbon fiber rod for consolidation, 4.0 x 100 mm	51-601-03-04
l	Carbon fiber rod for consolidation, 4.0 x 150 mm	51-601-07-04
m	Fixation clamp for carbon fiber rod	51-601-04-09
n	Set screw for pin holding clamp	51-601-05-09
o	Set screw for carbon rod fixation clamp	-

m 51-601-04-09 n 51-601-05-09 o 51-600-75-07 51-600-80-07

Note: Components 14 and 15 are included with 51-601-04-09.





Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

External Mandibular

all -71 and -81 stock numbers packaged sterile STERILE R

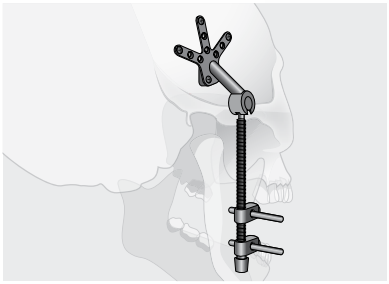
Craniomandibular Fixator

Distraction length	
short	51-603-50-09
long	51-604-50-09

Recommended screws:	2.0 mm
1 turn of 360°:	0.5 mm
Patient screwdriver:	51-600-90-07

Use 2.7 mm Molina pins (51-608-60-91) for all lengths

Pin driver :	51-600-85-07

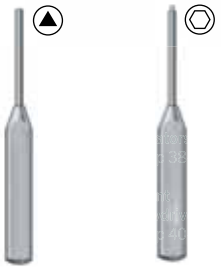


device

51-603-50-09 1:1 scale

51-604-50-09 1:1 scale

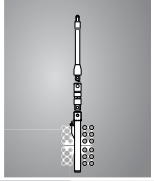
pin driver and patient screwdriver to be used together



51-600-85-07 51-600-90-07

- Designed for bony ankylosis or comminuted intracapsular fractures of the condyle when there is:
  - posterior occlusal stop preventing placement of a posterior open bite splint
  - severe head trauma when the patient is nonresponsive to therapy or intubated with a prolonged coma or head injury
- Ideal option for off-loading of the condyle
- Features a ball joint to allow for functionality of the mandible during treatment

For additional product information, please refer to brochure *Craniomandibular Fixation.*



Distraction pins

Distraction pins 1:1			
a	2 x 42 mm (1 each)	1:1 scale	51-606-40-91
b	2 x 121 mm (1 each)	1:1 scale	51-606-12-09
c	2.7 x 62 mm (1 each)	1:1 scale	51-608-60-91
d	3.2 x 60 mm (1 each)	1:1 scale	51-610-60-91

Pin driver		51-600-85-07

Optional distraction pins			
e	2 x 141 mm (1 each)	1:2 scale	51-606-14-09
f	2 x 52 mm (1 each)	1:1 scale	51-606-50-91
g	2 x 62 mm (1 each)	1:1 scale	51-606-60-91

h	**Special fit pin driver blade**	01-600-86-07
i	**Ratchet screwdriver handle**	25-411-00-07

