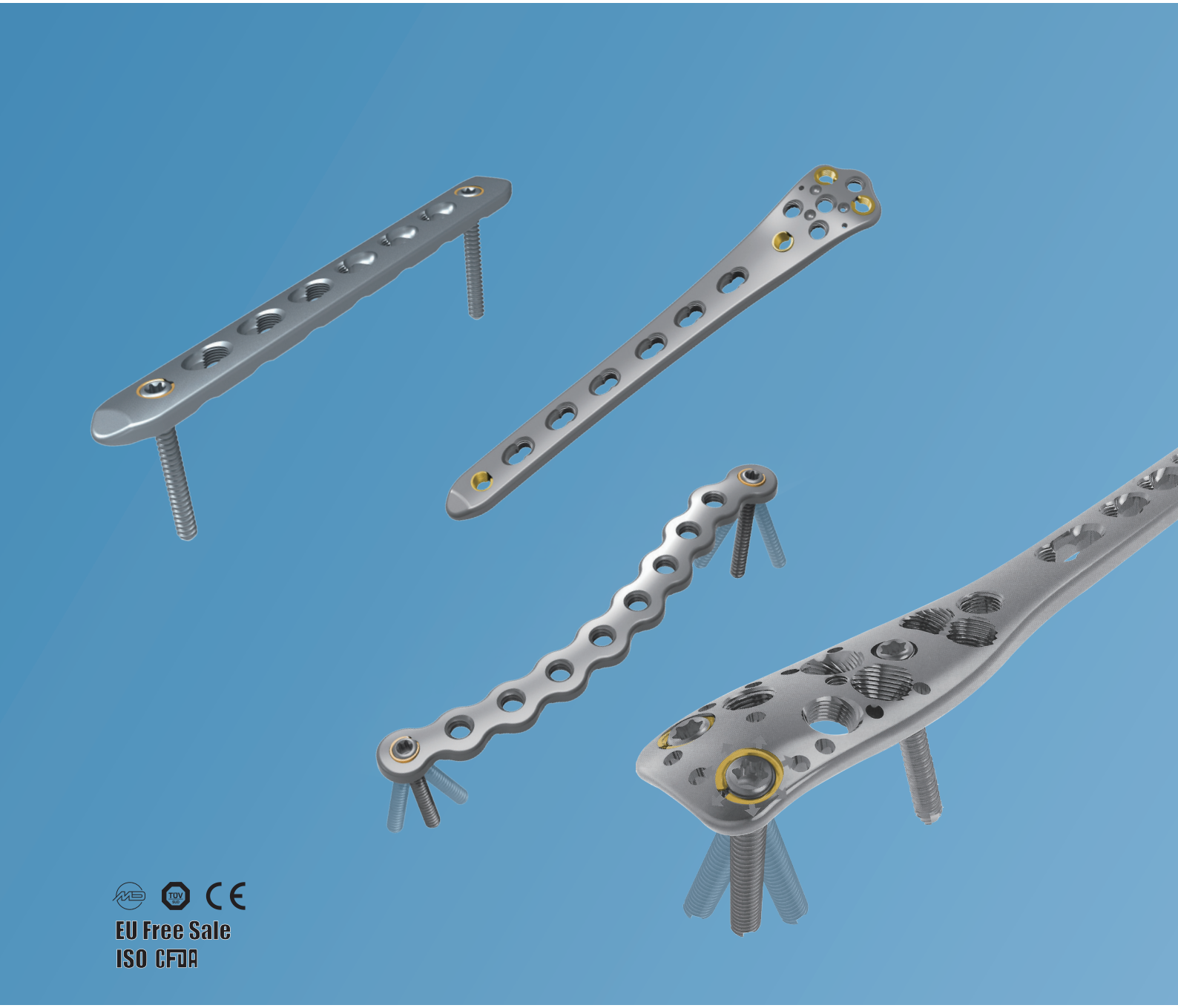
Small and Large Fragment Variable Angle Locking System

Ring Type Variable Angle Locking System Introduction



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NX Medical
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The NX Medical Small and Large Fragment Variable Angle Locking System (Ring Type) consists of plates that are straight, anatomic, locking screws that are motion locking, both plates and screws are available in titanium for better bio-compatibility.

