

# Aesculap<sup>®</sup> Neuroendoscopy

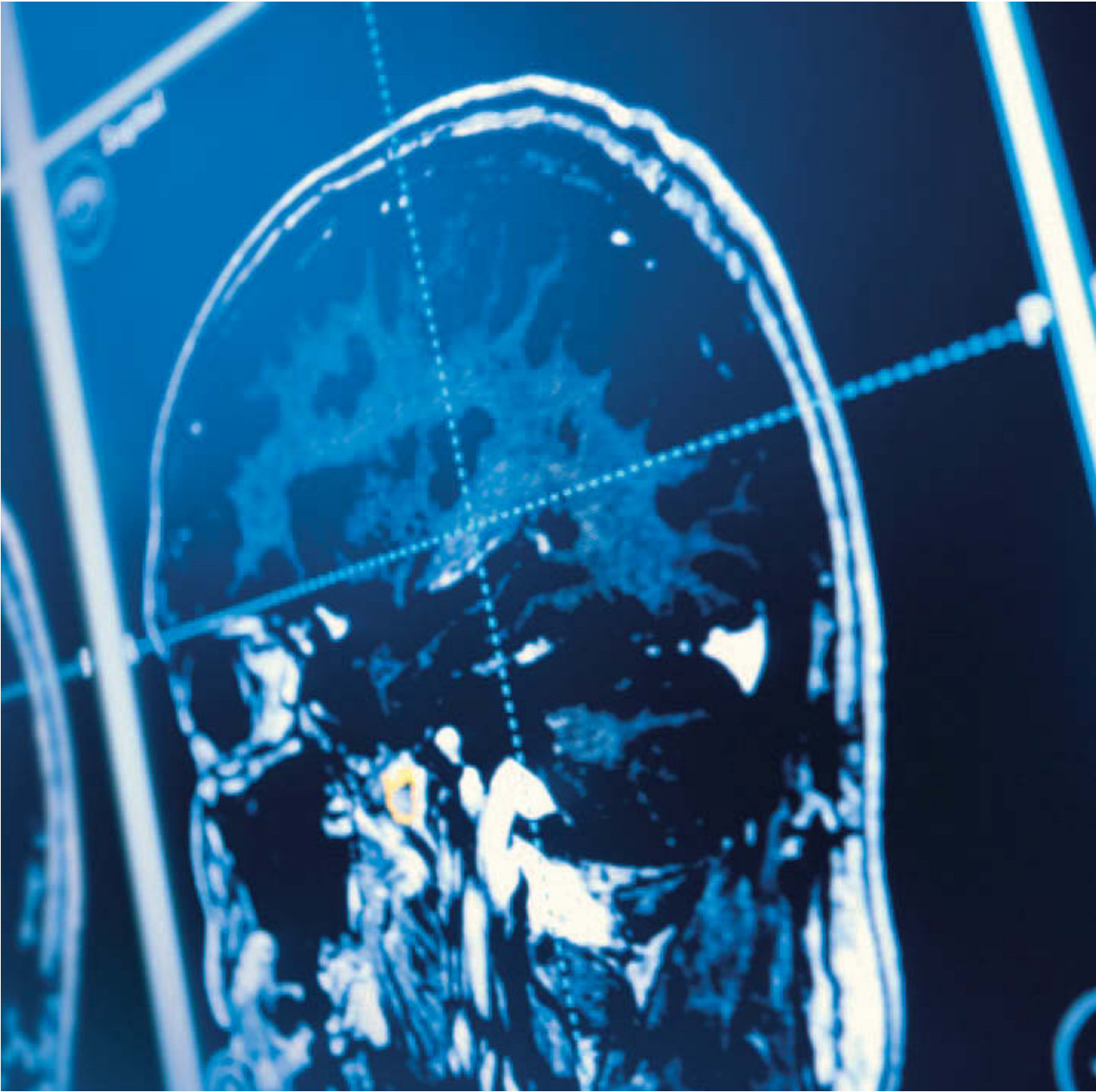
Intraventricular, Endoscope-Assisted, Transnasal/Transsphenoidal Neuroendoscopic Equipment

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



Aesculap Neurosurgery

# 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  
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 Robert Reisch, Zurich, Switzerland  
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 Charles Teo, Sydney, Australia



Peter Nakaji  
Phoenix, USA



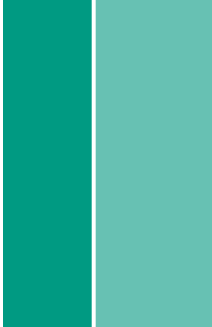
Robert Reisch  
Zurich, Switzerland



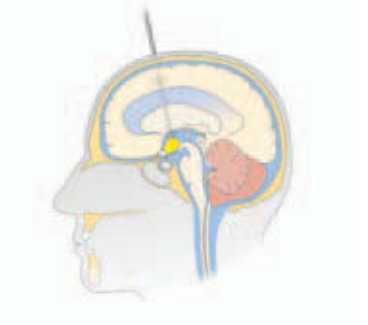
Mark Souweidane  
New York, USA



Charles Teo  
Sydney, Australia

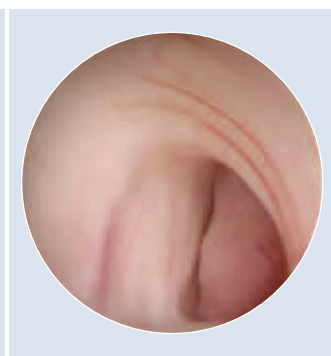
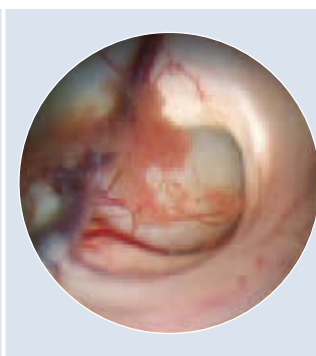


# Intraventricular Neuroendoscopy



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 neuroendoscopic 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



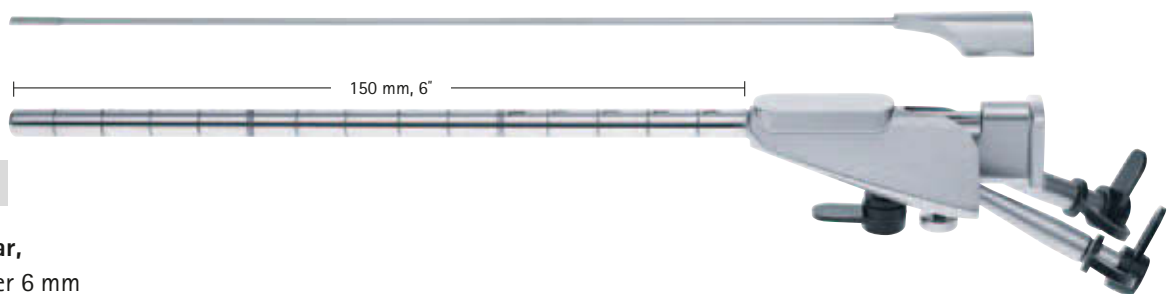
Mark Souweidane  
New York, USA

# 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:

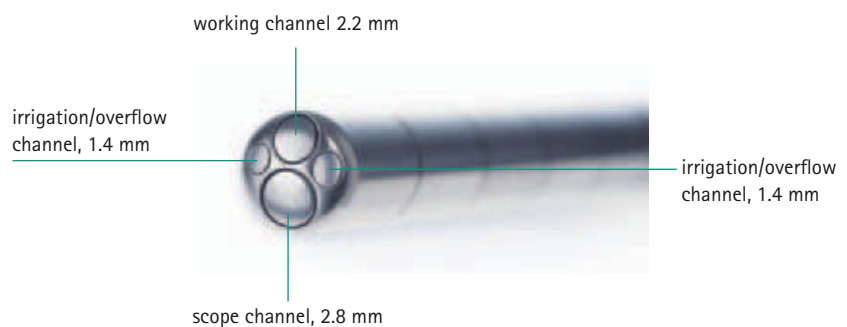
Scope channel, diam. 2.8 mm

Working channel, diam. 2.2 mm

Irrigation channel, diam. 1.4 mm

Overflow channel, diam. 1.4 mm

Including 4 obturators  
for all channels

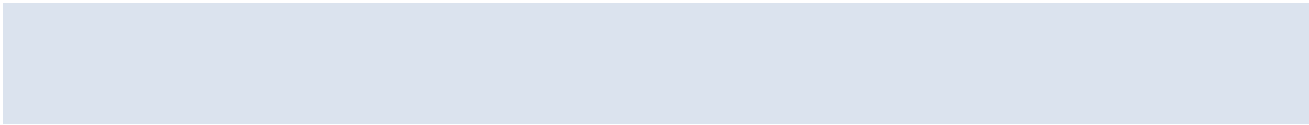


“ I had used the Aesculap MINOP system for all intraventricular cases and was mostly pleased with its versatility and safety. However, I had some concerns regarding its user-friendliness and applicability when one needed to be a 2-handed surgeon. Both these issues have been addressed with the new, improved 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! ”

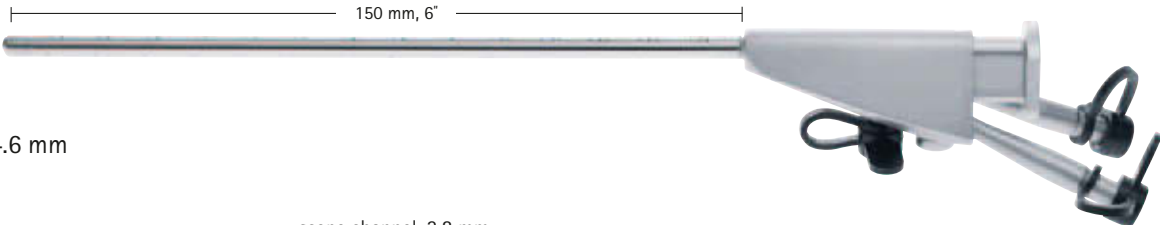
Charles Teo, Sydney, Australia







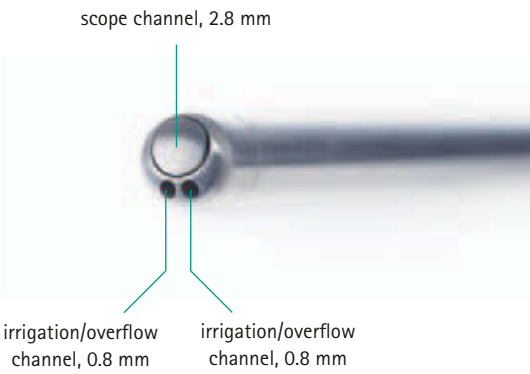
**FF398R**



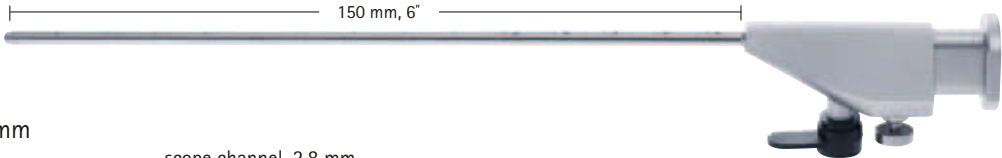
**MINOP® trocar,**  
Outer diameter 4.6 mm

**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



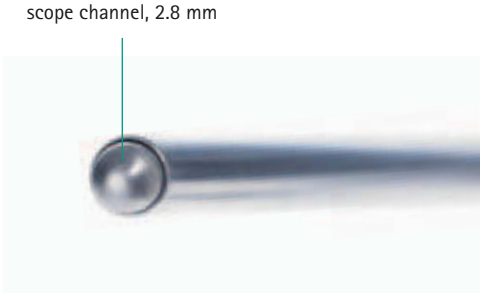
**FF397R**



**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

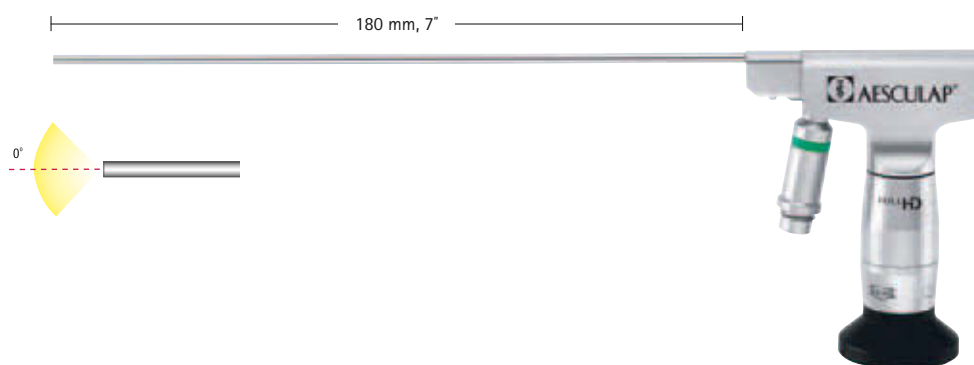
##### MINOP® endoscope

Direction of view 0°  
(green ring)

Shaft diameter, 2.7 mm

Shaft length, 180 mm

Autoclavable



#### PE204A

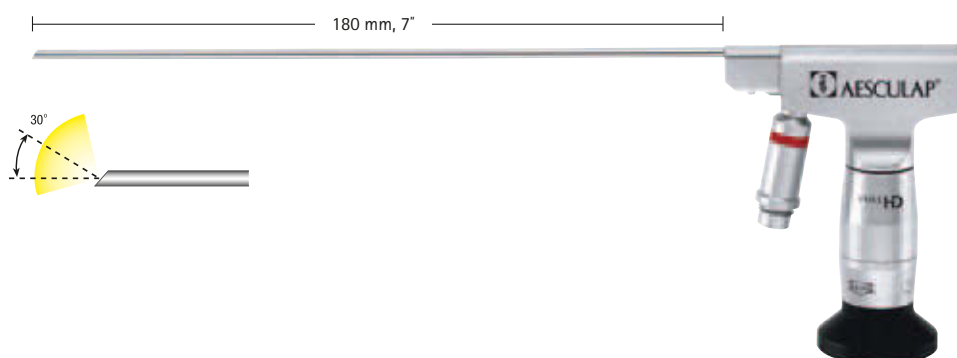
##### MINOP® endoscope

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

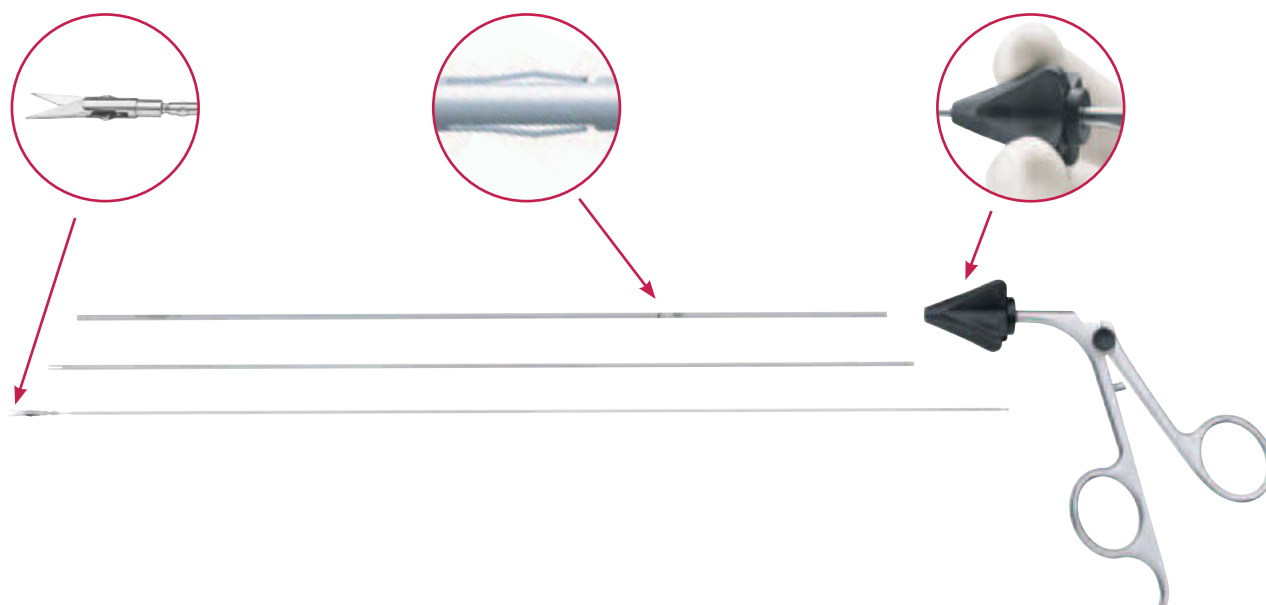
- Shaft length 265 mm
- Diam. 2.0 mm
- Fully detachable for reprocessing
- High precision instrument tip

### 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. ”

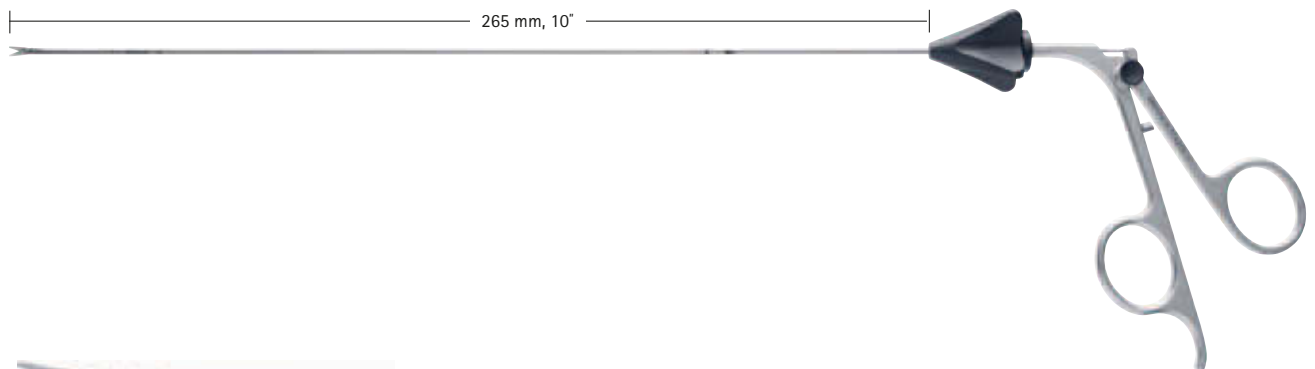
Mark Souweidane, New York, USA

# 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



**FF388R**

MINOP® grasping and dissecting forceps



**FF387R**

MINOP® biopsy forceps



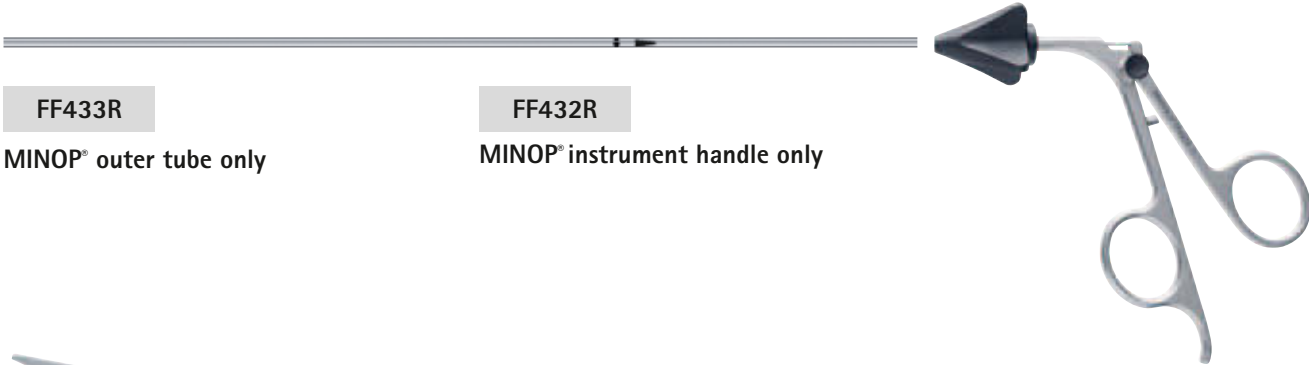
**FF389R**

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

∅ 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).