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

1:1 scale

1:2 scale

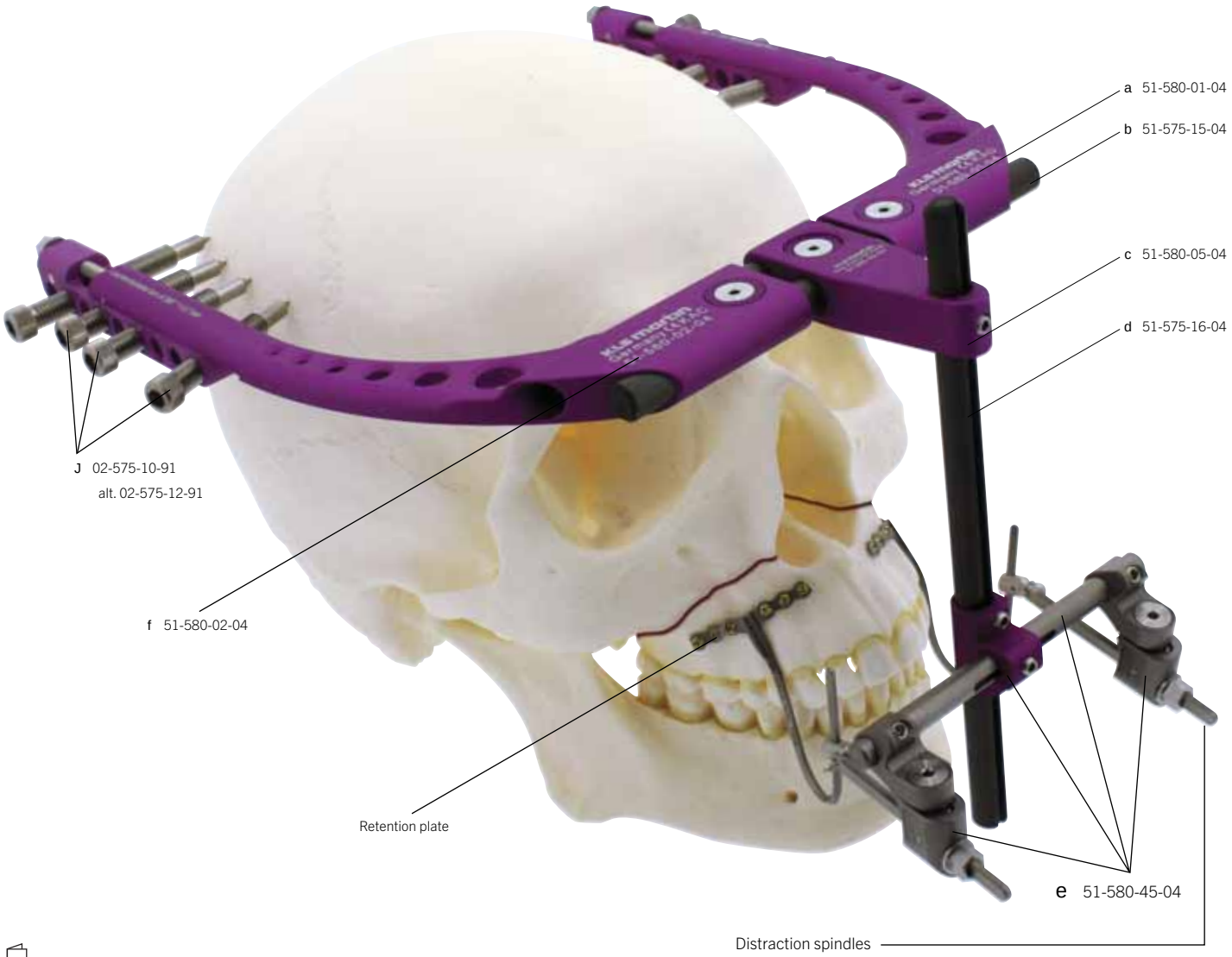
patient screwdriver

51-600-85-07

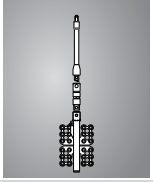
Standard **RED II** Distraction System

Advantages of the **RED II** System

The RED II System provides the means to obtain predictable and consistent results in maxillary and midface distraction. This system is designed to provide the surgeon with the ability to deliver controlled rigid distraction forces without the need for internal hardware. The advantages of the RED II System are multiple and include the following:



For additional product information, please refer to brochure *RED II System*.



- Rigid distraction forces
- External rather than in situ gear placement allows for greater movements in small patients
- Multidirectional, accurate distraction
- Interchangeable parts for more adjustability and faster repositioning of the components
- Multiplanar adjustability of distraction forces at any time during the distraction procedure
- Improved acceptance and compliance with lock nuts for fixation screws and two frame colors
- Easy and quick assembly in the OR as well as removal in the office or clinical setting

⑦ 51-580-85-07
18 cm / 7¼"
Patient screwdriver
hexagonal

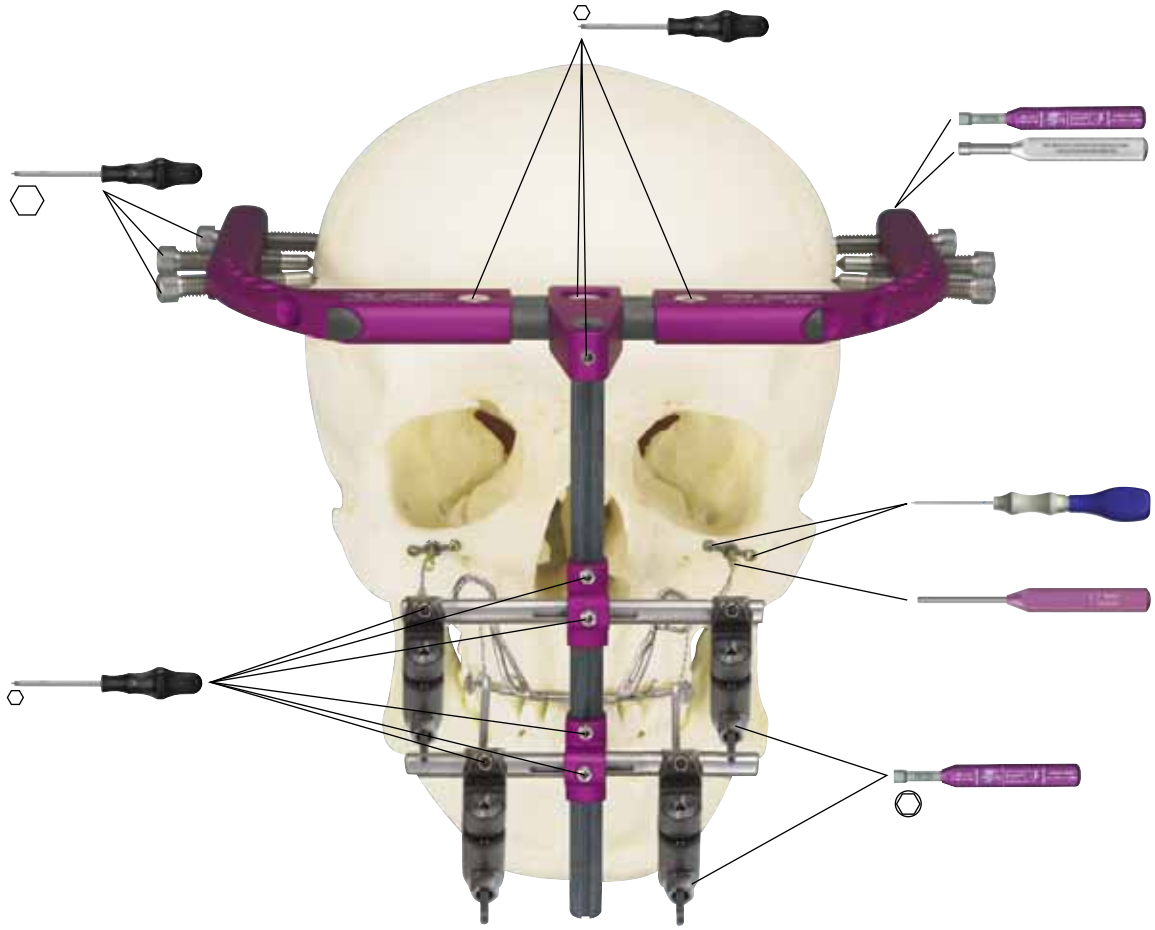
H 51-580-87-07
18 cm / 7¼"
Patient screwdriver
hexagonal

