Powered Bone Management
Aesculap was founded in 1867 by master craftsman Goffried Jetter in Tuttlingen, Germany. Since then, the name Aesculap has been synonymous with quality throughout the world.

Aesculap introduced its first surgical electric motor as early as 1904. Further important milestones followed in subsequent decades with the introduction of compressed-air systems in the 1960s, the further development of flexible cable electric motors in the 1970s, the introduction of battery-driven motors in the 1980s and the development of pneumatic and electric high speed systems in the 1990s.

With the current systems BoneScalpel®, microspeed® uni, HiLAN® XS and KAIRison® Aesculap offers cutting edge technology for all Bone Management tasks in Neuro, Neuro-Otology and Spine.

These systems are the result of an uncompromising development effort, years of experience in powered surgical instruments and Aesculap’s passionate commitment to high quality & innovation.
Most important milestones of Aesculap Power Systems

1867  Gottfried Jetter founded Aesculap
1904  First surgical electric motor with bulb based screwed socket connection
1935  First surgical electric motor
1978  Introduction of the legendary cable electric ELAN® E system
1988  First Aesculap battery driven motor – Acculan®
1997  First Aesculap high speed system – HiLAN®
2008  First pneumatic bone punch – KAIRison® – one of a kind
2009  microspeed® uni XS – smallest electric high speed motor with 80,000 rpm
2010  Introduction of Aesculap BoneScalpel™ – unique ultrasonic bone cutting technology
BoneScalpel™
Unique technology: cuts bone – spares soft tissue

The primary application of the BoneScalpel is for use in neurosurgical and orthopaedic spine procedures. The technology uses ultrasonic energy to cut bone while sparing soft tissue.

The technology

- The BoneScalpel blade oscillates many times per second (22,000) impacting bone with each stroke
- Much in the same way an osteotome works, the blade both cleaves and compresses hard tissue as it advances. Instead of one high-impact, large-displacement hit, the BoneScalpel produces many thousands of small-displacement impacts to bone
- Hard tissue is compressed and cleaved at the interface whereas soft tissue is minimally affected due to its elasticity. In contrast to rigid bone, soft tissue structures can bend, move away and vibrate upon contact with the blade.

The application

Our clinical consultants have been using the BoneScalpel system in the U.S. for the past two years. These consultants have performed over 400 spine and neuro cases in total, with excellent results. The system has been used primarily for, but not limited to:

- Laminectomies
- Laminoplasties
- Laminotomies
- Facetectomies
- Corpectomies
- Orbito-Zygomatic Craniotomies
- Cranio Synosthosis

The blade’s low-amplitude high-frequency back-and-forth movement
The benefits

- Makes precise cuts in bone with a high degree of control and accuracy
- Safe for use in close proximity to delicate soft tissue
- High overall procedure speed that increases end user efficiencies, which leads to a significant reduction in O.R. time
- Clean osseous cut with minimal bone loss
- Ultrasonic power (vibration) coupled with irrigation can be customized to produce a tailored cut
- Atraumatic to soft tissue with excellent preservation of spinal dura
- Minimal learning curve

The user

Peyman Pakzaban, MD
Houston Micro Neurosurgery
Pasadena, Texas, USA

"I believe that the ultrasonic bone dissector has the potential to transform spine surgery in the same way that the pneumatic drill did three decades ago. BoneScalpel’s ability to safely cut bone with precision and speed all the way down to dura makes us reconsider the way we expose and decompress the spine. No longer are we limited to nibbling at bone with hand instruments or reducing it to dust with drills. I use BoneScalpel in every spine operation in which substantial bone removal is required. This tool will soon become an integral part of every spine surgeon’s armamentarium."

Peyman Pakzaban, MD
Houston Micro Neurosurgery
Pasadena, Texas, USA
microspeed® uni
The electric motor system for versatile usage

The technology
- Electric high and low speed universal power system
- Smallest electric high speed motor with consistent 80,000 rpm and low heat generation due to unique and patented motor technology
- Quiet, yet powerful 100 - 150 Watt motors with speeds up to 80,000 rpm
- Top grade materials such as titanium and precise manufacturing provide the highest level of quality and reliability
- Clear, self explanatory, touch screen control unit
- Customizable settings for motor acceleration and stopping, oscillation angles and much more can be adapted to surgeon preferences
- Over 100 years of leading edge German technology in the field of surgical motors

The application
The universal microspeed® uni electric power system offers innovative, patented motor technology in small, powerful motors, and slim, ergonomic handpieces. Combined with an intuitive, high tech control unit, the microspeed uni provides precision cutting, reliability and adapts to the following surgical disciplines:
- Spine
- Neurosurgery
- OMF
- ENT / Neurotology
- Small Bone
The benefits