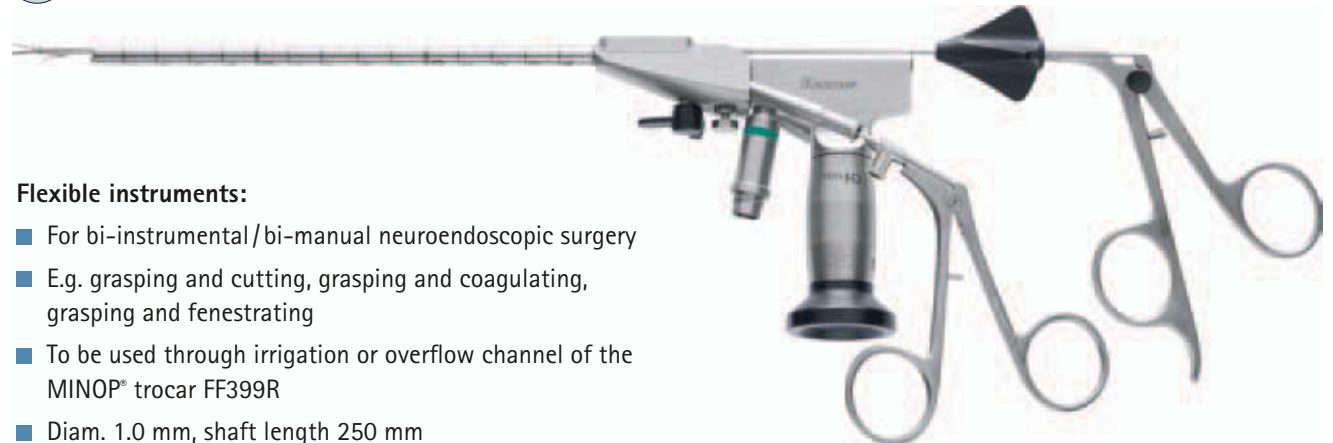
# MINOP®

## Intraventricular Neuroendoscopic System

### MINOP® – Flexible Instruments



Ø 1 mm 1.0 mm Instruments for bi-instrumental work

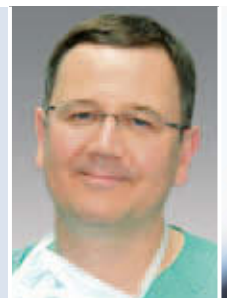


#### Flexible instruments:

- 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

1:1


255 mm, 10"


- GK363R**

Needle electrode, diam. 1.1 mm

1:1


255 mm, 10"


- GK364R**

Hook electrode, 45°, diam. 2.2 mm

1:1


255 mm, 10"


- GK365R**

Hook electrode, 70°, diam. 2.2 mm

1:1


255 mm, 10"


- GK362R**

Hook electrode, 90°, diam. 2.2 mm

1:1


255 mm, 10"


- GK366R**

Hook electrode, 180°, diam. 2.2 mm

1:1

255 mm, 10"




**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

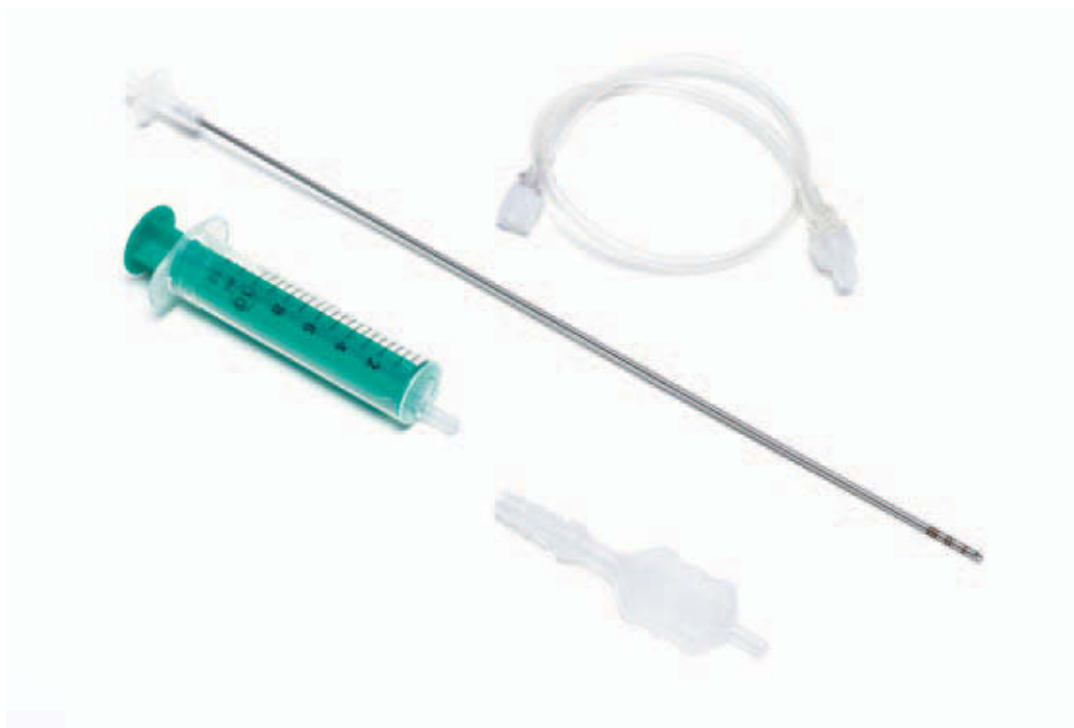
- For removal of cystic intraventricular lesions
- For puncturing the floor of the 3rd ventricle
- With depth marking, interval of 5 mm
- Outer diameter of 2.0 mm
- Suitable for working channel of MINOP® trocar FF399R
- Available with blunt or sharp tip suction cannula
- Optional control of suction
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

FH606SU

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

FH607SU

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

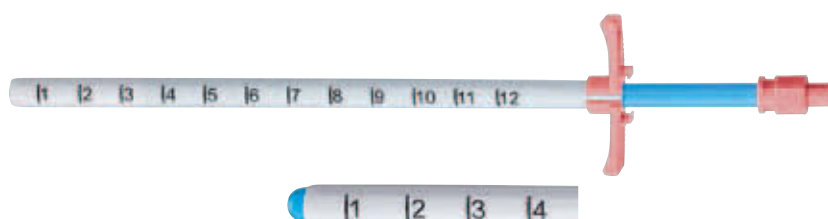




## MINOP® – Disposable Introducer

### 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).

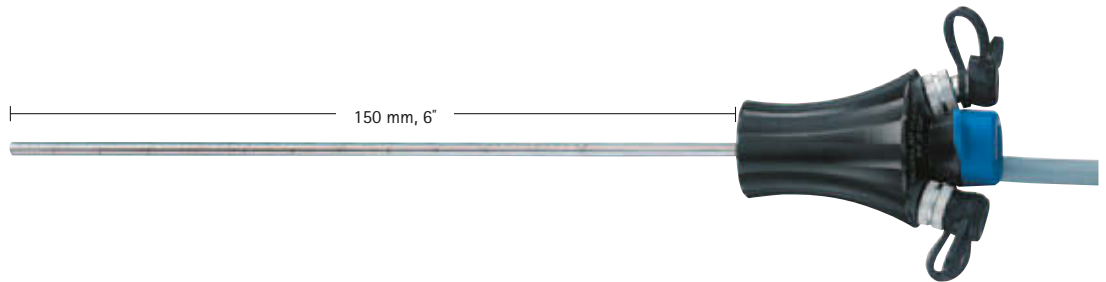


# Paediscopes

## Paediatric Intraventricular Neuroendoscopic System

### Paediscopes

PF010A

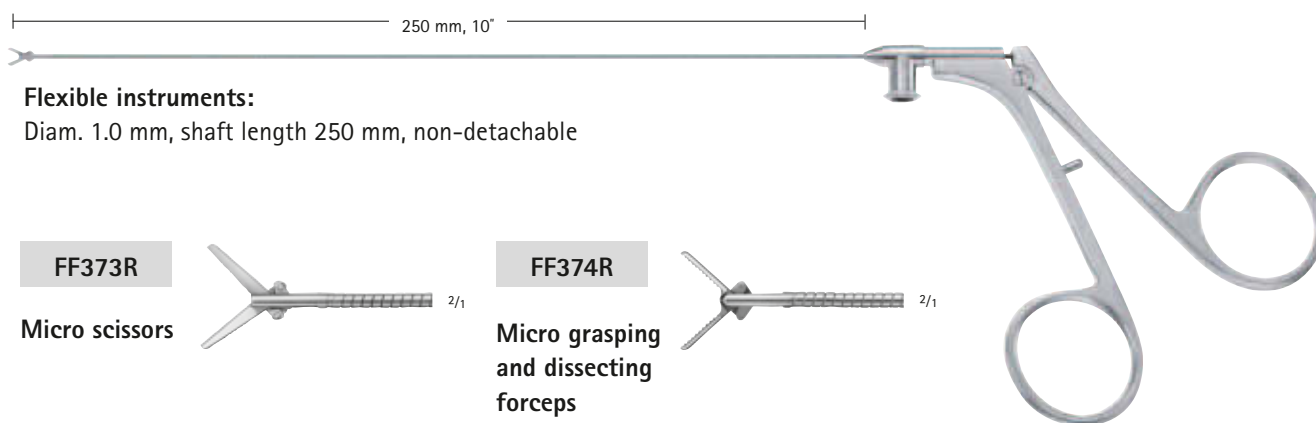


PF011A

**Ocular with focus**

\* for complete Paediscopes,  
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

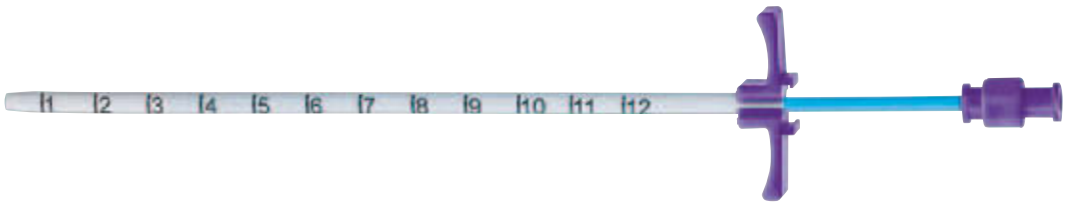


**FF378R**

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 Paediscopie 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

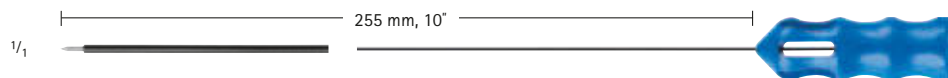
# Paediscopes

## Paediatric Intraventricular Neuroendoscopic System

### Paediscopes

#### GK363R

Needle electrode,  
diam. 1.1 mm



#### GK361R

Blunt electrode,  
diam. 1.1 mm



#### GN202

Monopolar cable  
suitable for GN300, GN640, 3.5 m



**FF379R**

For Paediscopes 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

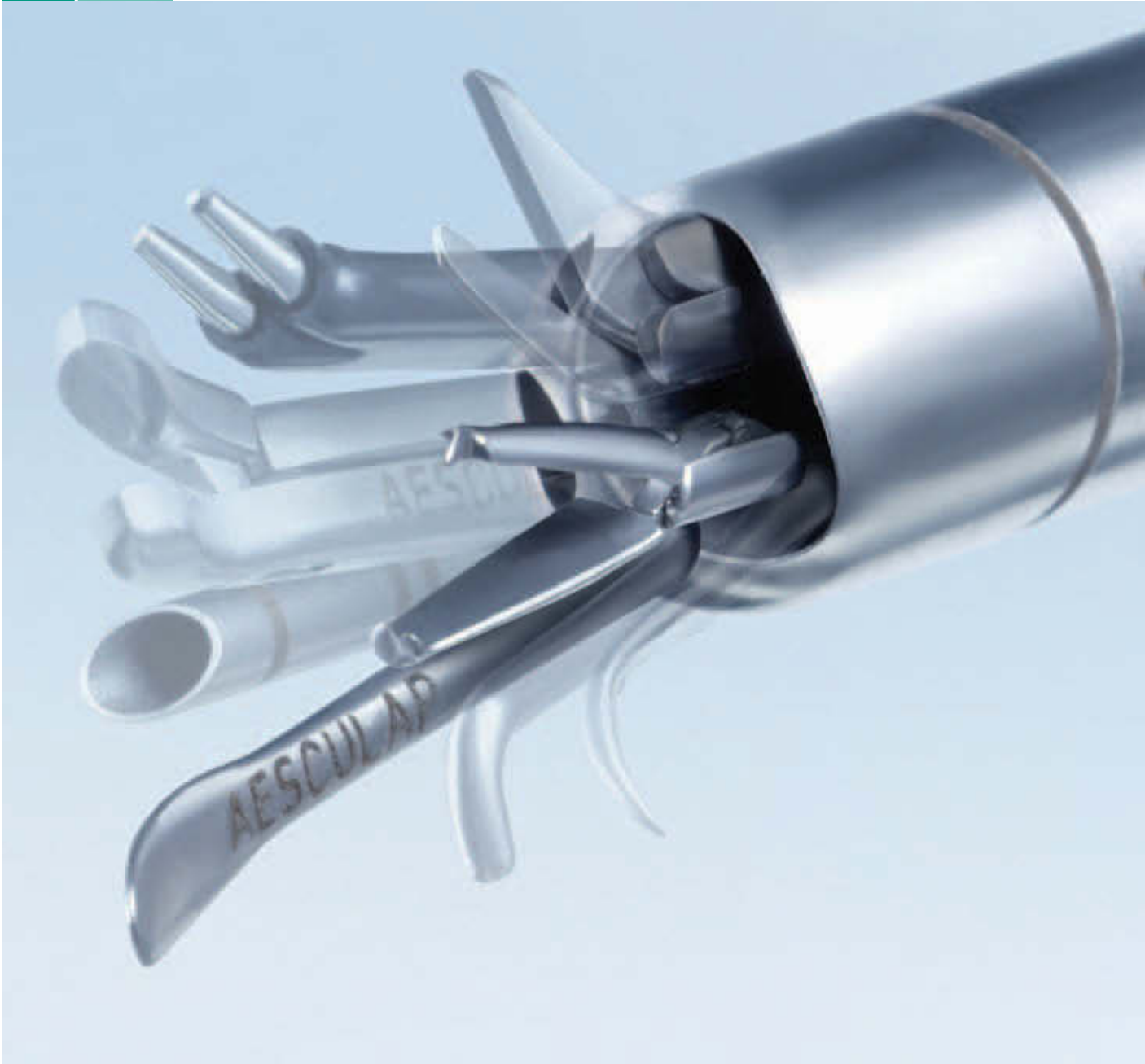
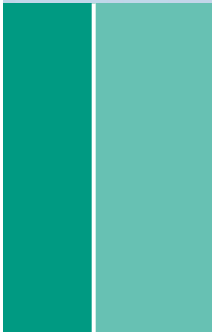
L/W/H 544 x 258 x 75 mm

**JK486****Container basis 1/1 lid**

blue

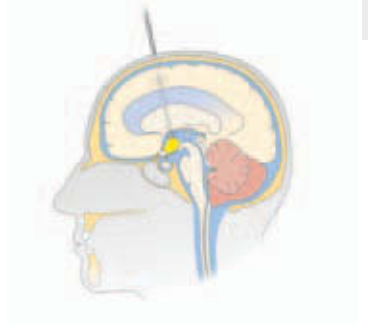
For more information about MINOP®  
please see our „Practical Atlas“ C29202.







# Advanced Intraventricular Neuroendoscopy

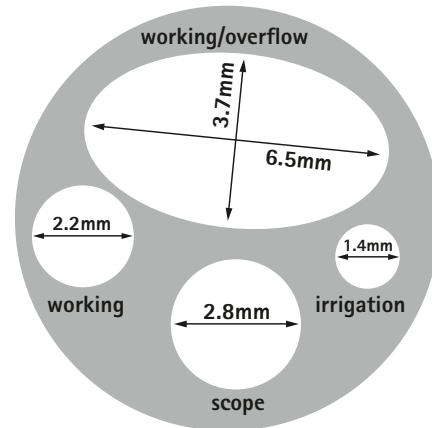


# MINOP® InVent

## 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

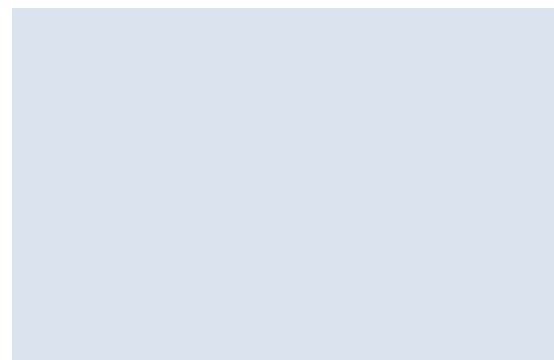
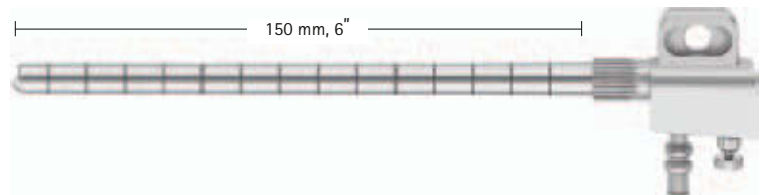
Irrigation channel, diam. 1.4 mm

#### 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

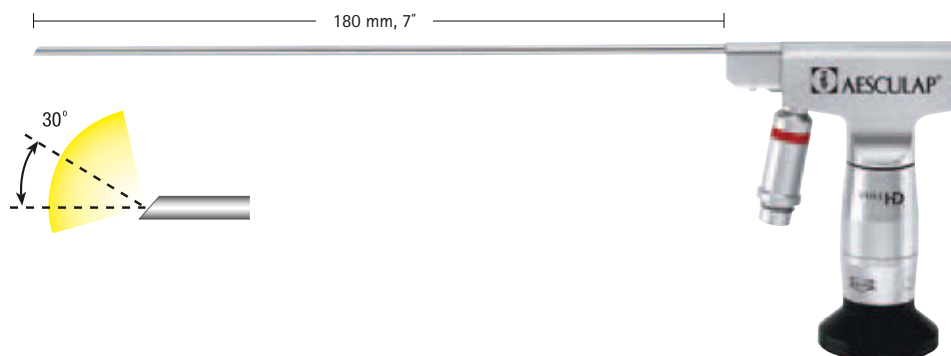
#### MINOP® endoscope

Direction of view 30°, upwards (red ring)

