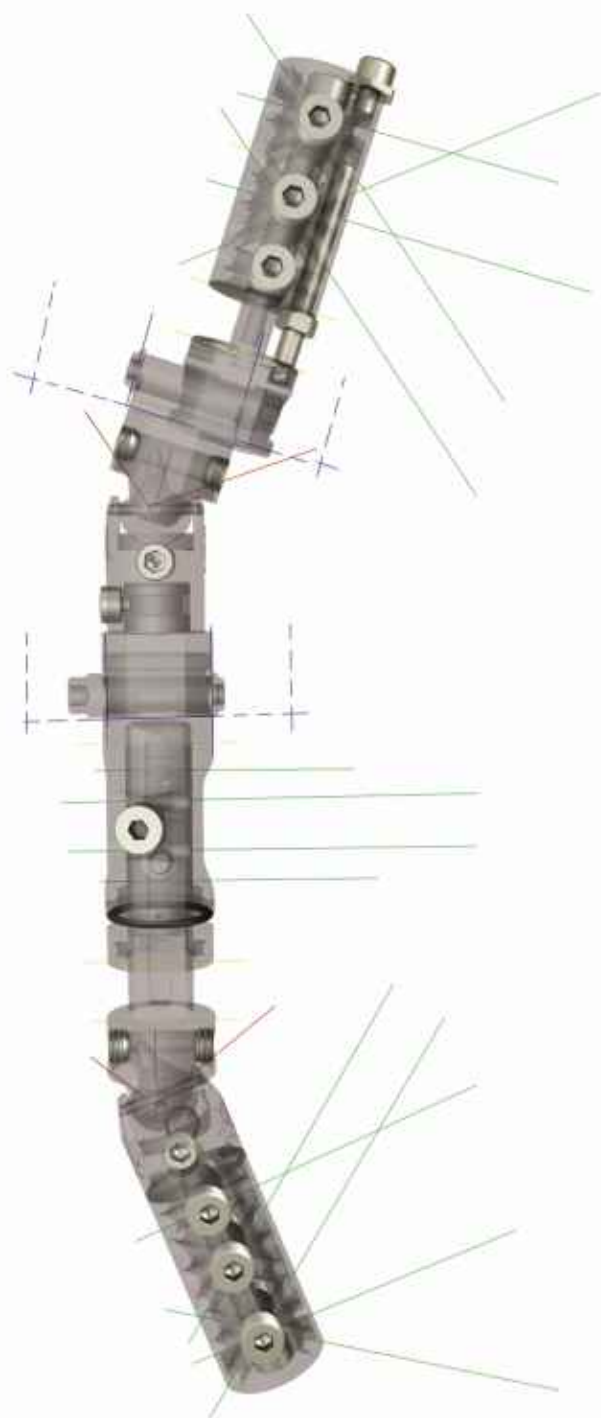


MAMEF

titanium

Patented

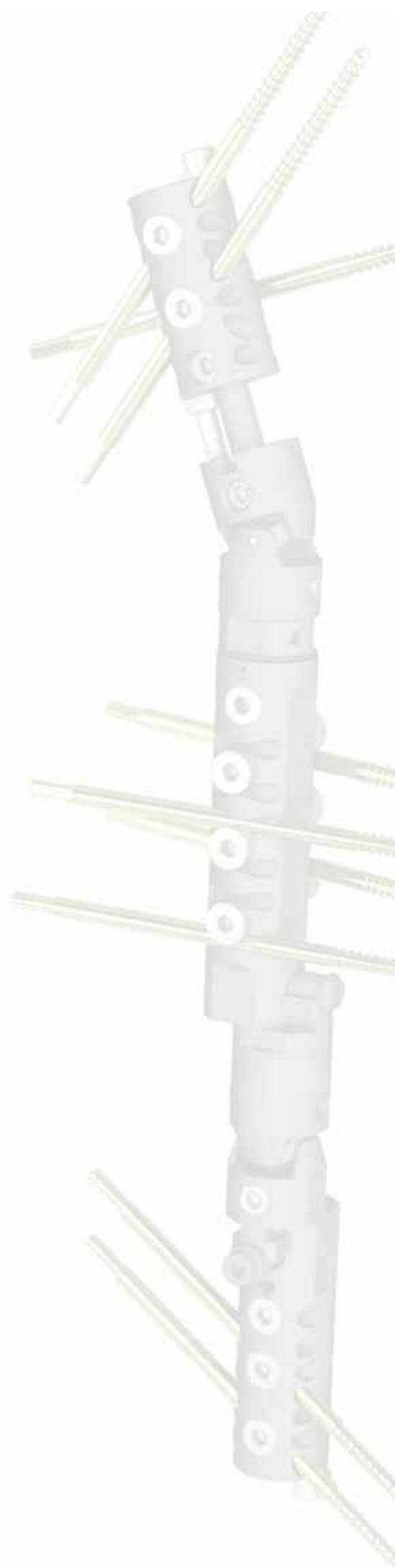


M O D U L A R
A D J U S T A B L E
M U L T I F U N C T I O N A L
E X T E R N A L
F I X A T O R

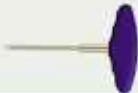










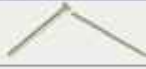




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Types of MAMEF	5
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Code	Products	Quantity
41520030000	MODULAR ADJUSTABLE MULTIFUNCT. EXT. FIX SHORT(MAMEF)	1
41520020000	MODULAR ADJUSTABLE MULTIFUNCT. EXT. FIX STD (MAMEF)	1
41520010000	MODULAR ADJUSTABLE MULTIFUNCT. EXT. FIX LONG (MAMEF)	1
41520100000	MAMEF TRANSLATION-ROTATION EXT. FIXATOR	1
41520002000	MAMEF DEFORMITY EXTERNAL FIXATOR	1
41520050000	MAMEF SEGMENT TRANSPORTATION EXT. FIXATOR	1
41520060000	MAMEF SINGLE JOINTED EXT. FIXATOR	1
41520080000	MAMEF MONOBLOCK TROCHANTERIC EXT. FIXATOR	1
41520040000	MAMEF TRANSLATION MULTIPLANAR JOINT	2
40180000140	DEFORMITY C-RING (FIBER CARBON) 140 mm	1
40180000160	DEFORMITY C-RING (FIBER CARBON) 160 mm	1
40180000180	DEFORMITY C-RING (FIBER CARBON) 180 mm	1
50460120018	MAMEF FEMORAL ARCH 120° X 180 mm (FIBER CARBON)	1
50460180180	MAMEF FEMORAL ARCH 180° X 180 mm (FIBER CARBON)	1
21520000100	MAMEF FEMORAL ARCH CONNECTION SCREW	4
41510000010	MAMEF ARCH ROTATION UNIT	1
41520010003	MAMEF T-CLAMP	1
52051003200	TRANS-ANGLED PIN FIXATION BOLT (40 mm THREADED)	2
52051004200	TRANS-ANGLED PIN FIXATION BOLT (50 mm THREADED)	2
52052000032	TRANS-ANGLED PIN FIXATION BOLT (40 mm POLYGONAL)	2
52052000042	TRANS-ANGLED PIN FIXATION BOLT (50 mm POLYGONAL)	2
41511000040	POLIAXIAL PIN FIXATION BOLT (40 mm THREADED)	4
41511000050	POLIAXIAL PIN FIXATION BOLT (50 mm THREADED)	2
41512000040	POLIAXIAL PIN FIXATION BOLT (40 mm POLYGONAL)	2
41512000050	POLIAXIAL PIN FIXATION BOLT (50 mm POLYGONAL)	2
41580000000	MAMEF & RING CONNECTION UNIT	1
20920152005	SCHANZ CORT. (Ti) 5X20X150	5