Both Small and Large Fragment Variable Angle Locking System (Ring Type) and Regular Small and Large Fragment Locking System share the same instrumentation to facilitate surgeon's easier handling and to reduce stock level, and aid in: fracture reduction, provisional fixation, plate adaptation, construct creation.

NX medical Small and Large Fragment Variable Angle Locking System (Ring Type) is designed for the Surgeon and Patient to satisfy clinical demand and improve patient care.

System Overview

Extensive system of anatomically pre-contoured plates Variable Angle Locking Screws of Motion Locking Screws achieve micro dynamics Self-retaining screwdrivers with screw holding sleeves Plates and screws available in titanium

Variable Angle Locking Technology

Small and Large Fragment Variable Angle Locking feature variable angle locking coaxial holes. Golden Ring in the variable angle locking hole provide full threads for threaded locking between the plate and the Variable Angle Locking Screws to create a fixed-angle construct at the desired screw angle. Once the Variable Angle Locking Screw has been introduced tightly into the Golden Rings, the Golden Rings expend, which generate a solid construction between plates and screws. Variable Angle Locking Screws can be angled anywhere within a 25° cone. Other non-Variable Angle Locking Holes with Locking Screws assist the consolidation of the entire construction which also prevent Golden Ring loose out. This construction not only achieves variable angle for clinical requirements but also maintains a stable fixation construction.

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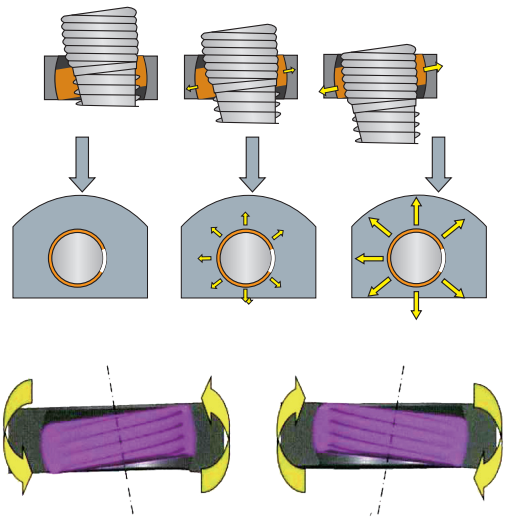


25°

Features	Benefits
Extensive range of implant options	Accommodates a variety of fractures and patient sizes
Anatomically contoured plates	Designed with contour to adapt to bony anatomy
Low-profile, anatomically precontoured plates	Designed to reduce soft tissue irritation
Recessed screw heads	Designed to sit flush with the plate surface
Variable Angle Locking Technology	Offers screw placement options in a variety of fragment patterns and around the joint Provides fixed angle stability for metaphyseal and osteopenic bone
Elongated plate holes	Facilitate plate positioning
Comprehensive instrumentation	Aids surgeon in all aspects of procedure: plate adaption, provisional fixation, and bone preparation
Torx coupling screwdriver handle	Ergonomic connection mechanism in a handle design that disassembles for cleaning

Advantages of Variable Locking Screw (Motion Locking)

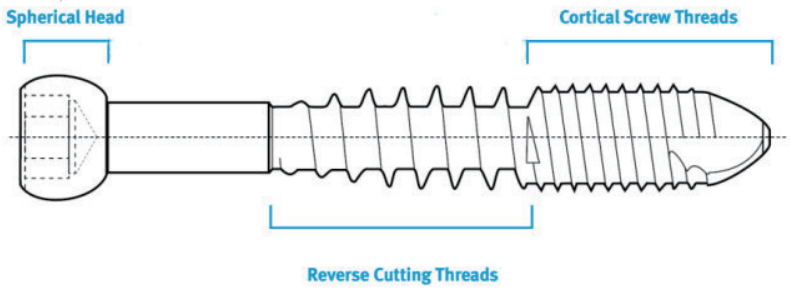
Recent studies show concern for the high degree of stiffness of locked plating constructs and report nonunion rates is higher. A plating construct needs to be strong enough to support the damaged bone while the fracture heals. However, too much stiffness will directly cause the bone nonunion.

In animal studies, Far Cortical Locking Technology provides controlled axial flexibility to promote fracture healing through callus formation, or secondary healing, by stressing the fracture with micro-motion at the fracture site.

