Aesculap® Neuroendoscopy

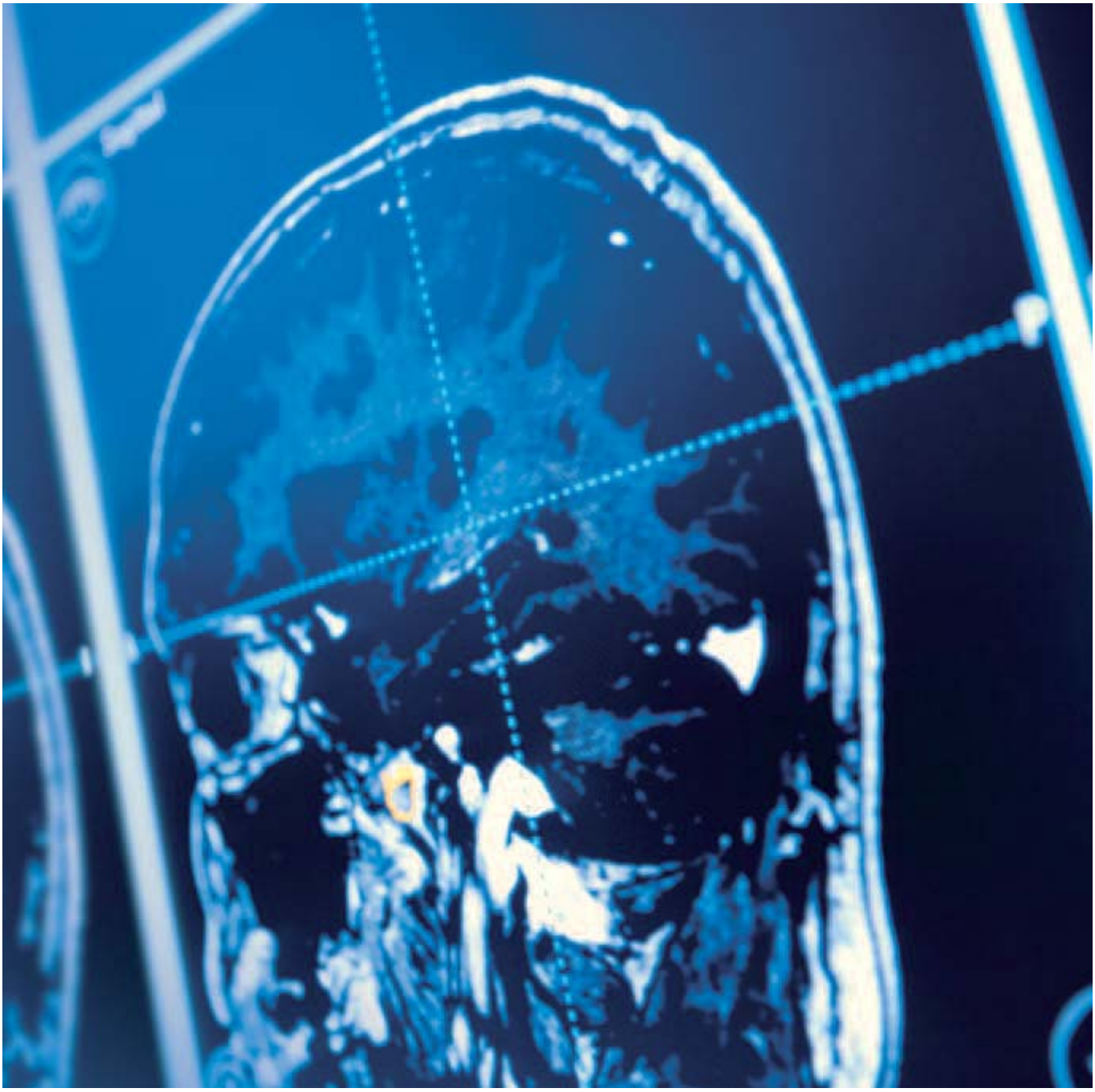
Intraventricular, Endoscope-Assisted, Transnasal/Transsphenoidal Neuroendoscopic Equipment

With comments from international experts in the field of neuroendoscopy and minimally-invasive neurosurgery.

Aesculap Neurosurgery

B BRAUN
SHARING EXPERTISE

Aesculap Neuroendoscopy



Michael Fritsch
Neubrandenburg, Germany

Jeremy Greenlee
Iowa City, USA

André Grotenhuis
Nijmegen, Netherlands

Nikolai Hopf
Stuttgart, Germany

"In 1924, the famous general and neurological surgeon William Halsted expressed his belief "... that the tendency will always be in the direction of exercising greater care and refinement in operating". Today, within the third millennium this fundamental philosophy of minimally invasive therapy should be emphasized more than ever before, operating with a minimum of iatrogenic trauma while achieving maximum surgical efficiency.

Recent improvements in preoperative imaging and surgical instrumentation allow neurosurgeons to treat more complex pathologies through customized less invasive approaches.

Using the advanced diagnostic tools of digital subtraction angiography, 3D angiography, computed tomography and magnetic resonance imaging, one is able to demonstrate and elucidate preoperatively the individual anatomy and pathology of the patient. Therefore, anatomically preformed surgical dissection can be described preoperatively and may so be included into the planning of surgery. With the individual anatomic details of a specific patient, it becomes possible to perform a tailored surgical procedure reducing the size of the skin incision, the craniotomy, and the extent of brain surface traumatization and retraction to a necessary minimum limit. These advantages of minimally invasive microsurgery contribute to improved postoperative results, including shorter hospitalization time because of reduction of the risk for complications.

However, small sized minimally invasive approaches cause two important limitations: the significant loss of optical control and limited maneuverability of microsurgical instruments. The intraoperative use of endoscopes and dedicated minimally invasive instruments overcome these restrictions, thus enabling neurosurgeons to achieve deep seated regions without approach related traumatization of sensitive neurovascular structures.

The endoscopic image allows illumination and inspection of angles in hidden parts of the surgical field with the and clear depiction of anatomical details. In addition, due to the enormous optical depth of field of modern endoscopes, endoscopes provide a three dimensional aspect of anatomic structures. Recently, the intraoperative use of full high definition (HD) image quality offers a new area in endoscopic neurosurgery with an increased range of indications in minimally invasive neurosurgery.

There are three main indications of endoscopic neurosurgery: the intraventricular, transcranial and transnasal application. In this brochure, contemporary endoscopic equipment and instrumentation is presented in a comprehensive way. International experts in the field of minimally invasive and endoscopic neurosurgery comment the different applications, giving remarks with important tips and ideas, thus providing valuable instructions for the use of endoscopes in the field of minimally invasive neurosurgery."

The Aesculap Advisory Board for "Minimally-Invasive Neurosurgery & Neuroendoscopy"

Michael Fritsch, Neubrandenburg, Germany
Jeremy Greenlee, Iowa City, USA
Andre Grotenhuis, Nijmegen, Netherlands
Nikolai Hopf, Stuttgart, Germany
Peter Nakaji, Phoenix, USA
Robert Reisch, Zurich, Switzerland
Mark Souweidane, New York, USA
Charles Teo, Sydney, Australia

Peter Nakaji
Phoenix, USA

Robert Reisch
Zurich, Switzerland

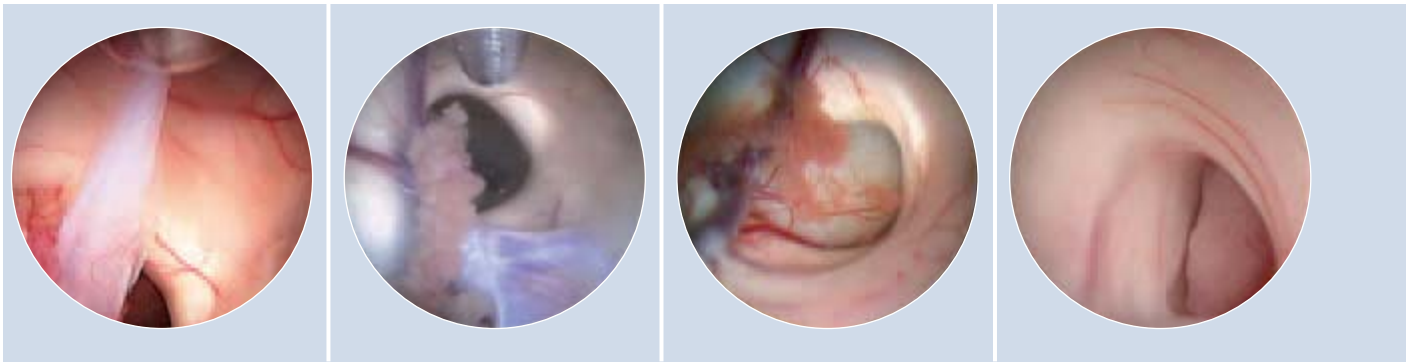
Mark Souweidane
New York, USA

Charles Teo
Sydney, Australia

Intraventricular Neuroendoscopy

MINOP®

Intraventricular Neuroendoscopic System



"The genesis of endoscopic surgery within the ventricular compartment can be attributed to the development of small caliber rod lens optics, fiberoptic light transmission and dedicated instrumentation. Since the advent of intraventricular endoscopic surgery, neurosurgeons have applied the technology to treat a number of disorders. While the enthusiasm has been great and the full potential not yet realized, a major benefit to the patient has been proven for selected conditions. Most notably the treatment of non-communicating hydrocephalus, management of patients with pineal region tumors, fenestration of intracranial cysts, and removal of colloid cysts have all been shown to provide significant benefit and reduced morbidity compared with conventional treatment strategies.

The benefit in minimally invasive endoscopic procedures is analogous to that of any endoscopic procedure, namely minimal tissue disruption, enhanced visualization, improved cosmetic results, shorter hospital stay, and less surgical morbidity. The surgeon willing to utilize intraventricular endoscopic surgery is first responsible for attaining a considerable degree of familiarity with the technology, relevant anatomy, and the surgical procedures. Given the relative nascence of the field, the discipline is only now being commonly implemented in training programs. Hence, for those that have not had the opportunity to have endoscopic surgery as part of their formal training, it is strongly recommended that the surgeon participates in established practical courses in endoscopic neurosurgery, such as the courses from the Aesculap Academy.

Once fluent with the endoscopic equipment, more advanced procedures can be performed with greater familiarity and experience. It is anticipated with future generations of neurosurgeons that the endoscope will be an indispensable part of the neurosurgeon's armamentarium given the unmatched image resolution and minimally invasive qualities.

This foreseeable integration will expectantly be paralleled with continued evolution in compatible equipment to suit the needs of an expanding repertoire.

Few neurosurgical procedures demand a degree of familiarity with equipment as do neuroendos-copic techniques. This feature is somewhat explained by the recent introduction of the neuroendoscope as well as the delicate nature of the equipment. The basic components of any neuroendoscopic procedure include the endoscope and trocar, a camera with light source and monitor, as well as compatible instrumentation."

Charles Teo
Mark Souweidane

Charles Teo
Sydney, Australia

Mark Souweidane
New York, USA

MINOP®

Intraventricular Neuroendoscopic System

MINOP® Trocars

- Smooth tip of trocar for atraumatic insertion into the brain
- Single obturator for working channel enables insertion of the trocar, under visual control, with the scope
- Large MM-length inscription on the outer shaft of the trocar
- Conical entry of working channel for intuitive insertion of instruments into trocar
- Attachment on top of trocar for improved handling and universal connection of peripheral devices

FF399R

MINOP® trocar,
Outer diameter 6 mm

4 channels:

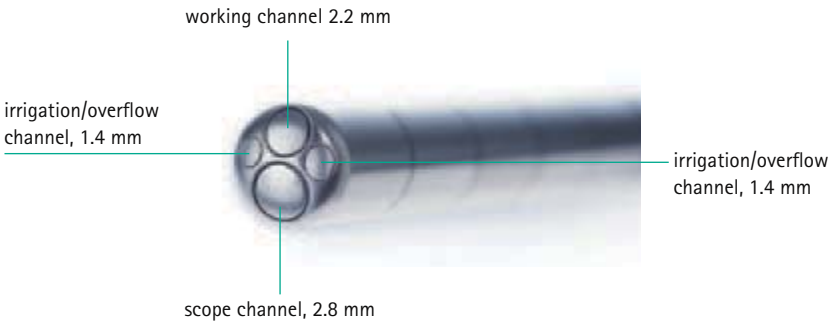
Scope channel, diam. 2.8 mm

Working channel, diam. 2.2 mm

Irrigation channel, diam. 1.4 mm

Overflow channel, diam. 1.4 mm

Including 4 obturators
for all channels



"I had used the Aesculap MINOP system for all intraventricular cases and was mostly pleased with its versatility and safety. However, I had some concerns regarding its user-friendliness and applicability when one needed to be a 2-handed surgeon. Both these issues have been addressed with the new, improved MINOP trocar and I have been very pleased with its added safety and practicality. I honestly believe it is quite clearly the best scope on the market for intraventricular endoscopic procedures. I applaud Aesculap for listening to the people who count most... the surgeons!"

Charles Teo, Sydney, Australia

FF398R

MINOP® trocar,
Outer diameter 4.6 mm

3 channels:

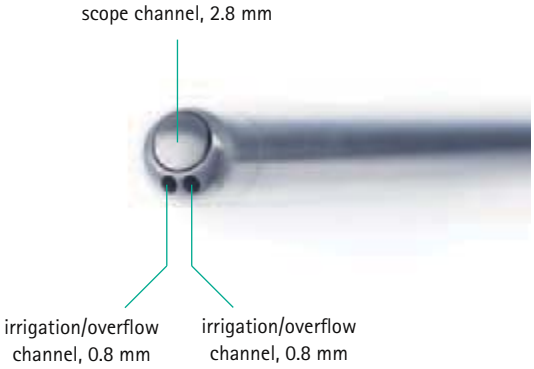
Scope channel, diam. 2.8 mm

Irrigation channel, diam. 0.8 mm

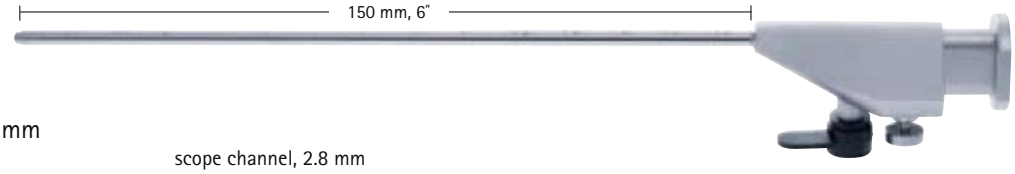
Overflow channel, diam. 0.8 mm

Including one obturator for scope channel

One sealing cap for pressure balance in scope channel



FF397R



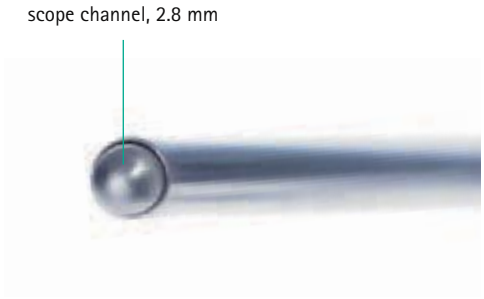
MINOP® trocar,
Outer diameter 3.2 mm

1 channel:
Single channel for scope

Including one obturator

Scope channel, diam. 2.8 mm

One sealing cap for pressure balance in scope channel



MINOP®

Intraventricular Neuroendoscopic System

MINOP® Endoscopes

- FULL HD compatible
- New optical components for enlarged image area and enhanced image quality, brightness, contrast
- Improved fibre optics provide more light
- The external tube is made from a high strength special alloy for superior breaking resistance
- Service-optimised construction reduces maintenance costs
- Autoclavable/Steris/Sterrad

PE184A

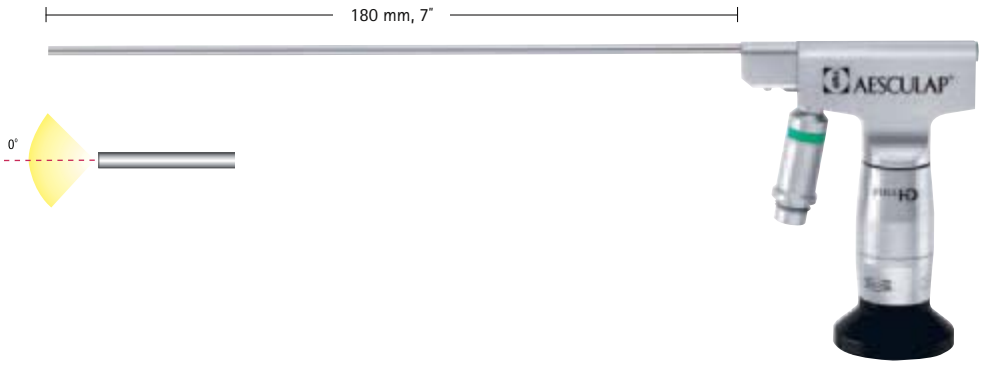
MINOP® endoscope

Direction of view 0° (green ring)

Shaft diameter, 2.7 mm

Shaft length, 180 mm

Autoclavable



PE204A

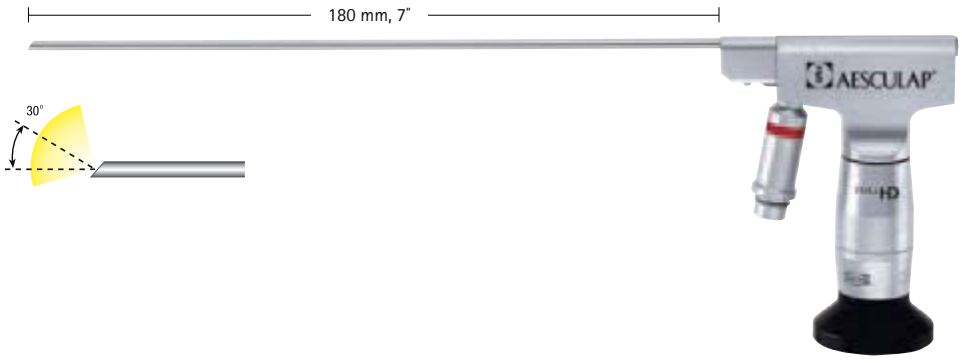
MINOP® endoscope

Direction of view 30°, upwards (red ring)

Shaft diameter 2.7 mm

Shaft length 180 mm

Autoclavable



"The angled design of the MINOP ventricular endoscope plays a central role in ergonomic and effective application, allowing the use of rigid instruments through the straight working channel. In this way, the side-gated camera and light cable do not disturb surgical manipulation. In my hands, an undisputable advantage!"

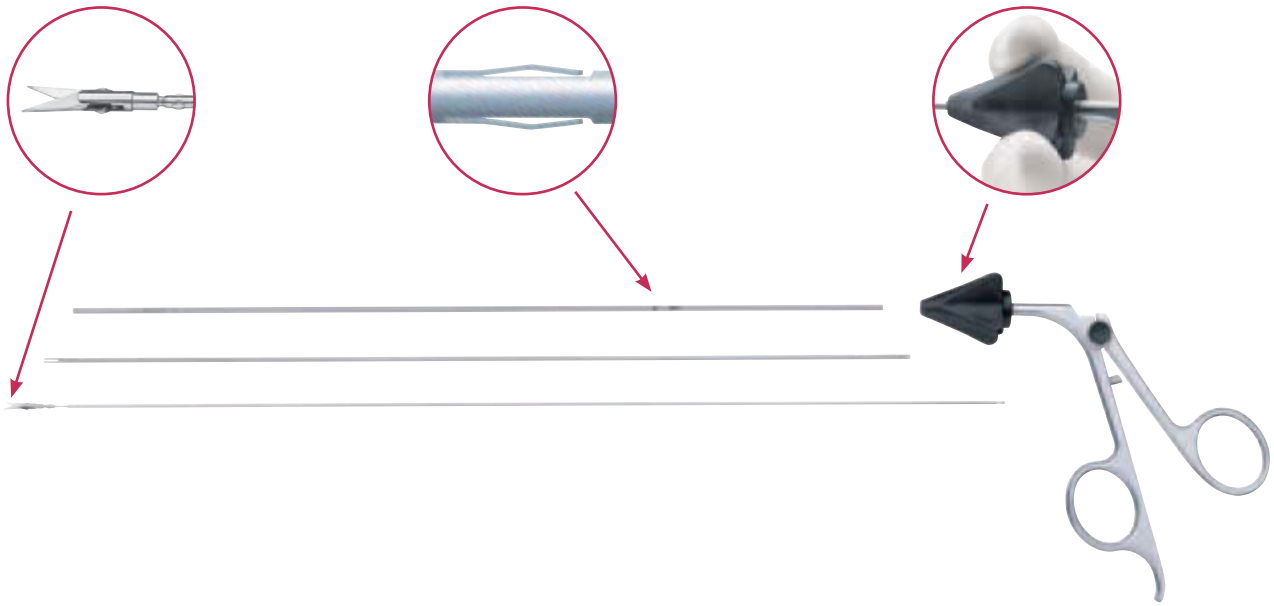
Robert Reisch, Zurich, Switzerland

MINOP® Rigid Instruments

Instruments
- Shaft length 265 mm
- Diam. 2.0 mm
- Fully detachable for reprocessing
- High precision instrument tip

Tactile Feedback
- Integrated tactile feedback delivers small resistance indicating that instrument tip emerges from the trocar
- Improves control during insertion of instruments

Rotating Knob
- By rotating the knob slightly with index finger, the tip of instrument turns equally
- No need anymore to turn/ rotate instrument with the entire arm/handle
- Improves precision of neuro-endoscopic surgery
- Integrated safety mechanism in instrument shaft



" A very appealing feature of the MINOP tube shaft instruments is a rotational capability of the instrument tip through a coaxial system thus eliminating the need for hand rotation and reducing excessive movement of the endoscope. Irrespective of the instrument, graduated markings or precalibrated indicators on the shaft are important in providing the surgeon knowledge as to when the instrument will enter the endoscopic field. Even more safety is provided by the new tactile feedback of the improved MINOP instruments. A small spring delivers a tactile resistance "telling" the surgeon that the instrument tip is exiting the trocar. "

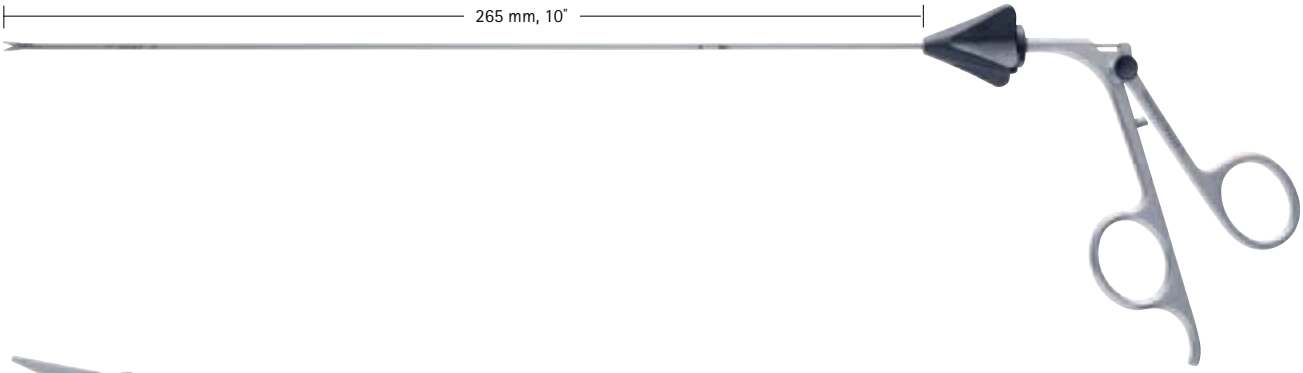
Mark Souweidane, New York, USA

MINOP®

Intraventricular Neuroendoscopic System

MINOP® Rigid Instruments

Ø 2 mm **Instrument complete:** Handle · outer tube · jaw part with inner tube



FF385R

MINOP® scissors
sharp/sharp

FF386R

MINOP® scissors
blunt/blunt

FF387R

MINOP® biopsy forceps

FF388R

MINOP® grasping and dissecting forceps

FF389R

MINOP® surgical forceps

The very delicate MINOP® instruments should be carefully detached completely and be pre-cleaned manually at the end of the operation. Keeping them in dedicated trays for reprocessing and sterilization protects the super-fine instrument tips. A careful handling by trained operating & CSSD staff is highly recommended and can eliminate the wear and tear of these sensitive but highly necessary neuroendoscopic tools.