20920162005	SCHANZ CORT. (Ti) 5X20X160	5
20920182005	SCHANZ CORT. (Ti) 5X20X180	5
21020204005	SCHANZ CORT. (Ti) 5X40X200	5
20920152006	SCHANZ CORT. (Ti) 6X20X150	5
20920162006	SCHANZ CORT. (Ti) 6X20X160	5
20920182006	SCHANZ CORT. (Ti) 6X20X180	5
20920204006	SCHANZ CORT. (Ti) 6X40X200	5
20920224006	SCHANZ CORT. (Ti) 6X40X220	5
21020153005	SCHANZ CANCEL.(Ti) 5X30X150	5
21020154005	SCHANZ CANCEL.(Ti) 5X40X150	5
21020164005	SCHANZ CANCEL.(Ti) 5X40X160	5
21020184005	SCHANZ CANCEL.(Ti) 5X40X180	5
21020204005	SCHANZ CANCEL.(Ti) 5X40X200	5
21020224005	SCHANZ CANCEL.(Ti) 5X40X220	5
21020154006	SCHANZ CANCEL.(Ti) 6X40X150	5
21020164006	SCHANZ CANCEL.(Ti) 6X40X160	5
21020184006	SCHANZ CANCEL.(Ti) 6X40X180	5
21020204006	SCHANZ CANCEL.(Ti) 6X40X200	5
21020224006	SCHANZ CANCEL.(Ti) 6X40X220	5
04100020056	PROTECTIVE CAP FOR 5-6 mm SCHANZ	10

Code	Instruments -1	Quantity	
02025100500	T-SCREW DRIVER 5 mm	1	
4013000050	RATCHED L ALLEN 5 mm	1	
04015000035	ALLEN WRENCH Ø 3.5 mm	1	
08044000014	WRENCH 13 mm	1	
04015030062	L-WRENCH MAMEF	1	
22310200027	BONE DRILL 3.5X200 mm (Stopper & Calibrated)	2	
22310200045	BONE DRILL 4.5X200 mm (Stopper & Calibrated)	2	
08021000015	T-HANDLE (For Schanz Screws 5-6 mm)	1	
04150290035	MAMEF DRILL GUIDE DOUBLE 3.5 mm	1	
04150290045	MAMEF DRILL GUIDE DOUBLE 4.5 mm	1	
04150090035	MAMEF DRILL GUIDE 3.5 mm	1	
04150090045	MAMEF DRILL GUIDE 4.5 mm	1	
04155090045	MAMEF TROCAR 4.5 mm	1	
04151056000	MAMEF SCHANZ GUIDE 5-6 mm (1/2 Tubular)	2	

Code	Instruments -2 For Circular Applications	Quantity
51850000106	NUT M6	20
51950000500	SPECIAL PIN FIXATION BOLT SERRATED	5
51950000901	CANNULATED BOLT WIRE FIXATION	10
52150240006	BOLTS M6 24 mm	12
51750000516	SLOTED WASHER	10
52310400018	OLIVE WIRES 1,8 X 400 mm	5
23410400115	KIRSCHNER WIRE TROCAR POINT 1.5X400 mm	5
52750200001	THREADED SOCKETS	5
05005010030	CYLINDER TENSIONER	1
05005010020	WIRE TENSIONER SIMPLE	1