Therefore, Variable Angle Locking Screw (Motion Locking) as a new locking screw generation provides an effective solution to solve the problem of excessive stiffness while stimulates earlier callus formation through micro motion technology.

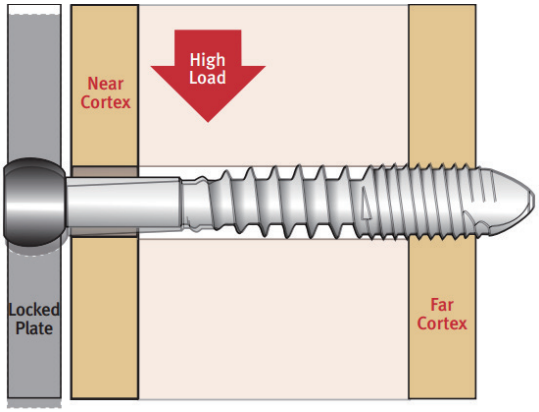
Dynamic locking screw	Features	Benefits
	Cortical & cancellous thread	Facilitate cortical or cancellous bone fixation
	Reverse cutting threads	Convenient for screw extraction
	Self-tapping flutes at the tip	Easy for screw insertion
	Proximal end of the screw with no thread design	Achieve micro-motion after insertion Stimulate callus formation

Dynamic locking screws are different from conventional locking screws. The following picture explains constitute elements of the screw.

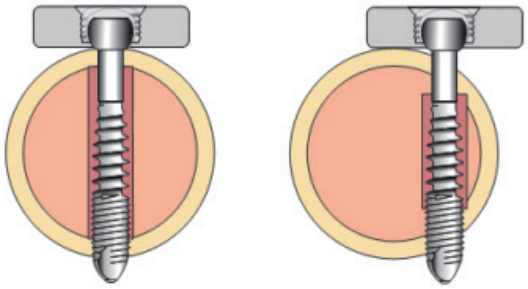


Far Cortical locking technology be called dynamic locking system. This system is different from the ordinary locking plate system, which can generate micro-motion. Micro-motion can stimulate the growth of bones and reduces stiffness of the plate, so there is no risk of secondary fracture.

This is the portion of the Variable Locking Screw (Motion Locking) that makes it unique. The diameter of this portion has been reduced in comparison to the distal end of the screw. This allows the screw within the drilled hole to flex through elastic deformation without deforming the screw. This is called the working length of the screw because this is the area that essentially does all of the workand flexes a controlled amount to create micro-motion at the fracture site.

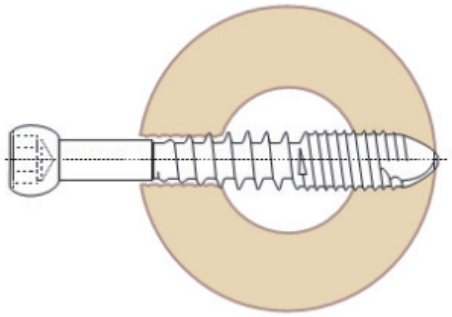


It is important to maximize the working length of the screw, so centering the screw in the bone is the key. Left picture shows the working length when the Motion Locking Screw is centered in the bone. Right picture shows how the working length shrinks when the screw is placed off-center. This is the portion of the screw that does all of the work. As the working length increases, so does screw flexibility.



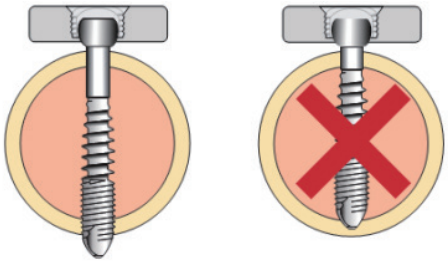
The reverse cutting threads on the working length of the screw are necessary for screw removal.

The reverse cutting threads are designed to engage with the near cortex before the threads on the tip of the screw disengage with the far cortex, so the screw can be backed out.

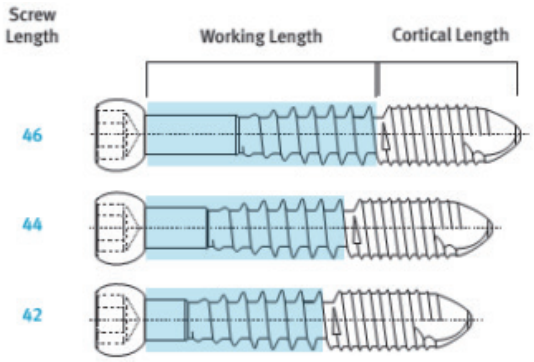


This picture shows how the reverse cutting threads engage the near cortex as the cortial threads disengage from the far cortex when the screw is backed out.