MINOP® Rigid Instruments – Spare Parts

Ø 2 mm Jaw part with inner tube for FF385R - FF389R

FF433R

MINOP® outer tube only

FF432R

MINOP® instrument handle only

FF435R

MINOP® scissors, jaw part
sharp / sharp

FF436R

MINOP® scissors, jaw part
blunt / blunt

FF438R

MINOP® grasping and dissecting forceps, jaw part

FF437R

MINOP® biopsy forceps, jaw part

FF439R

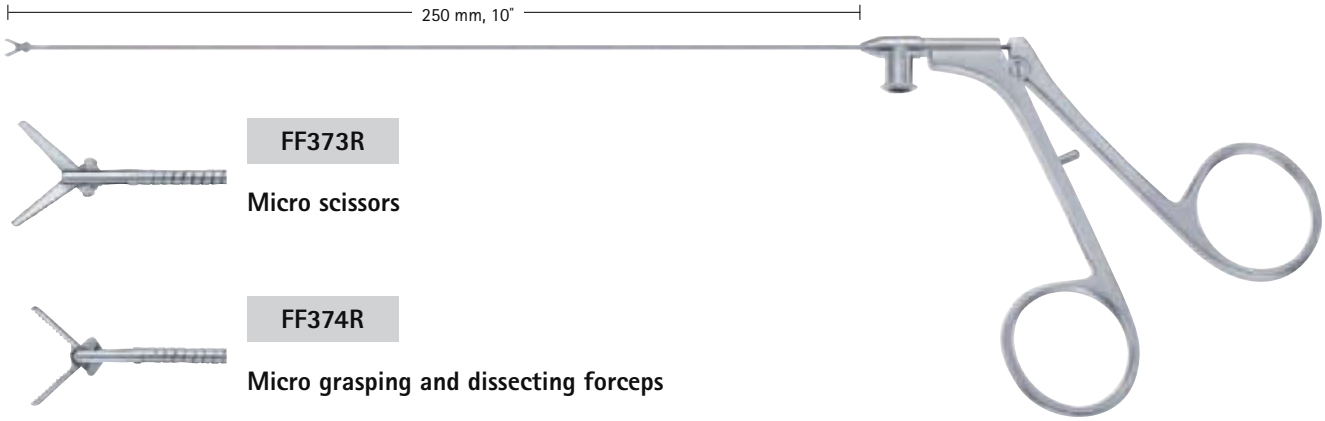
MINOP® surgical forceps, jaw part

For disassembly and assembly of MINOP® tube shaft instruments, please ask your local Aesculap sales representative: Brochure C60902 (English), C60901 (German).

MINOP®

Intraventricular Neuroendoscopic System

MINOP® – Flexible Instruments



FF373R

Micro scissors

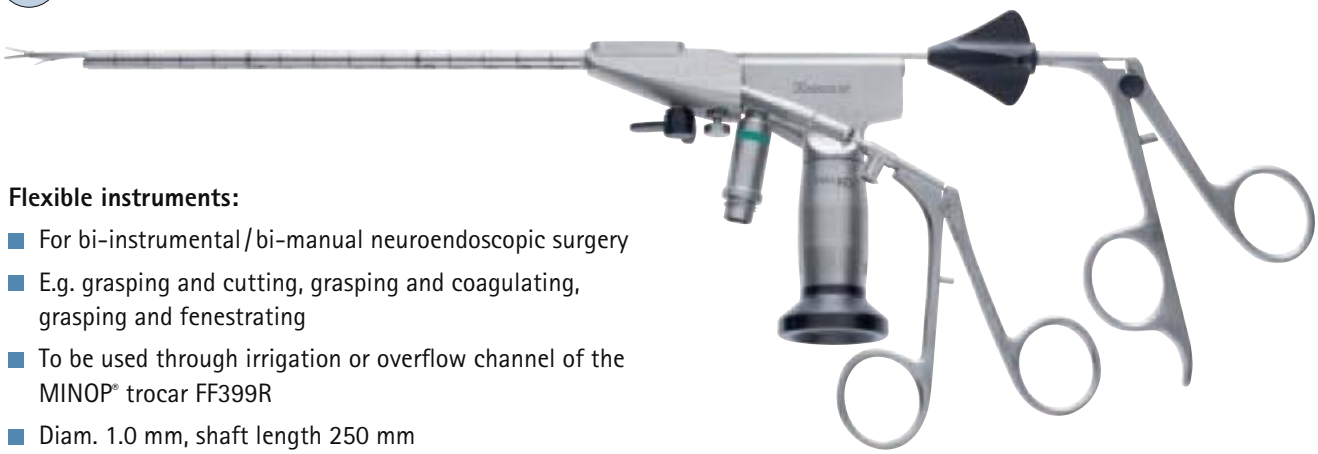
FF374R

Micro grasping and dissecting forceps

FF378R

Micro biopsy forceps

Ø 1 mm 1.0 mm Instruments for bi-instrumental work



Flexible instruments:

- For bi-instrumental/bi-manual neuroendoscopic surgery
- E.g. grasping and cutting, grasping and coagulating, grasping and fenestrating
- To be used through irrigation or overflow channel of the MINOP® trocar FF399R
- Diam. 1.0 mm, shaft length 250 mm
- Non-detachable
- With irrigation port for reprocessing/cleaning

" The MINOP® system is providing bi-instrumental endoscopic work. For example in cyst removal or endoscopic tumor surgery the surgeon has the opportunity to grasp and cut or grasp and coagulate at the same time. One can utilize flexible instruments or electrodes in one of the side-channels and rigid tube shaft instruments in the working channel. The design of the side-channels of the MINOP® trocar makes sure that both instruments do not interfere with each other. "

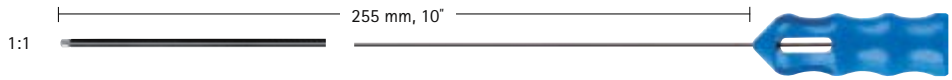
Michael Fritsch, Neubrandenburg, Germany

MINOP® – Electrodes

MONOPOLAR ELECTRODES

GK361R

Blunt electrode, diam. 1.1 mm



GK363R

Needle electrode, diam. 1.1 mm

GK364R

Hook electrode, 45°, diam. 2.2 mm

GK365R

Hook electrode, 70°, diam. 2.2 mm

GK362R

Hook electrode, 90°, diam. 2.2 mm

GK366R

Hook electrode, 180°, diam. 2.2 mm

GN202

Monopolar cable
suitable for GN300, GN640, 3.5 m

BIPOLAR ELECTRODE

GK360R

Fork electrode, diam. 2.1 mm

GN130

Bipolar cable
suitable for GN060, GN160, GN300, GN640, length 4 m

MINOP®

Intraventricular Neuroendoscopic System

MINOP® – Suction Cannula

MINOP® Disposable Suction Cannula

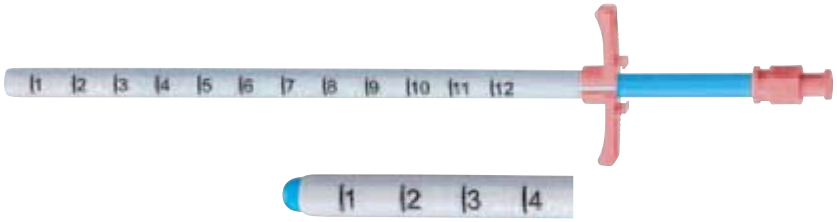
- For removal of cystic intraventricular lesions
- For puncturing the floor of the 3rd ventricle
- With depth marking, interval of 5 mm
- Outer diameter of 2.0 mm
- Suitable for working channel of MINOP® trocar FF399R
- Available with blunt or sharp tip suction cannula
- Optional control of suction
  - via thumb plate or
  - via syringe
- Single-use, sterile packaging

FH606SU	FH607SU
Suction cannula, blunt tip 0°, diam. 2.0 mm	**Suction cannula**, sharp tip 45°, diam. 2.0 mm

MINOP® – Disposable Introducer

MINOP® Disposable Introducer

- 19 Fr disposable introducer set including obturator and sheath
- Especially for MINOP® trocar FF399R
- Introducer sheath protects the brain while inserting and removing the endoscope/trocar
- Round & blunt obturator tip for atraumatic insertion into the ventricles
- Depth scale for precise positioning and perfect control
- Easy to peel with side handles



FH604SU

Introducer,
19 Fr

The MINOP® suction cannula and the MINOP® disposable introducer can be used in almost any intraventricular neuroendoscopic surgery providing more control during the procedure. The suction cannula can be used for the controlled and fast removal of intraventricular soft tumors or colloid cysts with its sharp cannula tip or even for the opening of the floor of the 3rd ventricle.
The disposable introducer (also called peel away) is very helpful when several intraparenchymal in- and out-movements of the trocar are necessary.

MINOP®

Intraventricular Neuroendoscopic System

MINOP® – Storage

FF358R

For MINOP® trocars and scopes

Storage rack with silicone protection cushioning

Bottom and lid

Only for reprocessing, not for transportation/shipment

(L/W/H 489 x 257 x 63 mm)

FF359R

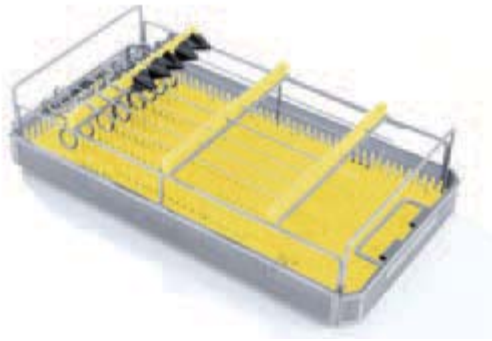
For MINOP® instruments and electrodes

Storage rack with silicone protection cushioning

Bottom only, lid not necessary

Only for reprocessing, not for transportation/shipment

(L/W/H 485 x 253 x 120 mm)



JK440

Container body 1/1
for FF358R
without base perforation

Outside/Inside dimensions with lid:
L/W/H 592 x 285 x 112 mm
L/W/H 544 x 258 x 75 mm

JK444

Container body 1/1
for FF359R
without base perforation

Outside/Inside dimensions with lid:
L/W/H 592 x 285 x 209 mm
L/W/H 544 x 258 x 172 mm

JK486

Container lid 1/1
blue

Dedicated storage racks for cleaning and reprocessing are highly recommended for your neuroendoscopic equipment. A special-designed storage concept is keeping the scopes and instruments properly stored and protected.

PF893800

Cleaning brush

EJ751251

Sealing cap Luer-Lock

20 pcs. per pack

EJ751200

Sealing cap

1 pc. per pack

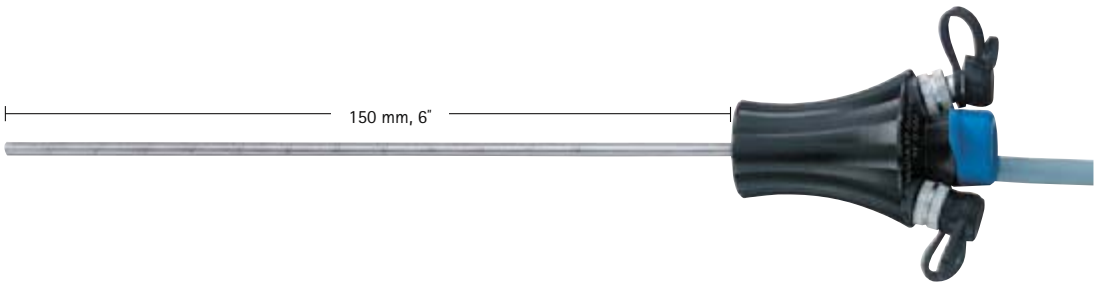
For more information about sterile container systems and accessories, please ask your local Aesculap sales representative: Brochure C40402 (English), C40401 (German).

Paediscope

Paediatric Intraventricular Neuroendoscopic System

Paediscope

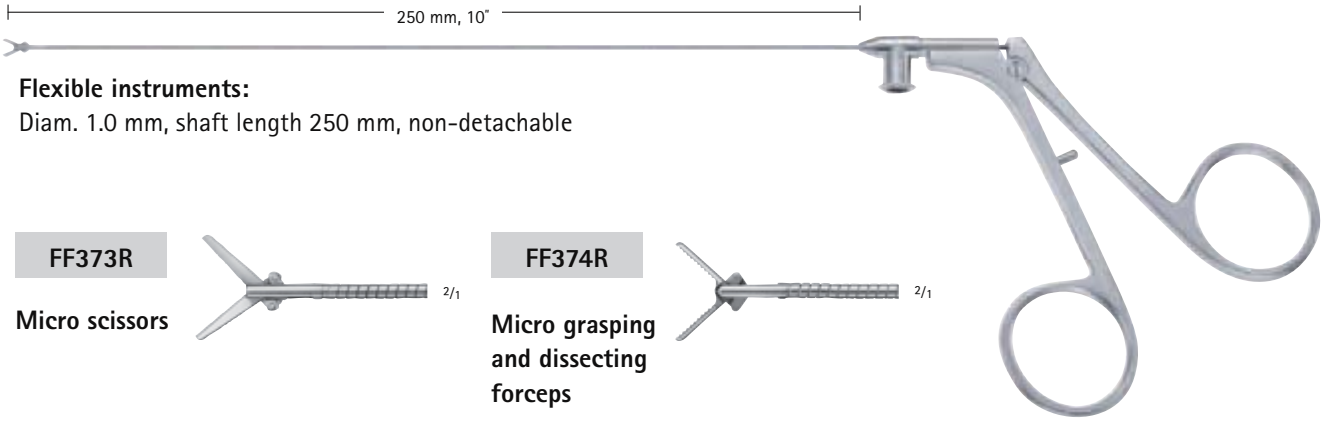
PF010A



PF011A

Ocular with focus

* for complete Paediscope, please order both PF010A and PF011A



Flexible instruments:
Diam. 1.0 mm, shaft length 250 mm, non-detachable

FF373R

Micro scissors

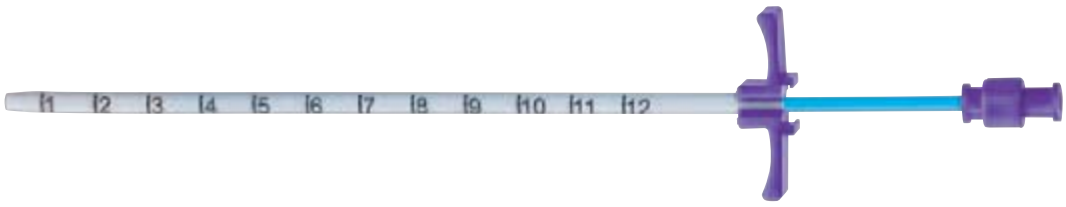
FF374R

Micro grasping and dissecting forceps

FF378R

Micro biopsy forceps

FH603SU



- Round & blunt obturator tip for atraumatic insertion into the ventricles
- Depth scale for precise positioning and perfect control
- Easy to peel with side handles

"The peel away sheath protects the brain while inserting and removing the pediatric endoscope. Because of its small outer diameter, the Paediscope does not have a dedicated trocar. The blunt obturator tip of the sheath allows atraumatic insertion into the ventricles. The sheath has a depth scale for precise positioning and is easy to peel back the side handles. Using a peel away sheath is especially helpful, if repeated in and out movements of the scope are necessary or different instruments or catheters (e.g. for aqueductoplasty) have to be utilized in addition to the scope."

Michael Fritsch, Neubrandenburg, Germany

Paediscope

Paediatric Intraventricular Neuroendoscopic System

Paediscope

GK363R

Needle electrode,
diam. 1.1 mm

1/1

GK361R

Blunt electrode,
diam. 1.1 mm

1/1

GN202

1/1

Monopolar cable
suitable for GN300, GN640, 3.5 m

FF379R

For Paediscope shaft,
instruments and electrodes

Storage rack with silicone
protection cushioning

Bottom and lid
Only for reprocessing, not
for transportation/shipment

(L/W/H 489 x 257 x 63 mm)

JK440

Container basis 1/1
for FF379R
without base perforation

Outside/Inside dimensions with lid:
L/W/H 592 x 285 x 112 mm
L/W/H 544 x 258 x 75 mm

JK486

Container basis 1/1 lid
blue

For more information about MINOP®
please see our „Practical Atlas" C29202.

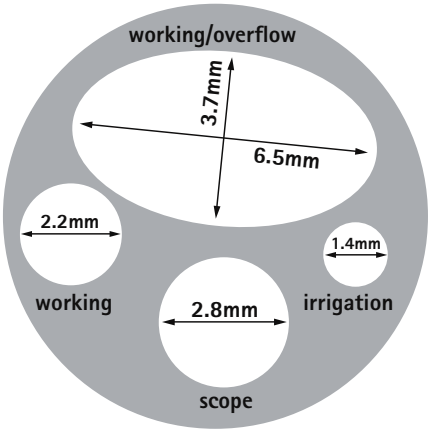

AESCULAP

Advanced Intraventricular Neuroendoscopy

MINOP® InVent
Advanced Intraventricular Endoscopic System

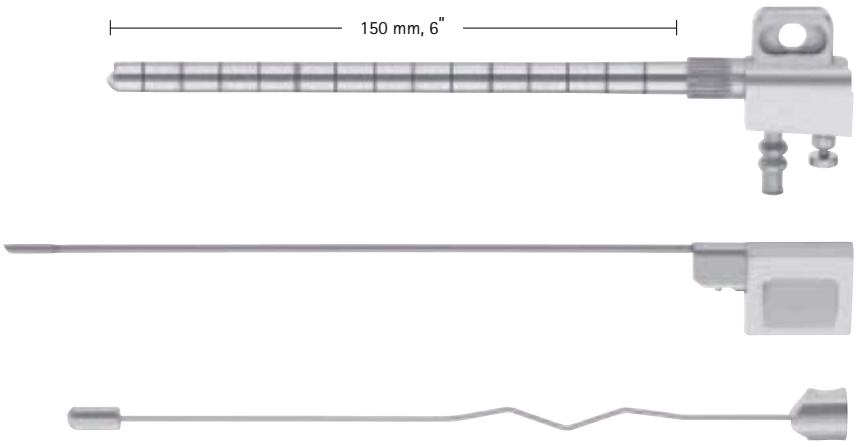
MINOP® InVent – Trocars

- Intraventricular system for experienced neuroendoscopic surgeons
- New trocar concept reduces brain trauma
- Oval working channel allows "microsurgical" techniques
- Enables the use of instruments with angled tips
- Wide range of up to 32 instruments available
- Connection for holding arm and intraoperative imaging



FH620R

MINOP® InVent trocar
Outer diameter 8.3 mm



3 (4) channels:

Scope channel, diam. 2.8 mm

Irrigation channel, diam. 1.4 mm

Two merging channels:

Large working/overflow channel:
3.7 mm x 6.5 mm

Small working channel: diam. 2.2 mm

Including 2 obturators for scope channel and large working/overflow channel

MINOP® InVent – Endoscope

- FULL HD compatible
- New optical components for enlarged image area and enhanced image quality, brightness, contrast
- Improved fibre optics provide more light
- The external tube is made from a high strength special alloy for superior breaking resistance
- Service-optimised construction reduces maintenance costs
- Autoclavable/Steris/Sterrad

PE204A

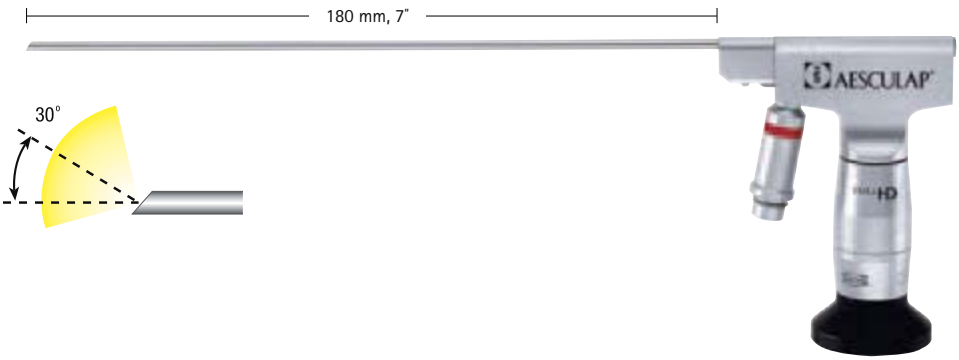
MINOP® endoscope

Direction of view 30°, upwards (red ring)

Shaft diameter 2.7 mm

Shaft length 180 mm

Autoclavable

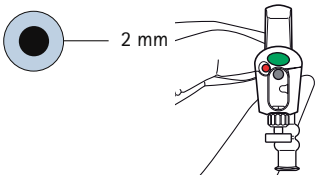


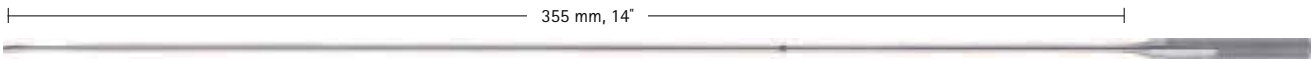
"The MINOP InVent system is truly unique and the next step for the future of Neuroendoscopy. This system allows for a true bi-manual technique through the large/small working channels expanding the possibilities to treat further indications. The angled instrumentation provide the ability to simultaneously grasp and cut or grasp and coagulate similar to traditional microsurgery. The MINOP InVent providesa new possibility for the treatment of intra- and paraventricular cysts and tumors in complex hydrocephalus and alleviating the need for certain craniotomies."