- MAMEF** Modular Adjustable Multifunct. Ext. Fixator (Short-Standard-Long)
- MAMEF** Translation-Rotation
- MAMEF** Segment Transportation
- MAMEF** Single Jointed
- MAMEF** Deformity
- MAMEF** Monoblock Trochanteric



Additional Modules:

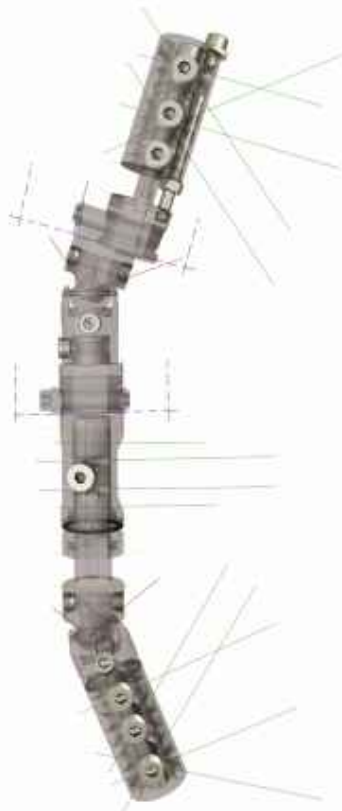


There are many different type of external fixators which have wide variations in geometric terms and can be applied in varied situations in orthopedic implant industry. Unilateral external fixator systems are often used because of their ease of use and also often used for applications of minimally invasive but improper reduction and problem of sustaining reduction of fracture are important complications. Some unilateral external fixators allow reduction of fracture in single- axis axial plane and in some kind of unilateral external fixators allow correction of a deformity in two or three plans but to obtain a good deformity correction of two or three plans simultaneously is very difficult. The other issue is loss of reduction of fracture while working on two planes at the same time.

In light of today's technology and biomechanical studies, a new generation of external fixator which has superior technical features, was made of lightweight titanium material, has the ability to offer high resistance and stabilization, allows obtaining the desired reposition on different plans simultaneously has been developed.

The so called Modular Adjustable Multifunctional External Fixator MAMEF, allows rotational correction, segmental transportation and angular correction of the deformity in addition to the axial axis corrections of deformity.

This external fixator can be used for the fixation of the lower limb fracture, limb deformity correction in frontal, sagittal and oblique planes, shortening and lengthening osteotomies, malunion or nonunion (pseudoarthrosis) conditions, elimination of joint contractures, correction of congenital limb deformities.

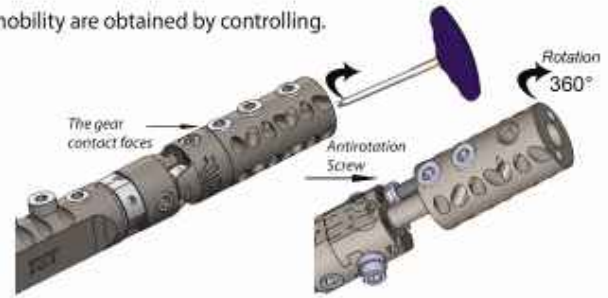


- This fixator are made of titanium alloy.
- The fixator has a special and effective connection system to maintain the reduction of fracture obtained with MAMEF.
- The fixator allows 360 degree rotation, flexion – extension and varus-valgus mobility are obtained by controlling.
- 30+30=60 degree of clamp angulation can be carried out (in all directions according to the long axis of the fixator).
- Transactions can be done individually or in combination with this external fixator system and the other parts of the fixator which are pre-fixed sections will not be affected by courtesy of this feature of the fixator during the secondary applications.
- MAMEF allows Schanz pin placement for all planes and configurations.
- Trans Angled Pin Fixation Bolts provide to place Schanz pin transversal and 135 degrees in an angle. Poliaxial Pin Fixation Bolts allow to position Schanz pin in different plans and they can be combined with each other (Lego Feature).
- This external fixator is suitable for use in hybrid with the type of ring and bar fixators which provide to use as circular and small fixation wires in case of the purpose of fixation of the intra-articular and extra-articular fractures in metaphyseal application of femur and tibia and in case of poor bone stock conditions that not suitable for large-scale Schanz pin placement.
- Eight different types of models and sizes, including MAMEF (Short-Standard-Long), Translation-Rotation, Deformity, Segment Transportation, Single Jointed and Monoblock Trochanteric.
- MAMEF Arch and C Ring Module: This connection modules provide to use as circular of K-Wires and Schanz screws in different plans for fixation of the intra-articular and extra-articular fractures in femoral and tibial metaphyseal applications and in case of deformity correction.
- Different lengths of cancellous and cortical schanz screws are available up to 150 mm to 220 mm. The diameter of 5 mm and 6 mm Schanz screws can be used with this external fixator system.
- Instruments to help application are also available into the set (Drill, Guide, Trocar, Screwdriver, L-Wrench, Ratched L Allen and T-Handle).



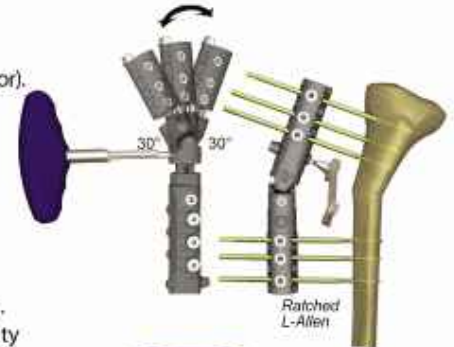
The fixator allows 360 degree rotation, flexion – extension and varus-valgus mobility are obtained by controlling.