This is what makes the Motion Locking Screw a standard screw with a standard surgical procedure. As this screw advances through the drilled hole, it carves out a flexibility envelope for the reduced shaft portion of the screw. This is also the portion that fixes into the cortical bone for hold. Since MotionLoc Screws are only fixed in the far cortex, radiographs must be inspected to confirm the screw tip has completely engaged that cortex.



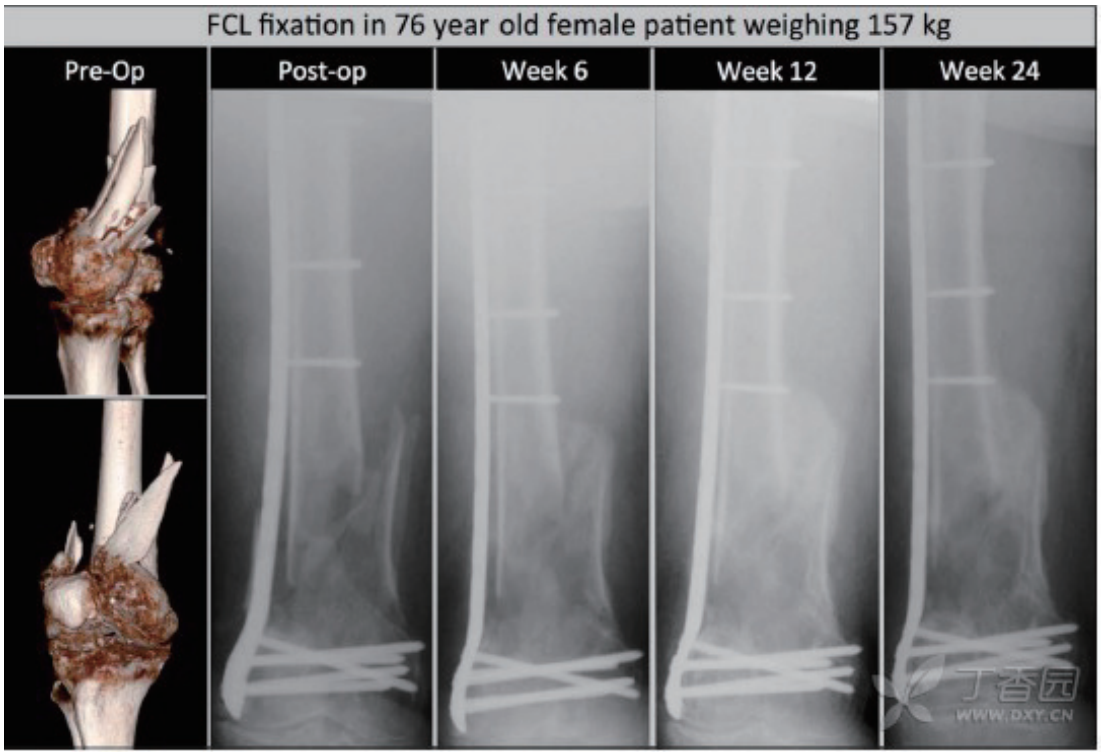
Increased flexibility of the screw is directly proportional to the length of the screw. Mechanically, Motion Locking Screws behave in a manner similar to a cantilever beam. As the length of the beam/Screw length Working Length Cortical Length screw increases so does the beam/screw flexibility. This makes it very important to keep the Motion Locking Screw completely perpendicular to the bone to maximize the working length of the screw.



This picture shows as the screw length increases, the working length increases, and so does the screw flexibility.

Motion Locking Screws reduce the locked plating construct stiffness while retaining construct strength. This stiffness reduction through the screws creates nearly-parallel micro-motion at the fracture site. Due to precise engineering, these screws have been designed to reducing the construct stiffness to create the necessary controlled micro-motion.

76-year-old obese patients with distal femoral fractures, weighing more than 157KG, can walk with crutches activities 6 weeks after surgery by using this system, and can perform barrier-free activities 10 weeks after surgery.



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