Mark Souweidane, New York, USA

MINOP® InVent
Advanced Intraventricular Endoscopic System

MINOP® InVent – Dissectors, Hooks and Knifes





FH629R

MINOP® InVent dissector,
tip width 2.2 mm

FH630R

MINOP® InVent dissector,
tip width 1.7 mm

FH631R

MINOP® InVent dissector,
tip width 1.0 mm

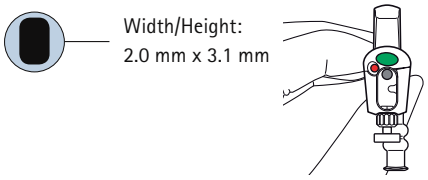
FH632R

MINOP® InVent hook 90° blunt,
hook deflection width 3.5 mm

FH634R

MINOP® InVent knife, backwards cutting,
knife deflection width 3.0 mm

MINOP® InVent – Shaft Instruments



FH621R

MINOP® InVent forceps straight

FH625R

MINOP® InVent scissors straight

FH622R

MINOP® InVent forceps right

FH626R

MINOP® InVent scissors left

FH623R

MINOP® InVent forceps left

FH627R

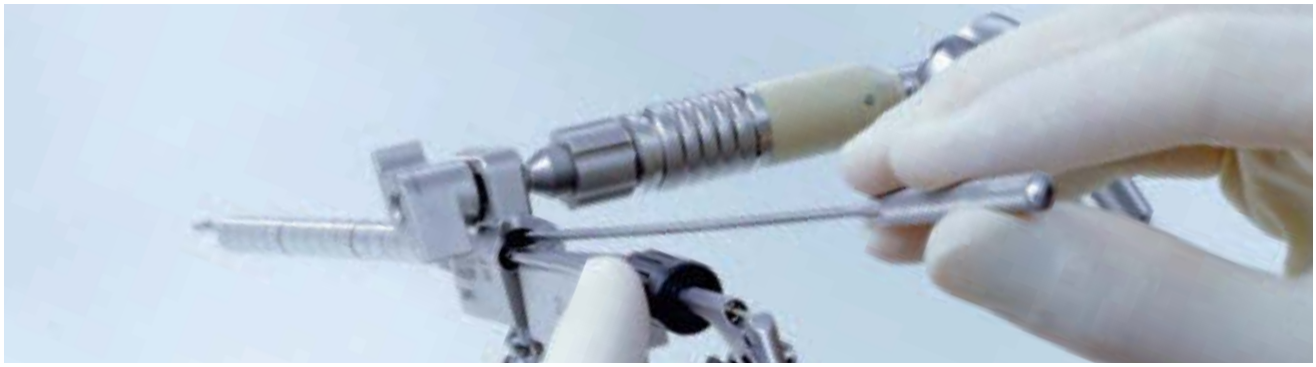
MINOP® InVent scissors right

FH624R

MINOP® InVent grasping forceps straight

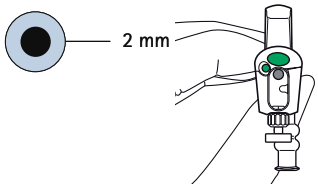
FH628R

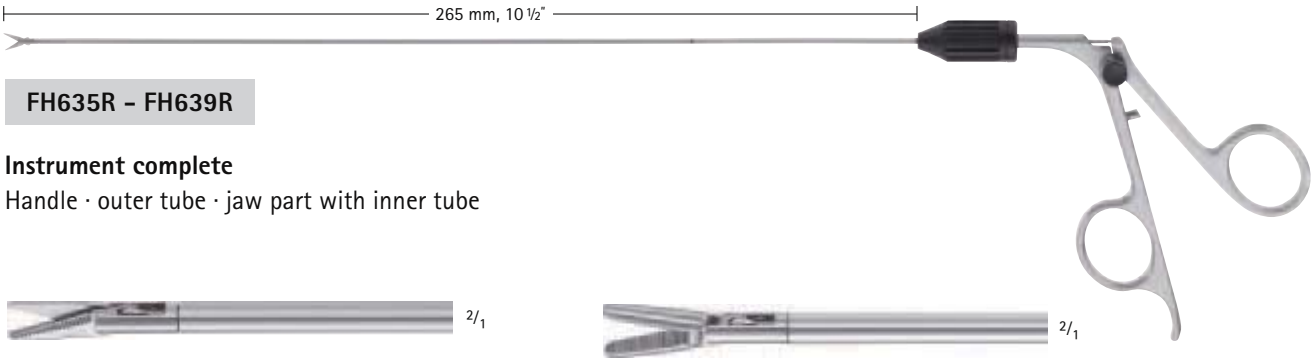
MINOP® InVent scissors upwards



MINOP® InVent
Advanced Intraventricular Endoscopic System

MINOP® InVent – Tube Shaft Instruments | Complete Instruments





FH635R – FH639R

Instrument complete
Handle · outer tube · jaw part with inner tube

FH635R

MINOP® InVent scissors
sharp/sharp

FH638R

MINOP® InVent grasping and dissecting forceps

FH636R

MINOP® InVent scissors
blunt/blunt

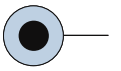
FH639R

MINOP® InVent surgical forceps

FH637R

MINOP® InVent biopsy forceps

MINOP® InVent – Tube Shaft Instruments | Spare Parts



FH635200

MINOP® InVent outer tube only

FH633R

MINOP® InVent instrument handle only

FF435R

MINOP® InVent scissors, jaw part sharp/sharp

FF438R

MINOP® InVent grasping and dissecting forceps, jaw part

FF436R

MINOP® InVent scissors, jaw part blunt/blunt

FF439R

MINOP® InVent surgical forceps, jaw part

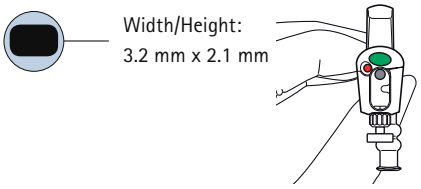
FF437R

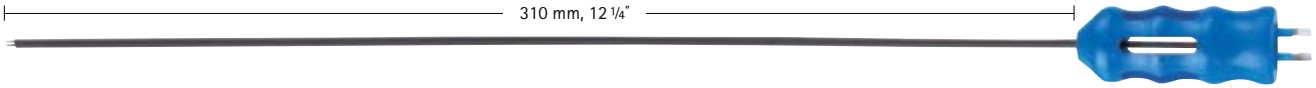
MINOP® InVent biopsy forceps, jaw part

For disassembly and assembly of MINOP® tube shaft instruments, please ask your local Aesculap sales representative: Brochure C60902 (English), C60901 (German).

MINOP® InVent
Advanced Intraventricular Endoscopic System

MINOP® InVent – Bipolar Electrodes





GK343R

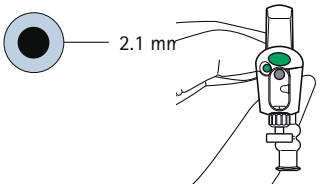
MINOP® InVent
bipolar electrode 0°

GK344R

MINOP® InVent
bipolar electrode 40°

GK345R

MINOP® InVent
bipolar electrode 30°



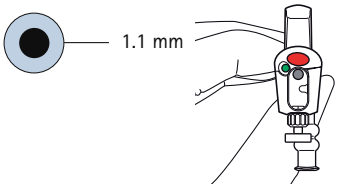
GK360R

Bipolar fork electrode 0°

GN130

Bipolar cable
suitable for GN060, GN160, GN300, GN640, length 4 m

MINOP® InVent – Monopolar Electrodes



GK361R

Blunt electrode, diam. 1.1 mm

GK363R

Needle electrode, diam. 1.1 mm

GK365R

Hook electrode, 70°, diam. 2.2 mm

GK362R

Hook electrode, 90°, diam. 2.2 mm

GK366R

Hook electrode, 180°, diam. 2.2 mm

GK364R

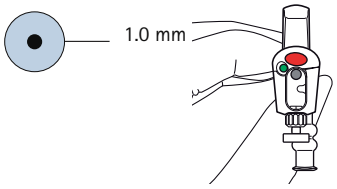
Hook electrode, 45°, diam. 2.2 mm

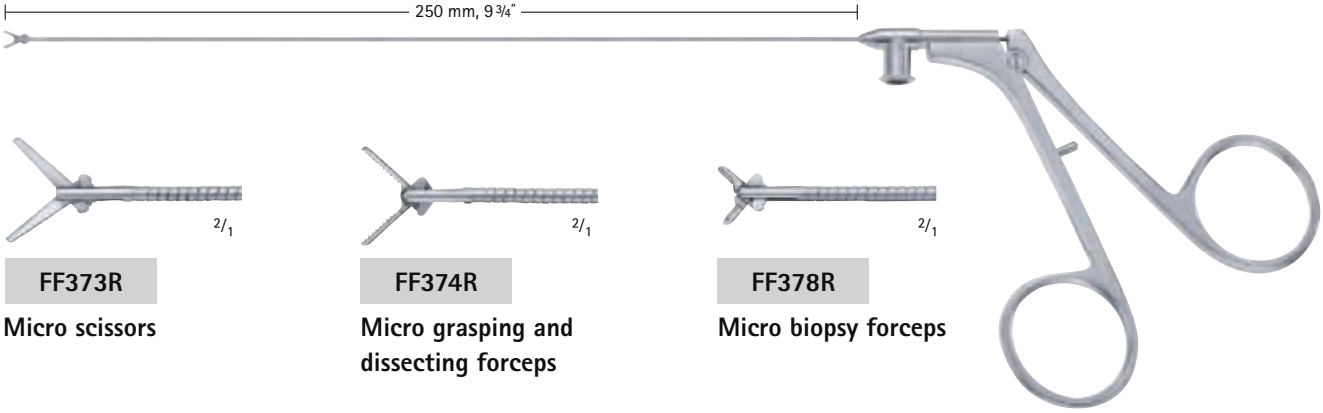
GN202

Monopolar cable
suitable for GN300, GN640, 3.5 m

MINOP® InVent
Advanced Intraventricular Endoscopic System

MINOP® InVent – Flexible Instruments & Suction Cannula





FF373R

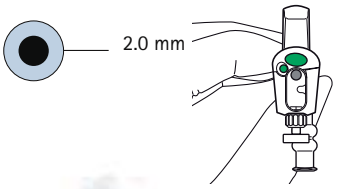
Micro scissors

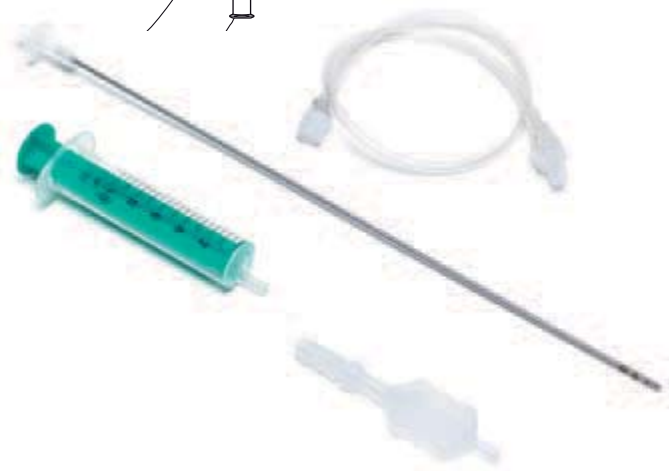
FF374R

Micro grasping and dissecting forceps

FF378R

Micro biopsy forceps



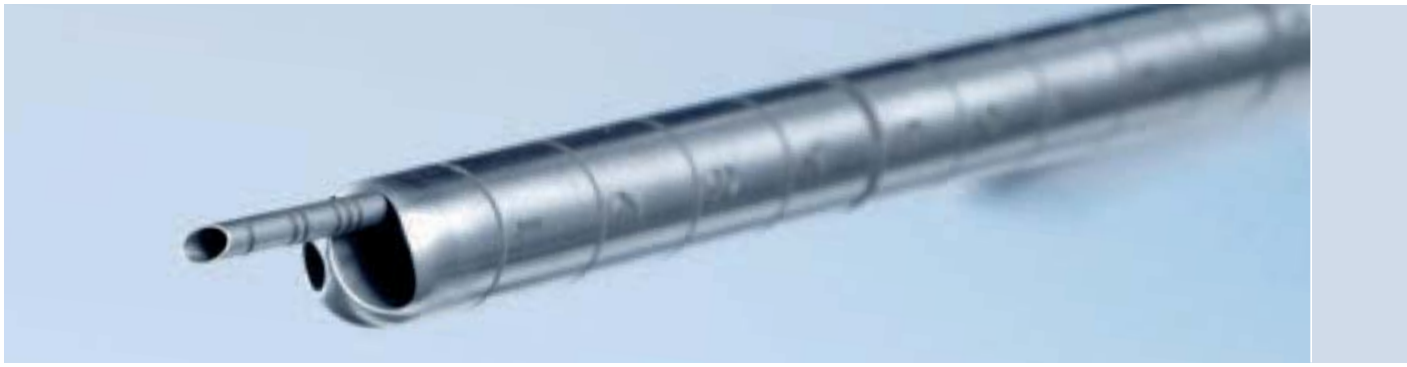


FH606SU

Suction cannula,
blunt tip 0°, diam. 2.0 mm

FH607SU

Suction cannula,
sharp tip 45°, diam. 2.0 mm



MINOP® InVent – Storage

FH358R

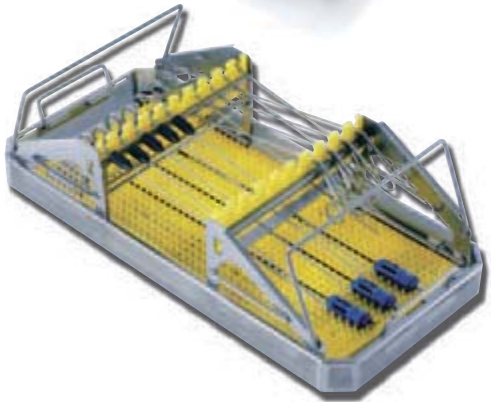
Storage rack for MINOP® InVent trocar and scope
with silicone protection and cushioning bottom and lid
Only for reprocessing, not for transportation/shipment

L/W/H 540 x 253 x 56 mm

FH359R

Storage rack for MINOP® InVent instruments and electrodes
with silicone protection and cushioning bottom and lid
Only for reprocessing, not for transportation/shipment

L/W/H 540 x 253 x 166 mm



JK440

Container body 1/1
for FF358R
without base perforation

Outside/Inside dimensions
with lid:
L/W/H 592 x 285 x 112 mm
L/W/H 544 x 258 x 75 mm

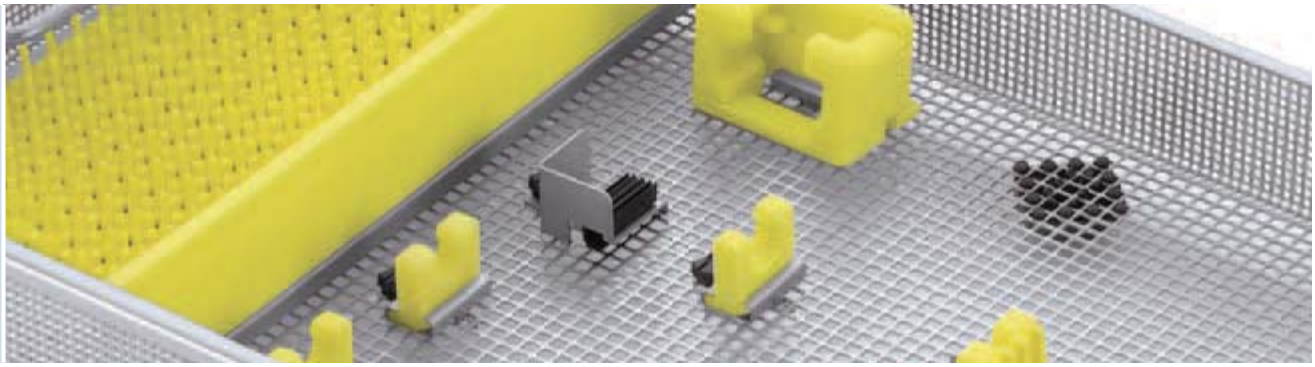
JK444

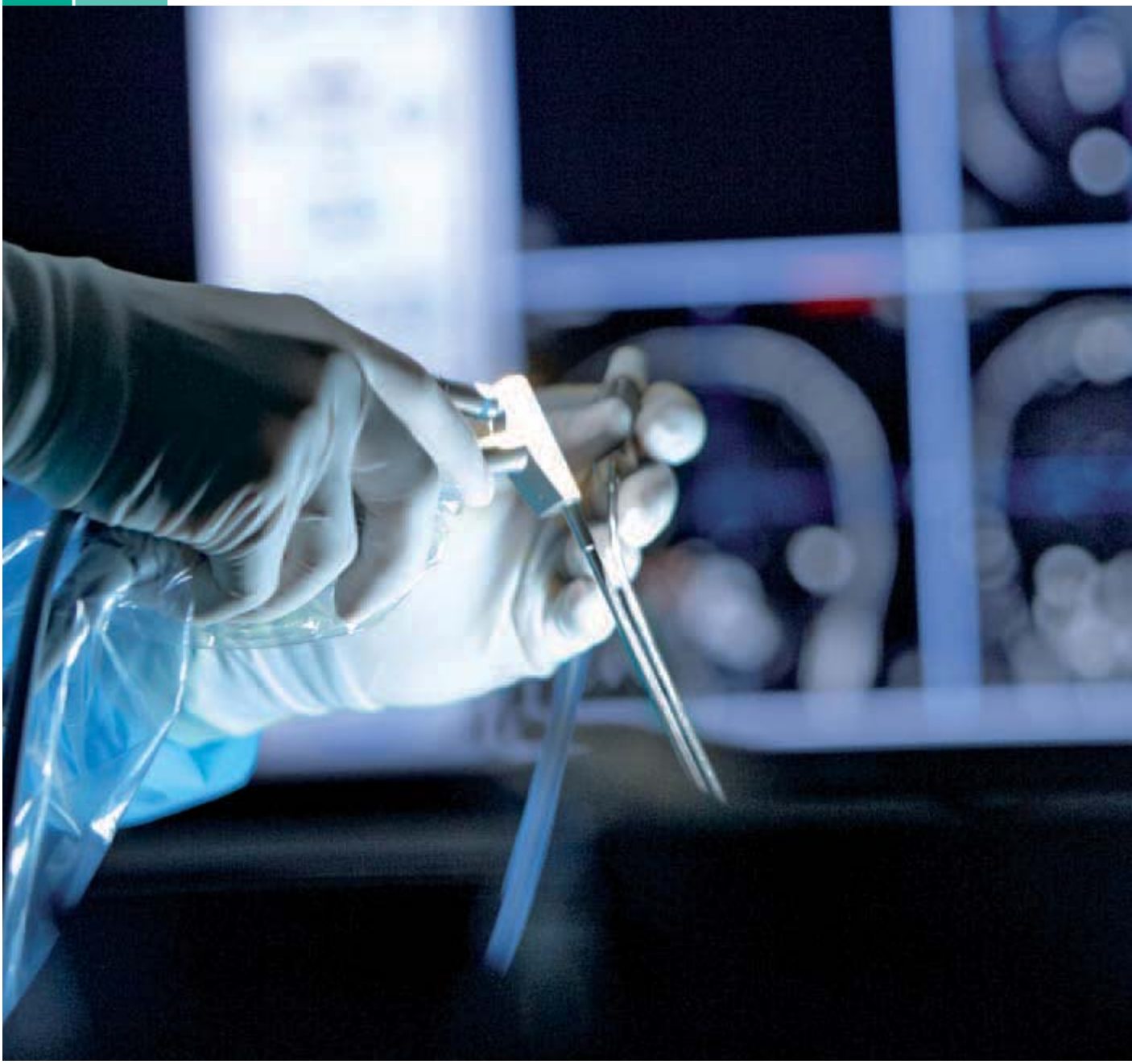
Container body 1/1
for FF359R
without base perforation

Outside/Inside dimensions
with lid:
L/W/H 592 x 285 x 209 mm
L/W/H 544 x 258 x 172 mm

JK486

Container lid 1/1
blue

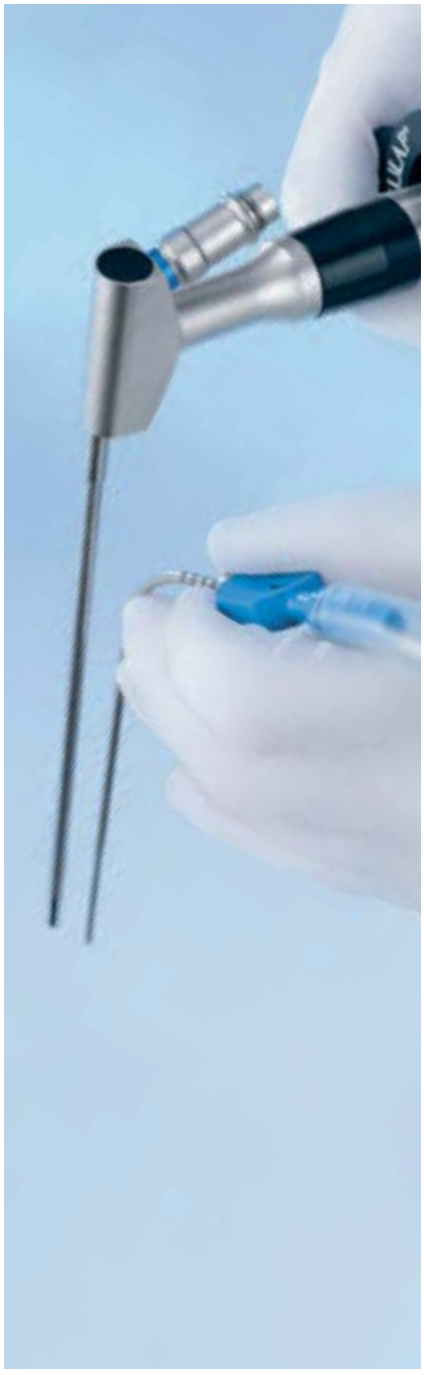


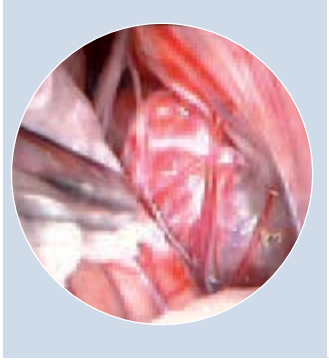


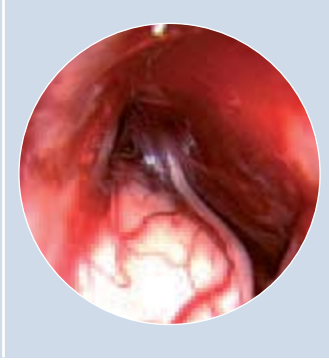
Endoscope-Assisted Microneurosurgery

MINOP® TEAM

Transcranial Endoscope Assisted Microneurosurgery







"The aim of minimally invasive neurosurgery is to avoid approach-related traumatization of the patient by creating a tailor-made limited craniotomy based on skilled preoperative planning.

Using modern diagnostic tools, surgical instruments and visual equipment, the specific anatomy and pathology of the individual patient can be precisely visualized and anatomical pathways and surgical corridors determined for the surgical approach. According to the predefined access, surgical dissection can be subsequently performed creating a much less traumatic cranial opening. The aim is not the limited cranial opening, but the limited approach associated injury with less brain exploration and retraction. The craniotomy should be as small as possible for minimally invasive exposure, but as large as necessary for achieving maximal surgical effect. In this way, limited exposure is not the primary goal but the result of the keyhole concept with the main and most important goal being to avoid surgery-related complications.

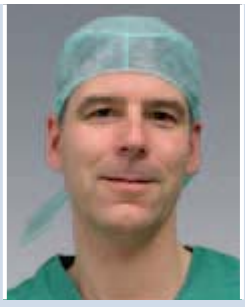
The intraoperative use of microscopes is mandatory in keyhole neurosurgery. The operating microscope provides both stereoscopic magnification and illumination of the surgical field. However, the loss of light intensity in the depth of the surgical field is a fundamental problem in keyhole approaches. For the purpose of bringing light into the site, operating microscopes can effectively be combined with the intraoperative use of modern endoscopes. The advantages of the endoscopic image are increased light, extended viewing angle and a better depiction of anatomical details in close-up. The endoscope is especially ideal for obtaining a detailed view of structures in the shadow of the microscope's light beam. Thus, in situations during microsurgical dissection where additional visual information of the target area is desired or when avoidance of retraction of superficial structures is recommended, an endoscope may be introduced into the surgical site.

The use of dedicated microneurosurgical instruments is obligatory in transcranial endoscope-assisted microneurosurgery. Highly sophisticated instrumentation including microdrills, Kerrison micropunches, self-retaining retractors, suction tubes, fine bipolar forceps, microscissors, diamond knives, microforceps, microdissectors, microcurettes, and clip appliers are mandatory for microsurgical dissection.

All before mentioned surgical tools - the microscope, endoscope and dedicated surgical instruments - complement each other and contribute in a TEAM-work manner to the goal of the keyhole concept: the achievement of the smallest iatrogenic trauma with the highest therapeutic effect for the patients."