Clamps can rotate 360 degrees . The DC (Distraction-Compression) Screw must be tightened by ensuring full contact of the gear contact faces for fixing or Antirotation Screw and its nut must be placed to between of body of the fixator and fixator clamp for the same purpose



30+30=60 degree of clamping can be carried out (in all directions according to the long axis of the fixator).

Gradual angulation of 30+30 degrees is accomplished by rotating of the set screw for variable-angle ball which positioned on the fixator owing to use a T-Handle screwdriver. Six degree angulation is provided by turning a round of the T Handle screwdriver. Desired clamp angulation is achieved by tightening of the opposite direction screws. In some cases, this set screw may be present a restricted area between fixator and the limb. Clamp angulation can be accomplished by using a 5 mm Ratched L Allen in very narrow areas. In this way, the fixator allows 360 degree rotation, flexion – extension and varus-valgus mobility are obtained by controlling.

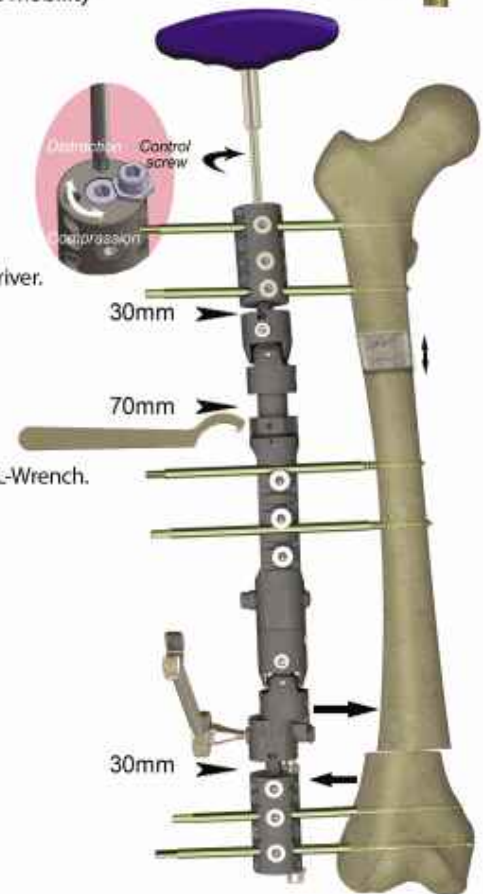


Three point compression and distraction can be performed separately with this fixator.

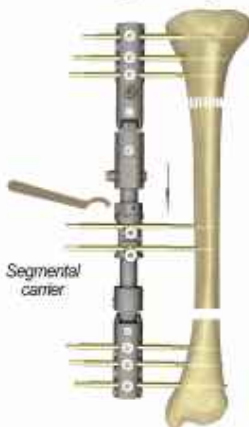
30 mm compression and distraction can be achieved by turning of the DC screw which positioned to the ends of the clamps with using a T-Handle screwdriver. 1 mm distraction or compression is provided by turning a round of the T-Handle screwdriver. The control screw must be plugged into the fixator clamp during this process.

70 mm distraction and compression can be performed by turning of the nut which located on the body of lengthening part that located in the central of MAMEF Short-Standard-Long and Single Jointed Fixator types by using a L-Wrench. 1.5 mm distraction or compression is provided by turning a round of the nut with using a L-Wrench.

Thus, the fixator has the ability of lengthening of $30+70+30 = 130$ mm in total. Compression-distraction and lengthening-shortening can be done by using MAMEF. This fixator, MAMEF is working with sensitivity rate of 0.25 mm.



Transport process can be performed in the range 40mm distance along the long axis of the fixator as a result of turning of the nut which located at the segmental carrier that positioned to the middle part of the MAMEF Segment transportation by using a L-Wrench.



Translation unit is located at the last part of the fixator. 20 mm (10+10) translational motion in all plans is obtained from two different levels by turning of the translation screw by the help of a Allen Wrench. 5 mm. 1.5-mm translation is obtained by turning a round of the translation screw.

This Modular Adjustable Multifunctional External Fixator, MAMEF consist of eight different types of fixators and some additional modules which can be added and easily removed.

The fixator has a special and effective connection system to maintain the reduction of fracture obtained with MAMEF.

Transactions can be done individually or in combination with this external fixator system and the other parts of the fixator which are pre-fixed sections will not be affected by courtesy of this feature of the fixator during the secondary applications. This is the most important feature in comparison with the other type of external fixator systems.

Schanz screws can be placed convergent owing to double-sided pin slots that positioned in the body of the MAMEF.

Each fixator clamp has seven transversal pin slots and seven angled pin slots. There are a total of fourteen pin slots which positioned at different levels in each fixator clamp for implantation of Schanz screws.

Pin Fixation Bolts (Trans-Angled and Poliaxial) can be mounted on the pin slots and at the end of the clamps.

The type of Threaded and Polygonal Pin Fixation Bolts are available with 40 mm and 50 mm in length.

Trans-Angled Pin Fixation Bolts provide to place Schanz screws in transvers or with 135 degree angles.

Poliaxial Pin Fixation Bolts provide to place Schanz screws in different plans and angles.

Pin Fixation Bolts can be used as a single, two or more bolts can be assembled together in different configurations owing to this feature of the bolts.

Pin Fixation Bolts allow to place Schanz screws in different plans and absolute configurations thanks to these features.