Shaft diameter 2.7 mm

Shaft length 180 mm

Autoclavable



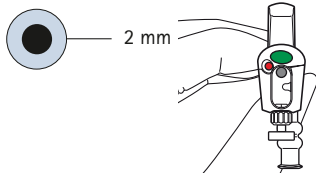
“ The MINOP InVent system is truly unique and the next step for the future of Neuroendoscopy. This system allows for a true bi-manual technique through the large/small working channels expanding the possibilities to treat further indications. The angled instrumentation provide the ability to simultaneously grasp and cut or grasp and coagulate similar to traditional microsurgery. The MINOP InVent provides a 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 Knives



**FH629R**

MINOP® InVent dissector,  
tip width 2.2 mm



**FH632R**

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



**FH630R**

MINOP® InVent dissector,  
tip width 1.7 mm



**FH634R**

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

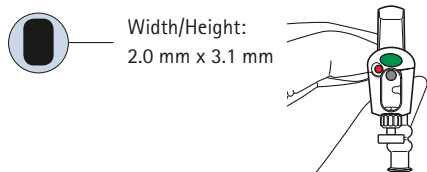


**FH631R**

MINOP® InVent dissector,  
tip width 1.0 mm



## MINOP® InVent - Shaft Instruments



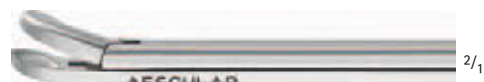
**FH621R**

MINOP® InVent forceps straight



**FH625R**

MINOP® InVent scissors straight



**FH622R**

MINOP® InVent forceps right



**FH626R**

MINOP® InVent scissors left



**FH623R**

MINOP® InVent forceps left



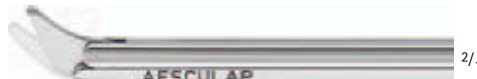
**FH627R**

MINOP® InVent scissors right



**FH624R**

MINOP® InVent grasping forceps straight



**FH628R**

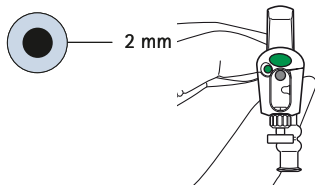
MINOP® InVent scissors upwards



# 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**

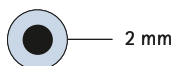


**FH637R**

**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

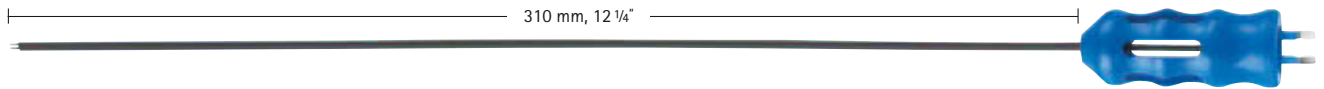
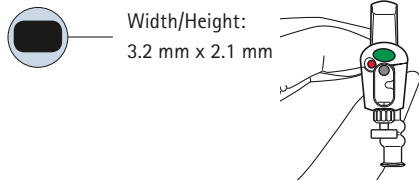


For disassembly and assembly of MINOP® tube shaft instruments, please ask your local Aesculap sales representative: Brochure C60902 (English), C60901 (German).

# MINOP® InVent

## Advanced Intraventricular Endoscopic System

### MINOP® InVent – Bipolar Electrodes



**GK343R**

MINOP® InVent  
bipolar electrode 0°



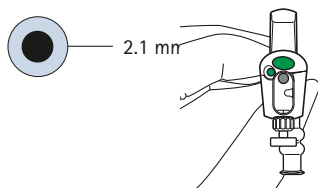
**GK344R**

MINOP® InVent  
bipolar electrode 40°



**GK345R**

MINOP® InVent  
bipolar electrode 30°

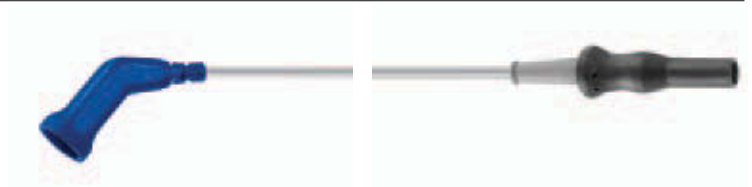


**GK360R**

Bipolar fork electrode 0°

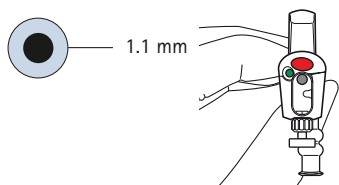
**GN130**

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





## MINOP<sup>®</sup> InVent - Monopolar Electrodes



**GK361R** <sup>2/1</sup>  
Blunt electrode, diam. 1.1 mm



**GK363R** <sup>2/1</sup>  
Needle electrode, diam. 1.1 mm



**GK365R** <sup>2/1</sup>  
Hook electrode, 70°, diam. 2.2 mm



**GK362R** <sup>2/1</sup>  
Hook electrode, 90°, diam. 2.2 mm



**GK366R** <sup>2/1</sup>  
Hook electrode, 180°, diam. 2.2 mm



**GK364R** <sup>2/1</sup>  
Hook electrode, 45°, diam. 2.2 mm

**GN202**

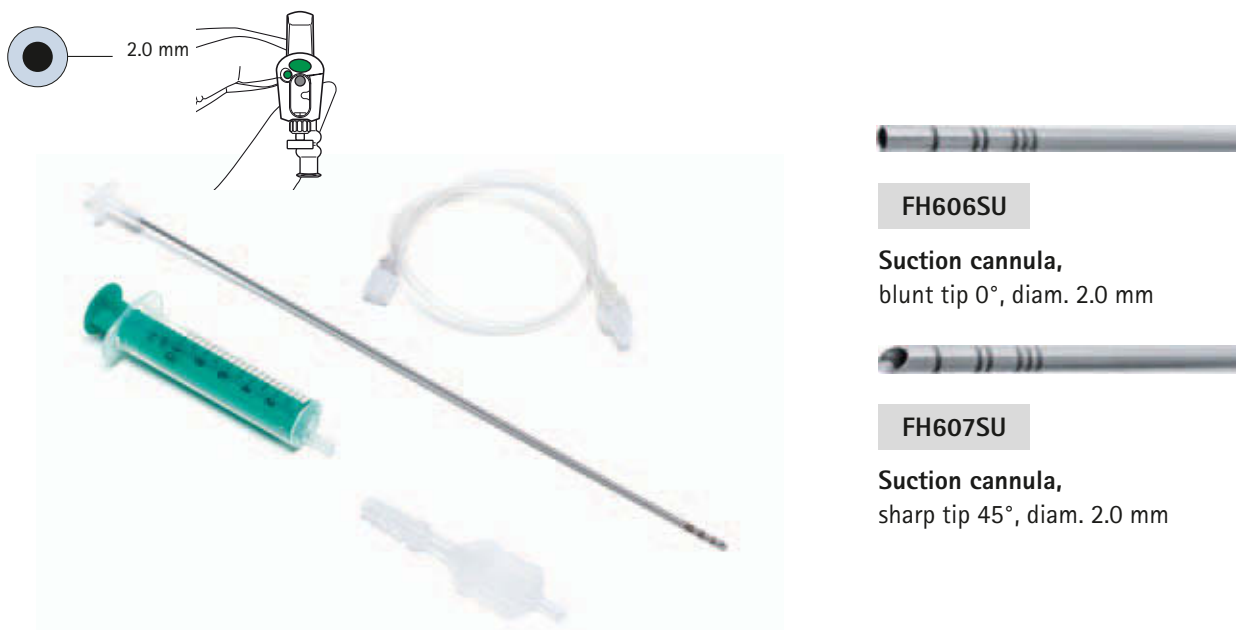
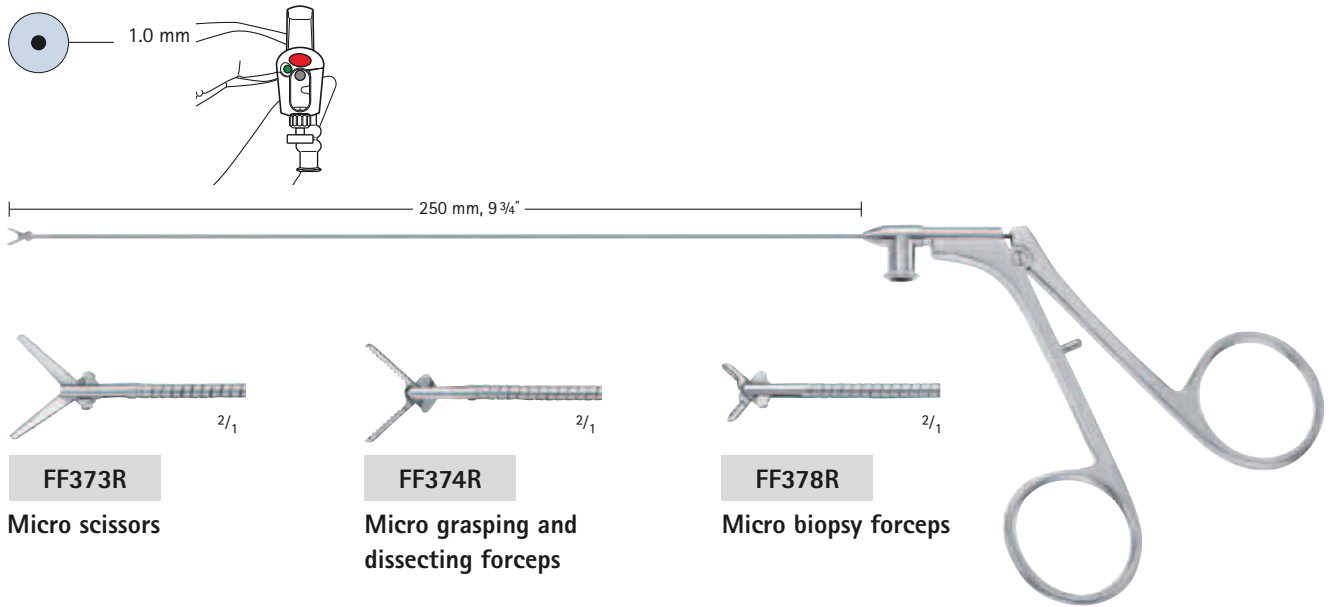
Monopolar cable  
suitable for GN300, GN640, 3.5 m



# MINOP® InVent

## Advanced Intraventricular Endoscopic System

### MINOP® InVent – Flexible Instruments & Suction Cannula



## 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

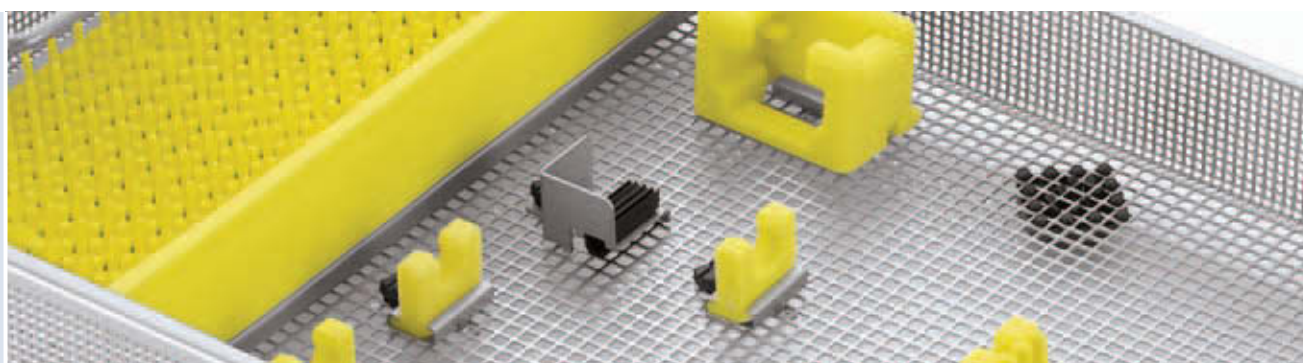
Outside/Inside dimensions  
with lid:

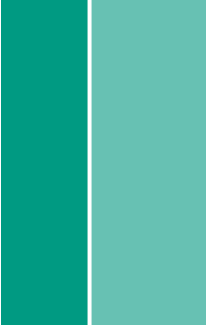
L/W/H 592 x 285 x 209 mm

L/W/H 544 x 258 x 172 mm

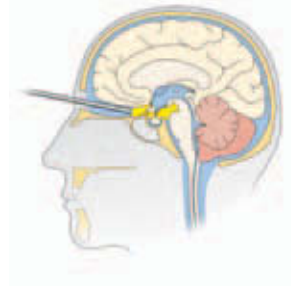
### JK486

**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 applicators 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



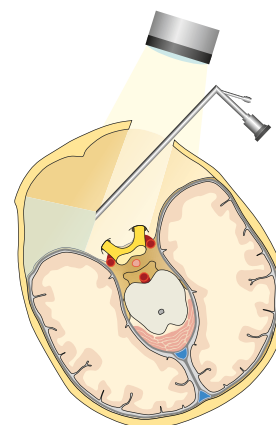
Nikolai Hopf  
Stuttgart, Germany

# 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.



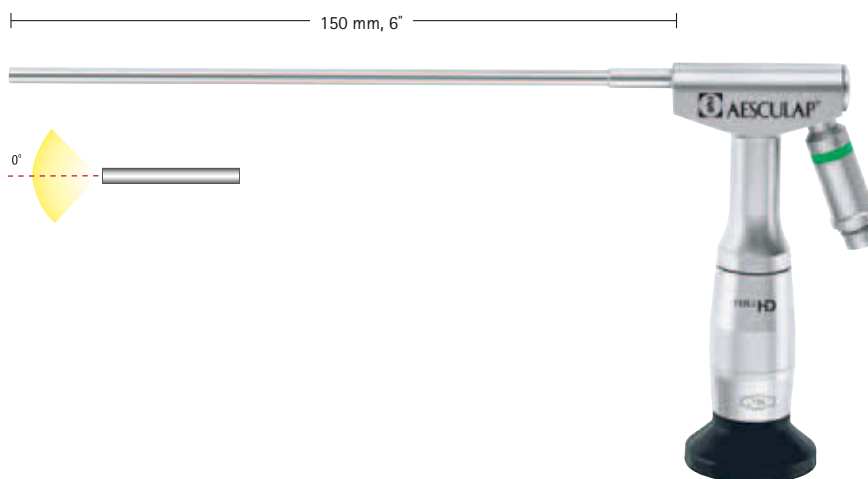
PE486A

#### 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





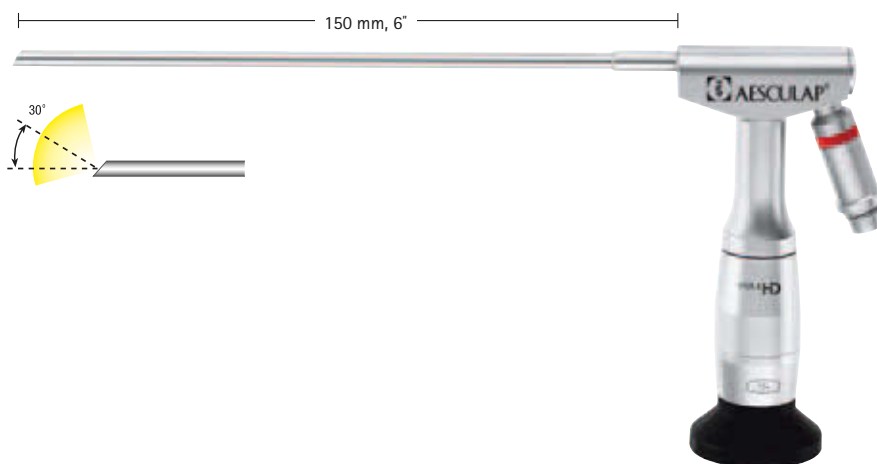
**PE506A**

**Angled endoscope**

Direction of view: 30°, upwards

Shaft diameter: 4 mm

Shaft length: 150 mm, 6"



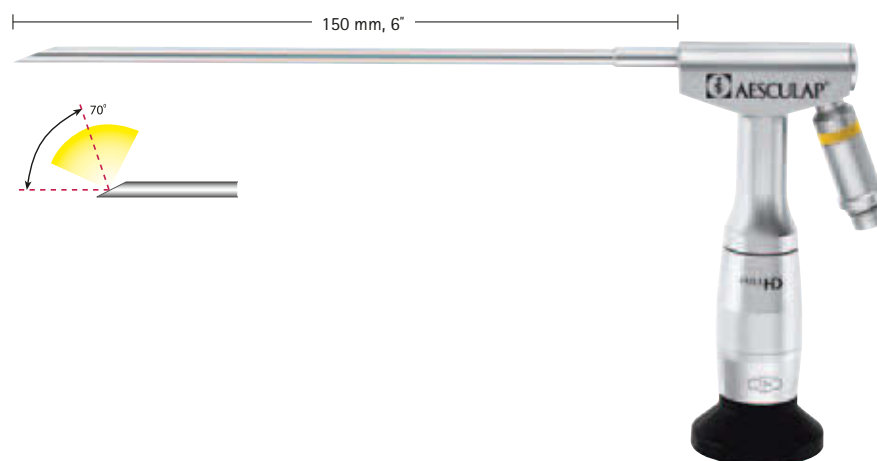
**PE526A**

**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

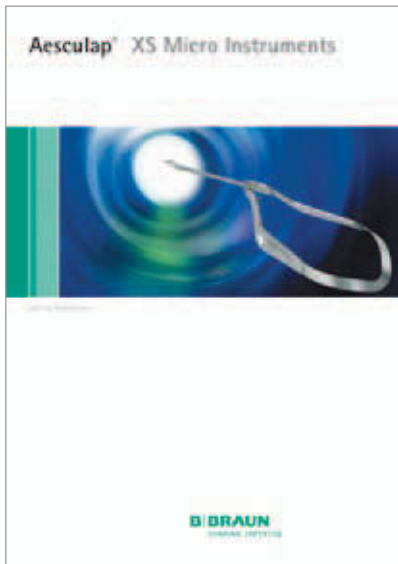
## Transcranial Endoscope Assisted Microneurosurgery