Peter Nakaji
Nikolai Hopf

Peter Nakaji
Phoenix, USA

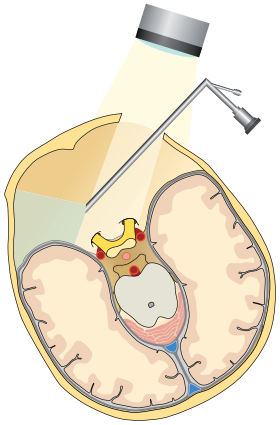


Nikolai Hopf
Stuttgart, Germany

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

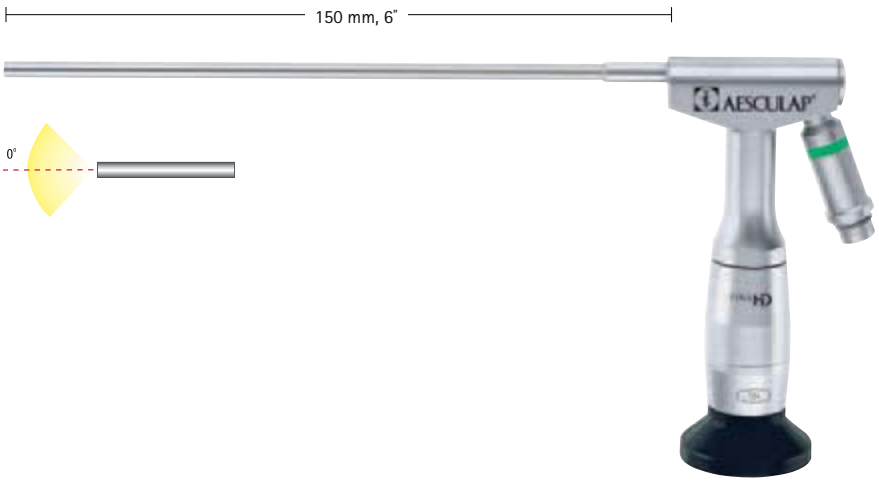
Angled "Perneczky" Scopes

- FULL HD compatible, diam. 4.0 mm
- Brilliant image, rod lens system and different viewing directions (0°, 30°, 70°)
- Angled endoscope design and lateral connection for camera and light source
- Ergonomic handling by centered balance of weight
- Permits parallel microscope image
- Free area around the scope shaft for parallel use of micro instruments
- Autoclavable/Steris®/Sterrad®
- Robust and rigid scope sheath enables the scope to be used as dissector, manipulating delicate structures without bending the scope.



PE486A

Angled endoscope
Direction of view: 0°
Shaft diameter: 4 mm
Shaft length: 150 mm, 6"

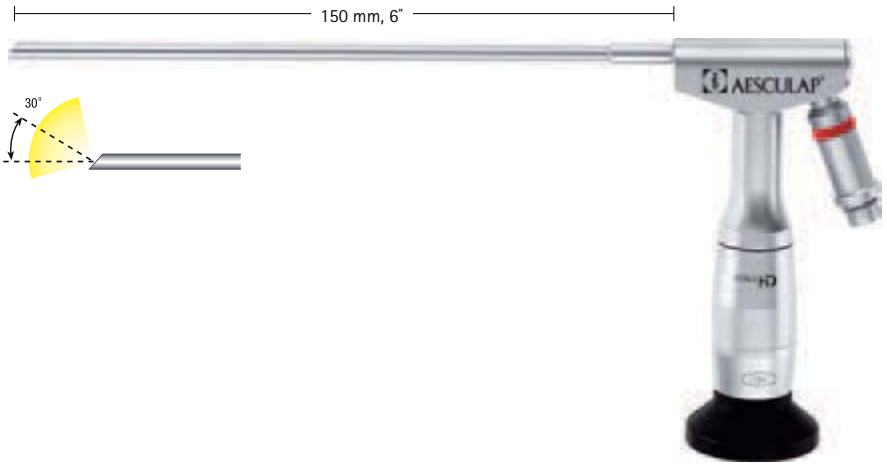


"I have been using the Aesculap angled Perneczky scopes since the mid nineties and in over 1000 cases. I have trialed many different scopes for endoscope-assisted surgery but the Perneczky scopes have the versatility that I need when removing tumors from many different cranial locations. The main advantage of the angled scopes is the unique design that allows simultaneous use of endoscope and microscope. Other important qualities that are met by this system are robustness, ability to use it to retract if necessary and clarity of image. I believe these scopes are an essential tool in the neurosurgeon's armamentarium."

Charles Teo, Sydney, Australia

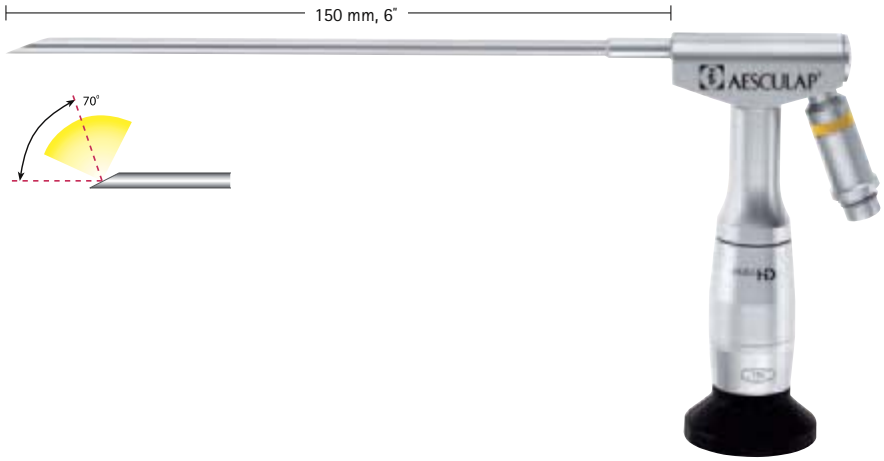
PE506A

Angled endoscope
Direction of view: 30°, upwards
Shaft diameter: 4 mm
Shaft length: 150 mm, 6"



PE526A

Angled endoscope
Direction of view: 70°, upwards
Shaft diameter: 4 mm
Shaft length: 150 mm, 6"



JF324R

Storage tray
with silicone cushioning racks and lid
for 2 angled neuroscopes (not included)
(L/W/H 247 x 257 x 64 mm)

"During microneurosurgical skull base approaches for either vascular lesions or tumors, there is often a difficulty of visualizing important neurovascular structures around and behind the lesion. In such a situation, the use of endoscopes has greatly advanced my surgical possibilities. The additional view through the endoscopes, which is complementary to what can be seen through the operating microscope, facilitates the handling of the lesion, be it aneurysm clipping or tumor removal, while at the same time there is no need for extensive retraction or bone removal."

André Grotenhuis, Nijmegen, Netherlands

MINOP® TEAM

Transcranial Endoscope Assisted Microneurosurgery

Aesculap Micro Instruments

Small craniotomies or narrow operative sites require especially designed fine and slender micro instruments

Experience our three different lines of minimally invasive Micro Instruments

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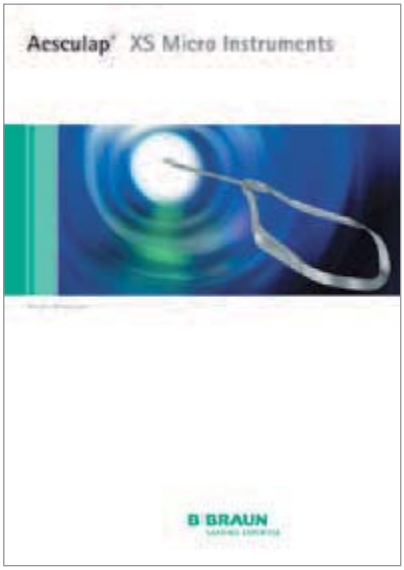

For more information about XS Micro Instruments please see our brochure C77011

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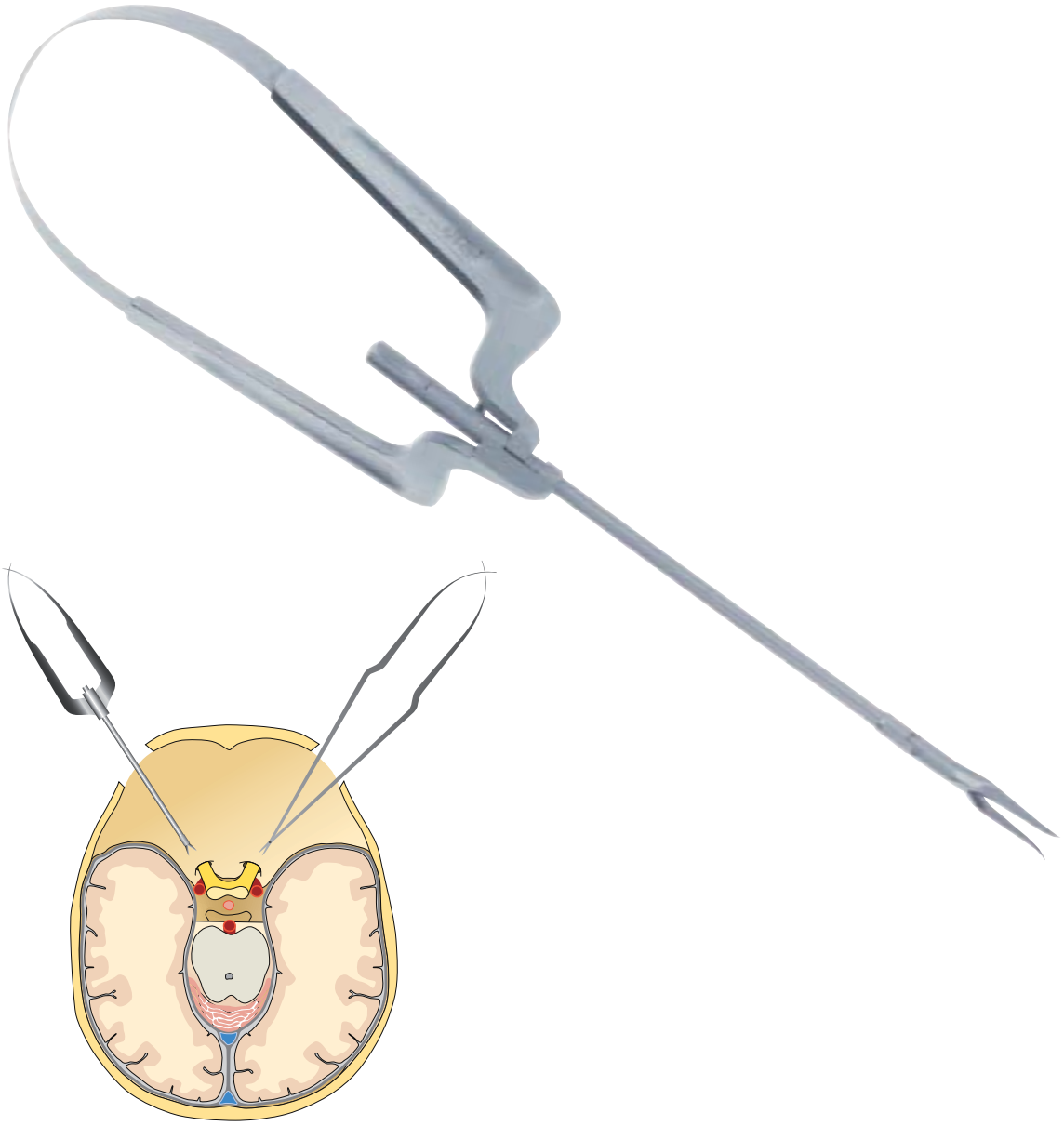
For more information about MIN Set please see our brochure C92011

For more information about SENSATION Micro Instruments please see our brochure C84902

XS Tube Shaft Micro Instruments

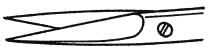


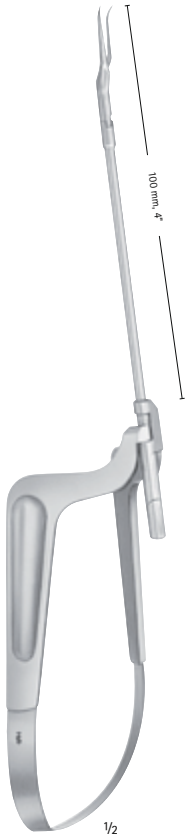
" Performing limited keyhole approaches, the application of conventional microsurgical instruments becomes limited in several cases. Slender keyhole microinstruments have been specially created to overcome this problem allowing unhindered introduction of the tool through the limited craniotomy. These XS tube-shaft designed instruments can be used in very small operating corridor enabling safe manipulation within the narrow surgical passage and obvious visualisation of the surgical field. "

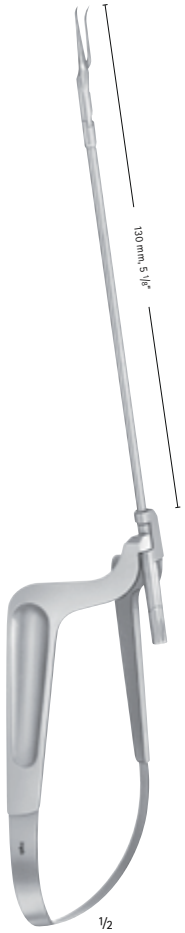
Robert Reisch, Zurich, Switzerland

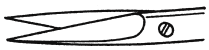
MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

XS Tube Shaft Micro Instruments

straight jaws	Instrument complete	Single parts		Instrument complete	Single parts		Instrument complete	Single parts	
sharp/sharp		Jaw insert	Handle		Jaw insert	Handle		Jaw insert	Handle
	**FM670R**	**FM675R**	**FM730R**	**FM671R**	**FM676R**	**FM731R**	**FM672R**	**FM677R**	**FM732R**
blunt/blunt									
	**FM690R**	**FM695R**		**FM691R**	**FM696R**		**FM692R**	**FM697R**	
Jaw length	70 mm, 2 3/4"			100 mm, 4"			130 mm, 5 1/8"		
Total length	200 mm, 8"			230 mm, 9"			260 mm, 10 1/4"		

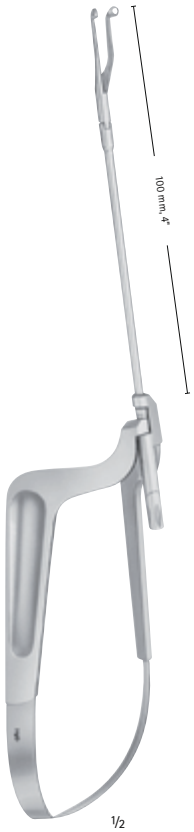


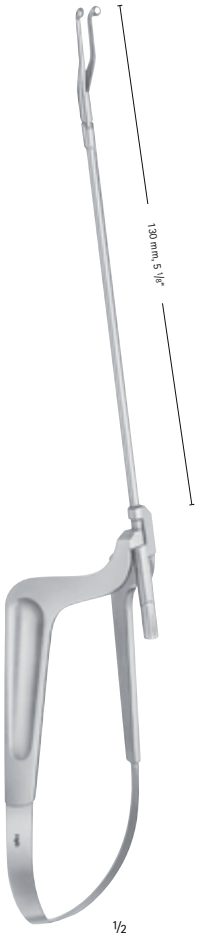


curved jaws sharp/sharp	Instrument complete	Single parts Jaw insert	 Handle	Instrument complete	Single parts Jaw insert	 Handle	Instrument complete	Single parts Jaw insert	 Handle
	**FM680R**	**FM685R**	**FM730R**	**FM681R**	**FM686R**	**FM731R**	**FM682R**	**FM687R**	**FM732R**
blunt/blunt 	**FM700R**	**FM705R**		**FM701R**	**FM706R**		**FM702R**	**FM707R**	
Jaw length	70 mm, 2 3/4"			100 mm, 4"			130 mm, 5 1/8"		
Total length	200 mm, 8"			230 mm, 9"			260 mm, 10 1/4"		

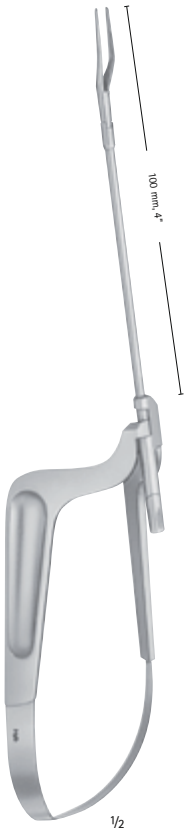
MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

XS Tube Shaft Micro Forceps acc. PERNECZKY/CHRISTIANE





Jaw 3 mm, sharp	Instrument complete	Single parts		Instrument complete	Single parts		Instrument complete	Single parts	
		Jaw insert	Handle		Jaw insert	Handle		Jaw insert	Handle
	FM725R	**FM725R**	**FM730R**	**FM721R**	**FM726R**	**FM731R**	**FM722R**	**FM727R**	**FM732R**
Jaw length	70 mm, 2 3/4"			100 mm, 4"			130 mm, 5 1/8"		
Total length	200 mm, 8"			230 mm, 9"			260 mm, 10 1/4"		



Jaw 0.9 mm	Instrument complete	Single parts		Instrument complete	Single parts		Instrument complete	Single parts	
		Jaw insert	Handle		Jaw insert	Handle		Jaw insert	Handle
	FM710R	**FM715R**	**FM730R**	**FM711R**	**FM716R**	**FM731R**	**FM712R**	**FM717R**	**FM732R**
Jaw length	70 mm, 2 3/4"			100 mm, 4"			130 mm, 5 1/8"		
Total length	200 mm, 8"			230 mm, 9"			260 mm, 10 1/4"		

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

XS Tube Shaft Aneurysm Clip Applying Forceps

- 360° rotation
- suitable for narrow approaches

230 mm, 9"

	Standard	Mini
For Titanium clips	FT495T	FT490T
For Phynox clips	FE495K	FE490K

250 mm, 9 3/4"

	Standard	Mini
For Titanium clips	FT496T	FT491T
For Phynox clips	FE496K	FE491K

" The cause for the significant superiority of the endovascular treatment of aneurysms compared with the surgical therapy in the ISAT study was the surgical morbidity and mortality of large sized standard approaches. In my opinion, surgical clipping will play an important role in the treatment of intracranial aneurysms in the future only, if it will be able to reduce approach related complications using limited craniotomies. The use of endoscope-assisted techniques and tube-shaft clip appliers offer increased safety in keyhole vascular neurosurgery, thus achieving the basic goal with minimally invasive and maximal effective aneurysm closure. "

Robert Reisch, Zurich, Switzerland

MIN Instruments

Slender design and angled bayonet shape
Improved visibility of the surgical site due to the slender design. Angled bayonet shape allows for less obstructions while working under the microscope.

Round golf ball handle design
Designed to provide an excellent grip and enable easy rotation of the instruments. This allows precise handling.

Various working lengths
One handle design aligned with precisely adapted working lengths. Always provides the right instrument at your fingertips!

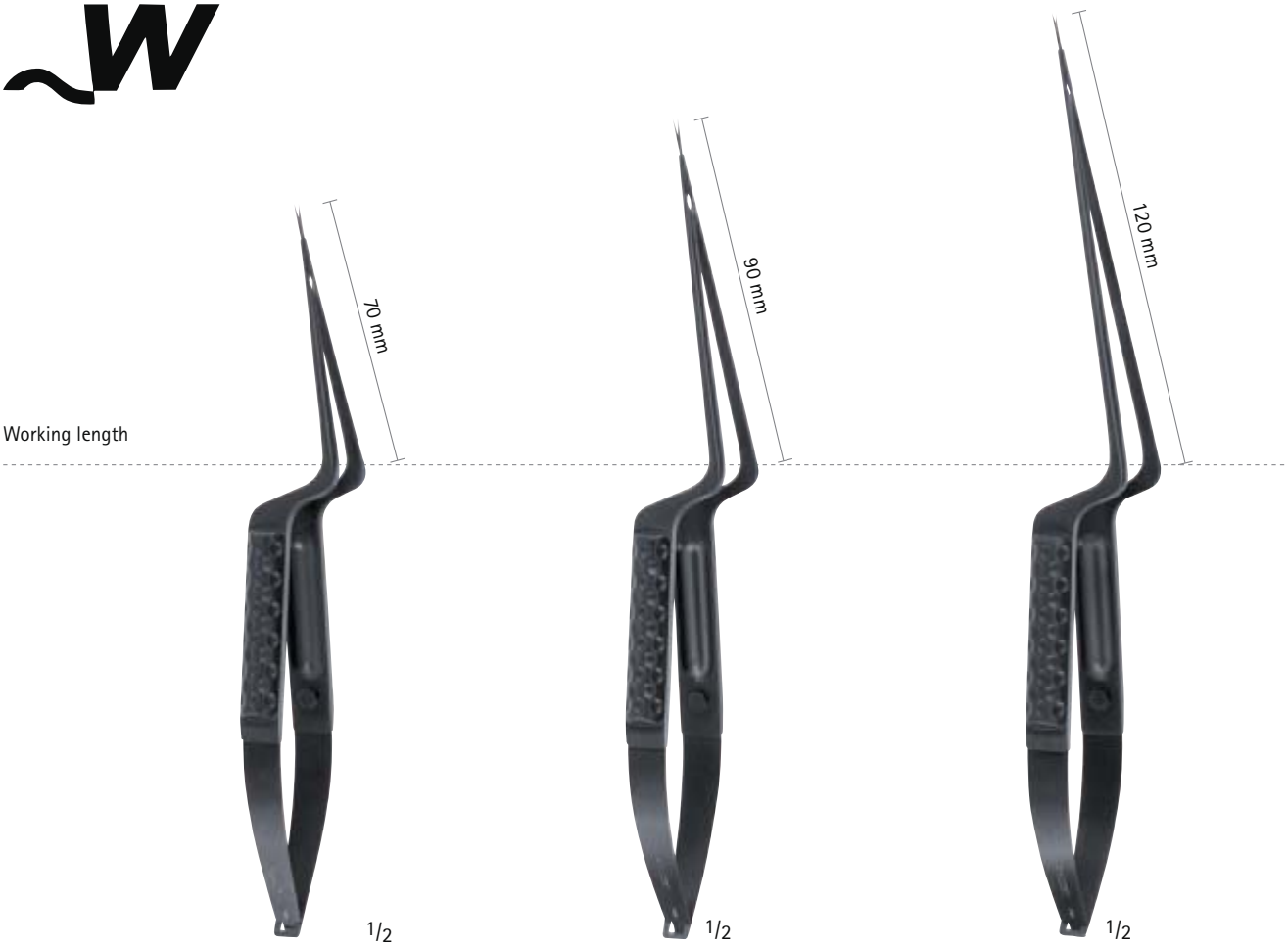
Noir®, No Irritating Reflections
Aesthetic surface coating effectively prevents disturbing light reflections.

Fine instrument tips
Especially important when working in very small operating corridors and close to sensitive structures.