Hybrid Frame with the type of Ring and Bar Fixators



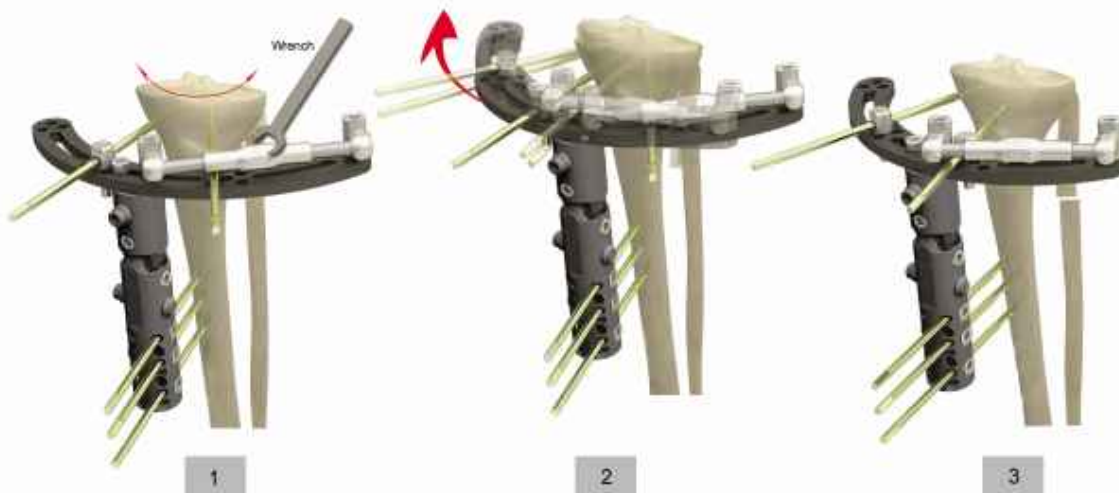
This external fixator is suitable for use in hybrid with the type of ring and bar fixators which provide to use as circular and small fixation wires in case of the purpose of fixation of the intra-articular and extra-articular fractures in metaphyseal application of femur and tibia and in case of poor bone stock conditions that not suitable for large-scale Schanz pin placement.

MAMEF Arch and C-Ring Module are connection modules which allow to use Schanz screw as circular in different plans and to fix the rotational bone deformity. These modules are used in combination with MAMEF Multiplanar Joint and the other type of MAMEF fixators for fixation of the intra-articular and extra-articular fractures in metaphyseal application of femur and tibia and to fix the bone deformity.

The connection between the fixator and Arch or C-Ring is provided to use a Connection Screw.

A Schanz screw can be placed by using a Pin Fixation Bolt which can be mounted on the module of Arch or C-Ring.

K-Wire can be inserted to the bone segment over the C-Ring Module of the MAMEF by using Wire Fixation Bolt and the type of M6 nuts. The process of derotation is achieved owing to MAMEF Arch Rotation Unit.



Correction of Proximal Tibia Rotational Deformity by MAMEF Translation Rotation Fixator – Arch Module-Rotation Unit

The application of MAMEF and Schanz Pin

The type and length of the fixator which will be used is determined according to the status of the case. Schanz pins can be inserted in transverse plane or placed at an angle through the grooves which positioned to the main part of the fixator and/or through the fourteen different tunnels that were located in the fixator clamps. Schanz screws can be inserted in the desired directions by using Pin Fixation Bolts.

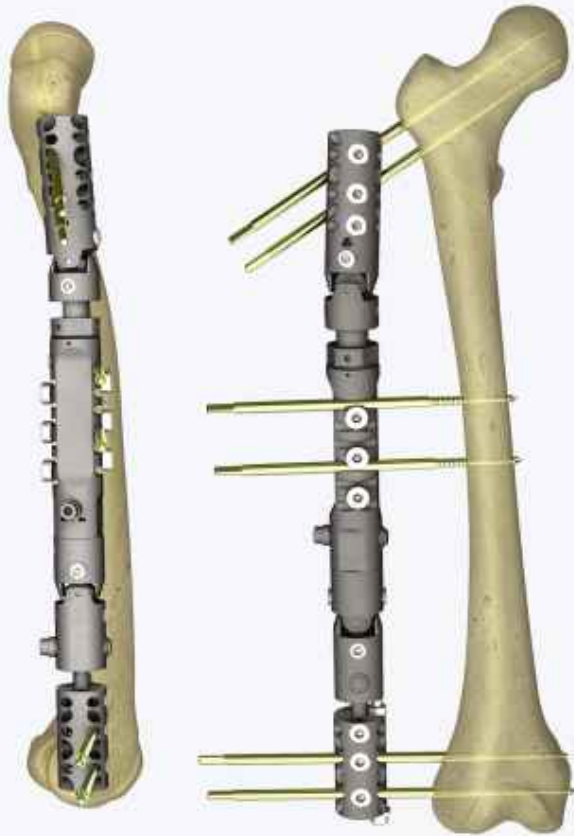
Single or Double MAMEF Drill Guide is placed to the fixator in line with the grooves that positioned on the fixator. A trocar is sent through the Drill Guide which had been placed to the fixator previously. After stab incision which was performed with the trocar the bone is reached by passing the skin and regional soft tissues. Drilling is accomplished by using proper drill bits.

The diameter of 3.5 mm and 4.5 mm Bone Drills must be used respectively for insertion of 5 mm and 6 mm in diameter Schanz screws.