### 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

page 43 -48



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

page 49 - 58

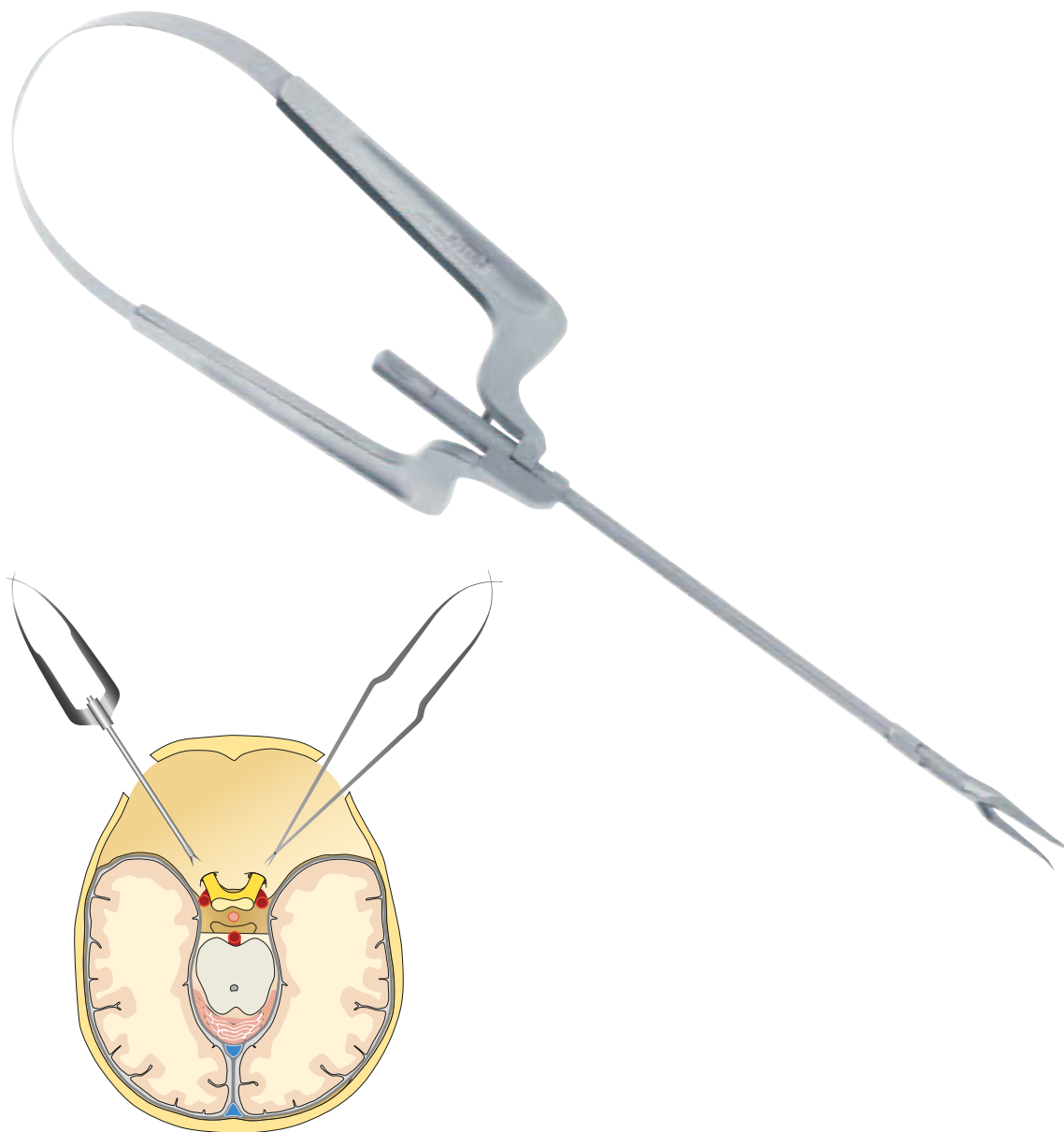


*For more information about MIN Set please see our brochure C92011*



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

## XS Tube Shaft Micro Instruments



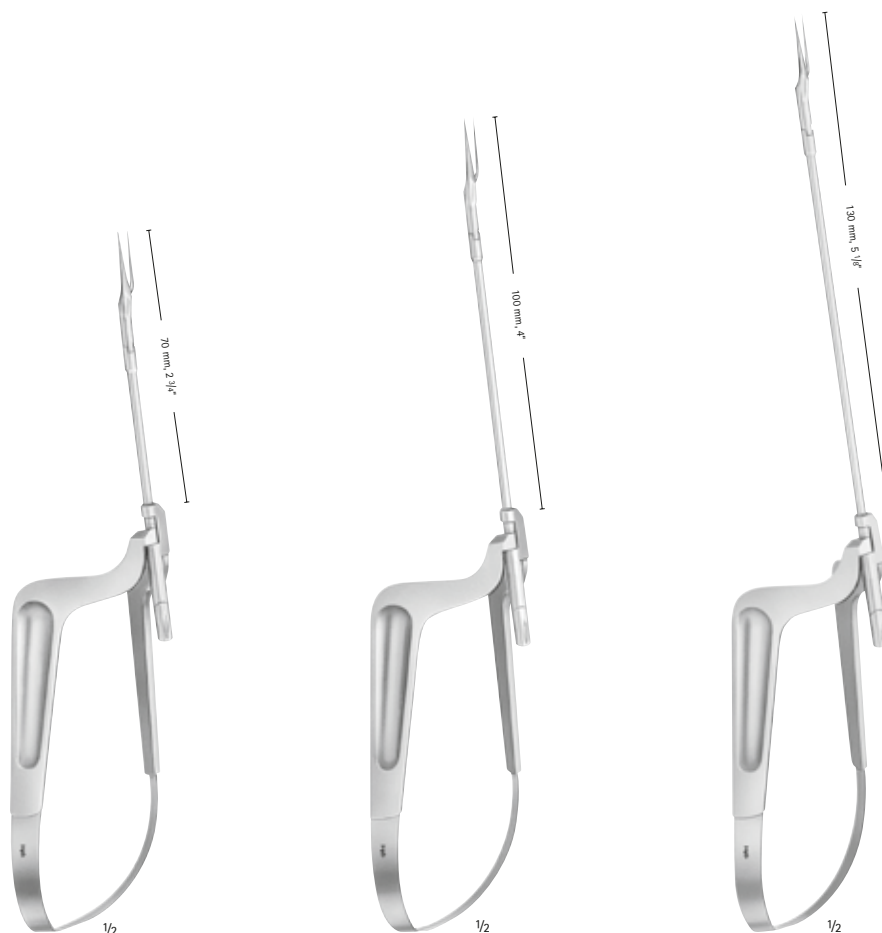
“ Performing limited keyhole approaches, the application of conventional microsurgical instruments becomes limited in several cases. Slender keyhole microinstruments have been specially created to overcome this problem allowing unhindered introduction of the tool through the limited craniotomy. These 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

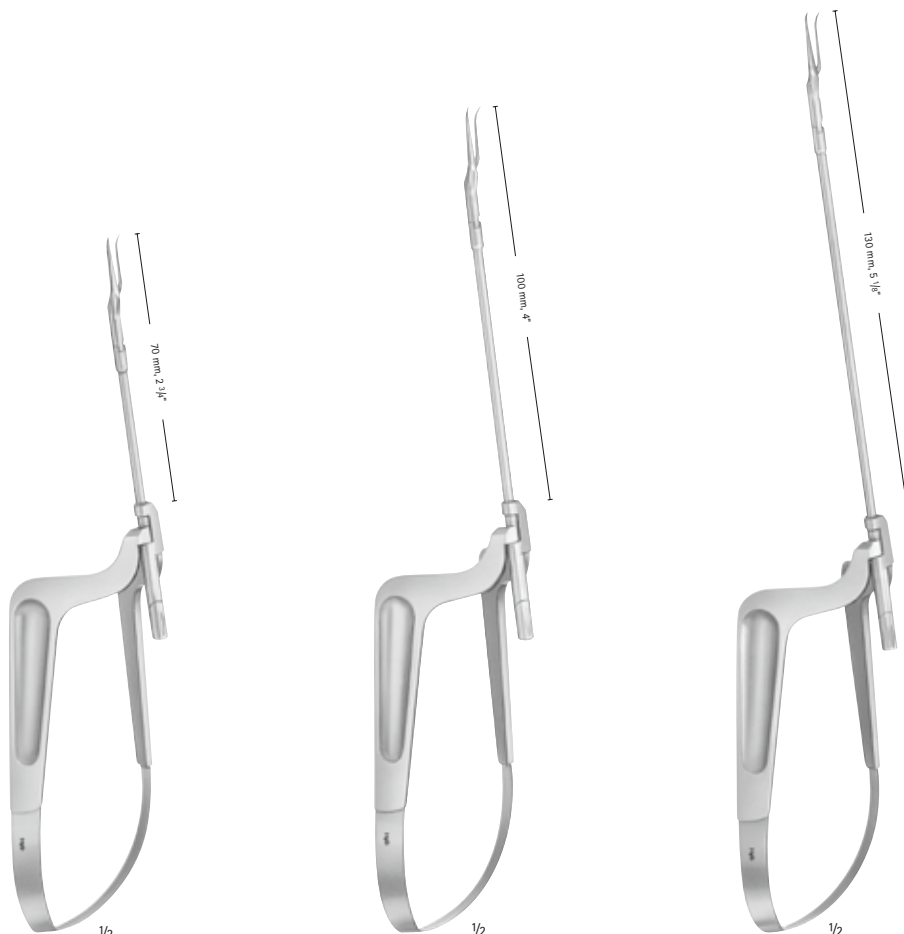
# MINOP® TEAM

## Transcranial Endoscope Assisted Microneurosurgery

### XS Tube Shaft Micro Instruments



	Instrument complete	Single parts		Instrument complete	Single parts		Instrument complete	Single parts	
		Jaw insert	Handle		Jaw insert	Handle		Jaw insert	Handle
straight jaws sharp/sharp 	<b>FM670R</b>	<b>FM675R</b>	<b>FM730R</b>	<b>FM671R</b>	<b>FM676R</b>	<b>FM731R</b>	<b>FM672R</b>	<b>FM677R</b>	<b>FM732R</b>
blunt/blunt 	<b>FM690R</b>	<b>FM695R</b>		<b>FM691R</b>	<b>FM696R</b>		<b>FM692R</b>	<b>FM697R</b>	
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"		



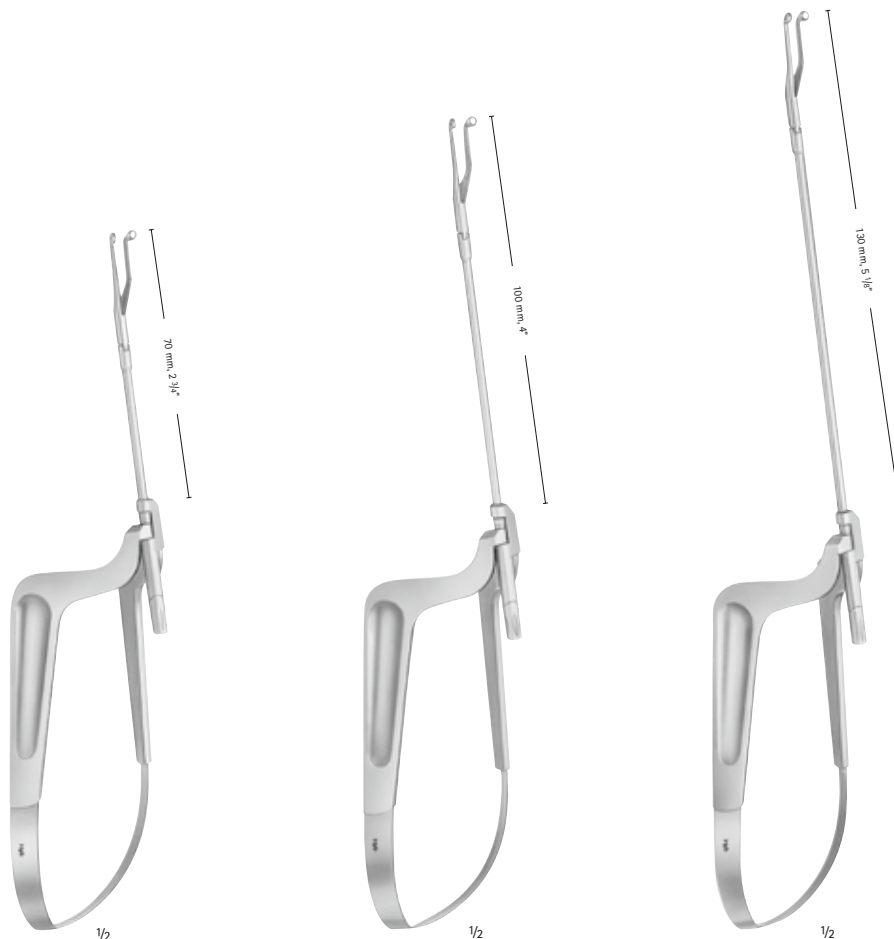
	70 mm, 2 3/4"			100 mm, 4"			130 mm, 5 1/8"		
	Instrument complete	Single parts		Instrument complete	Single parts		Instrument complete	Single parts	
		Jaw insert	Handle		Jaw insert	Handle		Jaw insert	Handle
curved jaws sharp/sharp	<b>FM680R</b>	<b>FM685R</b>	<b>FM730R</b>	<b>FM681R</b>	<b>FM686R</b>	<b>FM731R</b>	<b>FM682R</b>	<b>FM687R</b>	<b>FM732R</b>
blunt/blunt	<b>FM700R</b>	<b>FM705R</b>		<b>FM701R</b>	<b>FM706R</b>		<b>FM702R</b>	<b>FM707R</b>	
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"		




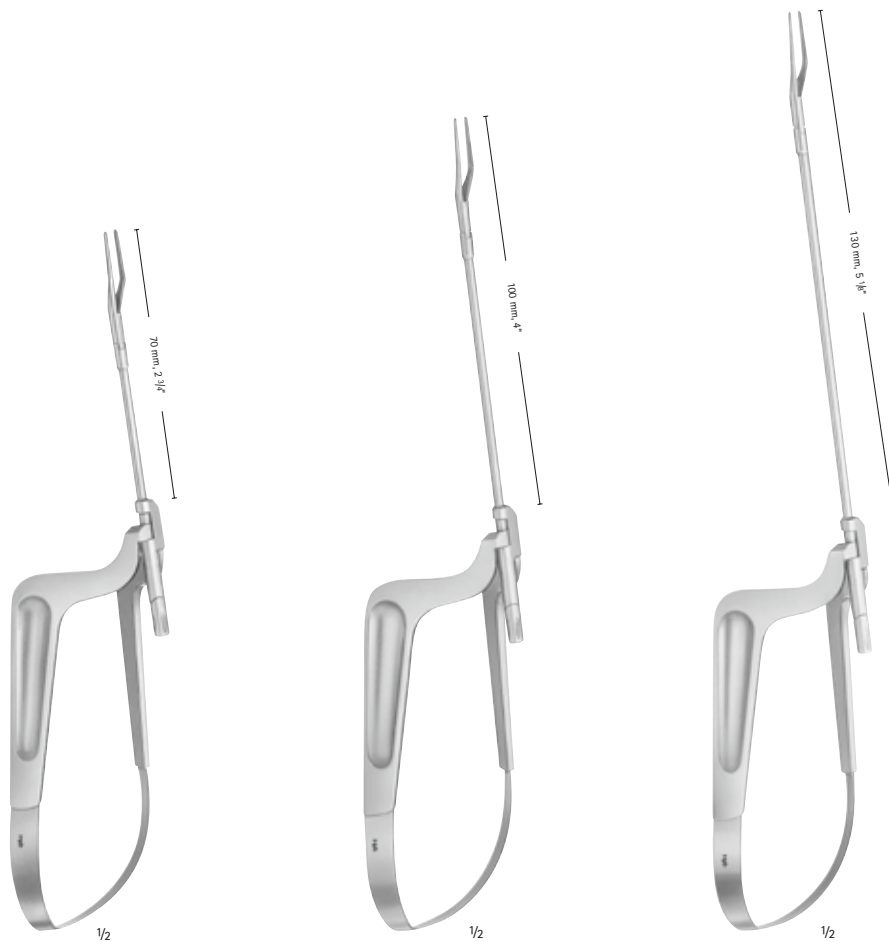
# MINOP® TEAM

## 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
	<b>FM725R</b>	<b>FM725R</b>	<b>FM730R</b>	<b>FM721R</b>	<b>FM726R</b>	<b>FM731R</b>	<b>FM722R</b>	<b>FM727R</b>	<b>FM732R</b>
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	Jaw insert	Handle	Instrument complete	Jaw insert	Handle	Instrument complete	Jaw insert	Handle	Instrument complete	Jaw insert	Handle
	<b>FM710R</b>	<b>FM715R</b>	<b>FM730R</b>	<b>FM711R</b>	<b>FM716R</b>	<b>FM731R</b>	<b>FM712R</b>	<b>FM717R</b>	<b>FM732R</b>			
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



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



	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 applicators 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<sup>®</sup>, 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
	<b>FD701B</b>	<b>FD702B</b>	<b>FD703B</b>	<b>FD731B</b>	<b>FD732B</b>	<b>FD733B</b>	<b>FD771B</b>	<b>FD772B</b>	<b>FD773B</b>
	<b>FD704B</b>	<b>FD705B</b>	<b>FD706B</b>	<b>FD734B</b>	<b>FD735B</b>	<b>FD736B</b>	<b>FD774B</b>	<b>FD775B</b>	<b>FD776B</b>
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 our Brochure C92011

## MIN Micro Needle Holder

Working length

70 mm

90 mm

120 mm

2/1

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



0.5 mm 

0.9 mm 

Working length

Total length

<b>FD711B</b>
70 mm
190 mm


<b>FD741B</b>
<b>FD743B</b>
90 mm
210 mm

<b>FD761B</b>
<b>FD763B</b>
120 mm
240 mm





1/2

	straight		45° curved		90° curved	
2.5 mm 	<b>FD766B</b>	<b>FD786B</b>	<b>FD767B</b>	<b>FD787B</b>	<b>FD768B</b>	<b>FD788B</b>
3.5 mm 	<b>FD769B</b>	<b>FD789B</b>	-	-	-	-
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



		Noir® Modular Handles
	FD811B	Handle, 8 mm, 100 mm
	FD812B	Handle, 11 mm, 100 mm
1/2		
		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

	<b>FD824B</b>	Curette, 200 mm, diam. 4 mm, 0°
	<b>FD825B</b>	Curette, 200 mm, diam. 4 mm, 45°
	<b>FD826B</b>	Curette, 200 mm, diam. 4 mm, 90°
	<b>FD827B</b>	Curette with neck, 200 mm, diam. 4 mm, 45°
	<b>FD828B</b>	Curette with neck, 200 mm, diam. 4 mm, 90°
	<b>FD835B</b>	Curette, 200 mm, diam. 6,5 mm, 45°
	<b>FD836B</b>	Curette, 200 mm, diam. 6,5 mm, 90°




1/1

Noir® Rasparatories

	<b>FD831B</b>	Rasparatory, 200 mm, 1 mm
	<b>FD832B</b>	Rasparatory, 200 mm, 2 mm
	<b>FD833B</b>	Rasparatory, 200 mm, 3 mm

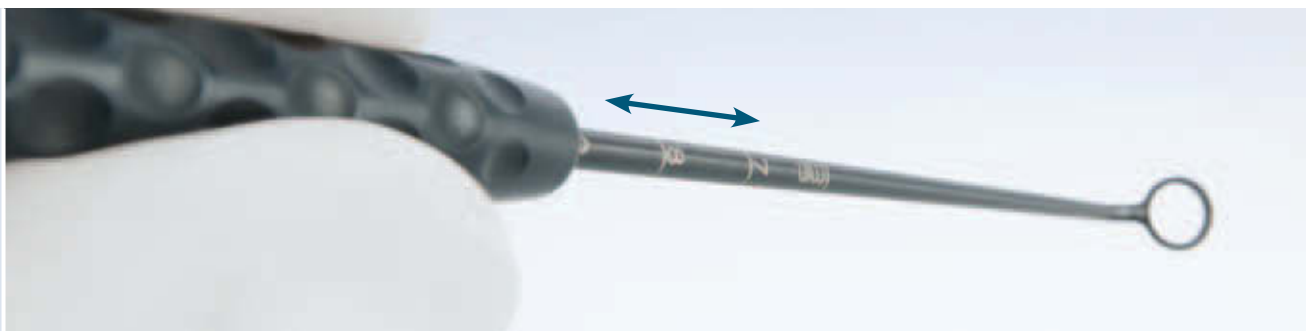
1/1

Noir® Tumor knives

	<b>FD839B</b>	Noir Tumor knife, 200 mm, diam. 1,5 mm, 45°
	<b>FD840B</b>	Noir Tumor knife, 200 mm, diam. 3 mm, 45°
	<b>FD841B</b>	Noir Tumor knife, 200 mm, diam. 4,5 mm, 45°