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

MIN Micro Scissors

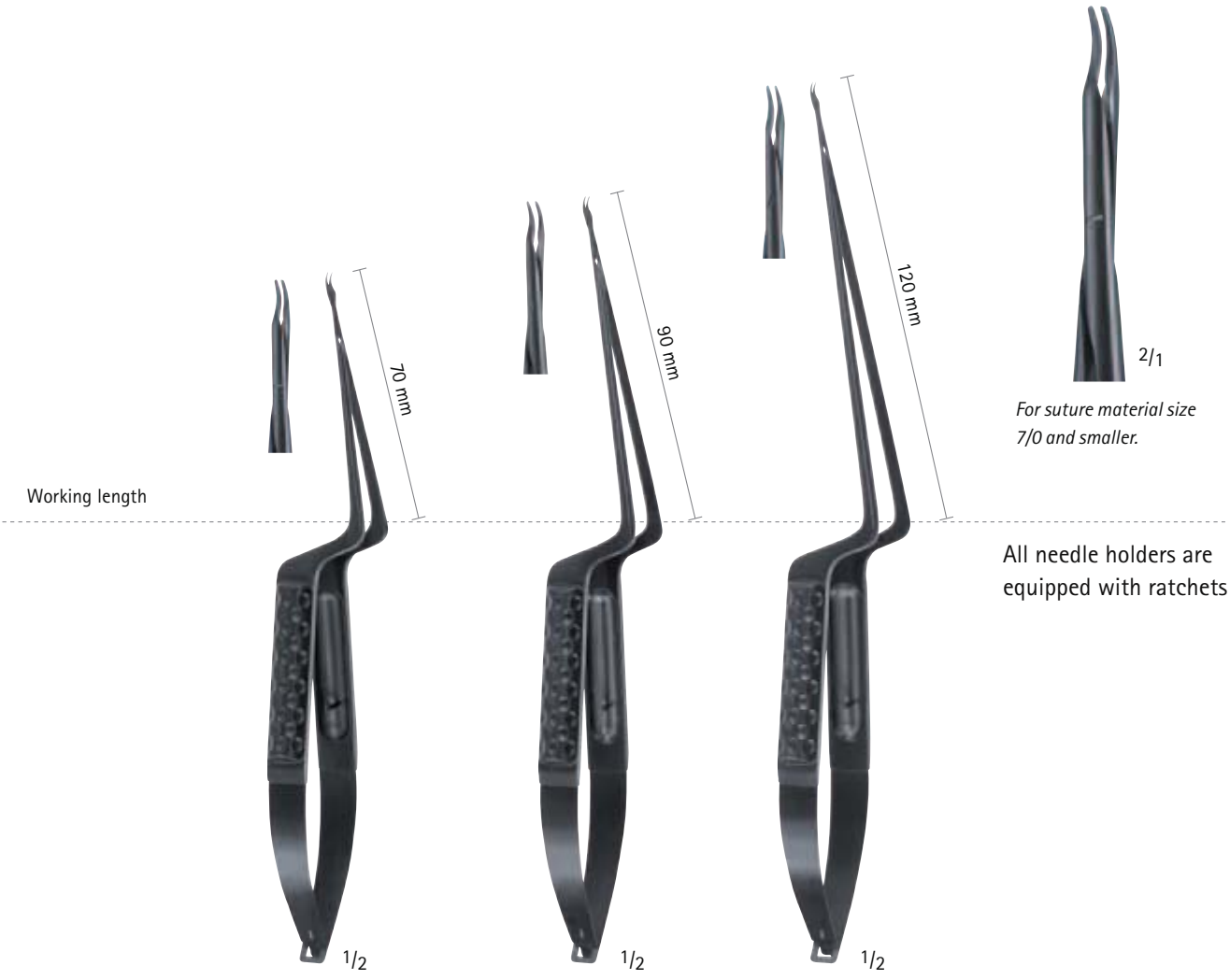
All scissors are equipped with wavecut



	straight	s.curved	curved	straight	s.curved	curved	straight	s.curved	curved
	FD701B	FD702B	FD703B	FD731B	FD732B	FD733B	FD771B	FD772B	FD773B
	FD704B	FD705B	FD706B	FD734B	FD735B	FD736B	FD774B	FD775B	FD776B
Working length	70 mm	70 mm	70 mm	90 mm	90 mm	90 mm	120 mm	120 mm	120 mm
Total length	200 mm	200 mm	200 mm	220 mm	220 mm	220 mm	250 mm	250 mm	250 mm

For more information to MIN Instruments, please ask your local Aesculap sales representative or see ourBrochure C92011

MIN Micro Needle Holder



For suture material size 7/0 and smaller.

All needle holders are equipped with ratchets

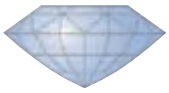
	FD717B	FD718B	FD719B
Working length	70 mm	90 mm	120 mm
Total length	200 mm	220 mm	250 mm

MINOP® TEAM

Transcranial Endoscope Assisted Microneurosurgery

MIN Tissue and Tumor Grasping Forceps

DIADUST



0.5 mm	FD711B	FD741B	FD761B
0.9 mm		FD743B	FD763B
Working length	70 mm	90 mm	120 mm
Total length	190 mm	210 mm	240 mm

1/2

	straight		45° curved		90° curved	
2.5 mm	**FD766B**	**FD786B**	**FD767B**	**FD787B**	**FD768B**	**FD788B**
3.5 mm	**FD769B**	**FD789B**	**-**	**-**	**-**	**-**
Working length	90 mm	120 mm	90 mm	120 mm	90 mm	120 mm
Total length	210 mm	240 mm	210 mm	240 mm	210 mm	240 mm

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

MIN Micro Instruments

1/2

	Noir® Modular Handles
FD811B	Handle, 8 mm, 100 mm
FD812B	Handle, 11 mm, 100 mm

1/1

	Noir® Probes / Hooks
FD797B	Probe ball-tip, 200 mm, 0°
FD798B	Probe ball-tip, 200 mm, 45°
FD799B	Probe ball-tip, 200 mm, 90°
FD808B	Hook, blunt, 200 mm, 45°
FD809B	Hook, blunt, 200 mm, 90°
FD805B	Hook, sharp, 200 mm, 90°

1/1

	Noir® Scoops
FD814B	Scoop, 200 mm, 2 mm, 10°
FD815B	Scoop, 200 mm, 2 mm, 45°
FD816B	Scoop with neck, 200 mm, 2 mm, 45°

1/1

	Noir® Dissectors
FD821B	Dissector, curved, 200 mm, 1 mm
FD822B	Dissector, curved, 200 mm, 2 mm
FD823B	Dissector, curved, 200 mm, 3 mm

1/1

	Noir® Currettes
FD824B	Curette, 200 mm, diam. 4 mm, 0°
FD825B	Curette, 200 mm, diam. 4 mm, 45°
FD826B	Curette, 200 mm, diam. 4 mm, 90°
FD827B	Curette with neck, 200 mm, diam. 4 mm, 45°
FD828B	Curette with neck, 200 mm, diam. 4 mm, 90°
FD835B	Curette, 200 mm, diam. 6,5 mm, 45°
FD836B	Curette, 200 mm, diam. 6,5 mm, 90°

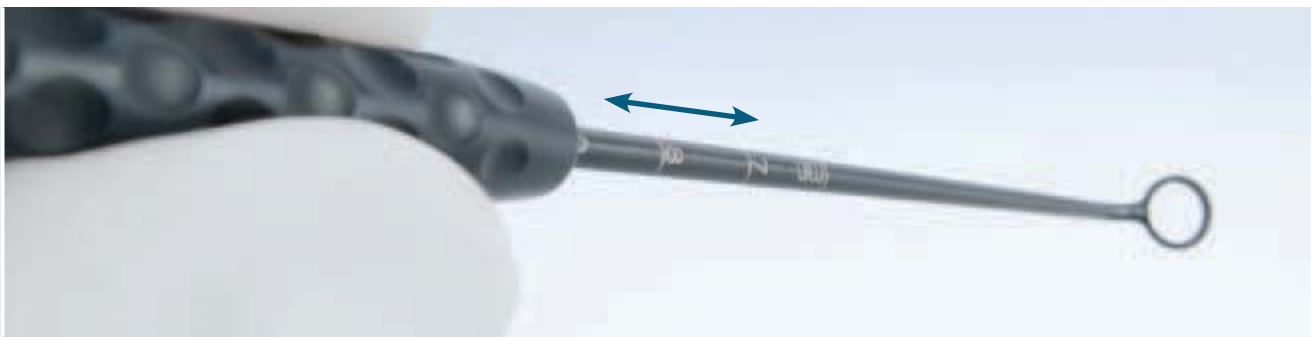
1/1

	Noir® Rasparatories
FD831B	Rasparatory, 200 mm, 1 mm
FD832B	Rasparatory, 200 mm, 2 mm
FD833B	Rasparatory, 200 mm, 3 mm

1/1

	Noir® Tumor knives
FD839B	Noir Tumor knife, 200 mm, diam. 1,5 mm, 45°
FD840B	Noir Tumor knife, 200 mm, diam. 3 mm, 45°
FD841B	Noir Tumor knife, 200 mm, diam. 4,5 mm, 45°

FD467R	Tray



MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

MIN Pivot-Point Bipolar Forceps

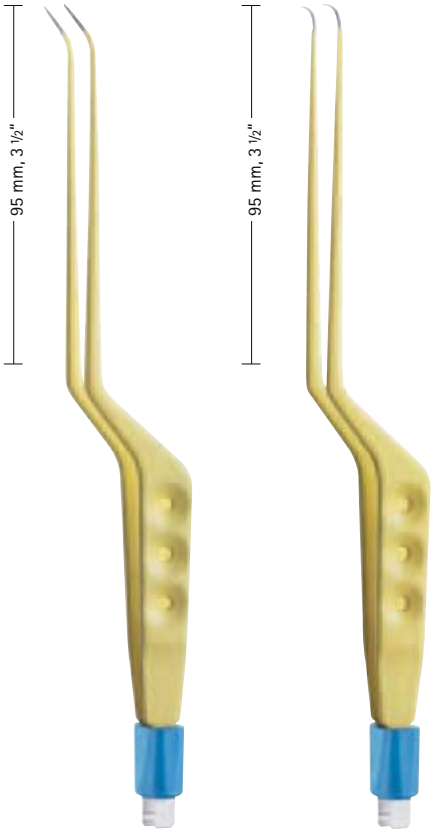
Aesculap tab		1/2	Aesculap tab		1/2
0.7 mm	GK822R	GK826R	0.7 mm	GK823R	GK827R
1.0 mm	GK824R	GK828R	1.0 mm	GK825R	GK829R
Working length	95 mm	135 mm	Working length	95 mm	135 mm
Total length	215 mm	255 mm	Total length	215 mm	255 mm

"The black „pivot" bipolar forceps are a great advance. The bipolar is as essential a tool as the neurosurgeon's own fingers. As we go more and more minimally invasive, the need for a very slim, responsive bipolar that will work under tight conditions is essential. The tips can be precisely separated even when the shafts are together in a tiny space. This is a must-have instrument, especially for transphenoidal and keyhole approaches."

Peter Nakaji, Phoenix, USA

Bipolar Yasargil Forceps

Bipolar Yasargil forceps:
extra-small bipolar forceps for keyhole approaches

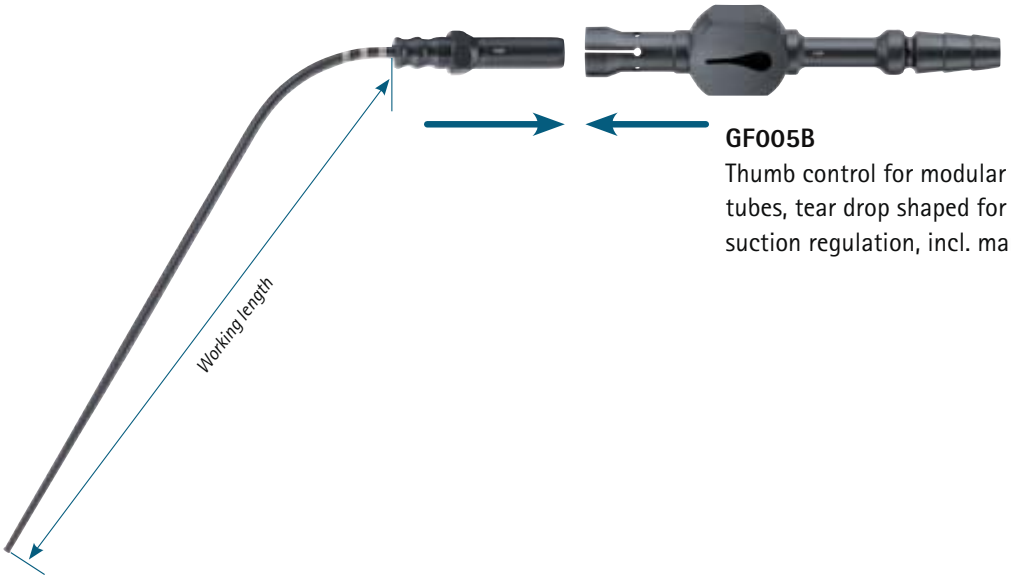


Aesculap tab		
0.4 mm		GK780R
0.7 mm	GK777R	
0.7 mm		GK781R
Working length	95 mm	135 mm
Total length	215 mm, 8 ½"	215 mm, 8 ½"

For more information please ask your local Aesculap sales representative or see our Brochure C30481

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

MIN Modular Suction Cannulas



GF005B
Thumb control for modular suction tubes, tear drop shaped for a very precise suction regulation, incl. mandrin.

	S	M	L	LL
Working length	80 mm	100 mm	120 mm	140 mm
4 Fr. straight	GF025B	GF035B	GF045B	GF055B
6 Fr. straight	GF026B	GF036B	GF046B	GF056B
6 Fr. straight, lateral holes	-	GF038B	GF048B	GF058B
6 Fr. curved left	-	GF030B	-	-
6 Fr. curved right	-	GF031B	-	-
8 Fr. straight	GF027B	GF037B	GF047B	GF057B
8 Fr. straight, lateral holes	-	GF039B	GF049B	GF059B
8 Fr. curved left	-	GF032B	-	-
8 Fr. curved left	-	GF033B	-	-

3 Fr. = 1 mm

Benefits...

- Atraumatic tips enable blunt dissection and retraction
- Lateral bore holes reduce suction pressure
- Damaged suction tubes can be replaced individually
- Tray weight is reduced and less space is required
- Greater freedom for even more flexible use

Atraumatic Micro Suction Instruments

Micro suction cannulas:
Atraumatic and rigid suction cannulas

Color code		Working length 80 mm	Working length 100 mm	Working length 120 mm	Working length 140 mm
yellow, 1.4 mm	**4 Fr**	**GF470R**	**GF473R**	**GF476R**	**GF479R**
blue, 2.0 mm	**6 Fr**	**GF471R**	**GF474R**	**GF477R**	**GF480R**
green, 2.7 mm	**8 Fr**	**GF472R**	**GF475R**	**GF478R**	**GF481R**

3 Fr = 1 mm

The ball tip at the end of the instrument allows gentle preparation and stable atraumatic retraction.

Colour coding for rapid identification of all three diameters. Black Rings as indicators to identify the instrument length.

In endoscope-assisted approaches to complex structures like fine vessels or aneurysms, Micro-Cannulas are reassuringly safe due to the delicate instrument tip. During preparations in conjunction with a bipolar forceps the Micro-Cannula offers a safe and stable retraction.

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

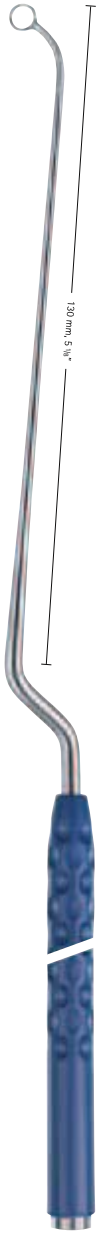
TREND Curettes and Dissectors

TREND instruments
Bayonet instruments for pituitary and skull base

FA041R–FA068R

Working length:
130 mm, 5 1/8"

Total length:
280 mm, 11"



NICOLA
FA041R
Curette
diam. 6.5 mm
45° vertical angled long neck

NICOLA
FA042R
Curette
diam. 6.5 mm
45° horizontal angled short neck

HARDY
FA043R
Enucleator
left cutting

HARDY
FA044R
Enucleator
right cutting

HARDY
FA045R
Curette
diam. 4.0 mm
90° left angled long neck

HARDY
FA046R
Curette
diam. 4.0 mm
90° left angled short neck

HARDY
FA047R
Curette
diam. 4.0 mm
90° right angled long neck

HARDY
FA060R
Curette
diam. 4.0 mm
90° right angled short neck

1/1

"Compared to a classical curette instrument, the TREND curettes provide highly ergonomic grasping with a well-balanced weight distribution and a perfect grip. This significantly supports the curette movements when the instrument is inserted vertically into smaller craniotomies, e.g. keyhole approaches. As the TREND instruments come in bayonet and straight design, I use them for both microscopic minimally invasive keyhole surgery and endoscope-assisted approaches."

Nikolai Hopf, Stuttgart, Germany

HARDY

FA061R

Curette
diam. 4.0 mm

45° left
horizontal angled
short neck

HARDY

FA062R

Curette
diam. 4.0 mm

45° right
horizontal angled
short neck

HARDY

FA063R

Curette
diam 6.0 mm

90° left angled
long neck

HARDY

FA064R

Curette
diam. 6.0 mm

90° left angled
short neck

HARDY

FA065R

Curette
diam. 6.0 mm

90° right angled
long neck

HARDY

FA066R

Curette
diam. 6.0 mm

90° right angled
short neck

REULEN-
LANDOLT

FA067R

Micro Hook
diam. 1.7 mm

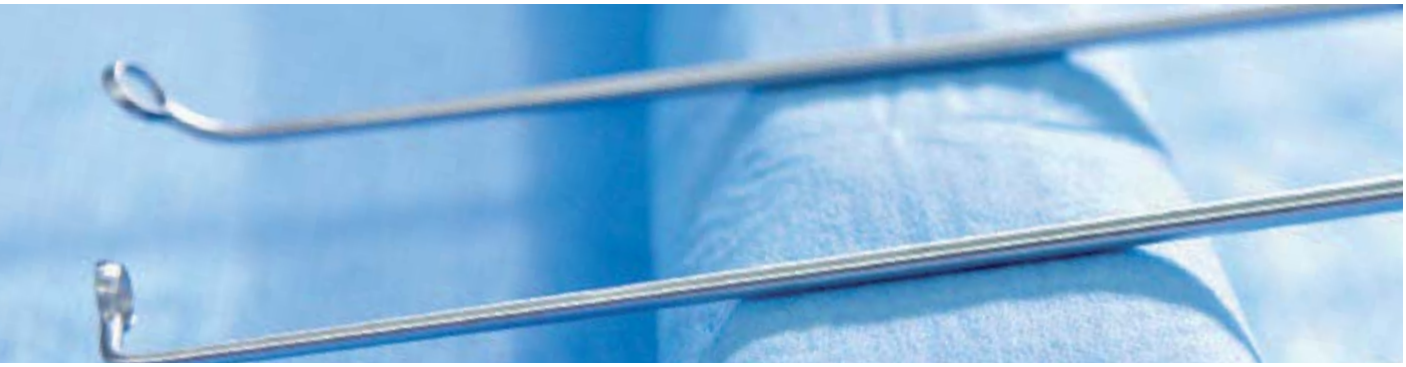
1/1

REULEN-
LANDOLT

FA068R

Dissector
diam. 2.0 mm

blunt



MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

Diamond Knives

Diamond knives
Blade made of natural diamond

Superior mechanical stability & elasticity of the blade

Sustained sharpness

Excellently clean, precise and force-free incisions

Protection mechanism for storage of the blade inside the handle

Color coded Titanium handles

FD113D

Round blade, gold-colored

7 facets
Length
205 mm, 8"

FD114D

Retro blade, copper-colored

60°
Length
205 mm, 8"

FD115D

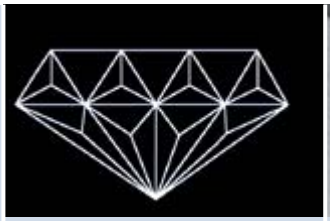
Wedge blade, black-colored

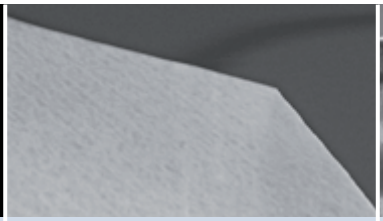
45°
Length
205 mm, 8"

FD116D

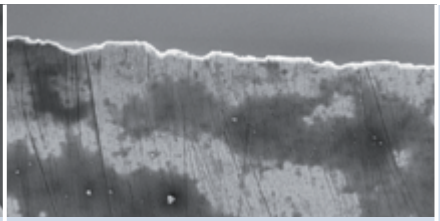
Lancet blade, bronze-colored

60°
Length
205 mm, 8"





SEM view of a diamond knife blade



SEM view of a common scalpel blade

NOIR® Brain Spatulas

NOIR® brain spatulas
NOIR® (NO Irritating Reflections)

Less light reflections under the endoscope light

Length 200 mm, 8"

FF456B	FF457B	FF458B	FF459B
S 8/4 mm	M 13/6 mm	L 17/9 mm	XL 21/11 mm

"Important goal in minimally invasive keyhole approaches is to avoid unnecessary brain exploration and retraction. With accurately tailored limited craniotomy and patients adequate positioning this ambition can be achieved in most cases. Nevertheless, if retraction cannot be avoided or brain surface must be protected, the use of a sensitive brain spatula is obligatory. With their conical shape, the NOIR® spatulas avoid extensive deep tissue retraction and provide excellent visualization of the field. In addition, the black coating avoids disturbing reflections using endoscope-assisted TEAM technique."

Robert Reisch, Zurich, Switzerland

MINOP® TEAM
Transcranial Endoscope Assisted Microneurosurgery

NOIR® KERRISON Bone Punches – NOIR® (NO Irritating Reflections)

Jaw position 130°, upward opening

Shaft length	Width	Footplate	Article No.	Ejector	Jaw opening
180 mm, 7"	1.0 mm	standard	**FK900B**	-	8 mm
	1.5 mm	standard	**FK911B**	-	9 mm
	2.0 mm	standard	**FK901B**	✔	9 mm
	2.5 mm	standard	**FK912B**	✔	10 mm
	3.0 mm	standard	**FK902B**	✔	10 mm
200 mm, 8"	1.5 mm	standard	**FK966B**	-	9 mm
	2.0 mm	standard	**FK913B**	✔	9 mm
	2.5 mm	standard	**FK967B**	✔	10 mm
	3.0 mm	standard	**FK914B**	✔	10 mm

At a glance, large numbered jaw identification

Ejector - for the easy removal of punched-out material.

Numerical code – for reliable identification when assembling the two punch components.

KERRISON Bayonet Bone Punches

Jaw position 130°, upward opening

Length	Width	Working length	Article No.	Jaw width
240 mm, 9 ½"	2.0 mm	170 mm	**FF496R**	10 mm
	3.0 mm	170 mm	**FF497R**	10 mm
	4.0 mm	170 mm	**FF498R**	10 mm
	5.0 mm	170 mm	**FF499R**	10 mm

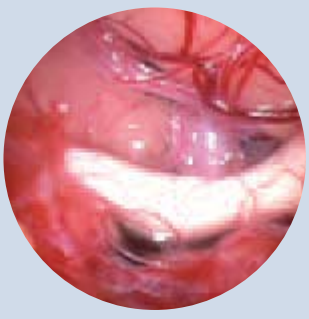
For more information about MINOP® TEAM please see our „Practical Atlas" C29802.

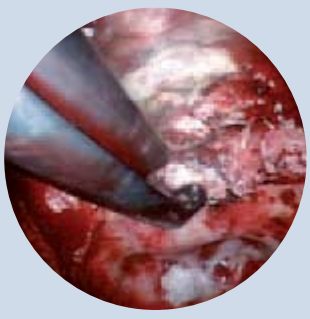

MINOP

Transnasal Neuroendoscopy

MINOP® TREND

TRansnasal ENDoscopic System





"When looking at recent publications on transsphenoidal surgery, it will be clear that **TR**anssphenoidal **END**oscopy is TREND-setting! However, this endoscopic technique is not in routine use everywhere and neurosurgeons are often reluctant to use it: One is often cautious about an endoscopic endonasal dissection because the permanent contamination of the endoscope with blood and nasal secretions hinders orientation. In addition, the para-endoscopic and biportal dissection is very unfamiliar requiring an unacceptably steep learning curve.

Nevertheless, endoscopic visualization and para-endoscopic dissection without using the surgical microscope offers several undisputable advantages. Advantages in visualization increases light intensity in the deep-seated surgical field and clearly displays patho-anatomical details. In addition, the extended viewing angle of endoscopes enables surgeons to observe hidden parts of the surgical field. The major benefit in surgical dissection is the unhindered approach to these clearly visible structures: Without using a nasal speculum, surgical manipulation is not impeded and the instruments are freely mobile. In addition, a pure endoscopic technique avoids the need for rhinoseptal submucosal dissection providing a direct and quicker approach to the sphenoid sinus. This method avoids the need for postoperative nasal packing, thus causing less pain and discomfort after surgery, providing better nasal airflow and a shorter hospital stay.