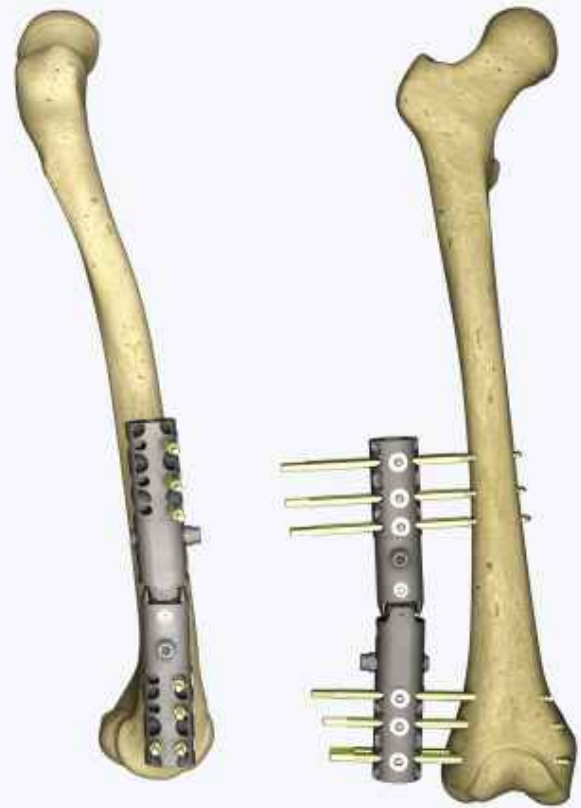
After drilling, drill bits and their guides (MAMEF Drill Guide) are removed and MAMEF Schanz Guide is placed to the fixator. This instrument which has tubular structure serves as a guide for insertion of the Schanz pins to the bone by the aid of T-Handle. The set screws that has been positioned on the fixator are tightened to immobilize Schanz screws. T-Handle screwdriver can be used for this purpose.

Different lengths of cancellous and cortical Schanz screws are available up to 150 mm to 220 mm. The diameter of 5 mm and 6 mm Schanz screws can be used with this external fixator system.

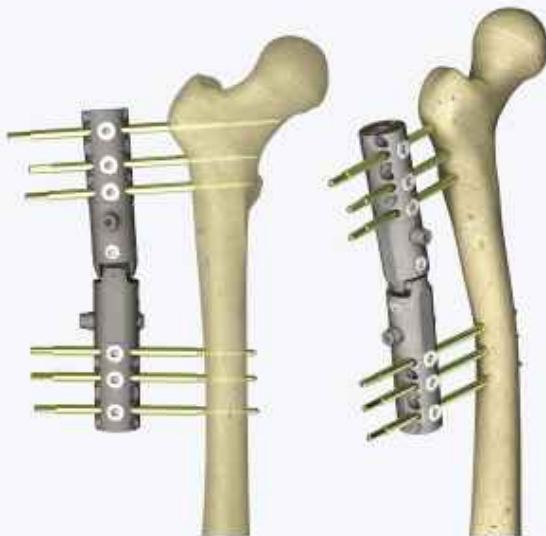
When needed, the transactions of Distraction, Compression, Translation, Clamp Angulation and Segmental transport can be performed.



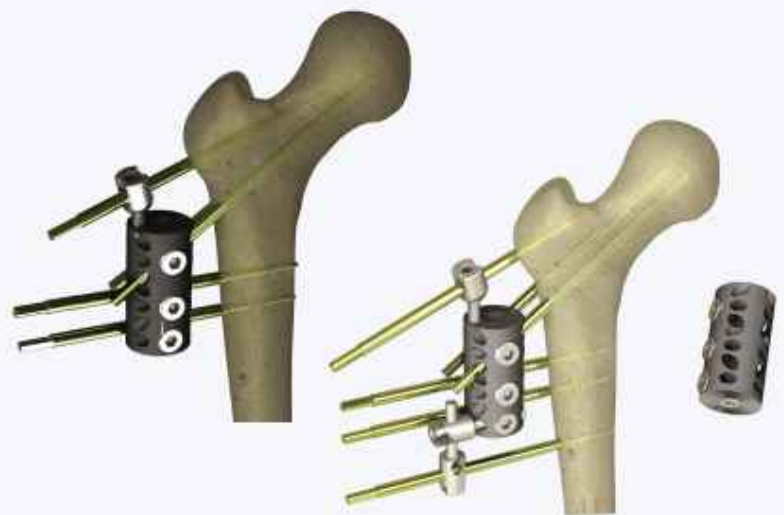
MAMEF (Long)
Femoral Fracture Fixation and Deformity Correction