1/1

<b>FD467R</b>	Tray
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# MINOP® TEAM

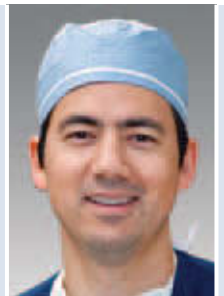
## Transcranial Endoscope Assisted Microneurosurgery

### MIN Pivot-Point Bipolar Forceps



“ 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. ”

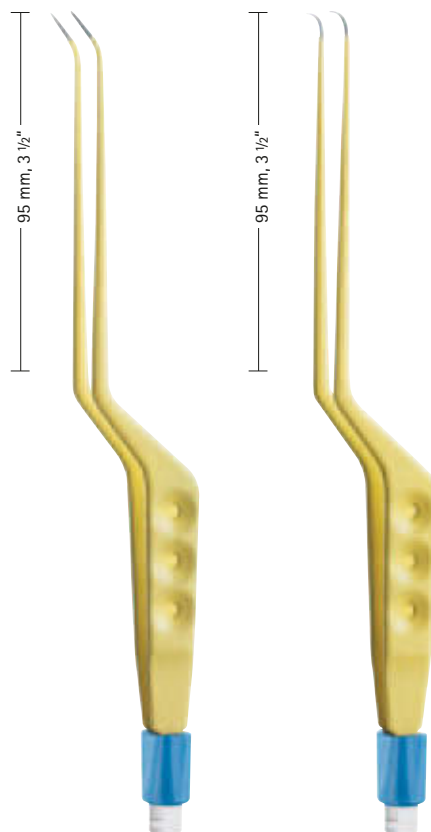
Peter Nakaji, Phoenix, USA





## Bipolar Yasargil Forceps

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



 Aesculap tab

0.4 mm 

0.7 mm 

0.7 mm 

Working length

Total length

**GK777R**

**GK780R**

**GK781R**

95 mm

135 mm

215 mm, 8 1/2"

215 mm, 8 1/2"

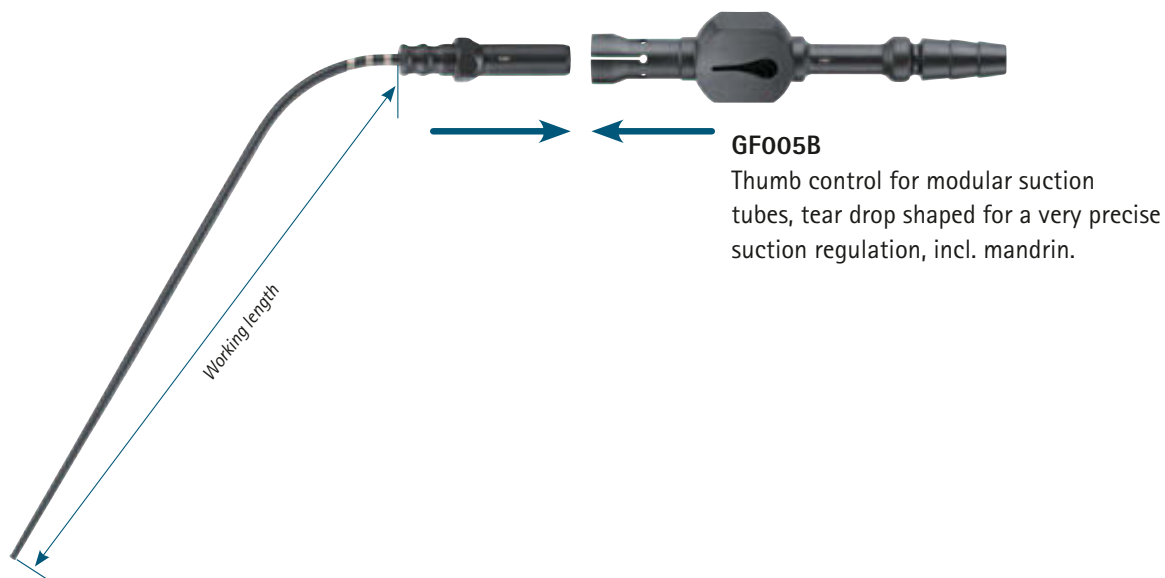


For more information please ask your  
local Aesculap sales representative or  
see our Brochure C30481

# MINOP® TEAM

## Transcranial Endoscope Assisted Microneurosurgery

### MIN Modular Suction Cannulas



	○ 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 ○ 1/4	GF470R	GF473R	GF476R	GF479R
blue, 2.0 mm	6 Fr ◎ 1/4	GF471R	GF474R	GF477R	GF480R
green, 2.7 mm	8 Fr ○ 1/2	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 Currettes 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



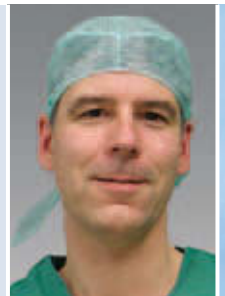
**HARDY**  
**FA047R**  
Curette  
diam. 4.0 mm  
90° right angled  
long neck



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

“ Compared to a classical curette instrument, the TREND currettes 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



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

Excellent 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

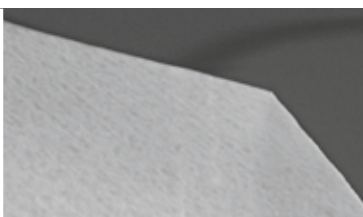
45°  
Length  
205 mm, 8"



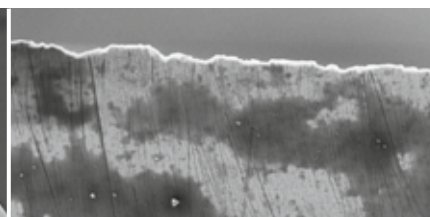
**FD116D**

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"



“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



<p>At a glance, large numbered jaw identification</p>	<p>Ejector – for the easy removal of punched-out material.</p>	<p>Numerical code – for reliable identification when assembling the two punch components.</p>



## KERRISON Bayonet Bone Punches

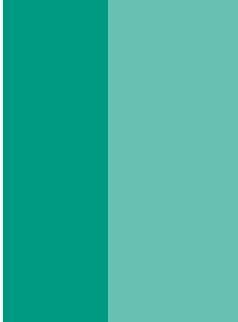
**Jaw position 130°, upward opening**

Length	Width	Working length	Article No.	Jaw width
240 mm, 9 1/2"	2.0 mm	170 mm	<b>FF496R</b>	10 mm
	3.0 mm	170 mm	<b>FF497R</b>	10 mm
	4.0 mm	170 mm	<b>FF498R</b>	10 mm
	5.0 mm	170 mm	<b>FF499R</b>	10 mm

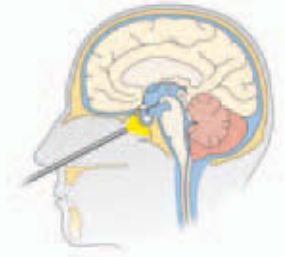


For more information about MINOP® TEAM please see our „Practical Atlas“ C29802.



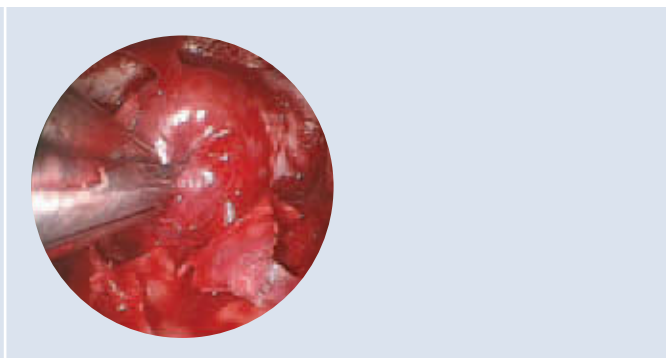
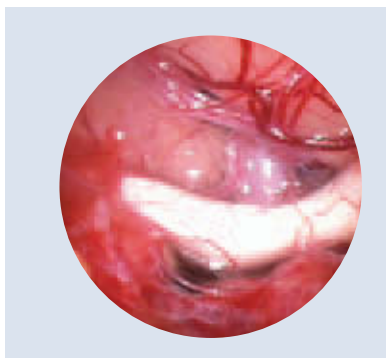


# Transnasal Neuroendoscopy



# 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



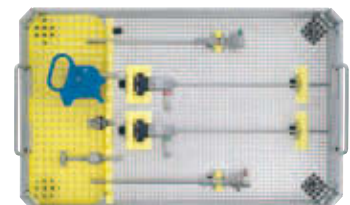
#### FH605SU

**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

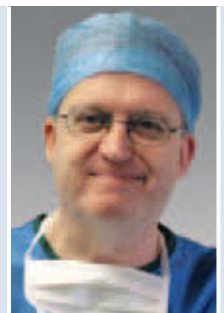


#### JK789

**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



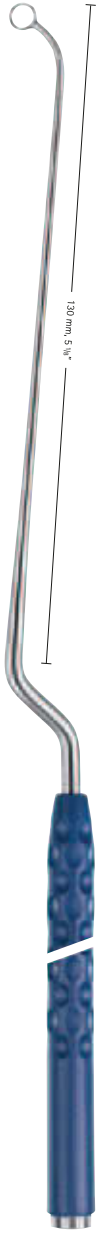
*“ No other system that I have used combines as many helpful features in a single ,instrument‘. The lens cleaning is rapid and conveniently controlled with a button, instead of a pedal. The suction is effective. The ability to rotate the scope easily and quickly within the handle improves angled viewing.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

Jeremy Greenlee, Iowa City, USA









# MINOP® TREND

## TRansnasal ENDoscopic System

### TREND – Currettes and Dissectors



130 mm, 5 1/8"

				
	<b>NICOLA</b>	<b>NICOLA</b>	<b>HARDY</b>	<b>HARDY</b>
	<b>FA041R</b>	<b>FA042R</b>	<b>FA043R</b>	<b>FA044R</b>
	Curette diam. 6.5 mm 45° vertical angled long neck	Curette diam. 6.5 mm 45° horizontal angled short neck	Enucleator left cutting	Enucleator right cutting
				
	<b>HARDY</b>	<b>HARDY</b>	<b>HARDY</b>	<b>HARDY</b>
	<b>FA045R</b>	<b>FA046R</b>	<b>FA047R</b>	<b>FA060R</b>
	Curette diam. 4.0 mm 90° left angled long neck	Curette diam. 4.0 mm 90° left angled short neck	Curette diam. 4.0 mm 90° right angled long neck	Curette diam. 4.0 mm 90° right angled short neck

**FA041R-FA068R**

Working length:  
130 mm, 5 1/8"

Total length:  
280 mm, 11"

“ 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



**REULEN-  
 LANDOLT**  
**FA068R**  
 Dissector  
 diam. 2.0 mm  
 blunt

1/1





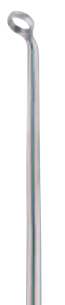




# MINOP® TREND

## TRansnasal ENDoscopic System

### TREND – Currettes and Dissectors



						
	NICOLA	NICOLA	HARDY	HARDY	HARDY	HARDY
	<b>FA030R</b>	<b>FA031R</b>	<b>FA032R</b>	<b>FA033R</b>	<b>FA034R</b>	<b>FA035R</b>
	Curette diam. 6.5 mm	Curette diam. 6.5 mm	Enucleator	Enucleator	Curette diam. 4.0 mm	Curette diam. 4.0 mm
	45° vertical angled, long neck	45° horizontal angled, short neck	left cutting	right cutting	90° angled long neck	90° angled short neck
	<b>FA030R-FA040R</b>					
	Working length: 140 mm, 5 1/2"					
	Total length: 265 mm, 10 1/2"					
	Straight design with ergonomic grasping part and semi-sharp tips					
						
	HARDY	HARDY	HARDY	LANDOLT- REULEN	LANDOLT- REULEN	
	<b>FA036R</b>	<b>FA037R</b>	<b>FA038R</b>	<b>FA039R</b>	<b>FA040R</b>	
	Curette diam. 4.0 mm	Curette diam. 6.0 mm	Curette diam. 6.0 mm	Micro Hook diam. 1.7 mm	Dissector diam. 2.0 mm	
	45° angled short neck	90° angled long neck	90° angled short neck		blunt	



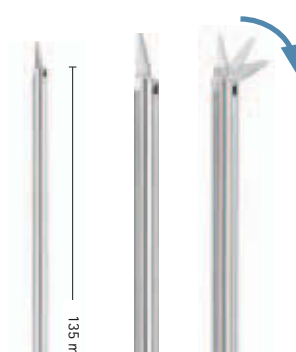
## Deflectable TREND - Instruments



**FD137R**

Deflectable TREND curette

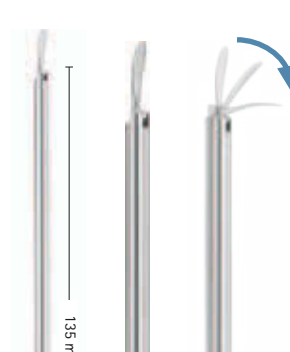
Diameter: 6 mm  
 Working length: 135 mm, 5 1/4"  
 Total length: 265 mm, 10 1/2"



**FD138R**

Deflectable TREND knife

Working length: 135 mm, 5 1/4"  
 Total length: 265 mm, 10 1/2"



**FD139R**

Deflectable TREND dissector

Diameter: 2.1 mm  
 Working length: 135 mm, 5 1/4"  
 Total length: 265 mm, 10 1/2"

# 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 1/2"



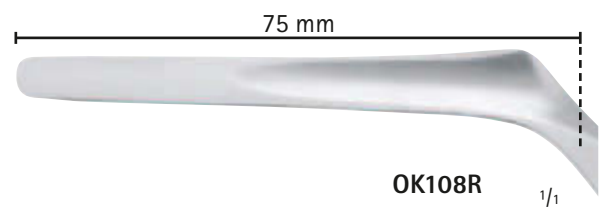
OK105R 1/1



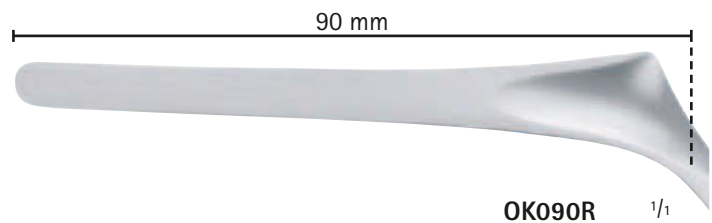
OK106R 1/1



OK107R 1/1



OK108R 1/1



OK090R 1/1



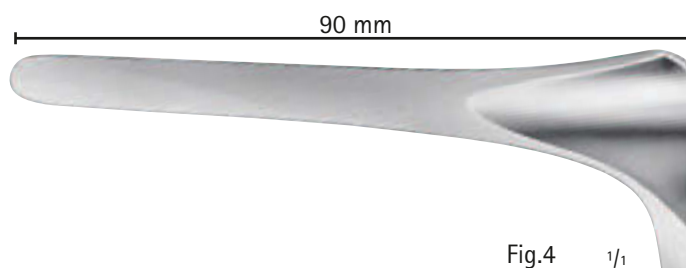
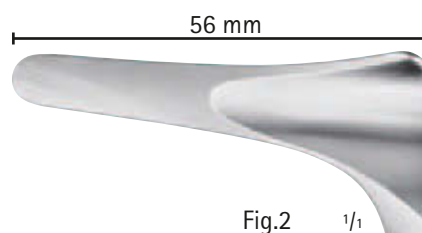
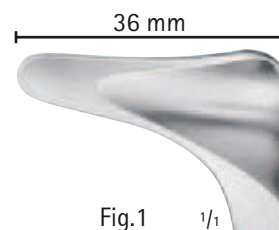
KILLIAN

- OK081R** Fig. 1
- OK082R** Fig. 2
- OK083R** Fig. 3
- OK084R** Fig. 4

with aseptic joint  
145 mm, 5 3/4"

- OK091R** Fig. 1
- OK092R** Fig. 2
- OK093R** Fig. 3
- OK094R** Fig. 4

with screw joint  
140 mm, 5 1/2"



# MINOP® TREND

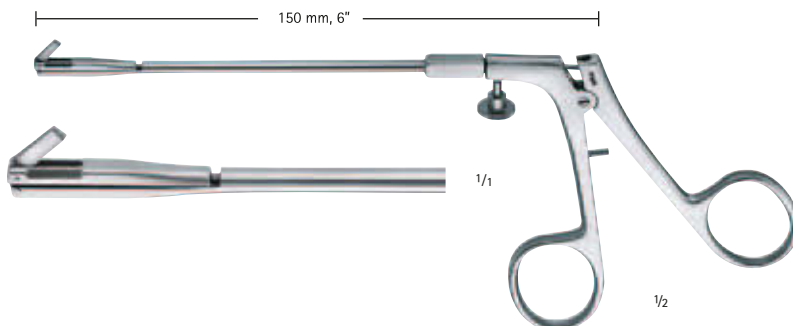
## TRansnasal ENDoscopic System

### Pituitary Instruments / Sinus Punches

**FA076R**

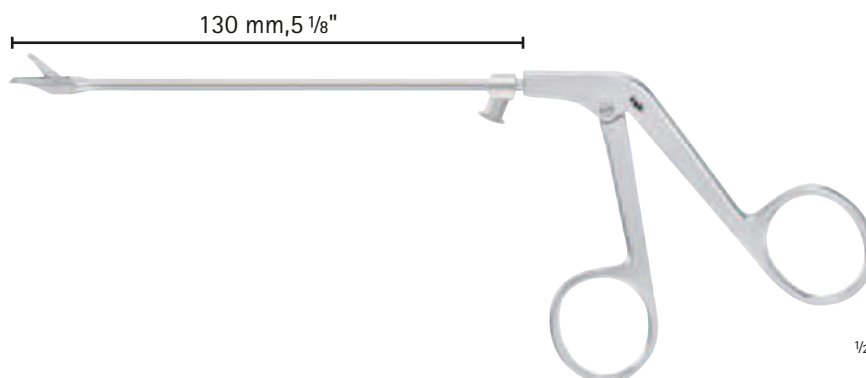
**Backwards cutting antrum punch,**  
Rotating sheath 360°,  
Working length: 120 mm, 4 3/4"



For removal of posterior nasal septum



**OK602R-OK609R**

Sinus Punches

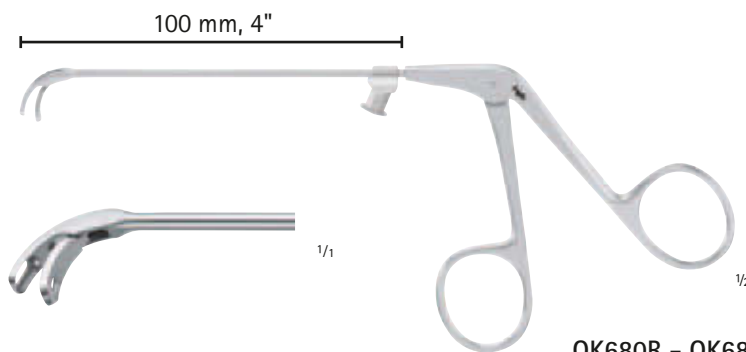


		6 x 1.5 mm <sup>2/1</sup>	8 x 3 mm <sup>2/1</sup>	11.5 x 3.5 mm <sup>2/1</sup>
	straight	<b>OK608R</b> forward through cutting	MACKAY-GRUNEWALD <b>OK602R</b> forward through cutting	MACKAY-GRUNEWALD <b>OK603R</b> forward through cutting
	45° upwards angled	<b>OK609R</b> forward through cutting	MACKAY-GRUNEWALD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