Pre-conditions of transsphenoidal endoscopy are the basic endoscopic experience and anatomical studies in the laboratory; however, it is indispensable to use a dedicated endoscopic system to further shorten the learning phase. The endoscope for transsphenoidal skull base surgery must provide a brilliant image quality with true colors, high contrast and highly realistic images. This simplifies the differentiation between healthy or pathological structures. It is essential to have an effective cleaning function in order to free the endoscope lens from fog, blood or mucosal secretions. The endoscope must offer a highly ergonomic design and sufficient working length for extended approaches. For selected cases, it is also necessary to connect the endoscope to a navigation system or a holding device."

André Grotenhuis , Robert Reisch

André Grotenhuis
Nijmegen, Netherlands

Robert Reisch
Zurich, Switzerland

MINOP® TREND

TRansnasal ENDoscopic System

MINOP® TREND

FH615

Handle with irrigation button
for FH610R and FH611R
Ergonomic grasping part

RT099R

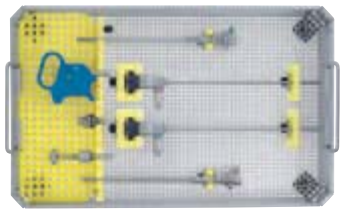
Adapter for Aesculap holding arm

FH605SU

Suction and irrigation tube,
sterile, 4.5 m, 2 puncture needles,
for MINOP® TREND handle FH615
Package of 10 tubes

FF357R

Storage tray with silicone padding and lid
for all MINOP® TREND components
(L/W/H 410 x 257 x 64 mm)



JK740

container body 3/4
with base perforation
Outside/Inside dimensions with lid:
L/W/H 470 x 285 x 112mm
L/W/H 421 x 258 x 75mm

JK789

container lid 3/4
blue

" The view through the operating microscope allows a purely coaxial visualisation in transsphenoidal surgery: laterally located structures are concealed behind the nasal speculum. Blind tumor removal involves a higher risk of iatrogenic damage to neurovascular structures and a possible increase in tumor remnants. With the use of the MINOP TREND endoscope for transnasal procedures, these laterally located parts of the field are directly visible and therefore surgically better approachable. In the past 15 years of endoscopic transnasal surgery, the use of endoscopes has proven to be not only indispensable but rather mandatory for a safe and effective transnasal surgery in de sellar and parasellar region. "

André Grotenhuis, Nijmegen, Netherlands

FH610R

Suction and irrigation trocar
for 0° endoscope PE487A
Diameter: 4.5 / 6.0 mm
Working length: 120 mm

FH611R

Suction and irrigation trocar
for 30° endoscope PE507A
Diameter: 4.5 / 6.0 mm
Working length: 120 mm

PE487A

Endoscope
0° viewing angle,
shaft diameter 4.0 mm

PE507A

Endoscope
30° viewing angle,
shaft diameter 4.0 mm

"No other system that I have used combines as many helpful features in a single ‚instrument'. The lens cleaning is rapid and conveniently controlled with a button, instead of a pedal. The suction is effective. The ability to rotate the scope easily and quickly within the handle improves angled viewing. Overall, these features make the MINOP TREND an asset for endonasal surgery."

Jeremy Greenlee, Iowa City, USA

MINOP® TREND

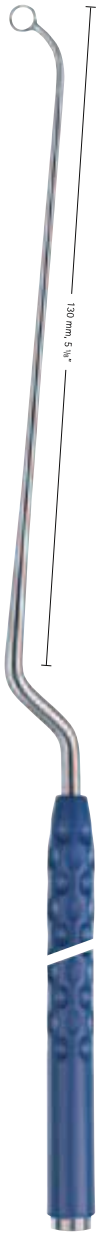
TRansnasal ENDoscopic System

TREND – Curettes and Dissectors

FA041R-FA068R

Working length:
130 mm, 5 1/8"

Total length:
280 mm, 11"



NICOLA

FA041R

Curette
diam. 6.5 mm

45° vertical angled long neck

NICOLA

FA042R

Curette
diam. 6.5 mm

45° horizontal angled short neck

HARDY

FA043R

Enucleator

left cutting

HARDY

FA044R

Enucleator

right cutting

HARDY

FA045R

Curette
diam. 4.0 mm

90° left angled long neck

HARDY

FA046R

Curette
diam. 4.0 mm

90° left angled short neck

HARDY

FA047R

Curette
diam. 4.0 mm

90° right angled long neck

HARDY

FA060R

Curette
diam. 4.0 mm

90° right angled short neck

1/1

" Difficulties in the learning curve of transsphenoidal endoscopy are often caused by handicaps of endoscope systems. The TREND endoscope clearly compensates this drawback with a human-engineered grasping part. The surgeon holds the TREND endoscope as a fine microinstrument allowing precise manipulation; the unique construction and perfect balance provide a less tiring tool for the neurosurgeon. The efficient suction/irrigation device is also incorporated within the grasping part where the valve is controlled simply with the index finger. Moreover the grasping part offers a quick connection of the endoscope to a holding arm and easy application with several navigation systems. "

Robert Reisch, Zurich, Switzerland

HARDY

FA061R

Curette
diam. 4.0 mm

45° left
horizontal angled
short neck

HARDY

FA062R

Curette
diam. 4.0 mm

45° right
horizontal angled
short neck

HARDY

FA063R

Curette
diam 6.0 mm

90° left angled
long neck

HARDY

FA064R

Curette
diam. 6.0 mm

90° left angled
short neck

HARDY

FA065R

Curette
diam. 6.0 mm

90° right angled
long neck

HARDY

FA066R

Curette
diam. 6.0 mm

90° right angled
short neck

REULEN-
LANDOLT

FA067R

Micro Hook
diam. 1.7 mm

1/1

REULEN-
LANDOLT

FA068R

Dissector
diam. 2.0 mm

blunt

MINOP® TREND

TRansnasal ENDoscopic System

TREND – Curettes and Dissectors

FA030R-FA040R

Working length:
140 mm, 5 ½"

Total length:
265 mm, 10 ½"

Straight design with ergonomic grasping part and semi-sharp tips

1/1

NICOLA
FA030R
Curette
diam. 6.5 mm
45° vertical
angled, long neck

NICOLA
FA031R
Curette
diam. 6.5 mm
45° horizontal
angled, short neck

HARDY
FA032R
Enucleator
left cutting

HARDY
FA033R
Enucleator
right cutting

HARDY
FA034R
Curette
diam. 4.0 mm
90° angled
long neck

HARDY
FA035R
Curette
diam. 4.0 mm
90° angled
short neck

1/1

HARDY
FA036R
Curette
diam. 4.0 mm
45° angled
short neck

HARDY
FA037R
Curette
diam. 6.0 mm
90° angled
long neck

HARDY
FA038R
Curette
diam. 6.0 mm
90° angled
short neck

LANDOLT-
REULEN
FA039R
Micro Hook
diam. 1.7 mm

LANDOLT-
REULEN
FA040R
Dissector
diam. 2.0 mm
blunt

Deflectable TREND – Instruments

FD137R

Deflectable TREND curette

Diameter: 6 mm
Working length: 140 mm, 5 ½"
Total length: 265 mm, 10 ½"

FD138R

Deflectable TREND knife

Working length: 140 mm, 5 ½"
Total length: 265 mm, 10 ½"

FD139R

Deflectable TREND dissector

Diameter: 2.1 mm
Working length: 140 mm, 5 ½"
Total length: 265 mm, 10 ½"

MINOP® TREND

TRansnasal ENDoscopic System

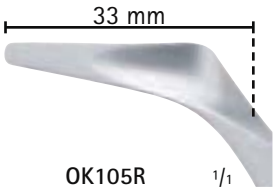
Nasal Specula

1/2

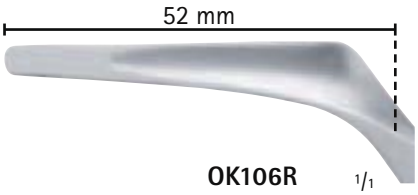
COTTLE

OK105R–OK108R
OK090R

with aseptic joint, set-screw,
with extra thin blades
140 mm, 5 ½"

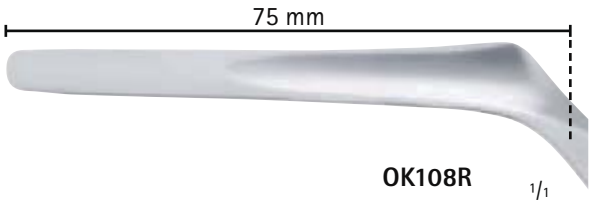


OK105R 1/1

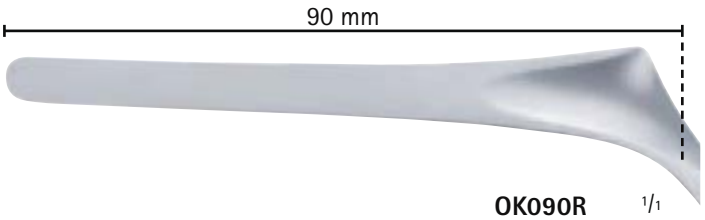


OK106R 1/1

OK107R 1/1



OK108R 1/1



OK090R 1/1

1/2

KILLIAN

OK081R	Fig. 1	**OK091R**	Fig. 1
OK082R	Fig. 2	**OK092R**	Fig. 2
OK083R	Fig. 3	**OK093R**	Fig. 3
OK084R	Fig. 4	**OK094R**	Fig. 4
with aseptic joint 145 mm, 5 3/4"		with screw joint 140 mm, 5 1/2"	

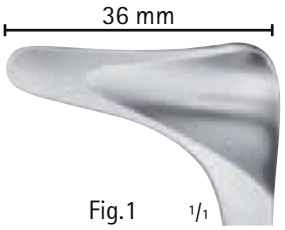


Fig.1 1/1

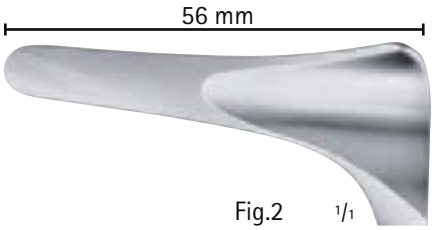


Fig.2 1/1

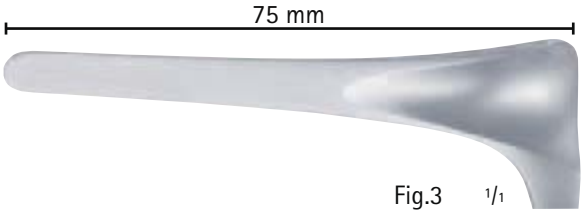


Fig.3 1/1

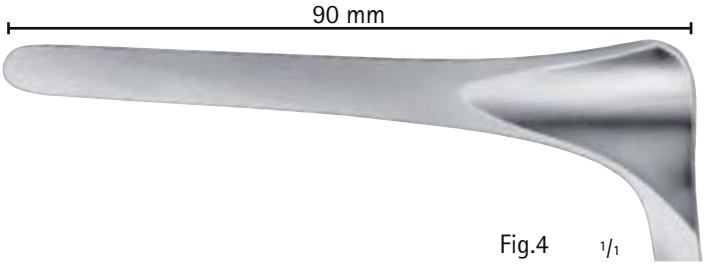


Fig.4 1/1

MINOP® TREND

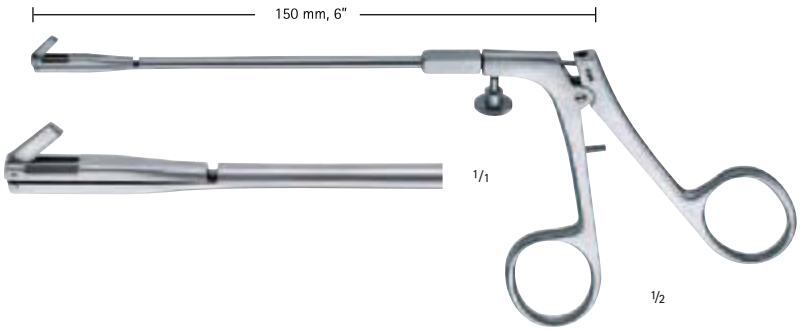
TRansnasal ENDoscopic System

Pituitary Instruments / Sinus Punches

FA076R

Backwards cutting antrum punch,
Rotating sheath 360°,
Working length: 120 mm, 4 ¾"

For removal of posterior nasal septum

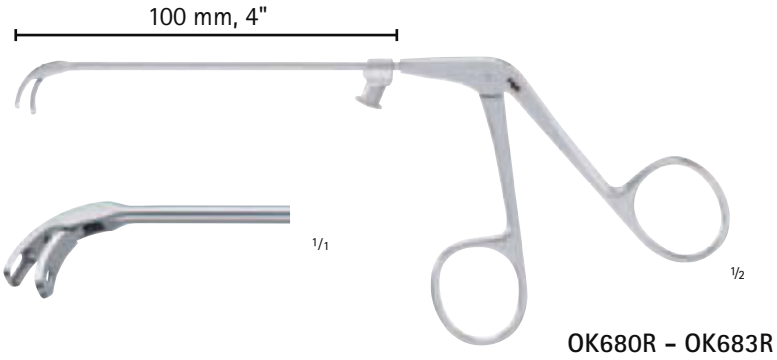


OK602R-OK609R

Sinus Punches

		2/1 6 x 1.5 mm	2/1 8 x 3 mm	2/1 11.5 x 3.5 mm
	straight	**OK608R** forward through cutting	MACKAY-GRUNEWALD **OK602R** forward through cutting	MACKAY-GRUNEWALD **OK603R** forward through cutting
	45° upwards angled	**OK609R** forward through cutting	MACKAY-GRUNEWALD **OK606R** forward through cutting	MACKAY-GRUNEWALD **OK607R** forward through cutting

Antrum Grasping Forceps



OK680R – OK683R

OK680R

jaw opening backwards,
curved downwards

OK681R

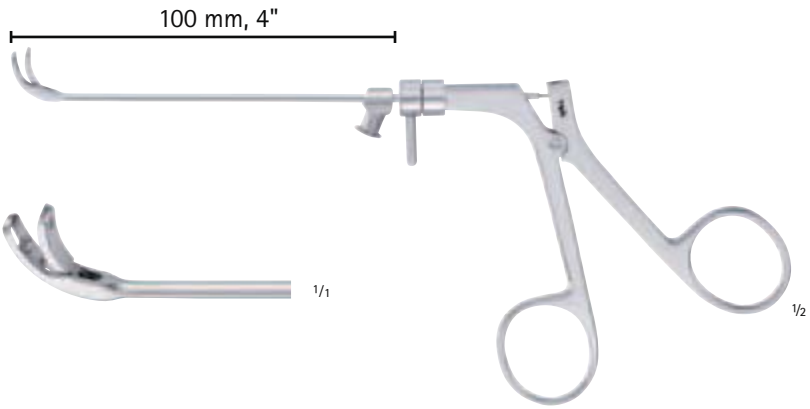
jaw opening backwards,
curved upwards

OK682R

jaw opening backwards,
curved to right

OK683R

jaw opening backwards,
curved to left



OK684R

jaw opening backwards,
jaw 360° rotatable

MINOP® TREND

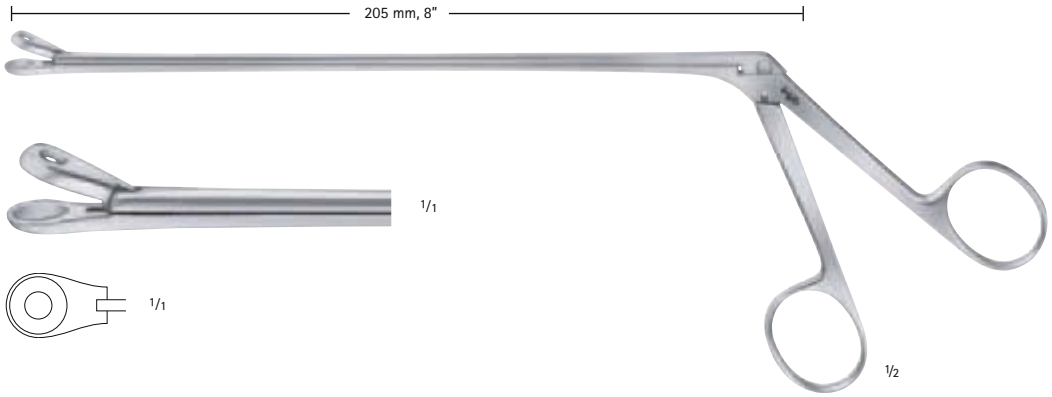
TRansnasal ENDoscopic System

Nasal Forceps

LANDOLT

FF345R

Tumor grasping forceps, blunt
Diam. 9.0 mm



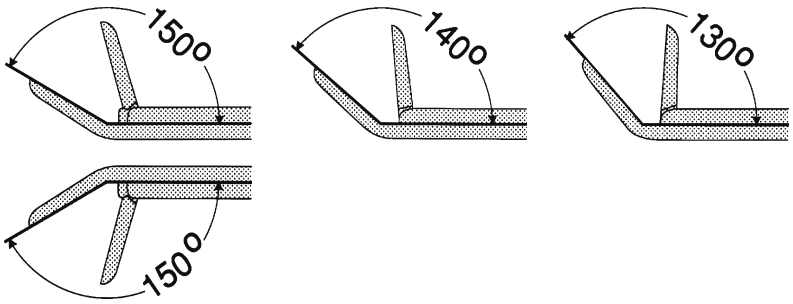
TAKAHASHI

OK525R

Rongeur, straight

Nasal Forceps

Angled positions for rongeurs



BLAKESLEY-WILDE

OK505R–OK509R

Ethmoidal forceps, straight

OK505R	3.0 mm	1/1
OK506R	3.6 mm	1/1
OK507R	4.2 mm	1/1
OK508R	4.8 mm	1/1
OK509R	5.6 mm	1/1

BLAKESLEY-WILDE

OK520R–OK522R **140°**

Ethmoidal forceps, upwards curved

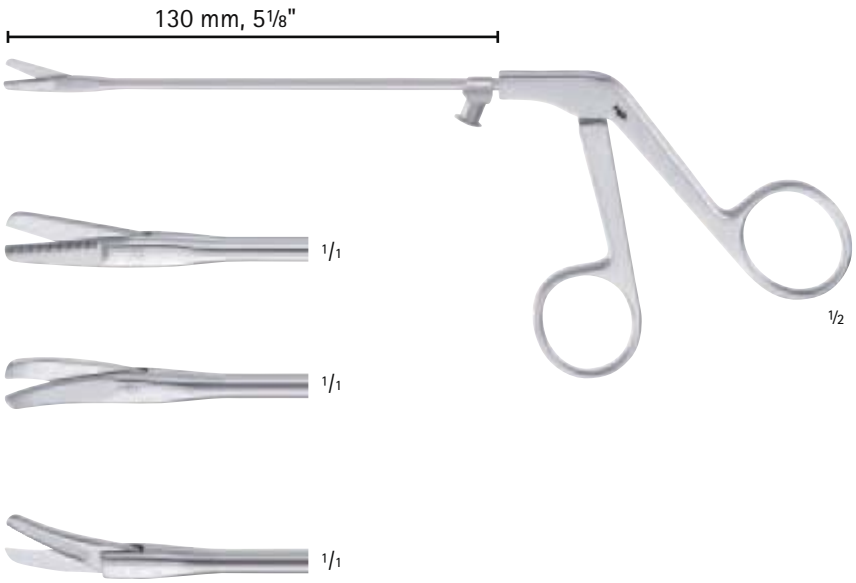
OK520R	3.6 mm	1/1
OK521R	4.2 mm	1/1
OK522R	4.8 mm	1/1

For more information about instruments for **F**unctional **E**ndoscopic **S**inus **S**urgery (FESS), please ask your local Aesculap sales representative or see brochure no. C87511.

MINOP® TREND

TRansnasal ENDoscopic System

Nasal Scissors



OK560R – OK562R

Nasal scissors

OK560R

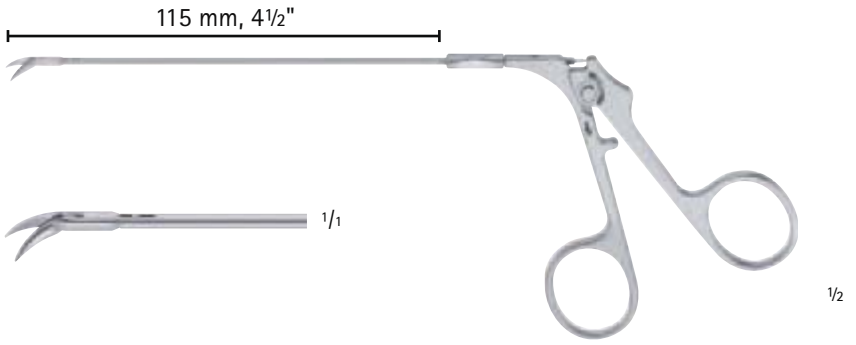
straight, blades serrated

OK561R

left curved, blades serrated

OK562R

right curved, blades serrated

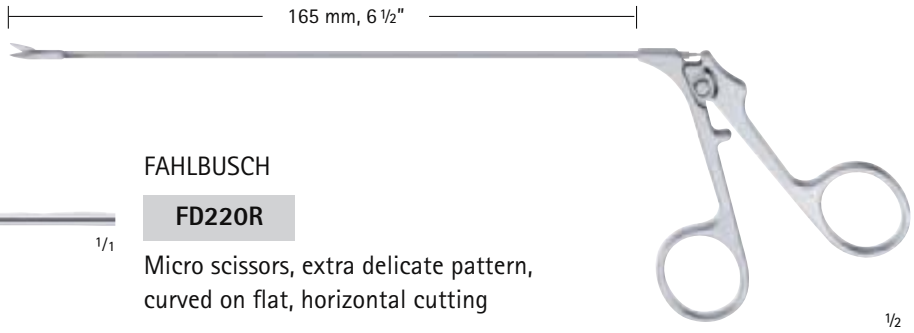


CASPAR

FD228R

Micro scissors, curved
rotatable 360°

Pituitary Scissors



FAHLBUSCH

FD220R

Micro scissors, extra delicate pattern, curved on flat, horizontal cutting

NICOLA

FD222R

Forceps, scoop-shaped, diam. 2.5 mm

YASARGIL-NICOLA

FD224R

Grasping forceps with long conical jaw

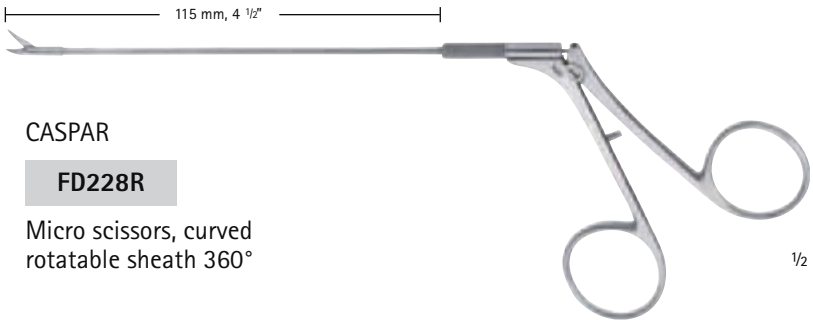
NICOLA

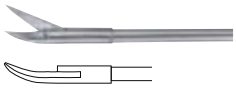
FD226R

Micro scissors, straight, diam. 2.5 mm

FD220R–FD226R

extra delicate tubular shaft scissors and grasping instruments for pituitary & skull base surgery