I 51-575-90-07
24 cm / 9½"
Adjustment screwdriver
hexagonal

	Item No.	Qty.	Description
	51-580-00-04		RED II distraction system, complete assembly
	Consisting of:		
a	51-580-01-04	1	Distraction segment, left
b	51-575-15-04	2	Carbon rods, 120 mm, horizontal
c	51-580-05-04	1	Upper part
d	51-575-16-04	1	Carbon rod, 150 mm, vertical
e	51-580-45-04	1	Horizontal cross bar assembly, complete with horizontal cross bar, holder, and 2 spindle units
f	51-580-02-04	1	Distraction segment, right
g	51-580-85-07	1	Patient screwdriver, hexagonal
To order separately:			
H	51-580-87-07	1	Patient screwdriver, hexagonal
I	51-575-90-07	1	Adjustment screwdriver, hexagonal
J	02-575-10-91	1	Halo fixation screw, 45 mm, knurled, min 3 per side
	alt.		
	02-575-12-91	1	Halo fixation screw, 55 mm, knurled, min 3 per side

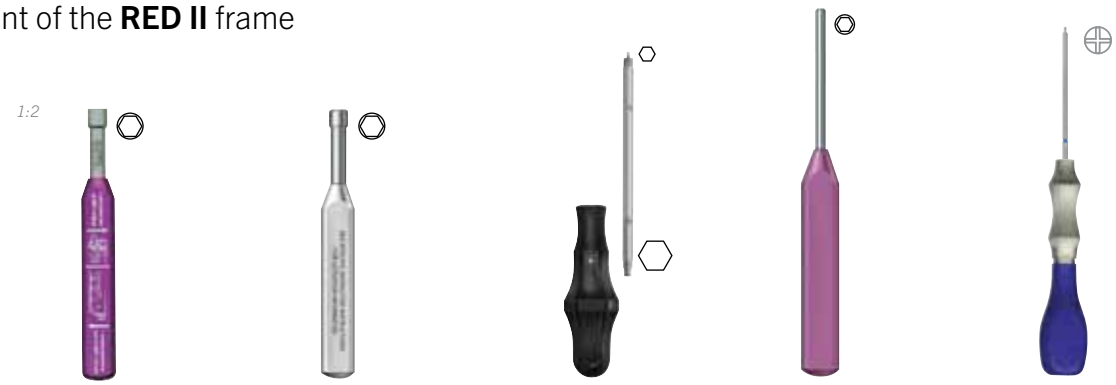
Activators
see pp 38-39

Patient screwdrivers
see pp 40-41



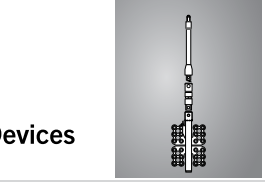
Adjustment of the **RED II** frame

1:2

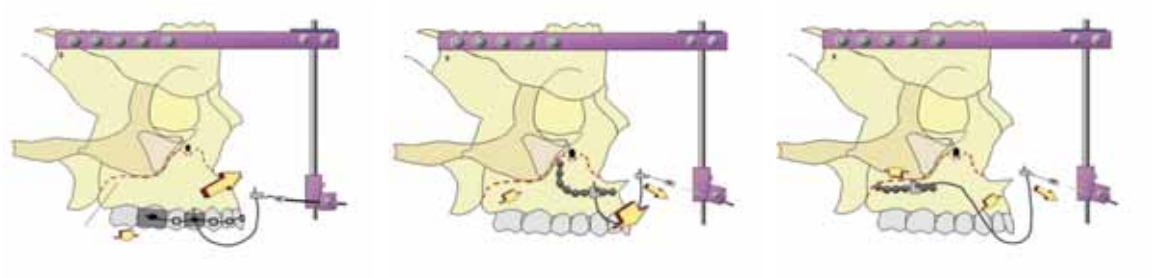


Item No.	51-580-85-07	51-580-87-09	51-575-90-07	51-500-80-07	25-407-02-07 25-438-97-07
Description	Patient screwdriver, hexagonal	Patient screwdriver, hexagonal	Adjustment screwdriver, hexagonal	Hex screwdriver, hexagonal	Screwdriver 1.5 mm maxDrive® blade
Description	Activates the standard horizontal crossbar spindles and the posterior halo frame when applicable	Activates and adjusts components other than the standard horizontal crossbar spindles	For all intraoperative adjustments of the RED II frame. **Note:** 2 working ends	For insertion of the midface fixation screws in LeFort III and monobloc procedures	For modification of the slider on the retention plates

For additional product information, please refer to brochure *Standard RED II Distraction System.*