## Antrum Grasping Forceps

### OK680R

jaw opening backwards,  
curved downwards



OK680R - OK683R

### OK681R

jaw opening backwards,  
curved upwards



### OK682R

jaw opening backwards,  
curved to right



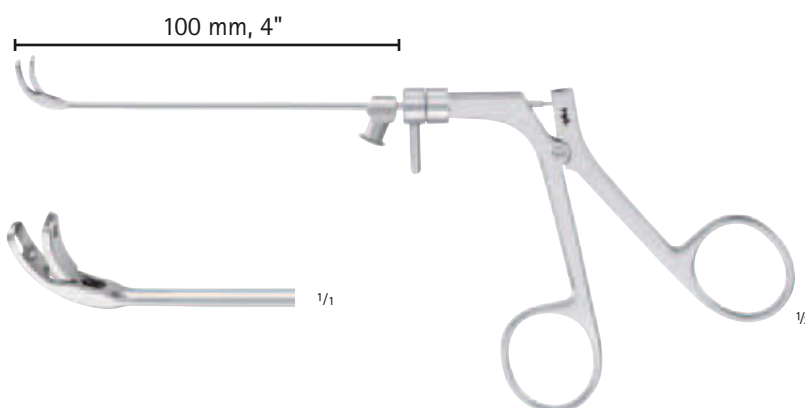
### OK683R

jaw opening backwards,  
curved to left



### OK684R

jaw opening backwards,  
jaw 360° rotatable



# MINOP® TREND

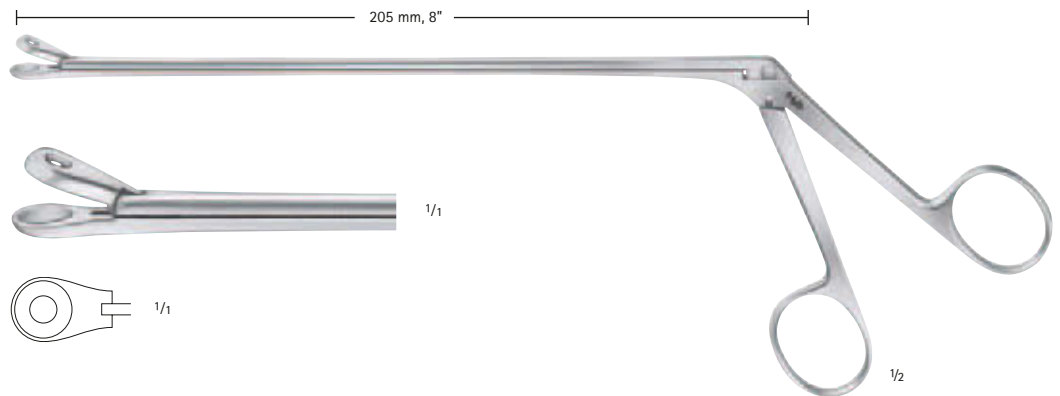
## TRansnasal ENDoscopic System

### Nasal Forceps

LANDOLT

FF345R

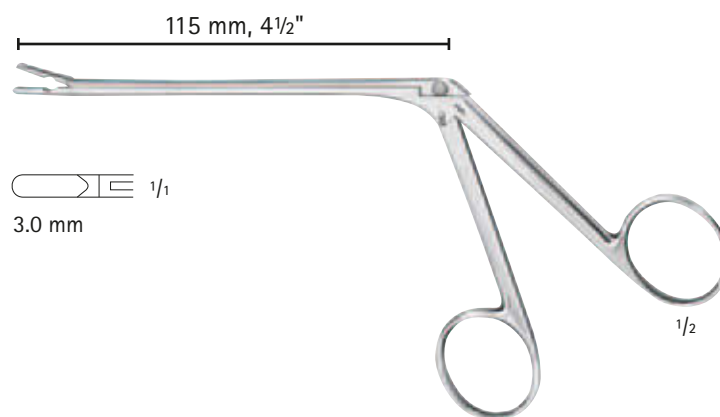
Tumor grasping forceps,  
blunt  
Diam. 9.0 mm



TAKAHASHI

OK525R

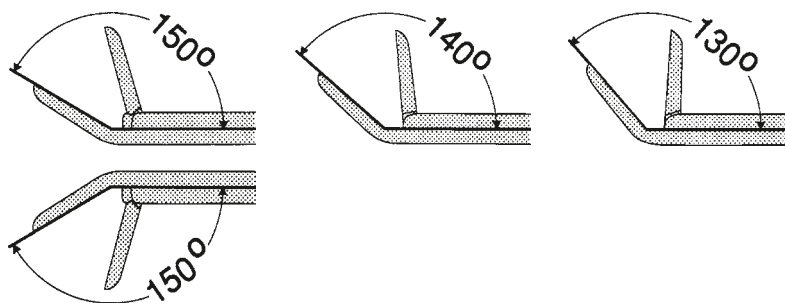
Rongeur, straight





## Nasal Forceps

Angled positions for rongeurs

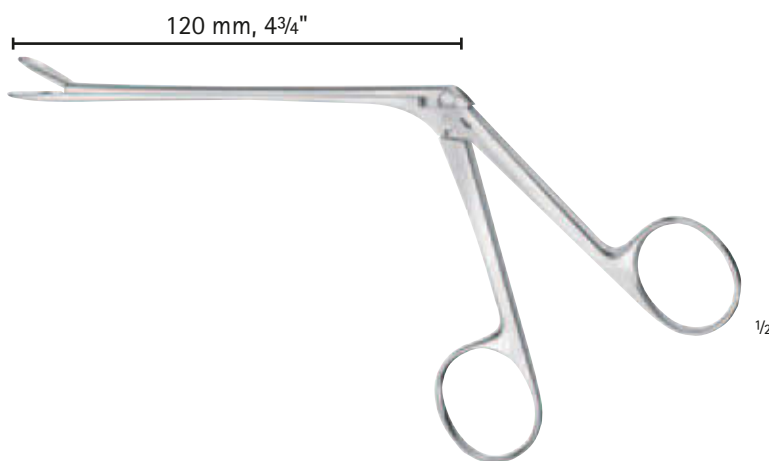


BLAKESLEY-WILDE

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

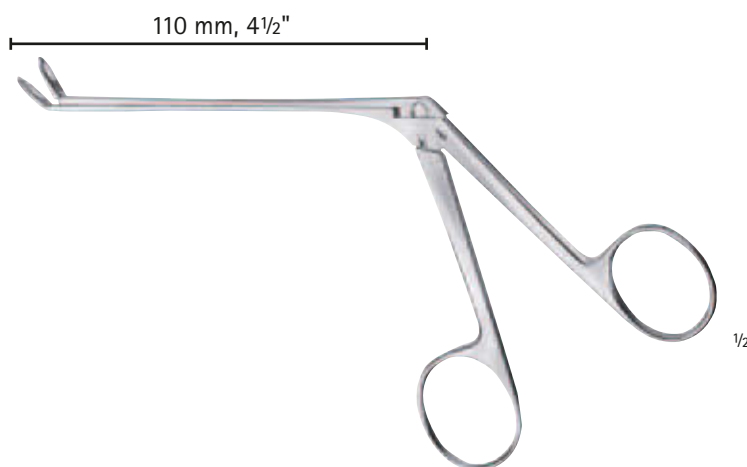


BLAKESLEY-WILDE

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



Transnasal

For more information about instruments for Functional Endoscopic Sinus Surgery (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**

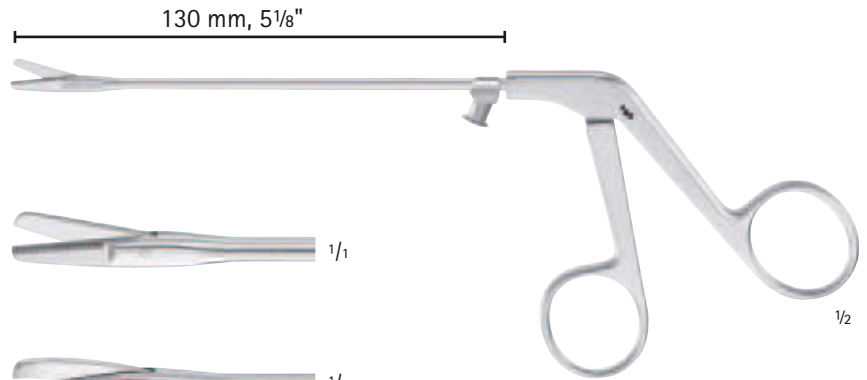
straight, blades serrated

**OK561R**

left curved, blades serrated

**OK562R**

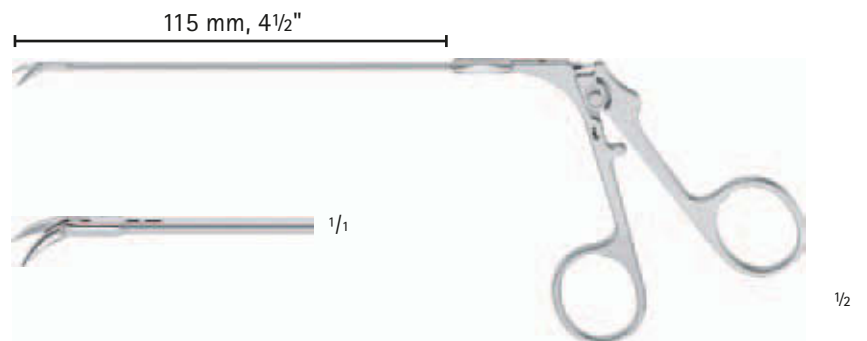
right curved, blades serrated



CASPAR

**FD228R**

Micro scissors, curved  
rotatable 360°



## Pituitary Scissors

165 mm, 6 1/2"

FAHLBUSCH

**FD220R**

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



1/1



1/2

NICOLA

**FD222R**

Forceps, scoop-shaped, diam. 2.5 mm



1/1

**FD220R-FD226R**

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

YASARGIL-NICOLA

**FD224R**

Grasping forceps with long conical jaw



1/1

NICOLA

**FD226R**

Micro scissors, straight, diam. 2.5 mm



1/1

115 mm, 4 1/2"

CASPAR

**FD228R**

Micro scissors, curved rotatable sheath 360°



1/1



1/2



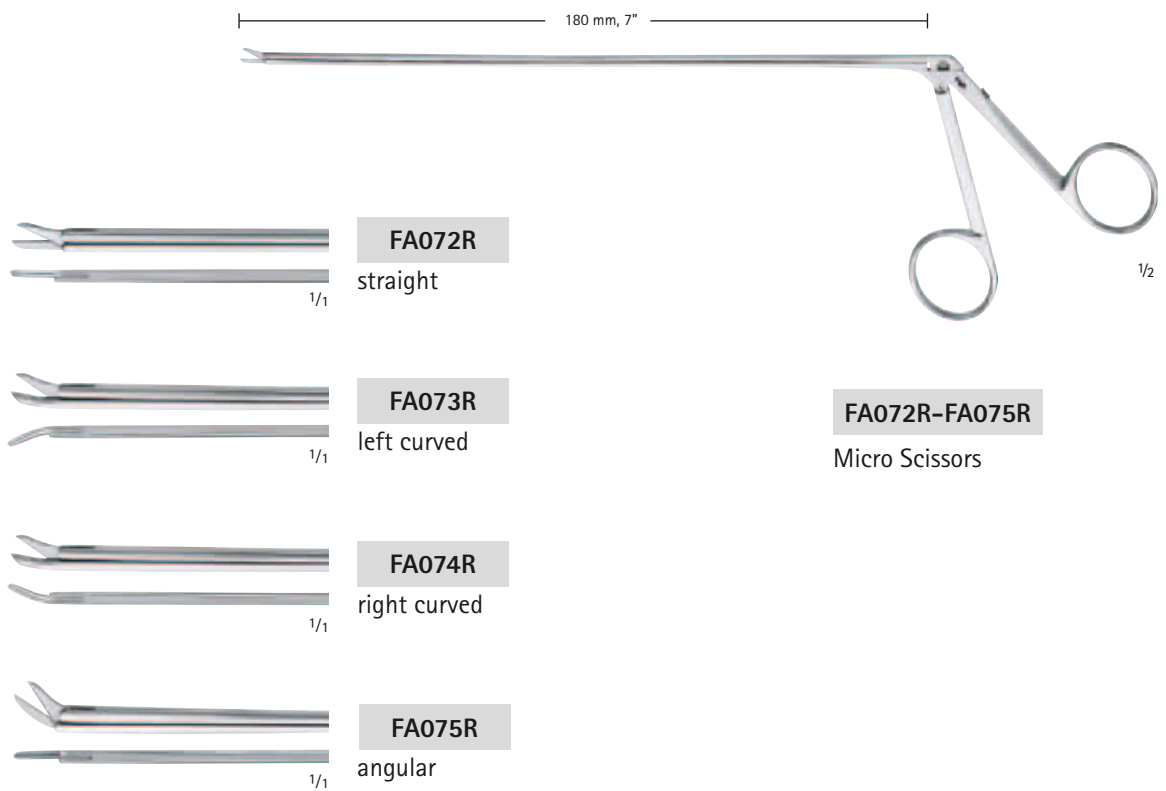
“ Essential part of the endoscopic transnasal surgery is the nasal dissection, using special pituitary instruments. Goal is the maximum exploration of the target area, but also minimally invasive nasal traumatization, thus avoiding mucosal lacerations and unnecessary bony fractures. This influences patients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

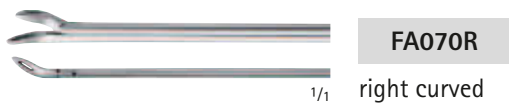
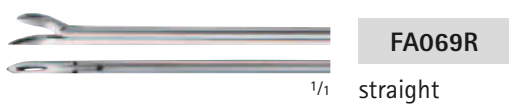
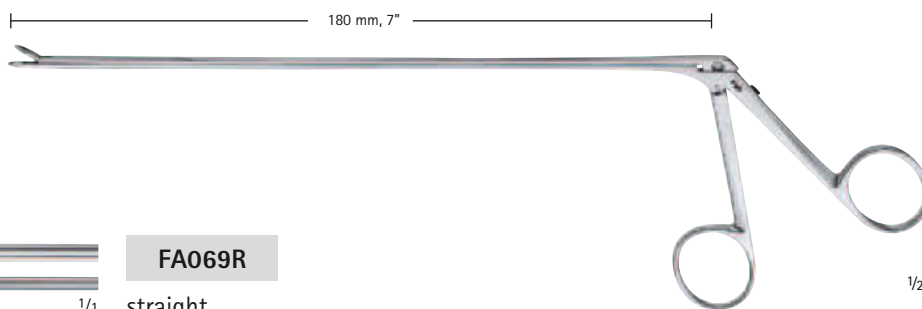
André Grotenhuis, Nijmegen, Netherlands

# MINOP® TREND

## TRansnasal ENDoscopic System

### Pituitary Scissors





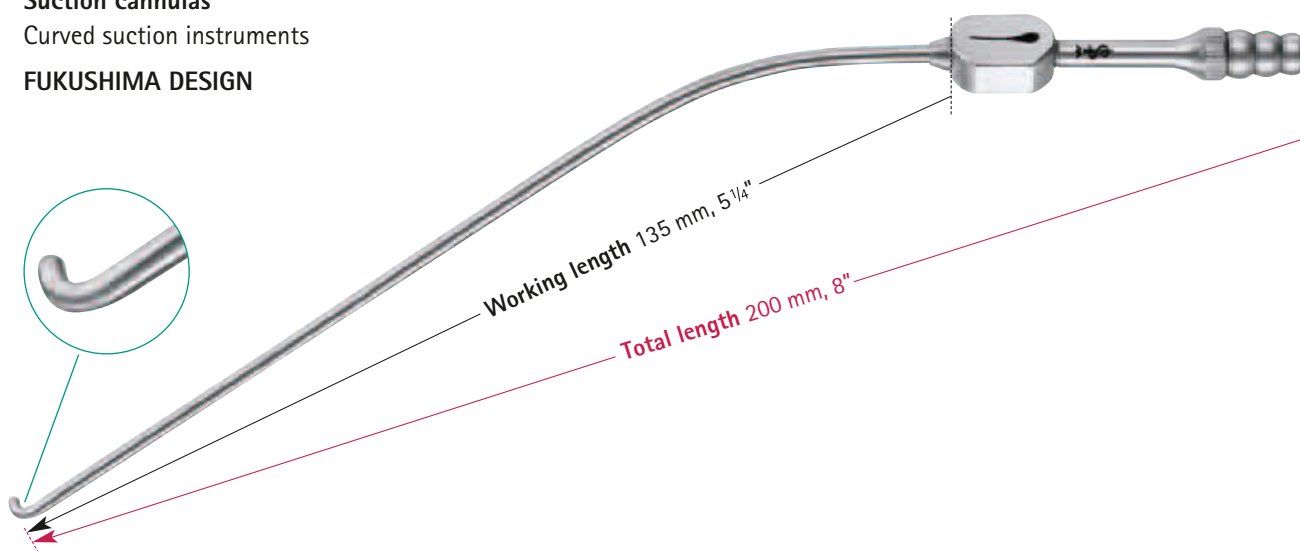
**FA069R-FA071R**  
Micro Forceps

# MINOP® TREND

## TRansnasal ENDoscopic System

### Curved Micro Suction Instruments

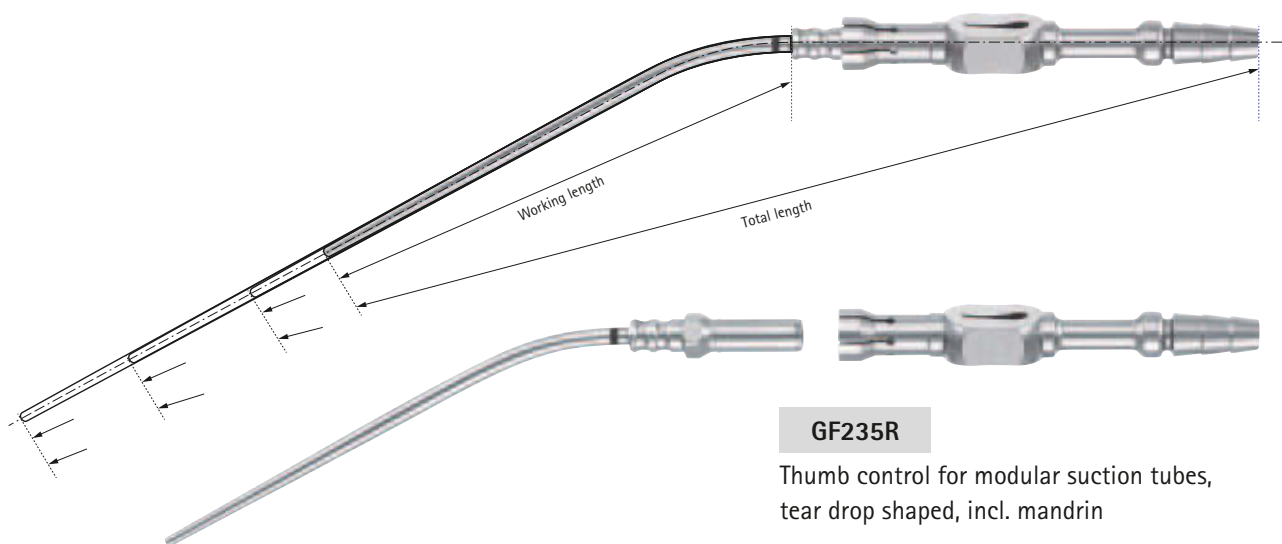
Suction cannulas  
Curved suction instruments  
FUKUSHIMA DESIGN



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
	<b>GF431R</b>	<b>GF432R</b>



## 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

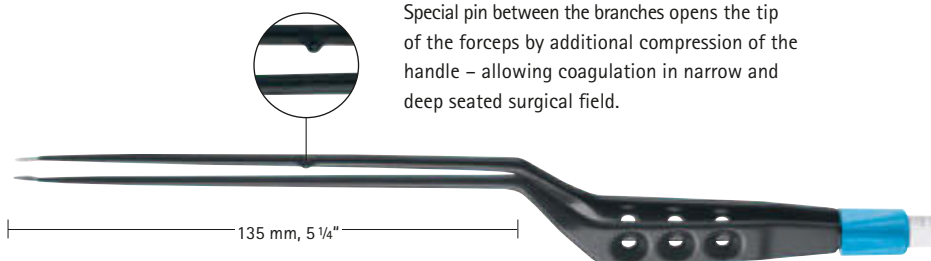
## TRansnasal ENDoscopic System

### Nasal Forceps

#### GK801R

**Bipolar coagulation forceps**  
with slender jaws and higher  
spring tension

Total length 255 mm, 10"  
Working length 135 mm, 5 1/4"

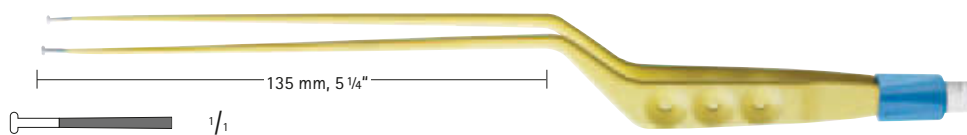


Special pin between the branches opens the tip of the forceps by additional compression of the handle – allowing coagulation in narrow and deep seated surgical field.