CASPAR

FD228R

Micro scissors, curved rotatable sheath 360°

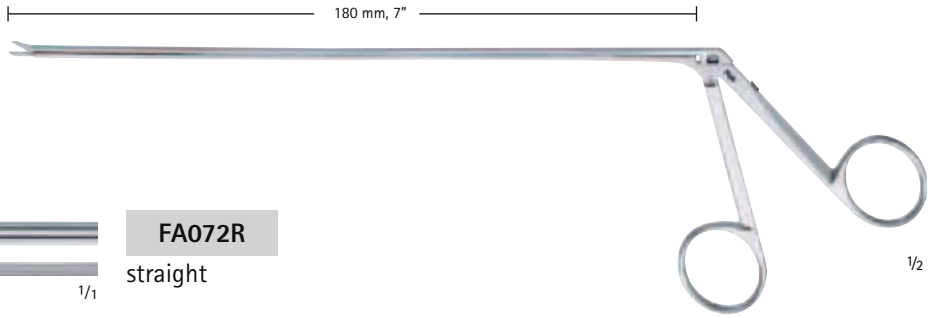
" Essential part of the endoscopic transnasal surgery is the nasal dissection, using special pituitary instruments. Goal is the maximum exploration of the target area, but also minimally invasive nasal traumatisation, thus avoiding mucosal lacerations and unnecessary bony fractures. This influences patients postoperative quality of life enormously. "

André Grotenhuis, Nijmegen, Netherlands

MINOP® TREND

TRansnasal ENDoscopic System

Pituitary Scissors



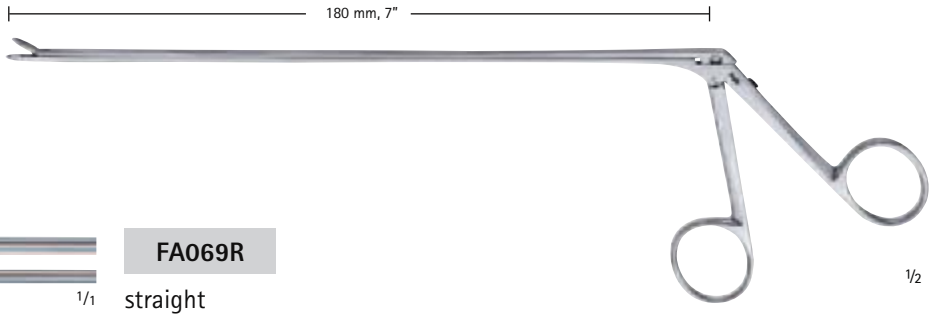
FA072R-FA075R
Micro Scissors

FA072R
straight

FA073R
left curved

FA074R
right curved

FA075R
angular



1/2

1/1

FA069R

straight

1/1

FA070R

right curved

1/1

FA071R

left curved

FA069R–FA071R

Micro Forceps

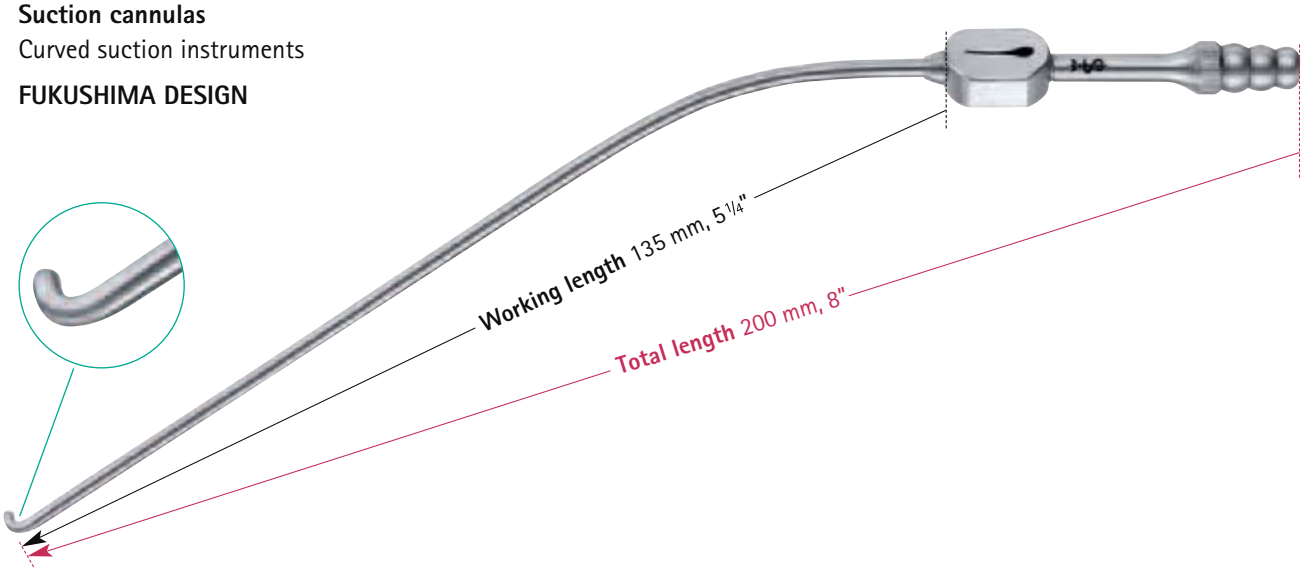
MINOP® TREND

TRansnasal ENDoscopic System

Curved Micro Suction Instruments

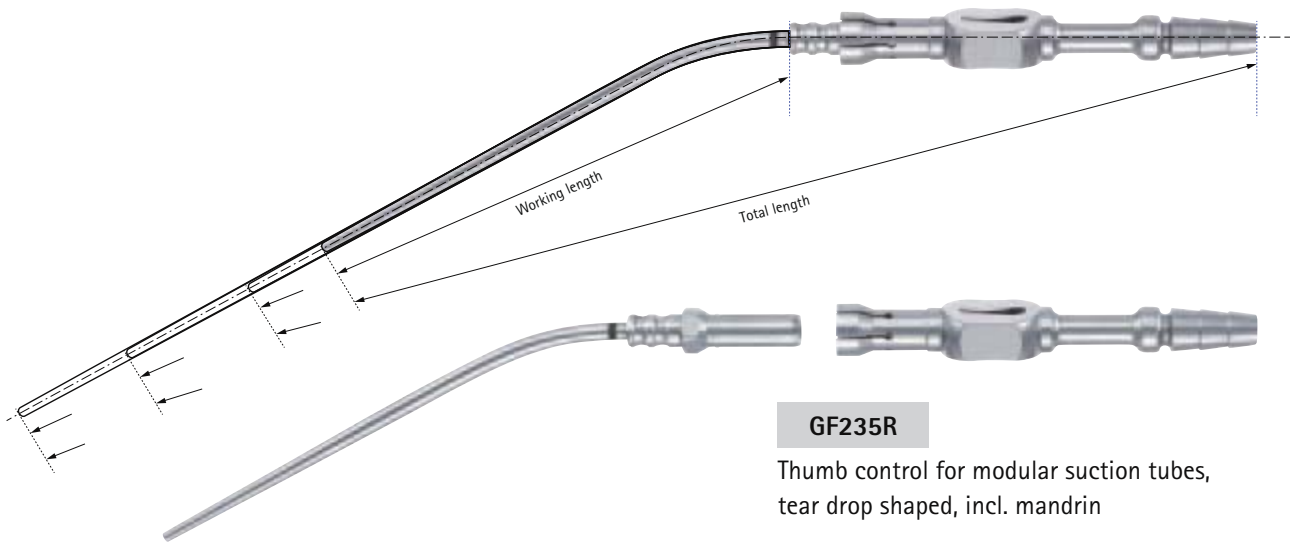
Suction cannulas
Curved suction instruments

FUKUSHIMA DESIGN



Working length	135 mm, 5 1/4"	135 mm, 5 1/4"
Total length	200 mm, 8"	200 mm, 8"
Outer diameter	2.7 mm	2.7 mm
Inner diameter	2.0 mm	2.0 mm
Angled tip	Right angled tip	Left angled tip
	GF431R	**GF432R**

Micro Suction Instruments



GF235R

Thumb control for modular suction tubes, tear drop shaped, incl. mandrin

		S	M	L	LL
Working length		100 mm	115 mm	140 mm	165 mm
Total length		185 mm	200 mm	225 mm	250 mm
Outer diameter (3Fr = 1 mm)	3 Fr.	GF240R	GF250R	GF260R	GF270R
	4 Fr.	GF241R	GF251R	GF261R	GF271R
	5 Fr.	GF242R	GF252R	GF262R	GF272R
	6 Fr.	GF243R	GF253R	GF263R	GF273R
	7 Fr.	GF244R	GF254R	GF264R	GF274R
	8 Fr.	GF245R	GF255R	GF265R	GF275R
	9 Fr.	GF246R	GF256R	GF266R	GF276R
	10 Fr.	GF247R	GF257R	GF267R	GF277R
	12 Fr.	GF248R	GF258R	GF268R	GF278R

MINOP® TREND

TRansnasal ENDoscopic System

Nasal Forceps

GK801R

Bipolar coagulation forceps
with slender jaws and higher spring tension

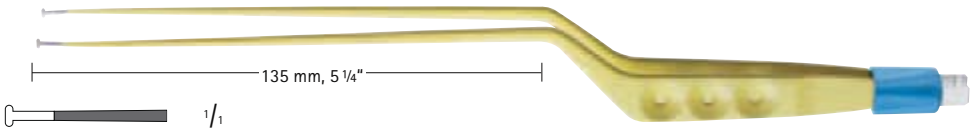
Total length 255 mm, 10"
Working length 135 mm, 5 ¼"

Special pin between the branches opens the tip of the forceps by additional compression of the handle – allowing coagulation in narrow and deep seated surgical field.

GK800R

T-coagulation forceps
with blunt, t-shaped tips

Total length 255 mm, 10"
Working length 135 mm, 5 ¼"



LANDOLT

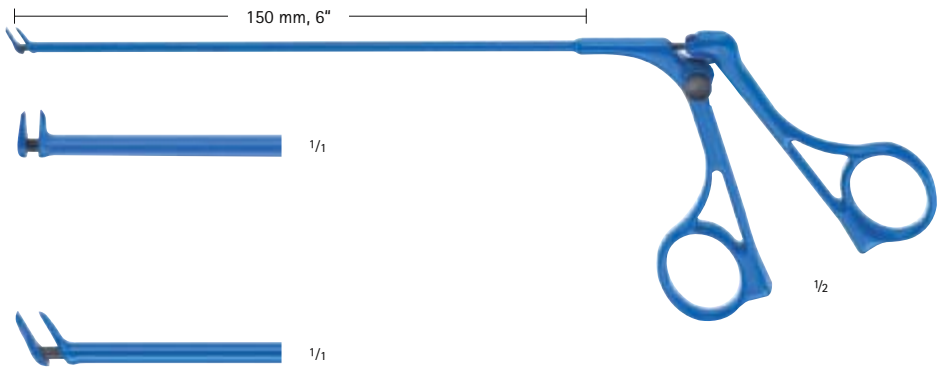
GK560R

Coagulation forceps for hypophysectomy, 90°

LANDOLT

GK580R

Coagulation forceps for hypophysectomy, 120°



OF601R

Sickle knife, sharp tip
190 mm, 7 1/2"

BN175R

Frontal sinus ostium seeker,
double ended, curved
220 mm, 8 3/4"

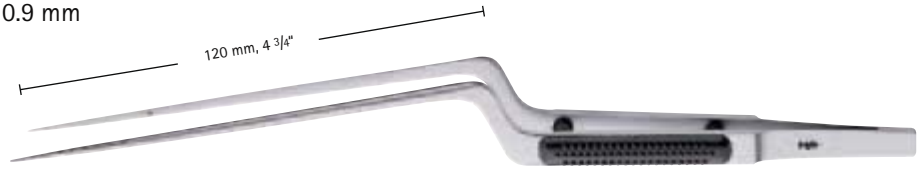
FM158R

Bayonet grasping forceps
straight tip
Total length 240 mm, 9 1/2"
Working length 120 mm, 4 3/4 "

FM156R Jaw 0.5 mm

FM157R Jaw 0.9 mm

Bayonet micro grasping
forceps straight tip
Working length 120 mm, 4 3/4"
Total length 240 mm, 9 5/8"



MINOP® TREND

TRansnasal ENDoscopic System

KERRISON Bone Punches

Jaw position 130°, upward opening

Shaft length	Width	Footplate	Detachable	Ejector	NOIR®, detachable	Ejector	Jaw opening
180 mm, 7"	1.0 mm	thin	**FK906R**	–	**FK906B**	–	8 mm
	1.5 mm	thin	**FK923R**	–	**FK923B**	–	9 mm
	2.0 mm	thin	**FK907R**	✔	**FK907B**	✔	9 mm
	2.5 mm	thin	**FK924R**	✔	**FK924B**	✔	10 mm
	3.0 mm	thin	**FK908R**	✔	**FK908B**	✔	10 mm
	4.0 mm	thin	**FK909R**	✔	**FK909B**	✔	12 mm

Jaw position 130°, downward opening

Shaft length	Width	Footplate	Detachable	Ejector	Jaw opening
180 mm, 7"	1.0 mm	thin	**FK936R**	–	8 mm
	2.0 mm	thin	**FK937R**	✔	9 mm
	3.0 mm	thin	**FK938R**	✔	10 mm

KERRISON Bayonet Bone Punches

Jaw position 130°, upward opening

Length	Width	Working length	Article No.	Jaw width
240 mm, 7"	2.0 mm	170 mm	**FF496R**	10 mm
	3.0 mm	170 mm	**FF497R**	10 mm
	4.0 mm	170 mm	**FF498R**	10 mm
	5.0 mm	170 mm	**FF499R**	10 mm

For more information about MINOP® TREND please see our „Practical Atlas" C26402.

Aesculap Neurosurgery

Holding Devices

M-TRAC – Mechanical Holding Arm

FF168R

M-TRAC – Flexible holding device with mechanical fixation

- Assembly: flexible holding arm with integrated fixation bar
- Total length: 107 cm
- Length of fixation bar: 46 cm
- Diameter of fixation bar: 20 mm
- Total weight: 0,7 kg
- Holding force: 4 kg
- Easy mechanical fixation by clamping handle
- Small, flexible joints for fine positioning
- Autoclavable 134°C, 5 minutes
- Full range of accessories/adapters for connecting Aesculap endoscopes, trocars and instruments
- Holding Arm fits into regular Standard 1/1 Container

FF280R

Flexible fixation element with ball joint suitable for RT040R and FF168R

RT090R

Flexible fixation element with sprocket suitable for RT040R and FF168R

FF151R

Rigid fixation element suitable for RT040R and FF168R

UNITRAC® – Pneumatic Holding Arm

RT040R

UNITRAC®

- Single handed use
- Fast sterile set-up in the OR
- Universal retraction and holding system with special accessories for neuroendoscopy
- Simple to assemble onto the OR table railing
- Integrated safety systems prevent collapse of holding arm if OR compressed air supply is interrupted
- Direct connection to OR compressed air supply
- Diameter of fixation bar: 20 mm
- To be used with JG901

JG901

Sterile drape for coverage of the Unitrac® arms, single-use product, package of 50 pcs.

RT020R

Quick connect adapter for use with sterile drape JG901 allows the change of instruments after draping with JG901

RT043R

CO_2 cartrigde adapter
For use of Unitrac independent from compressed air sources

RT044SU

Unitrac CO_2 cartridge pack of 10 pcs
Single use product

"Bimanual, two-handed dissection forms the foundation of microneurosurgery and is also an essential precondition for transsphenoidal endoneurosurgery. For this reason, the TREND endoscope can be easily fixed in a special holding arm: the endoscope placed through nostril does not disturb surgical dissection, especially by using biportal – binostril approaches. The pneumatic and mechanical devices can be also used effectively in transcranial endoscope-controlled and intraventricular pure endoscopic neurosurgery."

Nikolai Hopf, Stuttgart, Germany

Aesculap Neurosurgery

Holding Devices

Adapters for UNITRAC® and M-TRAC

RT046P

Universal holder
for endoscopes and trocars with diam. 3.0-7.5 mm, consisting of: RT081R and RT055P

RT081R

Adapter
for universal insert RT055P

RT055P

Universal insert (Spare Part)
for endoscopes and trocars with diam. 3.0-7.5 mm

RT099R

Adapter
for fixation of MINOP® TREND handle, FH615

RT079R

Adapter
for fixation of angled endoscopes PE486A, PE506A, PE526A

RT068R

Adapter
for fixation of MINOP® InVent trocar, FH620R

RT079205

Silicone bit
for RT079R

	MINOP® FF397R FF398R FF399R	Paediscope PA010A	MINOP® InVent FH620R	Angled scopes PE486A PE506A PE526A	MINOP® TREND FH615	MINOP® TR FH601R
RT046P	●	●		●		●
RT099R					●	
RT079R				●		
RT068R			●			

Aesculap Neurosurgery

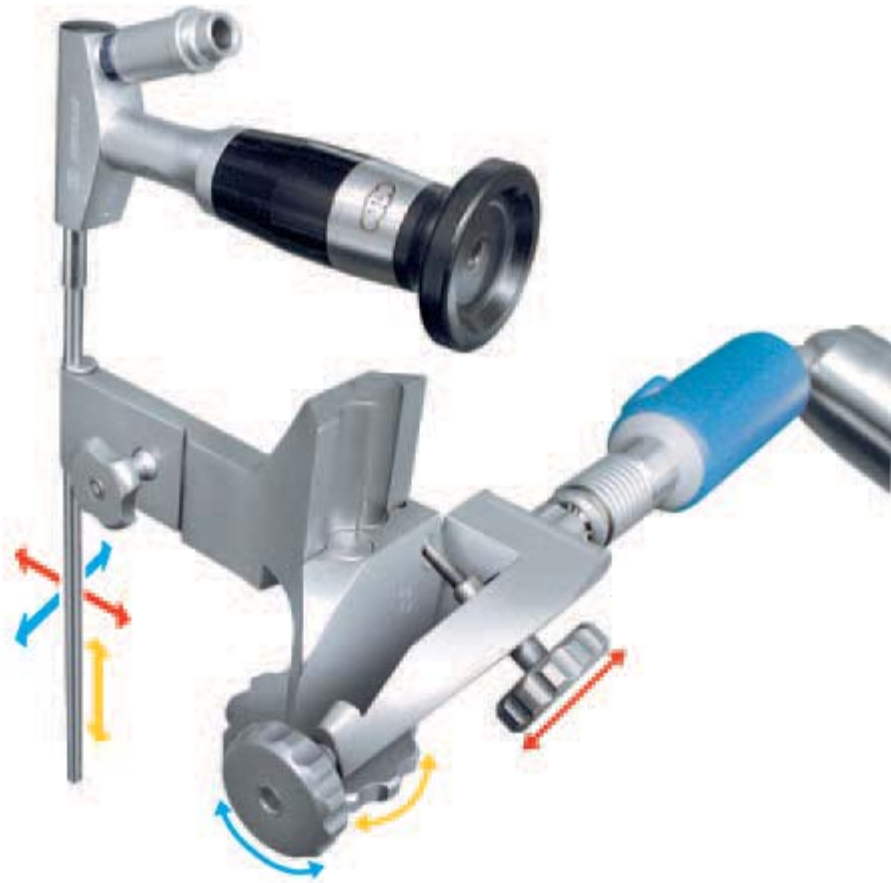
Holding Devices

Neuropilot® – Fine-positioning for UNITRAC® and M-TRAC

NeuroPilot® for IntraVentricular and Endoscope-Assisted indications with all Aesculap neuroendoscopes. NeuroPilot® is a new, unique steering device for neuroendoscopes. After positioning the neuroendoscope in situ, finest corrections or adjustments are necessary, to receive the optimal endoscopic image. With traditional holding devices, only rough positioning is possible; a precise and fine steering of the neuroendoscope can be compromised.

NeuroPilot® offers a number of unique advantages:

- Proper fixation of the neuroendoscope in the NeuroPilot® and the holding device
- Precise steering of the neuroendoscope by three screws in the three-dimensional space
- Accurate manoeuvring of the neuroendoscope by defined movements in the sub-millimeter area

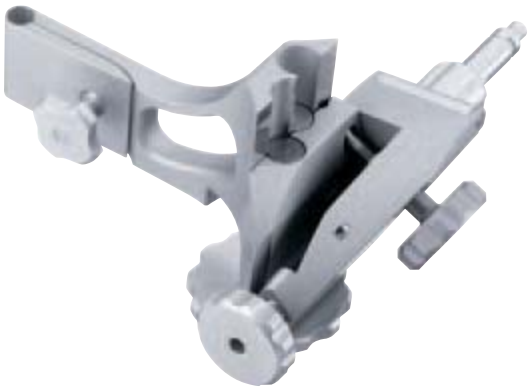


"In pure intraventricular neuroendoscopy, a micro-steering device can be extremely useful. If the precision and adjustment of a holding arm is not enough, the Neuropilot closes this gap. Additionally, in cases where both hands are needed for instrumentation the Neuropilot is of great help. The Aesculap Neuropilot is the only system on the market providing finest correction of your endoscope in a three-dimensional space inside the ventricular compartments."

Peter Nakaji, Phoenix, USA

RT060R

NeuroPilot®
for intraventricular and
endoscope-assisted indications



RT061R

Insert for angled endoscopes
PE486A–PE526A with diam. 4.0 mm

RT063R

Insert for MINOP® trocar FF397R
with diam. 3.2 mm

RT064R

Insert for MINOP® trocar FF398R
with diam. 4.6 mm

RT065R

Insert for MINOP® trocar FF399R
with diam. 6.0 mm

RT066R

Insert for PaediScope® PF010A
with diam. 3.0 mm

Aesculap Neurosurgery

Holding Devices

Neuropilot® – Fine-positioning for UNITRAC® and M-TRAC

	MINOP® FF397R	MINOP® FF398R	MINOP® FF399R	Paediscope PA010A	Angled scopes PE486A PE506A PE526A	MINOP® TR FH601R
RT060R	●	●	●	●	●	●
RT061R					●	
RT063P	●					
RT064P						●
RT065P		●				
RT066P			●	●		

Operating Manuals

Aesculap® MINOP®
Intraventricular Neuroendoscopy: A Practical Atlas
Mark M. Souweidane, M.D., F.A.C.S, F.A.A.P.
C29202

Aesculap® MINOP® TEAM
Transcranial **E**ndoscope-**A**ssisted **M**icroneurosurgery: A Practical Atlas
Robert Reisch, M.D., Ph.D.
C29802

Aesculap® MINOP® TREND
TRansnasal Neuro**END**oscopy: A Practical Atlas
Robert Reisch, M.D., Ph.D.
C26402

Aesculap Neurosurgery

Visual Equipment Examples for Neuroendoscopy

Full HD Camera, Xenon Light Source, Documentation System and Touch Screen

PV463

3-Chip Full HD camera head with fixed focus coupler

PV462

3-Chip Full HD camera head with zoomcoupler

PV884

Camera holder

PV460

Full HD Camera control unit

PV840

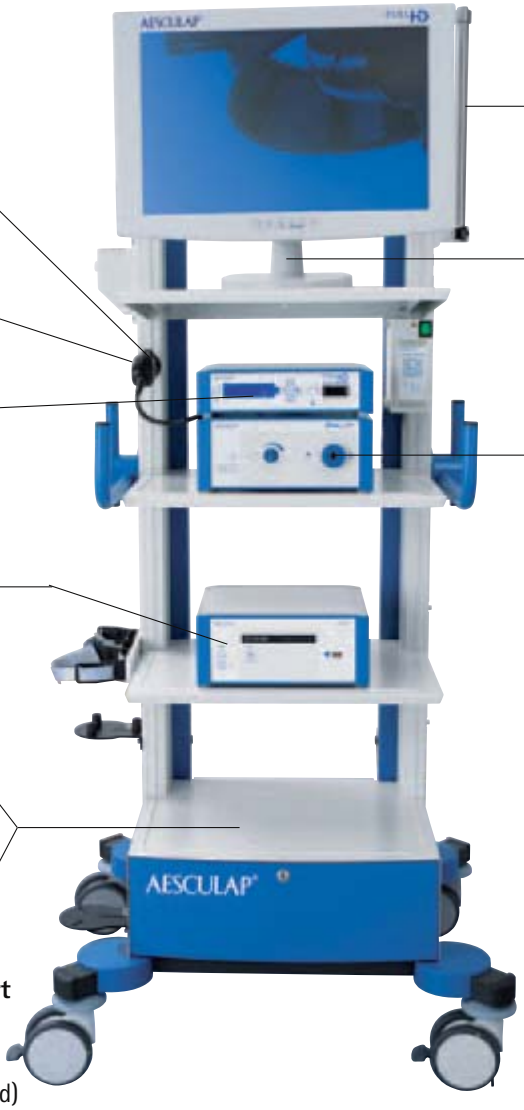
EDDY DVD
Digital Documentation System

PV880

"Metro Junior" Endoscopy cart 835 x 1580 x 750 mm (w x h x d)

PV881

"Metro Junior" Endoscopy cart with integrated Isolation Transformer
835 x 1580 x 750 mm (w x h x d)



PV956

24" Full HD touch panel display

PV909

Monitor stand
for PV959 and PV956

OP930

Xenon light source

JG904

Sterile Camera drape, disposable, ring design, package of 25

"Recently, the intraoperative use of full high definition (HD) image quality offers a new area in endoscopic neurosurgery with an increased range of indications in minimally invasive neurosurgery. The image quality of the full-HD system is markedly superior to that of a standard one- or three-chip camera unit providing a five times higher optical resolution. This superior quality is particularly important in delicate situations, namely the differentiation of subtle structures and in the case of blurred scope vision. A recording system is also an important part of the equipment for documentation of the procedure and is useful for scientific evaluation and teaching purposes. An ideal solution is a digital video system with user friendly and rapid recording, e.g. with a touch screen."