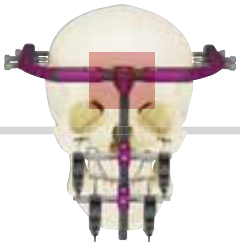
The parts you need listed by procedure



Item No.	Description	Qty Required	Qty (per pack)
1) Required for LeFort I and LeFort II procedures			
51-580-00-04	RED II complete, includes the patient screwdriver	1	1 piece
51-575-90-07	Adjustment screwdriver (for adjustment and pin fixation)	1	1 piece
02-575-10-91	Halo fixation screw, 45 mm, knurled, 3 needed per side	8+	1 piece
or 02-575-12-91	Halo fixation screw, 55 mm, knurled, 3 needed per side	8+	1 piece
2) Connection to the occlusal level			
Either	Intraoral splint for connecting the RED to the teeth	1	1 piece
or	Retention plates as presented on pages 10-13 in this brochure		
	General recommendation: T-long retention plate (51-582-51-09, use with a 1.5 mm cross-drive blade)	2	1 piece
3) Additional for LeFort III and monobloc procedures in addition to all items listed under 1) and 2)			
51-580-45-04	Second horizontal cross bar	1	1 piece
51-581-02-09	Midface fixation plate	2	1 piece
51-581-15-91	Midface fixation screw, 15 mm long	2	1 piece
51-500-90-07	Hex screwdriver	1	1 piece
25-875-05-09	maxDrive® screws 1.5 x 5 mm	1	5 pieces
or 25-875-07-09	maxDrive® screws 1.5 x 7 mm	1	5 pieces
25-407-02-07	Screwdriver handle	1	1 piece
25-438-97-07	Blade for 1.5 mm maxDrive® screws	1	1 piece
51-580-87-07	Vertical geared bar, square rod style	1	1 piece

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41



Expansion of the **RED II:** additional components

device

patient screwdriver

Fearon modified upper part 51-580-06-04

Adjustment screwdriver: 51-575-90-07

- Allows for lateral shifting in the upper central unit and more control on possible asymmetries.

Developed in cooperation with Dr. Jeffrey Fearon

Dallas, Texas

1:2

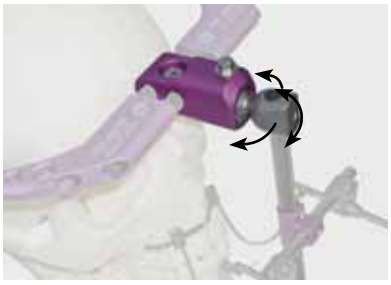
51-575-90-07

Multidirectional upper part 51-580-09-04

Adjustment screwdriver: 51-575-90-07
Patient screwdriver: 51-580-87-07

- Allows for complete adjustment of the central carbon rod in all 3 dimensions with the patient activator.

1:2

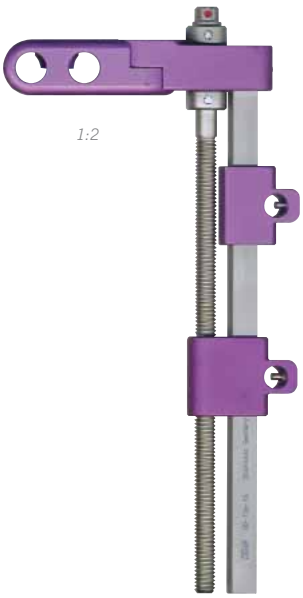


51-575-90-07 51-580-87-07

Vertical geared bar 51-580-07-04

1 turn of 360° CLOCKWISE:
1.0 mm **superior** movement
1 turn of 360° COUNTERCLOCKWISE:
1.0 mm **inferior** movement
Adjustment screwdriver: 51-575-90-07
Patient screwdriver: 51-580-87-07

- Allows for complete adjustment of the central carbon rod in all 3 dimensions with the patient activator.



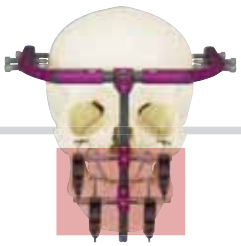
1:2

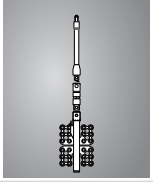
51-575-90-07 51-580-87-07

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

For additional product information, please refer to brochure *RED II System*.





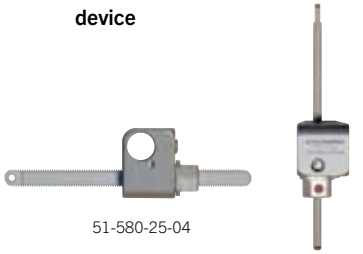
Rigid spindle unit assembly	51-580-25-04
Adjustable spindle unit assembly	51-580-30-04

Adjustment screwdriver:	51-575-90-07
Patient screwdriver:	51-580-85-07

- The adjustable spindle unit is designed to allow horizontal adjustment of the spindle. To adjust, loosen the set screw directly above the spindle, rotate the spindle to the desired orientation, and then retighten the set screw.