#### GK800R

**T-coagulation forceps**  
with blunt, t-shaped tips

Total length 255 mm, 10"  
Working length 135 mm, 5 1/4"



#### LANDOLT

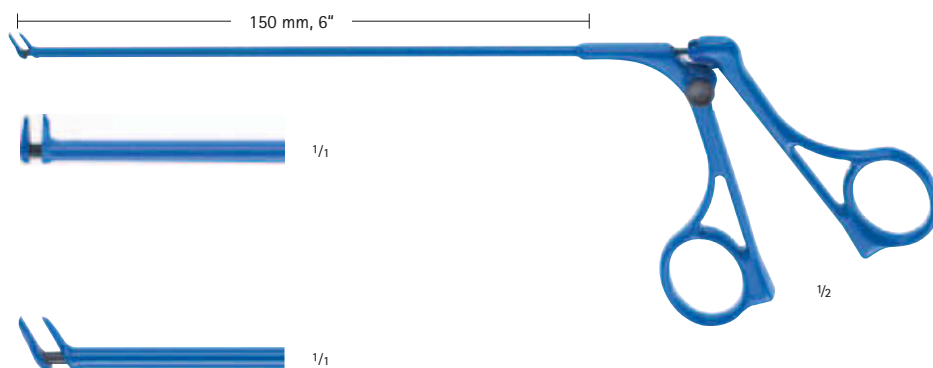
#### GK560R

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"



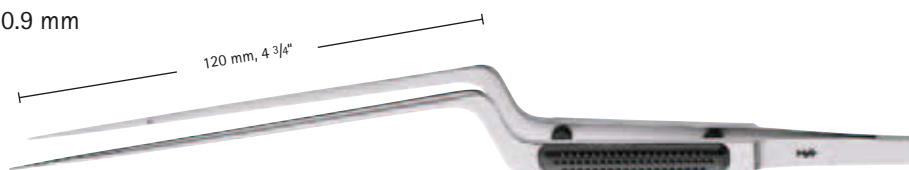
**FM156R**

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	<b>FF496R</b>	10 mm
	3.0 mm	170 mm	<b>FF497R</b>	10 mm
	4.0 mm	170 mm	<b>FF498R</b>	10 mm
	5.0 mm	170 mm	<b>FF499R</b>	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<sub>2</sub> cartridge adapter For use of Unitrac independent from compressed air sources



### RT044SU

Unitrac CO<sub>2</sub> 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



**RT099R**

**Adapter**  
for fixation of MINOP® TREND  
handle, FH615



**RT081R**

**Adapter**  
for universal insert RT055P



**RT079R**

**Adapter**  
for fixation of angled  
endoscopes PE486A, PE506A,  
PE526A



**RT055P**

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



**RT068R**

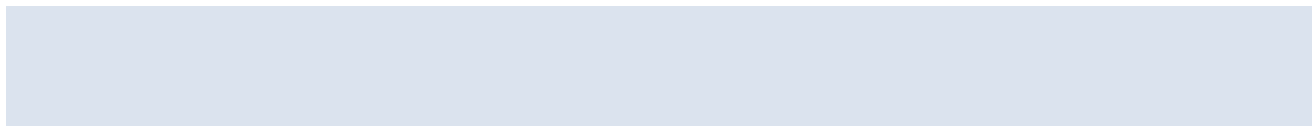
**Adapter**  
for fixation of MINOP® InVent  
trocar, FH620R



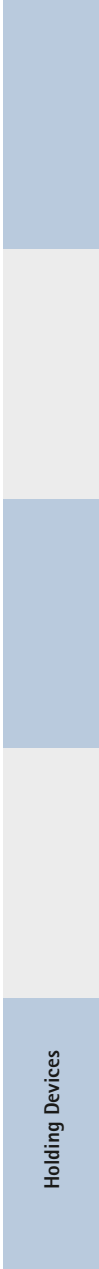
**RT079205**

**Silicone bit**  
for RT079R

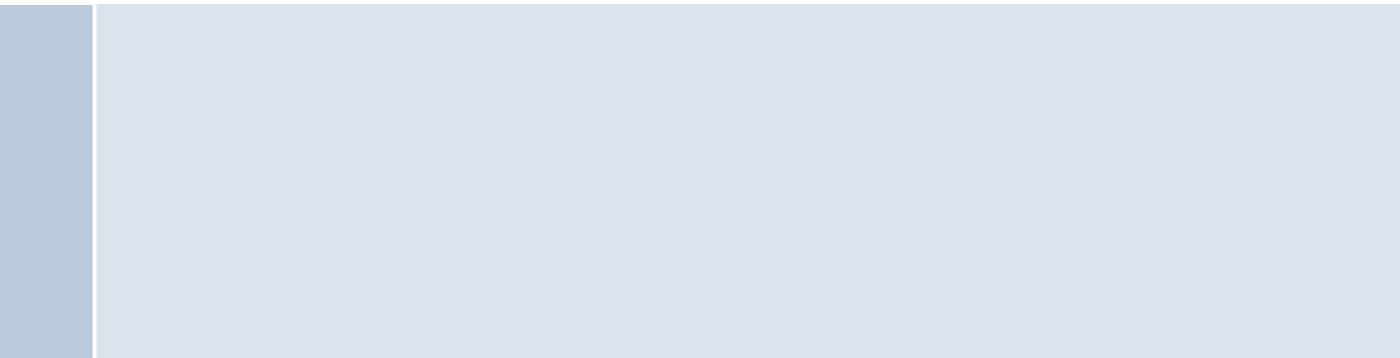




	MINOP® FF397R FF398R FF399R	Paediscopes PA010A	MINOP® InVent FH620R	Angled scopes PE486A PE506A PE526A	MINOP® TREND FH615	MINOP® TR FH601R
RT046P	●	●		●		●
RT099R					●	
RT079R				●		
RT068R			●			



Holding Devices



# Aesculap Neurosurgery

## Holding Devices

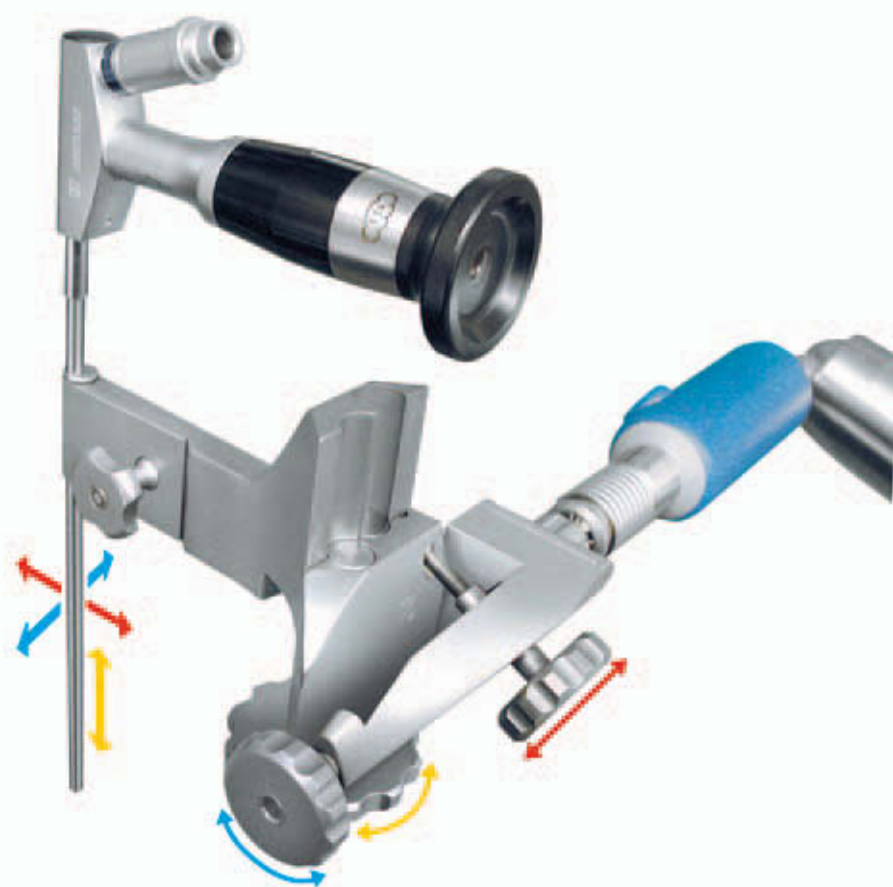
### Neuropilot® – Fine-positioning for UNITRAC® and M-TRAC

#### 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.”

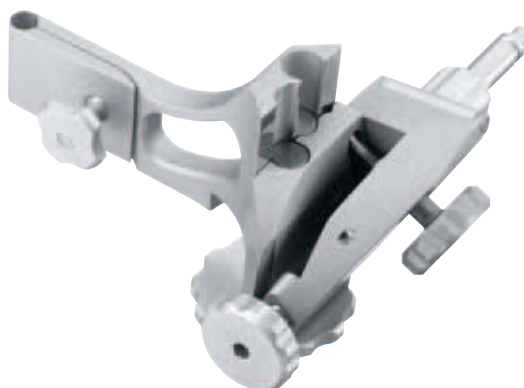
Peter Nakaji, Phoenix, USA





**RT060R**

**NeuroPilot®**  
for intraventricular and  
endoscope-assisted indications



**RT061R**

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



**RT065R**

Insert for MINOP® trocar FF399R  
with diam. 6.0 mm



**RT063R**

Insert for MINOP® trocar FF397R  
with diam. 3.2 mm



**RT066R**

Insert for PaediScope® PF010A  
with diam. 3.0 mm



**RT064R**

Insert for MINOP® trocar FF398R  
with diam. 4.6 mm



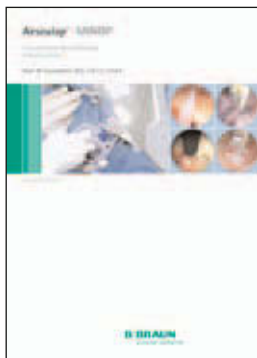
# Aesculap Neurosurgery

## Holding Devices

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

	MINOP® FF397R	MINOP® FF398R	MINOP® FF399R	Paediscopes 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 Endoscope-Assisted Microneurosurgery: A Practical Atlas  
 Robert Reisch, M.D., Ph.D.  
 C29802



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

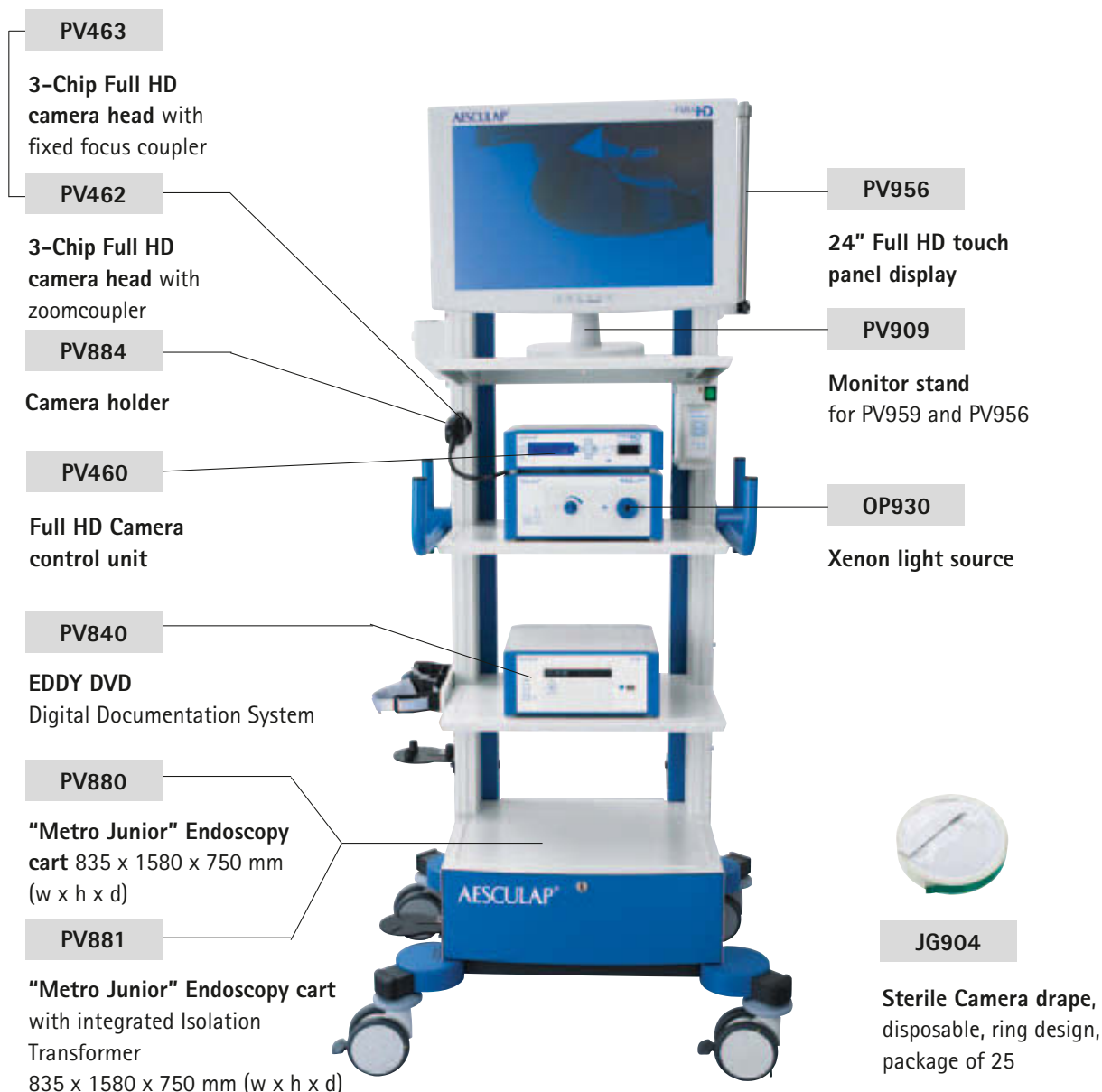
### Aesculap Neuroendoscopy App

### Helsinki Microneurosurgery App

# Aesculap Neurosurgery

## Visual Equipment Examples for Neuroendoscopy

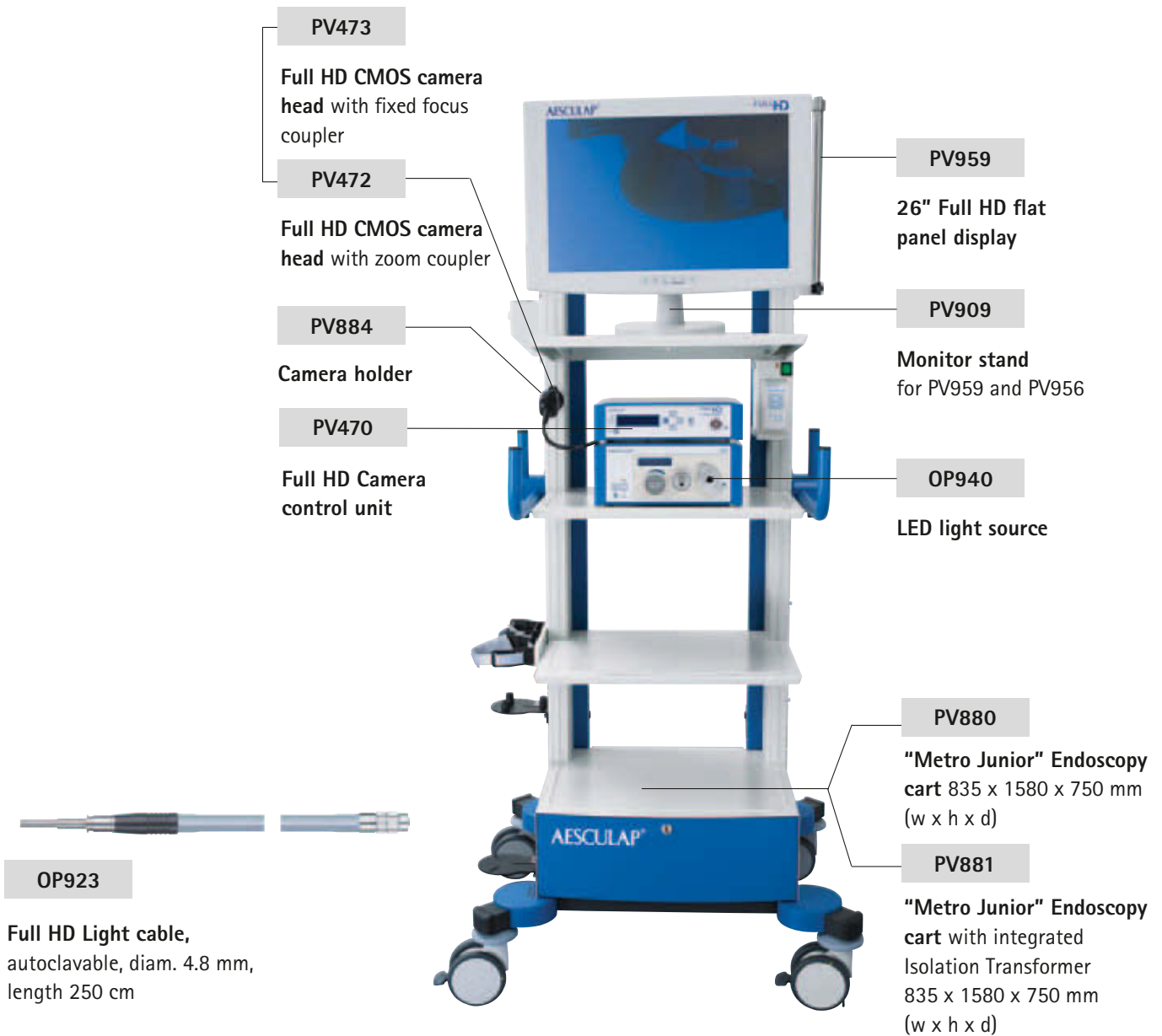
### Full HD Camera, Xenon Light Source, Documentation System and Touch Screen