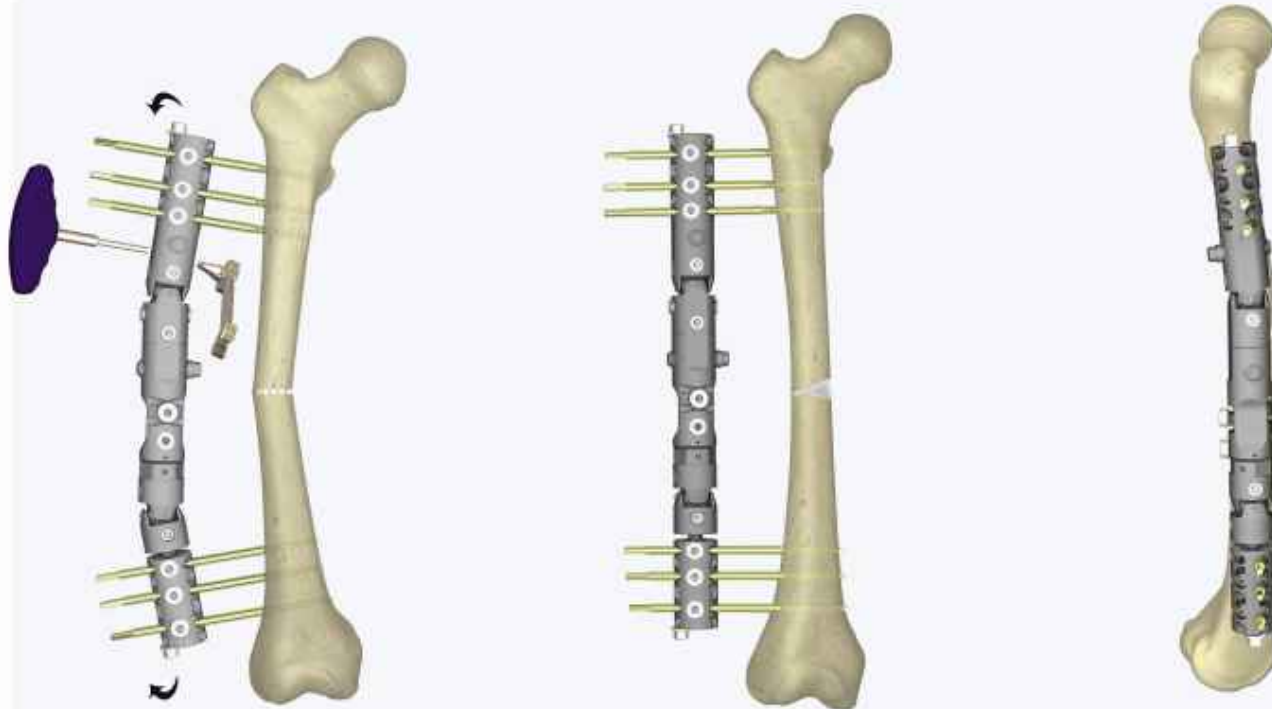
MAMEF Translation Rotation
Femoral Fracture Fixation and Deformity Correction



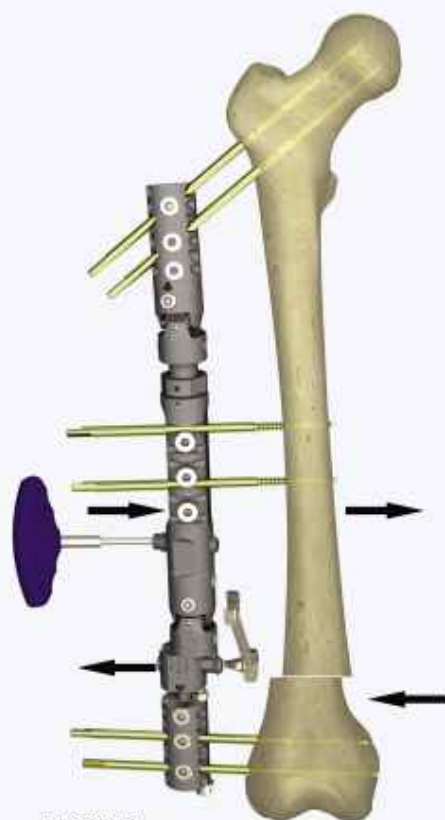
MAMEF Translation Rotation
Correction of Varus-Valgus-Anteversion Derotation Deformity
(After Proximal Femoral Osteotomy)



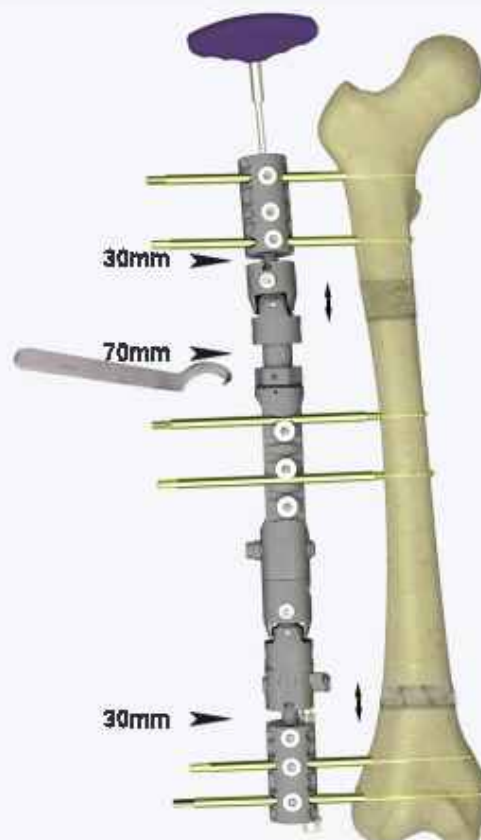
MAMEF Monoblock Trochanteric Fixator
Intertrochanteric Fracture Fixation



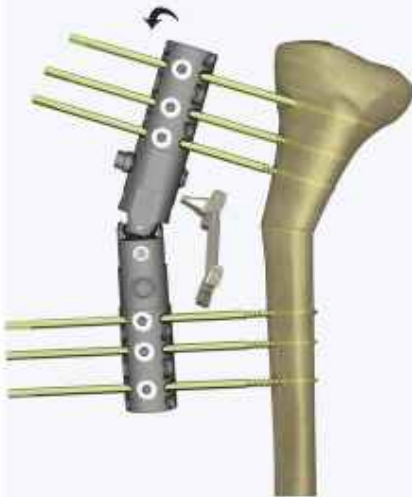
MAMEF Short
Femoral Diaphyseal Deformity Correction