Note: These items come as a single spindle, two must be ordered to make a pair.

device



51-580-25-04

1:2

51-580-30-04

patient screwdriver

51-575-90-07 51-580-85-07

Retention plate	
a T-long plate	51-582-51-09
b Slidable Loop	51-582-13-05

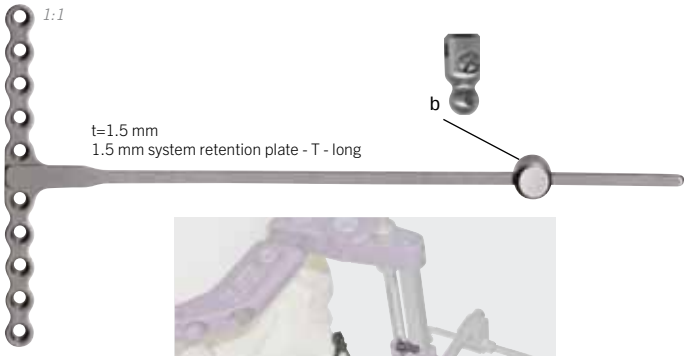
To be modified using 1.5 mm Cross-drive screwdriver	
Screwdriver handle	25-407-02-07
maxDrive® blade	25-438-97-07

- Designed to be used in place of an orthodontic splint or when bone - bone fixation is needed.

Developed in cooperation with Dr., Dr. Thomas Hierl and Prof., Dr., Dr. Alexander Hemprich

University of Leipzig, Germany

1:1

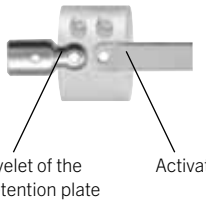


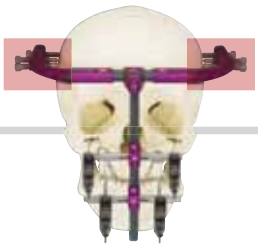
Retention plate connector	51-580-13-09

To be assembled with a 1.5 mm diameter Centre-Drive® screwdriver blade.

not to scale

- Designed to provide rigid fixation. This device works with the KLS Martin® Retention Plates and eliminates the need for wire connection.





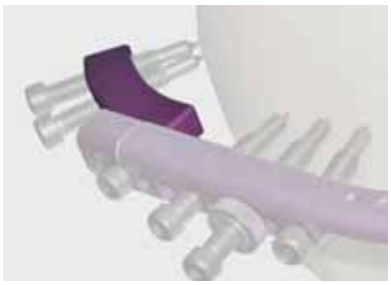
device

patient screwdriver

Halo extender	51-580-08-04

- Allows pin fixation on the posterior part of the skull and an extension of the RED frame. Symmetrical construction - to be used on the right or left side of the patient.
- Unit: 1 piece each.

not to scale



51-575-90-07

Complete RED II with rounded fixation element	51-583-00-04

For posterior activation drive screws:	
1 turn of 360° COUNTERCLOCKWISE:	0.7 mm advancement
Adjustment screwdriver:	51-575-90-07
Patient screwdriver:	51-580-85-07

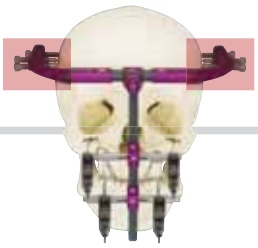
- Enables the placement of fixation pins on various levels.

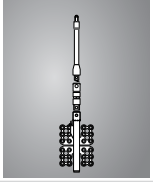
51-575-90-07 51-580-87-07

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

For additional product information, please refer to brochure *RED II System*.

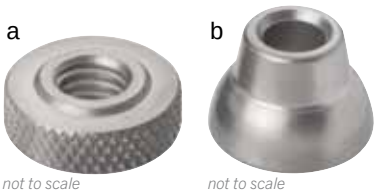




device **patient screwdriver**

a	**Locking nut**	51-575-94-09
b	**Positive stop**	51-575-99-09

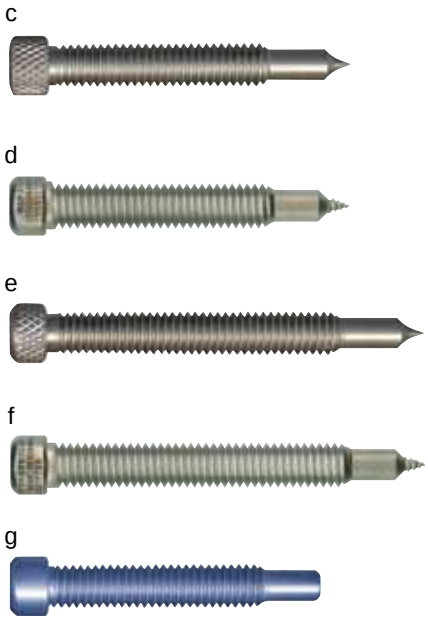
- The locking nut 51-575-94-09 is designed to prevent loosening and over-tightening of the fixation pin by placing them either inside or outside the frame.
- The positive stop 51-575-99-09 securely limits the skull entry of the RED fixation pin.



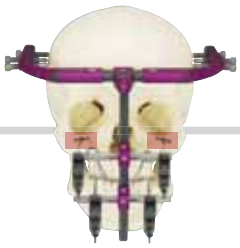
Halo fixation screws		
c	Knurled head, 45 mm	02-575-10-91
d	Hopper pin, 45 mm	51-575-11-91
e	Knurled head, 55 mm	02-575-12-91
f	Hopper pin, 55 mm	51-575-13-91
g	Trial pin, 41 mm	51-575-14-09

Adjustment screwdriver:	51-575-90-07

- Trial pin to be used for intraoperative setting of the RED II. Blunt tips - not for permanent fixation.