“ 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



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

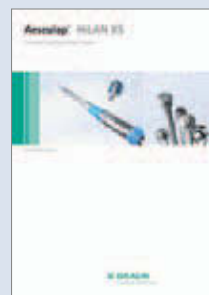
**GA468R** Supply hose (3 m)  
wall connection Schrader

**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

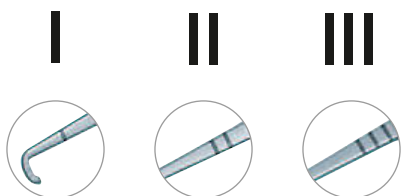
## Power Systems

### 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**



**I GB741R**

**II GB742R**

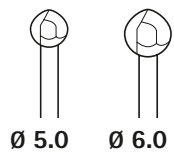
**III GB743R**

Fixed dura guards





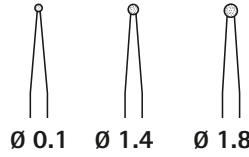
**Twin-cut burrs**



Ø 5.0    Ø 6.0

▲ GE396R GE397R

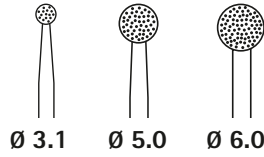
**Diamond burrs standard**



Ø 0.1    Ø 1.4    Ø 1.8

GE381R GE382R GE382R

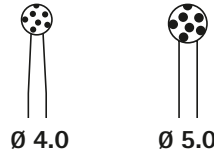
**Diamond burrs coarse**



Ø 3.1    Ø 5.0    Ø 6.0

GE394R GE398R GE399R

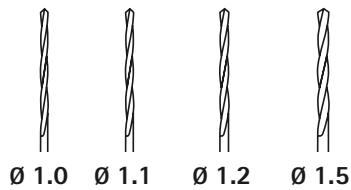
**extra coarse**



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

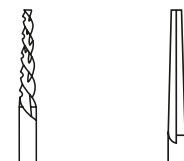
GE392R



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

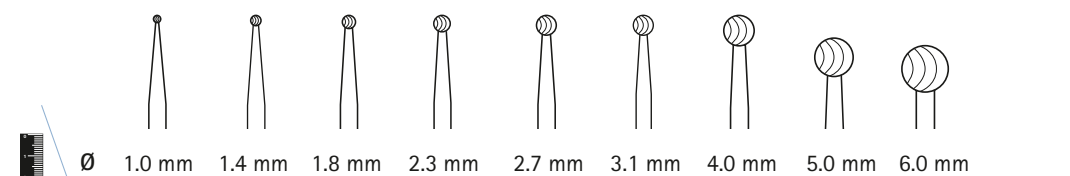
## Power Systems

### Hi-Line XS Handpieces and Tools - Standard

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

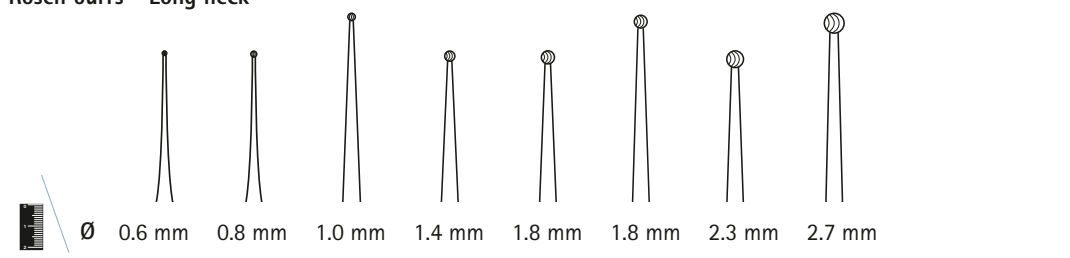


Rosen burrs



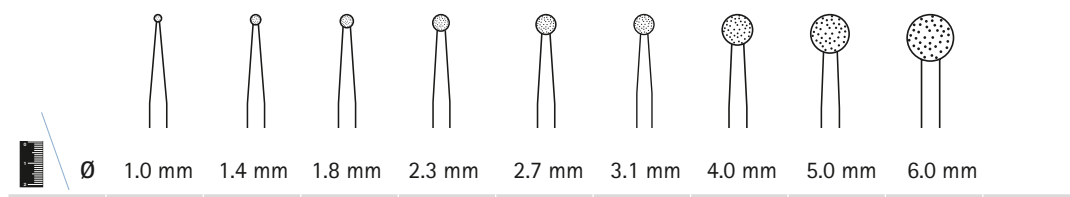
	Ø	1.0 mm	1.4 mm	1.8 mm	2.3 mm	2.7 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm	
I		GE401R	GE402R	GE403R	GE404R	GE405R	GE406R	GE407R	GE408R	GE409R	
II		GE501R	GE502R	GE503R	GE504R	GE505R	GE506R	GE507R	GE508R	GE509R	
III				GE603R	GE604R	GE605R	GE606R	GE607R	GE608R	GE609R	

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	⊗	GE469SU	GE470SU	GE471SU			GE473SU		GE475SU	
II					GE572R	GE573R		GE574R		
III										

Diamond burrs



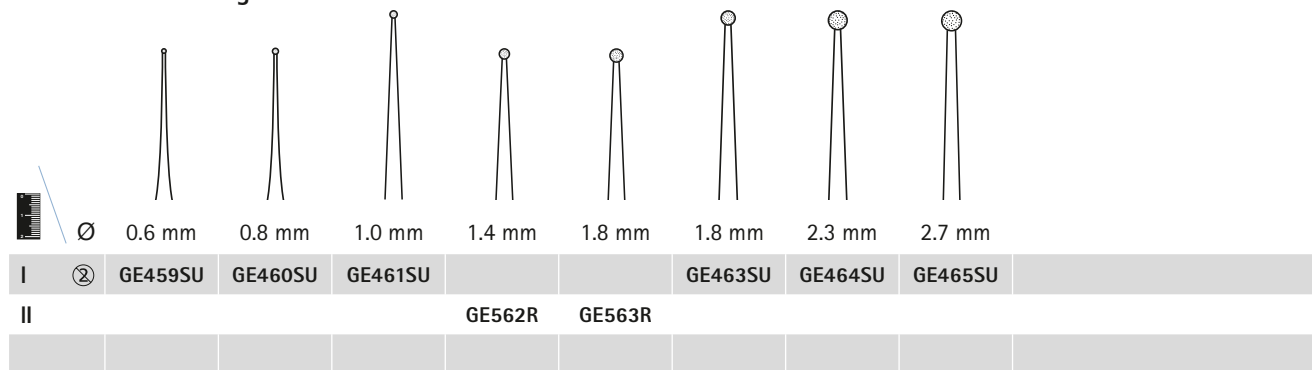
	Ø	1.0 mm	1.4 mm	1.8 mm	2.3 mm	2.7 mm	3.1 mm	4.0 mm	5.0 mm	6.0 mm	
I		GE411R	GE412R	GE413R	GE414R	GE415R	GE416R	GE417R	GE418R	GE419R	
II		GE511R	GE512R	GE513R	GE514R	GE515R	GE516R	GE517R	GE518R	GE519R	
III				GE613R	GE614R	GE615R	GE616R	GE617R	GE618R	GE619R	

# Aesculap Neurosurgery

## Power Systems

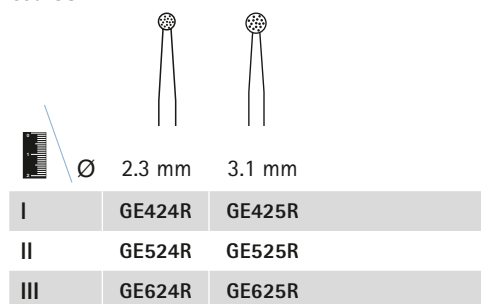
### Hi-Line XS Handpieces and Tools

#### Diamond burrs - Long neck



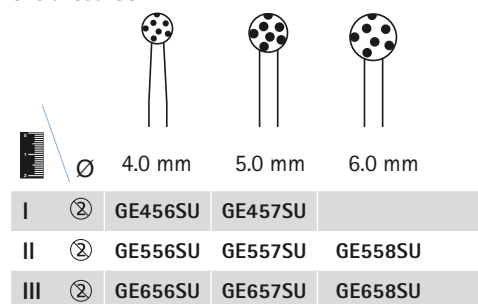
	Ø	0.6 mm	0.8 mm	1.0 mm	1.4 mm	1.8 mm	1.8 mm	2.3 mm	2.7 mm
I	⊗	GE459SU	GE460SU	GE461SU			GE463SU	GE464SU	GE465SU
II					GE562R	GE563R			

#### Diamond burrs coarse



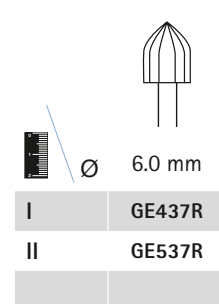
	Ø	2.3 mm	3.1 mm
I		GE424R	GE425R
II		GE524R	GE525R
III		GE624R	GE625R

#### Diamond burrs extra coarse



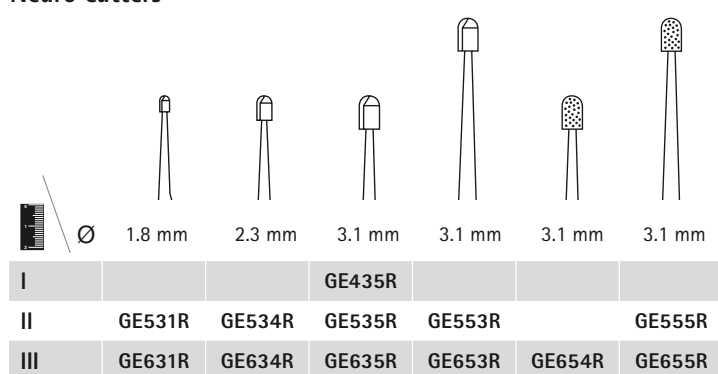
	Ø	4.0 mm	5.0 mm	6.0 mm
I	⊗	GE456SU	GE457SU	
II	⊗	GE556SU	GE557SU	GE558SU
III	⊗	GE656SU	GE657SU	GE658SU

#### Acorn burrs



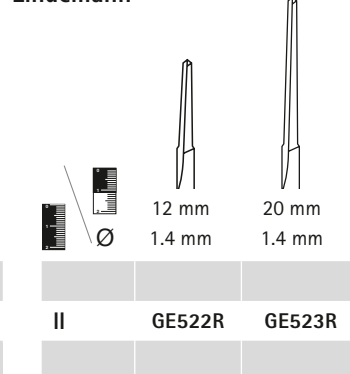
	Ø	6.0 mm
I		GE437R
II		GE537R

#### Neuro cutters



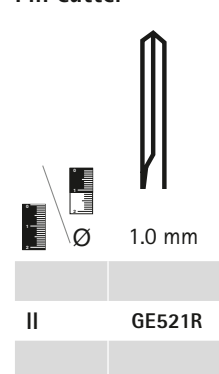
	Ø	1.8 mm	2.3 mm	3.1 mm	3.1 mm	3.1 mm	3.1 mm
I				GE435R			
II		GE531R	GE534R	GE535R	GE553R		GE555R
III		GE631R	GE634R	GE635R	GE653R	GE654R	GE655R

#### Lindemann



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

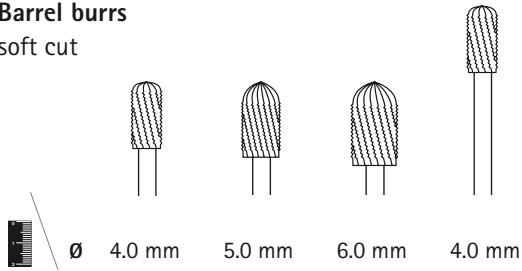
#### Pin cutter



	Ø	1.0 mm
II		GE521R

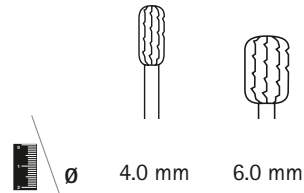


**Barrel burrs**  
soft cut



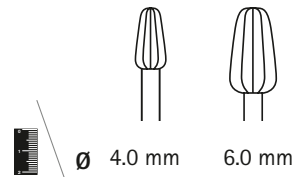
II	GE548R	GE549R	GE550R	
III	GE648R	GE649R	GE650R	GE645R

**Barrel burrs**  
standard



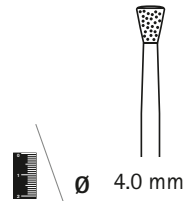
II	GE544R	GE546R
III	GE644R	GE646R

**Cone burrs**



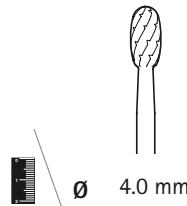
II	GE540R	GE542R

**Reverse taper burr coarse diamond**



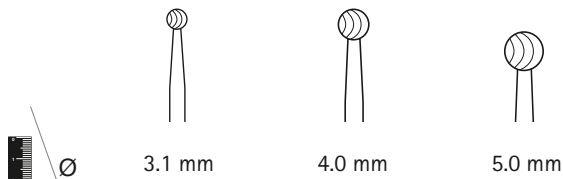
II	GE539R
III	GE639R

**Oval burr**



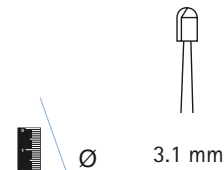
II	GE536R

**Rosen burrs - Tungsten carbide**



I	⊗	GE406TC-SU	GE407TC-SU	GE408TC-SU	
II	⊗		GE507TC-SU	GE508TC-SU	
III	⊗		GE607TC-SU	GE608TC-SU	

**Neuro cutter - Tungsten carbide**



I	⊗	GE435TC-SU
II	⊗	GE535TC-SU
III	⊗	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.



#### 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	GE700SU



# Aesculap Neurosurgery Power Systems

## Hi-Line XXS – Handpiece for Minimally Invasive Procedures

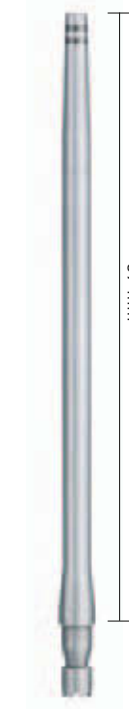
- Straight and curved handpiece shafts
- The curved handpiece shafts can be rotated in 8 different positions
- Proven ring-coding system correctly matches handpiece shafts to the associated burs
- Completely keyless operation



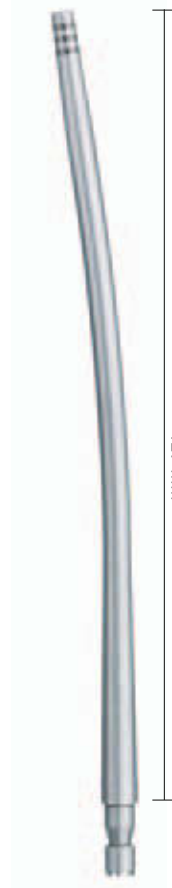
GB790R



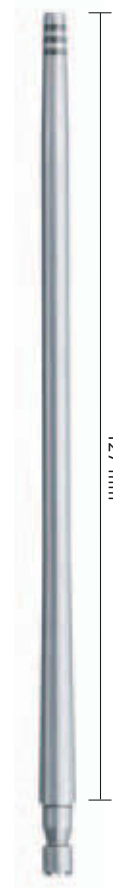
GB792R



GB791R



GB794R









GB793R


















**Rosen burrs**

			
		3.0 mm	4.0 mm
II		GE804SU	GE805SU
III		GE834SU	GE835SU









**Diamond burrs, coarse**

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

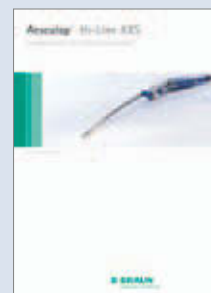
**Neuro cutter**

			
		2.0 mm	3.0 mm
II		GE802SU	GE803SU
III		GE832SU	GE833SU

**Neuro cutter, coarse diamond**

					
		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**

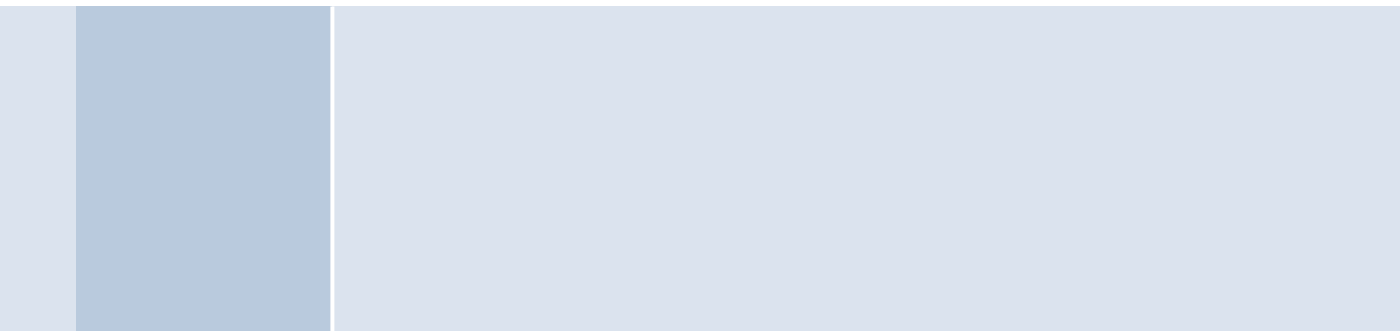
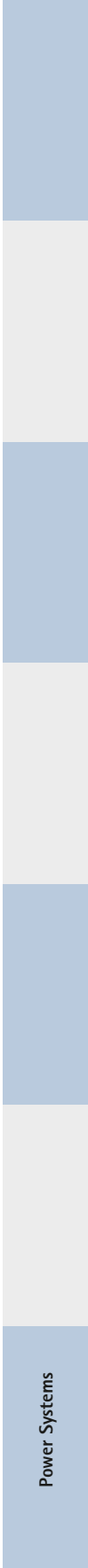
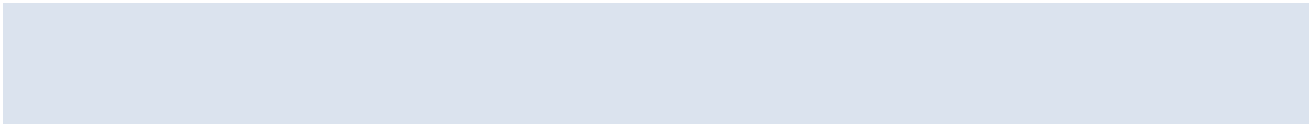
**Spray Adaptor**  
for microspend uni XS



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.**



[www.aesculap-neuro.com](http://www.aesculap-neuro.com) or  
[www.aesculap-academy.com](http://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](http://www.aesculap-neuro.com) or [www.aesculap-academy.com](http://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 Asclepius 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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