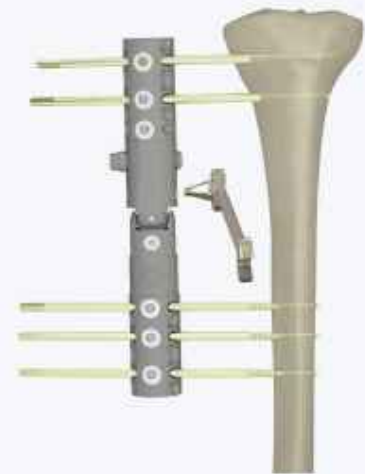
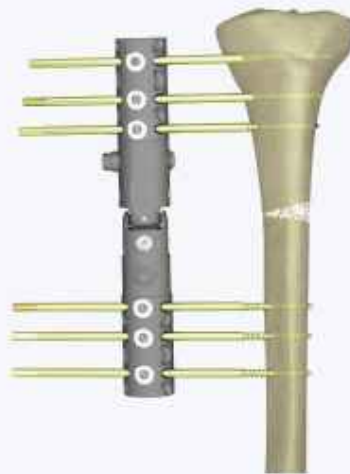
MAMEF Long
Distal Femoral Deformity Correction (with translation)



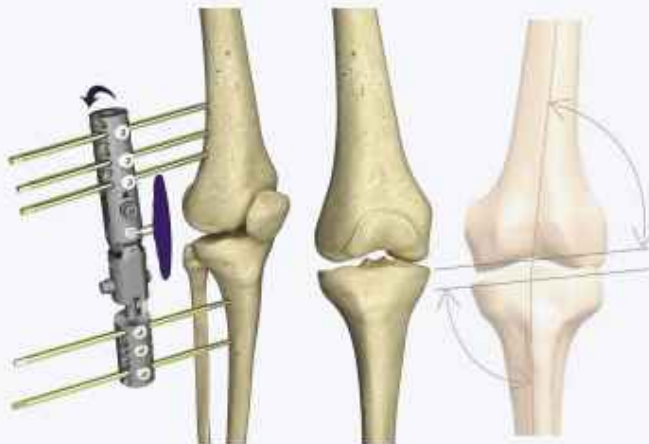
MAMEF Long
Femoral Lengthening (with monofocal or bifocal osteotomy)



MAMEF Translation Rotation Tibial deformity Correction
(varus, valgus, procurvatum, recurvatum)



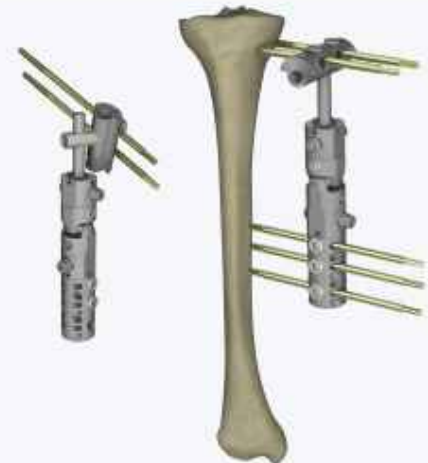
MAMEF Translation Rotation Tibial Fracture Fixation



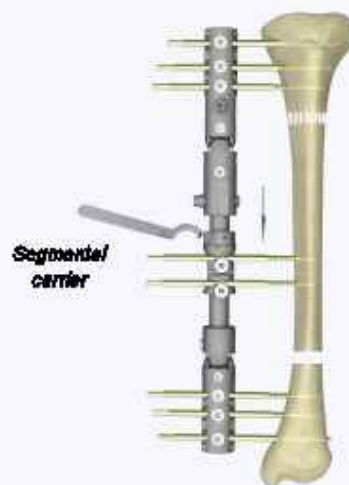
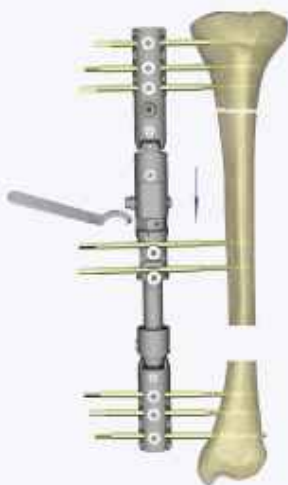
MAMEF Translation Rotation
Elimination of Knee and Ankle Joint Contractures



MAMEF Multiplaner Joint
The Combination of T-Clamp and Arch Module



MAMEF Translation Rotation
Combination with T-Clamp



MAMEF Segment Transportation Ext. Fixator
Tibial Defect with Bone Loss. The application of distal transportation is achieved by moving the segmental carrier part of the fixator distally until the defect is closed. (A piece of fibular bone which must be 1 cm longer than the defect length is removed)

The Correction of Oblique Plan Proximal Tibial Deformity by Using Namef Deformity External Fixator in combination with C-Ring and Rotation Unit of NAMEF.



The positioning of the fixator according to the deformity type. Angular Correction after Osteotomy

Elimination of the Translational Deformity



The Correction of the Rotational Deformity

The Correction of the Rotational Deformity

There are three different size of C-Ring into the set. The size of C-Rings are 140 mm, 160 mm and 180 mm.

1 mm displacement of the C-Ring is achieved by turning a round of the Rotation Unit which positioned on the C-Ring by the aid of a Wrench 13mm.

Angulation of the rings for each round as follows;
 0,8 degree for 140 mm C-Ring
 0,7 degree for 160 mm C-Ring
 0,6 degree for 180 mm C-Ring

This degrees which varies according to the C-Ring size should not be forgotten in rotational deformity correction.



Compression of the Proximal Segment



Deformity Correction with NAMEF Deformity External Fixator