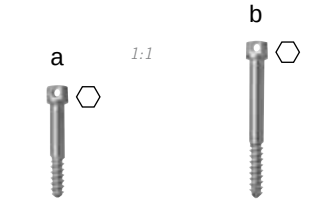
51-575-90-07



device **implant screwdriver**

Midface fixation screws

Description	
a 2.0 x 15 mm, 5.0 mm threaded	51-581-15-91
b 2.0 x 21 mm, 7.0 mm threaded	51-581-21-91
To be inserted using:	51-500-80-07

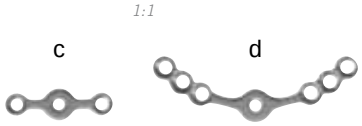


51-581-15-91 51-581-21-91

51-500-80-07

Midface fixation plates

Description	
c **Straight**, for LeFort III and monobloc procedures, a second fixation base allows better control of the distraction vector and the bony structures involved	51-581-02-09
d **Curved**, especially suitable in round, suborbital bone regions	51-581-06-09

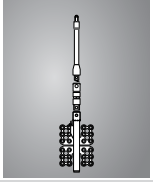


- Outer holes are secured with 1.5 mm diameter screws.
- Center hole is threaded for a central fixation screw. (2.0 mm diameter)

For additional product information, please refer to brochure *RED II System*.

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41



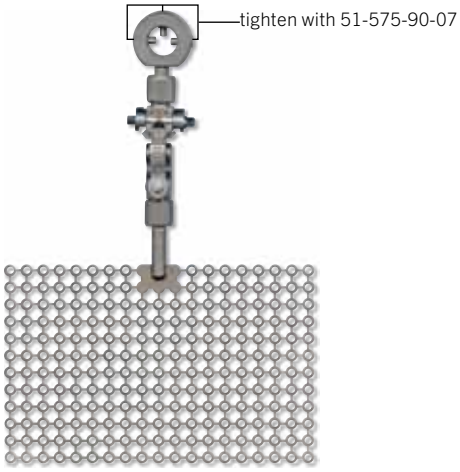
device

patient screwdriver

RED II adjustable palatal mesh	51-580-14-09
Recommended screws:	1.5 mm
Adjustment screwdriver:	51-575-90-07
Patient screwdriver:	51-580-87-07

Note:

Device is driven from the rear of the RED II with either 51-575-90-07 or 51-580-87-07 when applicable.



1:2

51-575-90-07 51-580-87-07

Palatal mesh attachment to the vertical geared bar	00-909-87-09

1:1

Distraction Activators

Rigid remote release activators

Most KLS Martin® distraction devices are delivered without an activator, thus allowing the surgeon to choose the individual activators and extensions that meet the anatomical requirements of the patient.

Our remote release activators are unique, allowing easy activator removal without the dissection required of many traditional components.

Remote release activators are compatible with the Zürich style hex connections on distraction devices and other extensions. However, note that the remote release activators will not detach additional elements, these additional elements will stay with the distractor after the remote release activator is removed.

Rigid remote removable activators * 1:1

	Activators	
B	Rigid, 23 mm	51-410-23-71**
C	Rigid, 33 mm	51-410-33-71**
D	Rigid, 43 mm	51-410-43-71**
E	Rigid, 53 mm	51-410-53-71**

connection point between distractor and activator

point of activation with the patient screwdriver

*Rigid remote detachable activation arms can be removed without forceps. Pull out and rotate the ball at the tip of the arm with a skin hook 90° and then manually grasp the arm and pull away.

At least one cardanic extension (51-401-91-71**) must be used with this activation arm.

Activators
see pp 38-39

Patient screwdrivers
see pp 40-41

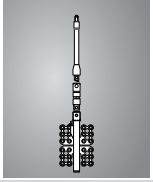
remote release procedure

1. Pull out the release lug with a skin hook.

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

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

4. The activator can now be easily removed by manually grasping and pulling away.
Do not attempt to remove the device with the skin hook alone.



Conventional removable activators

In addition to the remote release activators, many traditional activators are available. The four below are the most commonly used.

These attachments can be removed using the activator removing forceps, 51-400-01-07.

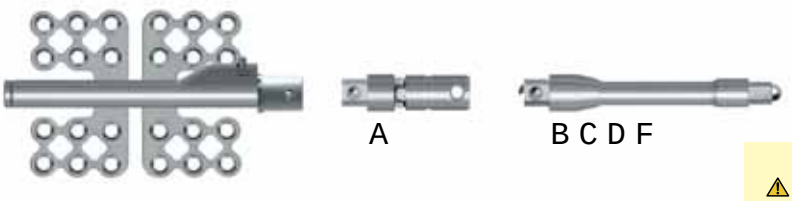
	Activators	
	Direct drive activator	51-401-90-71
A	Single cardanic extension	51-401-91-71
	Rigid extension, 20 mm	51-401-92-71
	Trocar for activator	51-401-93-71

Removal of activator

During the consolidation period Once the active distraction process has been completed, activators are usually no longer needed and may be a source of inconvenience for the patient.

The activators can easily be removed using special disconnection forceps
(item no. 51-400-01-07, see page 38).