Nikolai Hopf, Stuttgart, Germany

Full HD CMOS Camera, LED Light Source and Flat Screen

PV473

Full HD CMOS camera head with fixed focus coupler

PV472

Full HD CMOS camera head with zoom coupler

PV884

Camera holder

PV470

Full HD Camera control unit

PV959

26" Full HD flat panel display

PV909

Monitor stand for PV959 and PV956

OP940

LED light source

PV880

"Metro Junior" Endoscopy cart 835 x 1580 x 750 mm (w x h x d)

PV881

"Metro Junior" Endoscopy cart with integrated Isolation Transformer 835 x 1580 x 750 mm (w x h x d)

OP923

Full HD Light cable, autoclavable, diam. 4.8 mm, length 250 cm

For more information see brochure C46702

Aesculap Neurosurgery

Power Systems

microspeed® uni – Electric High Speed Motor System

System components:

GD670 microspeed uni control unit

GD675 microspeed uni XS high speed motor
for Hi-Line XS and Hi-Line XXS handpieces

GD685 microspeed uni perforator driver
with Hudson chuck

GD672 motor cable

GD668 foot control – single pedal

HiLAN® XS – Pneumatic High Speed Motor System

System components:

GA740R HiLAN XS high speed motor
for Hi-Line XS and Hi-Line XXS handpieces

GA742R HiLAN perforator driver
with Hudson chuck

GA521 Foot Pedal

GA513R Motor hose (3 m)

GA464R Supply hose (3 m)
wall connection Aesculap Dräger

GA468R Supply hose (3 m)
wall connection Schrader

GA461R Supply hose (3 m)
wall connection DIN

For more information about microspeed uni equipment and accessories, please ask your local Aesculap sales representative or see brochure no. 028302

For more information about HiLAN XS equipment and accessories, please ask your local Aesculap sales representative or see brochure no. 026002.

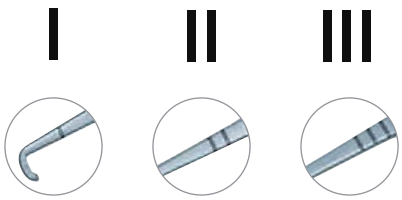
Aesculap Neurosurgery

Power Systems

Hi-Line XS Handpieces and Tools

GB740R

Craniotome and multi-function handpiece



Pediatric | Standard | Long

Holding sleeve for reaming

▲ **GB745R**

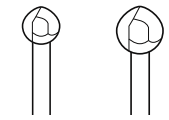
Drill depth guard for controlled pilot drilling
Drilling depth: 2-8 mm adjustable

▲ **GB744R**

Fixed dura guards

I	II	III
GB741R	**GB742R**	**GB743R**

Twin-cut burrs

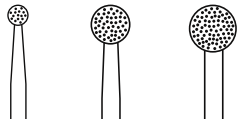


	Ø 5.0	Ø 6.0
▲	GE396R	GE397R

Diamond burrs
standard

	Ø 0.1	Ø 1.4	Ø 1.8
▲	GE381R	GE382R	GE382R

Diamond burrs
coarse

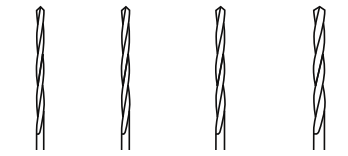


	Ø 3.1	Ø 5.0	Ø 6.0
▲	GE394R	GE398R	GE399R

extra coarse

	Ø 4.0	Ø 5.0
▲	GE386SU ②	GE387SU ②

Twist drills



	Ø 1.0	Ø 1.1	Ø 1.2	Ø 1.5
▲	GE390R	GE391R	GE389R	GE395R

Pin cutter

	Ø 1.0
▲	GE392R

Steerable dura guards

	I	II	III
	GB746R	GB747R	GB748R

Craniotome cutters

	spiral	straight
I	GE420R	GE429SU ②
II	GE520R	GE529SU ②
III	GE620R	GE629SU ②

Aesculap Neurosurgery

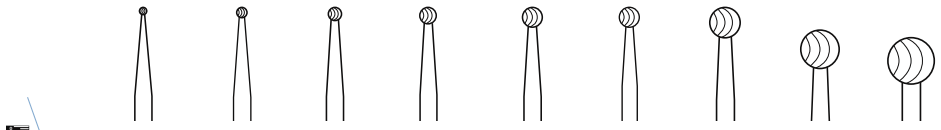
Power Systems

Hi-Line XS Handpieces and Tools – Standard

The proven user-friendly ring coding system allows simple and clear identification of handpiece and associated burrs.

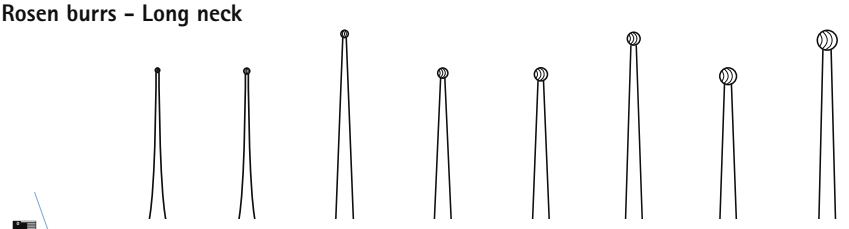
I	II	III	I	II	III
GB751R	GB752R	GB753R	GB756R	GB757R	GB758R

Rosen burrs



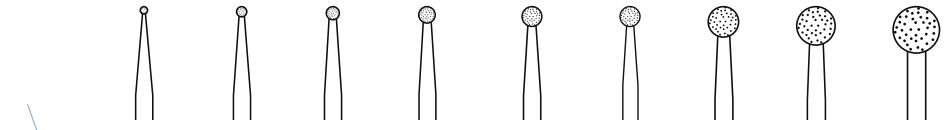
Ø	1.0 mm	1.4 mm	1.8 mm	2.3 mm	2.7 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm
I	GE401R	GE402R	GE403R	GE404R	GE405R	GE406R	GE407R	GE408R	GE409R
II	GE501R	GE502R	GE503R	GE504R	GE505R	GE506R	GE507R	GE508R	GE509R
III			GE603R	GE604R	GE605R	GE606R	GE607R	GE608R	GE609R

Rosen burrs – Long neck



Ø	0.6 mm	0.8 mm	1.0 mm	1.4 mm	1.8 mm	1.8 mm	2.3 mm	2.7 mm
I ②	GE469SU	GE470SU	GE471SU			GE473SU		GE475SU
II				GE572R	GE573R		GE574R	

Diamond burrs



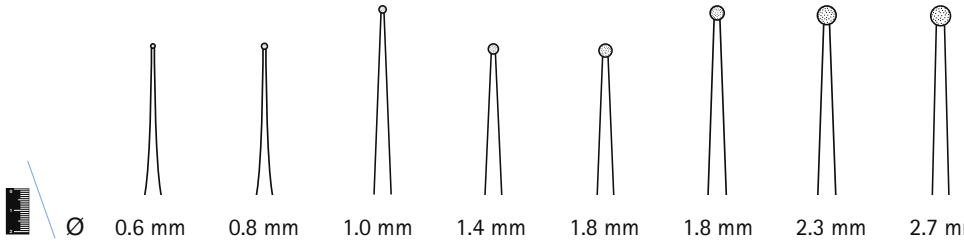
Ø	1.0 mm	1.4 mm	1.8 mm	2.3 mm	2.7 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm
I	GE411R	GE412R	GE413R	GE414R	GE415R	GE416R	GE417R	GE418R	GE419R
II	GE511R	GE512R	GE513R	GE514R	GE515R	GE516R	GE517R	GE518R	GE519R
III			GE613R	GE614R	GE615R	GE616R	GE617R	GE618R	GE619R

Aesculap Neurosurgery

Power Systems

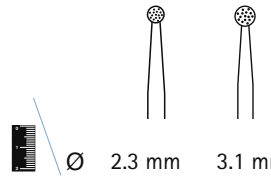
Hi-Line XS Handpieces and Tools

Diamond burrs – Long neck



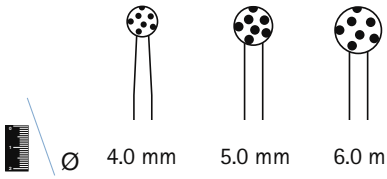
	Ø	0.6 mm	0.8 mm	1.0 mm	1.4 mm	1.8 mm	1.8 mm	2.3 mm	2.7 mm
I	②	GE459SU	GE460SU	GE461SU			GE463SU	GE464SU	GE465SU
II					GE562R	GE563R			

Diamond burrs
coarse



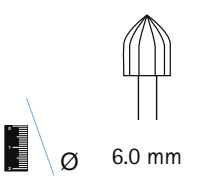
	Ø	2.3 mm	3.1 mm
I		GE424R	GE425R
II		GE524R	GE525R
III		GE624R	GE625R

Diamond burrs
extra coarse



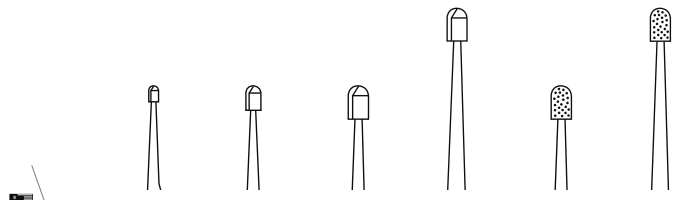
	Ø	4.0 mm	5.0 mm	6.0 mm
I	②	GE456SU	GE457SU	
II	②	GE556SU	GE557SU	GE558SU
III	②	GE656SU	GE657SU	GE658SU

Acorn burrs



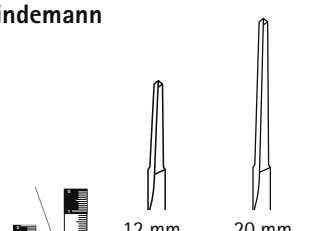
	Ø	6.0 mm
I		GE437R
II		GE537R

Neuro cutters



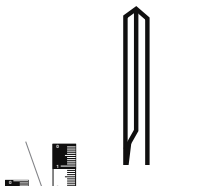
	Ø	1.8 mm	2.3 mm	3.1 mm	3.1 mm	3.1 mm	3.1 mm
I				GE435R			
II		GE531R	GE534R	GE535R	GE553R		GE555R
III		GE631R	GE634R	GE635R	GE653R	GE654R	GE655R

Lindemann



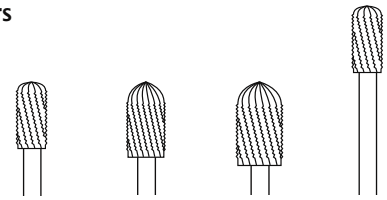
	Ø	12 mm 1.4 mm	20 mm 1.4 mm
II		GE522R	GE523R

Pin cutter



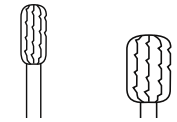
	Ø	1.0 mm
II		GE521R

Barrel burrs
soft cut



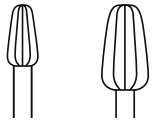
	ø 4.0 mm	5.0 mm	6.0 mm	4.0 mm
II	GE548R	GE549R	GE550R	
III	GE648R	GE649R	GE650R	GE645R

Barrel burrs
standard



	ø 4.0 mm	6.0 mm
II	GE544R	GE546R
III	GE644R	GE646R

Cone burrs



	ø 4.0 mm	6.0 mm
II	GE540R	GE542R

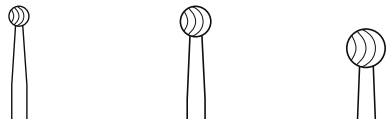
Reverse taper burr coarse diamond

	ø 4.0 mm
II	GE539R
III	GE639R

Oval burr

	ø 4.0 mm
II	GE536R

Rosen burrs – Tungsten carbide



		Ø 3.1 mm	4.0 mm	5.0 mm	
I	②	GE406TC-SU	GE407TC-SU	GE408TC-SU	
II	②		GE507TC-SU	GE508TC-SU	
III	②		GE607TC-SU	GE608TC-SU	

Neuro cutter – Tungsten carbide

		Ø 3.1 mm
I	②	GE435TC-SU
II	②	GE535TC-SU
III	②	GE635TC-SU

Aesculap Neurosurgery

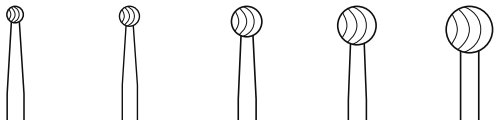
Power Systems

Hi-Line XS Handpieces and Tools – Extra Long

The proven user-friendly ring coding system allows simple and clear identification of handpiece and associated burrs.

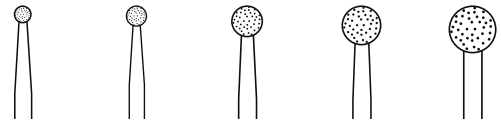
XLI
GB771R

Rosen burrs



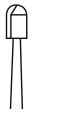
	Ø	2.3 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm
XLI		GE704R	GE706R	GE707R	GE708R	GE709R

Diamond burrs



	Ø	2.3 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm
XLI		GE714R	GE716R	GE717R	GE718R	GE719R

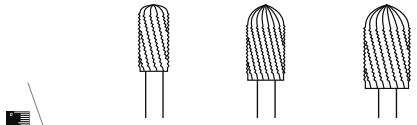
Neuro cutters



	Ø	3.1 mm
XLI		GE702R

Barrel burrs

soft cut



	Ø	4.0 mm	5.0 mm	6.0 mm
XLI		GE711R	GE729R	GE712R

Twist drills

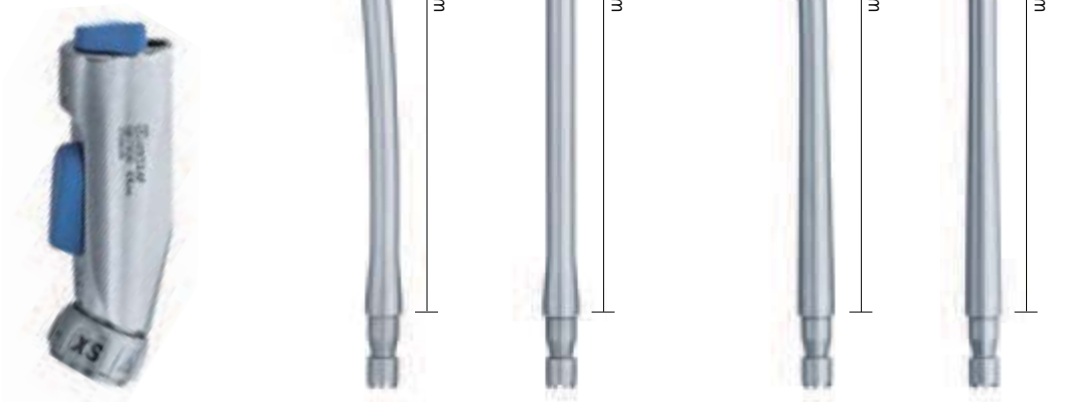
	Ø	1.5 mm
XLI	②	GE700SU

Aesculap Neurosurgery

Power Systems

Hi-Line XXS – Handpiece for Minimally Invasive Procedures

- Straight and curved handpiece shafts
- The curved handpiece shafts can be rotated in 8 different positions
- Proven ring-coding system correctly matches handpiece shafts to the associated burrs
- Completely keyless operation



GB790R | GB792R | GB791R | GB794R | GB793R

Rosen burrs

Ø	3.0 mm	4.0 mm
II	GE804SU	GE805SU
III	GE834SU	GE835SU

Diamond burrs, coarse

Ø	3.0 mm	4.0 mm	5.0 mm
II	GE816SU	GE817SU	GE818SU
III	GE846SU	GE847SU	GE848SU

Neuro cutter

Ø	2.0 mm	3.0 mm
II	GE802SU	GE803SU
III	GE832SU	GE833SU

Neuro cutter, coarse diamond

Ø	2.0 mm	3.0 mm	4.0 mm	5.0 mm
II	GE812SU	GE813SU	GE814SU	GE815SU
III	GE842SU	GE843SU	GE844SU	GE845SU

For more information about Hi-Line XXS equipment and accessories, please ask your local Aesculap sales representative or see brochure no. 046502

Aesculap Neurosurgery

Power Systems

Accessories

Spray nozzles

Spray nozzle	Handpiece	Length of handpiece
GB767SU	Hi-Line XS	**GB740R**
GB761SU		I
GB762SU		II
GB763SU		III
GB764SU		XLI
GB796SU	Hi-Line XXS	II
GB797SU		III

Maintenance

GB600

Sterilit® Power Systems Oil Spray

GB600820

Spray Adaptor
for HiLAN, HiLAN XS and Hi-Line (XS, XXS) handpieces

GB600870

Spray Adaptor
for microspeed uni XS

For more information about Aesculap Power Systems and accessories, please ask your local Aesculap sales representative or see brochure no. 022702

For more information about Burrs & Blades for Aesculap Power Systems please ask your local Aesculap sales representative or see brochure no. 017599

Aesculap Academy

Neuroendoscopy Courses

Horizons of Knowledge. Competence to Master the Future.

AESCULAP ACADEMY

www.aesculap-neuro.com or
www.aesculap-academy.com

Innovative developments in the field of medical technology, sophisticated new treatment methods, increasingly more stringent requirements for hospital and quality management and, last but not least, a healthy interest in acquiring new knowledge have given rise to an enormous and ever-increasing demand for further and advanced training.

The Aesculap Academy enjoys a world-wide reputation as a leading forum for medical training and answers the demands of physicians and medical staff in OR, anaesthesia, ward, outpatient care and hospital management. The course program comprises a wide range of hands-on workshops, management seminars and international symposia.

Aesculap Academy courses are of premium quality and are accredited by the respective medical societies and international medical organizations. A scientific advisory board guarantees the perfect selection of speakers and topics.

All of our courses are conducted by pioneering neurosurgeons who will address the theoretical knowledge of neuroendoscopy, cranial endoscopic anatomy, and clinical applications of neuroendoscopy. Each course includes extensive hands-on sessions or possibly live surgeries. Course attendees will benefit from discussions and analysis of real cases together with expert colleagues from all over the world. The training facilities of the Aesculap Academy in Berlin and Tuttlingen are traditional and spectacular locations for "sharing expertise".

Competence to master the future – keep yourself fit for the future and ask for the latest course programme offerings, e.g.

- Intracranial Neuroendoscopy Course
- Advanced Neuroendoscopy Course
- Master Course Intercranial Neuroendoscopy

Visit our website and register for one of the next neuroendoscopy courses -
www.aesculap-neuro.com or www.aesculap-academy.com
or contact your local B. Braun Aesculap representative.

"Pre-requisites of intracranial neuroendoscopy are valuable and user-friendly endoscopic equipment. However, despite of availability of dedicated systems, the endoscopic technique is not in routine use everywhere and neurosurgeons are often hesitant to use it. The cause of the aversion is often the steep learning curve. The goal of our Neuroendoscopy Courses is to facilitate the initial steps, thus giving a comprehensive overview in contemporary endoscopic techniques, including intraventricular, transcranial and transnasal applications. Didactic lectures by international experts give the necessary theoretical basis. Extensive hands-on laboratory allow basic anatomical studies and offer practical experience with endoscopes. Illustrative live surgeries show clinical application, giving advantageous tips in the every-day application of neuroendoscopy."

Program

Intracranial Neuroendoscopy

a basic hands-on training course for endoscopic neurosurgery

The objective of the course "Intracranial Neuroendoscopy" is to offer a comprehensive overview on endoscopic techniques in intracranial neurosurgery. Didactic lectures, extensive hands-on laboratory and illustrative cases are especially designed for newcomers in the field of neuroendoscopy, giving excellent theoretical and practical basis. Manuals and digital documentation of your own laboratory exercise provide an additional positive impact on your learning.

Advanced Intracranial Neuroendoscopy

a comprehensive hands-on course on minimally invasive and endoscopic neurosurgery

"Advanced Intracranial Neuroendoscopy" is designed for neurosurgeons with basic experience in neuroendoscopic techniques. The didactic lectures address especially the preoperative surgical planning as well as distinguished endoscopic techniques for cranial neurosurgery. Extended hands-on dissections and illustrative live surgeries demonstrate clinical applications in the daily routine offering important tips and tricks as well as valuable instructions for everyday use. The course is offered in two complementary parts. However, please note, that both parts can be booked separately as well as in combination.

Part I (Transcranial Endoscope-assisted Neurosurgery) concentrates on minimally invasive transcranial keyhole approaches and endoscope–assisted techniques dealing in a comprehensive way with the supraorbital, subtemporal and retrosigmoidal exposure.

Part II (Transcranial Endoscopic Skull Base) deals with endoscopic techniques to treat sellar and parasellar lesions via the transsphenoidal route. Special interest will be given to extended skull base surgery.

Master Course Intracranial Neuroendoscopy

a clinical observer course on minimally invasive and endoscopic neurosurgery

The "Master Course Intracranial Neuroendoscopy" offers a clinically oriented comprehensive overview on contemporary techniques in cranial endoscopic neurosurgery. Dedicated lectures, extensive case discussions and live surgeries will offer important tips and tricks providing valuable instructions for your everyday use. This event is a perfect and well recommended adjunct to the hands-on courses on "Intracranial Neuroendoscopy" and "Advanced Intracranial Neuroendoscopy" in Berlin and Tuttlingen. In addition, you will have the opportunity to look behind the scenes of the headquarters and manufacturing plant of B. Braun Aesculap in Tuttlingen. Forming aneurysm clips by yourself, experiencing how micro instruments are manually fabricated and visiting the famous Surgery Museum Asclepios are impressive parts of the course.

André Grotenhuis
Nijmegen, Netherlands

Nikolai Hopf
Stuttgart, Germany

Peter Nakaji
Phoenix, USA

Robert Reisch
Zurich, Switzerland

Mark Souweidane
New York, USA

Aesculap Neurosurgery

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Aesculap AG | Am Aesculap-Platz | 78532 Tuttlingen | Germany
Phone +49 0 74 61 95-0 | Fax +49 0 74 61 95-26 00 | www.aesculap.com

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