- Reliable – Innovative, patented motor technology provides consistent speed and torque yet low heat generation
- Versatile – Universal system for all bone cutting applications except large bone surgery
- Ergonomic – Miniaturized handpieces provide improved visibility and offer the comfort of a surgical instrument in the surgeon’s hand
- Intuitive – Simple assembly, quick handpiece changes, plug and play control unit and unique etched ring coding system to ensure correct burr and handpiece connections
- Unique – ECCOS™ decontamination system allows machine washing for consistent decontamination

The user

Jeffrey Kozak, MD
Fondren Orthopedic Group, LLP
Houston, Texas, USA

“After practicing spine surgery for 25 years, it is my opinion that the Aesculap microspeed® uni is the finest electric drill on the market. The drill’s precision allows for precise bone removal with absolutely no chatter regardless of the pressure that is applied during use. The microspeed uni’s 80,000 revolutions per minute allow for rapid bone removal with minimal generation of heat. There is a most complete choice of available bits adding to the drill’s versatility.”
HiLAN® XS
The pneumatic high speed system

The extremely small HiLAN XS power system is one of the trailblazers of the new generation of miniaturized surgical instruments, reflecting the trend towards ever smaller access and the demand for improved visibility of the operation site. The HiLAN XS motor concept is the result of an uncompromising development effort. The objective was to design particularly small, extremely light-weight, ergonomic handpiece shafts and a novel motor concept, which delivers the same power as the much larger predecessors. The result is an impressive combination of an elegant design and maximum precision: HiLAN XS.

The technology

- Pneumatic driven high and low speed power system
- Quiet, powerful motors with speeds to 90,000 rpm
- Top grade materials such as titanium and precise manufacturing provide the highest level of quality and reliability
- Slim, ergonomic design improves visibility into deep accesses

The application

An optimal pneumatic power system designed to access tight spaces with powerful motors, and slim, ergonomic handpieces. Balance, performance, and reliability provide precision bone cutting capable of handling the following surgical disciplines:

- Spine
- Neurosurgery
- OMF
- ENT / Neurotology
- Small Bone
The benefits

- Performance – powerful without the chatter and noise of other systems
- Balance – Compact pen styled design delivers comfort, control and accessibility in confined areas
- Weight – Ultra-lightweight components allow long running time without fatigue
- Safety – integrated safety lock on/off switch to prevent inadvertent activation
- Unique – ECCOS™ decontamination system allows machine washing for consistent decontamination

The user

P. Langham Gleason, MD
Norcentex Neocortex Neurosurgery
Wichita Falls, Texas, USA

“Having used several different brands of pneumatic drills over the past 22 years, I find the HiLAN® XS system more reliable, more compact and quieter than any other pneumatic drill. The 90,000 rpm motor provides more than enough torque to smoothly remove even the thickest bone without chatter or drift. The innovative, smaller motor makes maneuvering the drill in tight spaces, like the suboccipital region, easier and safer. The safety lock switch allows one to keep the drill up on the field without fear of accidental injury or contamination. These and other features make the HiLAN XS a superb choice among pneumatic drills.”
KAIRison®
The pneumatic bone punch

The technology

- A revolutionary pneumatic powered kerrison that weighs approximately 12.3 oz
- Enables cutting/punching bone with less strain and little effort
- Shaft can be retracted at any time by releasing the trigger
- Ten easily interchangeble shafts for almost every surgical situation

The application

Neurosurgeons and spine specialists have been using the pneumatic KAIRison since 2008. The pneumatic kerrison punch is mainly used in, but not limited to, the following procedures:

- Laminectomy
- Laminotomy
- Cervical and Lumbar Decompressions
- Cervical and Lumbar Stenosis
- Cervical and Lumbar Disc Prolapse
The benefits

- Easy handling
- Reduces physical effort required
- Relieves strain on hands and joints
- Less risk of reduced motor skills through fatigue
- Innovative safety mechanism
- Short learning curve
- Excellent balance
- Suitable for right- or left-handed use
- Reliable
- Ergonomic design

The user

Joseph Maroon, MD
UPMC
Pittsburgh, PA, USA

“Aesculap’s pneumatic kerrison will add years to my spine surgery career. I have experienced none of the hand and joint pain I typically have after a routine laminectomy. KAIRison® is similar to a regular kerrison punch in terms of feedback, control and speed – but makes cutting effortless. This pneumatic kerrison bone punch will become the bone-cutting tool of choice – a must for spinal surgeons in the US.”