51-400-01-07
Activator removing forceps, 15.5 cm



⚠ **Check clearance of distractor in full range of activation to ensure there is no interference with the ratchet device and any screws.**

Drivers for activation, fixation, and adjustment

1:2 scale, unless noted - working ends 1:1 scale

all -71 and -81 stock numbers packaged sterile STERILE R

01-600-86-07
Special fit pin driver blade

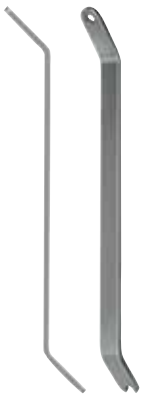
25-411-00-07
Ratchet screwdriver handle

50-346-90-07
2.0 mm hex

51-423-95-07
2.5 mm hex
0.6

51-430-95-07
2.5 mm hex
0.3

51-555-85-07
2.5 mm hex
0.35

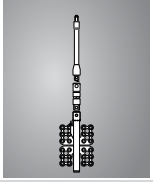


51-555-90-07
Rotterdam Palatal

51-567-95-07
RPE

51-575-90-07*
RED II, 2 ends
*includes:
handle 51-575-91-07
blade 51-575-92-07

51-580-85-07
RED II
0.5



Icon explanations:

- 0.3 — 1 turn of 360° = 0.3 mm
- 0.6 — 1 turn of 360° = 0.6 mm
- 1.0 — 3 turns of 360° = 1.0 mm
- 0.5 — 1 turn of 360° = 0.5 mm
- 6° — 1 turn of 360° = 6°

51-500-80-07
2.5 mm hex

51-500-90-07 0.5
2.5 mm hex

51-505-90-07 0.5
2.5 mm hex

51-509-90-07 1.0
Rotterdam Midline

51-510-90-07 1.0
2.5 mm hex

51-580-87-07
RED II

51-600-75-07 0.5
3DX

51-600-80-07 6°
2.5 mm hex

51-600-90-07 0.5
2.0 mm hex

51-600-85-07
Pin driver

Additional products for distractor placement

Icon explanations

TC GOLD Instruments with tungsten carbide inserts

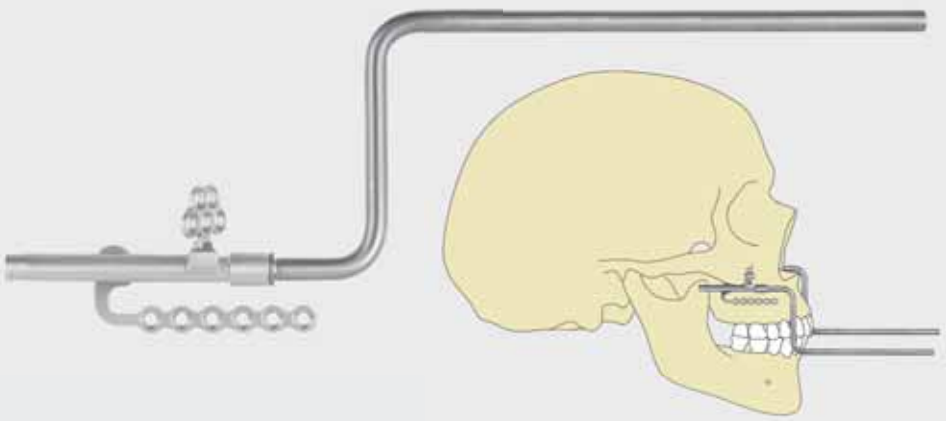
TC GOLD

25-486-13-07
Bending pliers,
2 items recommended

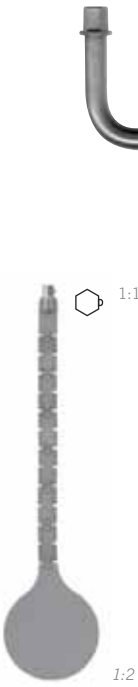
51-400-01-07
Removing forceps

51-400-02-07
Distraction plate cutter

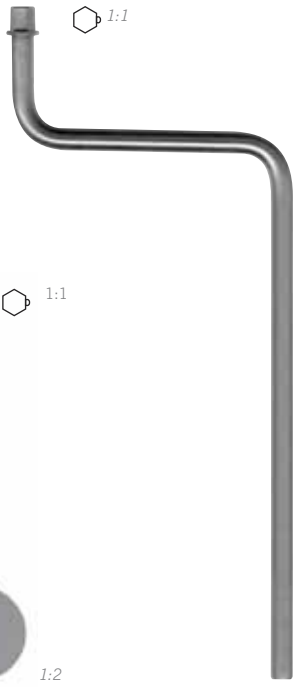
51-400-03-07
Body holding forceps



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



51-400-04-07
Activator measuring device



51-400-05-09
Alignment rod

51-400-20-07
Level One Easy Cut plate cutter

51-515-90-07
Distractor holding forceps, fits Zürich II style body tube

51-525-76-04
Distractor holding forceps, fits Micro Zürich style body tube

Screws, twist drills and screwdriver blades

all -71, -74, -78 stock numbers packaged sterile STERILE R

Drill-Free® Zürich screws

maxDrive® 1.2 mm hex head

Ø x Length	thread length	1 unit	4 units
1.2 mm x 5.0 mm	3.0 mm	50-347-05-71	50-347-05-74
1.2 mm x 7.0 mm	5.0 mm	50-347-07-71	50-347-07-74
1.2 mm x 9.0 mm	7.0 mm	50-347-09-71	50-347-09-74

maxDrive® 1.5 mm hex head

Ø x Length	thread length	1 unit	4 units
1.5 mm x 5.0 mm	3.0 mm	50-348-05-71	50-348-05-74
1.5 mm x 7.0 mm	5.0 mm	50-348-07-71	50-348-07-74
1.5 mm x 9.0 mm	7.0 mm	50-348-09-71	50-348-09-74

Screwdriver blades for 1.2 mm Ø screws
for screwdriver handle 25-402-99-07

maxDrive®
25-489-97-07

Screwdriver for 2.0 mm hex head screws

50-346-90-07

Screwdriver blades for 1.5 mm Ø screws
for screwdriver handle 25-407-02-07

maxDrive®
25-438-97-07

Screwdriver for 2.5 mm hex head screws

51-500-90-07

- Zürich screws lessen the difficulty of removal if there is bony overgrowth or the screw head is difficult to see during removal.

Centre-Drive® 1.0 mm

Micro screws — self-retaining

Ø x Length	5 units	1 unit	4 units
1.0 x 4 mm	25-660-04-09	25-660-04-71	25-660-04-74
1.0 x 5 mm	25-660-05-09	25-660-05-71	25-660-05-74
1.0 x 6 mm	25-660-06-09	25-660-06-71	25-660-06-74
1.0 x 7 mm	25-660-07-09	25-660-07-71	25-660-07-74

Emergency screws — self-retaining

Ø x Length	5 units	1 unit	4 units
1.2 x 5 mm	25-661-05-09	25-661-05-71	25-661-05-74
1.2 x 7 mm	25-661-07-09	25-661-07-71	25-661-07-74

Screwdriver blades for 1.0 mm screws
for screwdriver handle 25-402-99-07

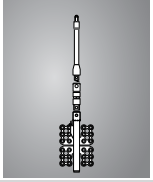
Centre-Drive®
25-428-98-07

Twist drills for 1.0 mm screws
with J-notch attachment

Ø x Length	Stop	
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

1:2

25-402-99-07
Screwdriver handle



Icon explanations

St Steel
Ti Titanium
5 units Units/pack
Centre-Drive®
Cross-Drive
maxDrive®
maxDrive® hex head
J-notch attachment

maxDrive® 1.5 mm

Micro screws self-retaining / flat tip

Ø x Length	5 units	1 unit	4 units	8 units	1 unit	1 unit	4 units	8 units
1.5 x 3.5 mm	25-875-03-09				25-875-43-91	25-875-43-71	25-875-43-74	25-875-43-78
1.5 x 4 mm	25-875-04-09	25-875-04-71	25-875-04-74	25-875-04-78				
1.5 x 5 mm	25-875-05-09	25-875-05-71	25-875-05-74	25-875-05-78				
1.5 x 6 mm	25-875-06-09							
1.5 x 7 mm	25-875-07-09	25-875-07-71	25-875-07-74					

Emergency screws self-retaining

Ø x Length		
1.8 x 4 mm	25-876-04-09	25-876-04-71
1.8 x 5 mm	25-876-05-09	25-876-05-71
1.8 x 7 mm	25-876-07-09	25-876-07-71

Drill-Free screws self-retaining

Ø x Length	1 unit	1 unit	4 units	8 units
1.5 x 4 mm	25-878-04-09	25-878-04-71	25-878-04-74	25-878-04-78
1.5 x 5 mm	25-878-05-09	25-878-05-71	25-878-05-74	25-878-05-78
1.5 x 6 mm	25-878-06-09	25-878-06-71	25-878-06-74	25-878-06-78
1.5 x 7 mm	25-878-07-09	25-878-07-71	25-878-07-74	25-878-07-78

Twist drills for 1.5 mm screws
with J-notch attachment

Ø x Length	Stop	
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

Screwdriver blades for 1.5 mm maxDrive® screws
for screwdriver handle 25-407-02-07

25-438-97-07	
25-436-97-07	

maxDrive® 2.0 mm

Mini screws self-retaining

Ø x Length	5 units	1 unit	4 units	8 units
2.0 x 4 mm	25-872-04-09			
2.0 x 5 mm	25-872-05-09	25-872-05-71	25-872-05-74	25-872-05-78
2.0 x 6 mm	25-872-06-09	25-872-06-71	25-872-06-74	
2.0 x 7 mm	25-872-07-09	25-872-07-71	25-872-07-74	25-872-07-78
2.0 x 9 mm	25-872-09-09	25-872-09-71	25-872-09-74	
2.0 x 11 mm	25-872-11-09	25-872-11-71		

Emergency screws self-retaining

Ø x Length	
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	1 unit	4 units	8 units
2.0 x 5 mm	25-879-05-09	25-879-05-71	25-879-05-74	25-879-05-78
2.0 x 6 mm	25-879-06-09			
2.0 x 7 mm	25-879-07-09	25-879-07-71	25-879-07-74	25-879-07-78
2.0 x 9 mm	25-879-09-09			

Twist drills for 2.0 mm screws
with J-notch attachment

Ø x Length	Stop	
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

Screwdriver blades for 2.0 mm maxDrive® screws
for screwdriver handle 25-407-02-07

25-486-97-07	

1:2

25-407-02-07
Bulb style
screwdriver handle
for maxDrive®

Storage

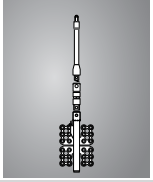
all -71 and -81 stock numbers packaged sterile STERILE R

Storage

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

Alternative items	
Twin insert module, purple	55-962-38-04
Lid for screw storage module	55-963-08-04
Lid for 3DX® system	55-963-20-04
Insert empty, universal (low height)	55-964-17-04
Insert empty, 2 sections (low height)	55-964-24-04
Insert empty, 3 sections (low height)	55-964-25-04
Insert for complete 3DX® devices (double height)	55-964-33-04
Insert for 3DX® 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.



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