

# Aesculap Neurosurgery

## Neuroendoscopy

Neuroendoscopic Equipment...



... for cranial and spinal neuroendoscopy.

For more than 10 years, minimally invasive techniques have had an established place in neurosurgery. Using an endoscope in neurosurgery brings the advantages of less traumatization due to the smaller access (the "keyhole concept": as small as possible, as large as necessary – or "optimally invasive") and a wider field of vision thanks to endoscopes with lateral viewing angles. The endoscope guides the surgeon's eye directly to the operating site.

We differentiate between the fully endoscopic approach with a trocar system for intraventricular indications and the endoscope-assisted technique, where microscope and endoscope are used in combination to make minimally invasive access possible.

Particular indications for the fully endoscopic approach are ventriculocisternostomy and intraventricular cysts. The keyhole concept is used in the following indications: intracranial tumor surgery, vascular malformation surgery, especially aneurysm surgery, operations in the posterior cranial fossa and everywhere where optical monitoring behind structures, bone walls and dura folds is necessary (e.g. acoustic neuroma, vascular decompression ...).



The **MINOP® (Minimally Invasive Neuroendoscopic Operation)** System was developed in cooperation with AESCULAP for all neuroendoscopic indications. The system consists of rod lens endoscopes, trocars and rigid, tubular shaft instruments. For endoscope-assisted techniques, the range includes endoscopes with an angled ocular design to improve the field of vision together with tubular shaft instruments (XS micro instruments) specifically designed not to obstruct the view with the microscope. The Unitrac® pneumatic holding system and the Neupilot® micromanipulator system are available for holding and positioning the endoscope/camera system.

MINOP® – a modular all round system for all fully endoscopic operations in the ventricular system, endoscope-assisted microsurgery and transnasal pituitary operations.

I cordially invite you to take part in one of the various neuroendoscopy courses conducted by the neurosurgical team of the University of Mainz and the Aesculap Academy in the Aesculapium in Tuttlingen/Germany or anywhere else in this world.



Prof. Dr. Axel Perneczky



## The World Wide Learning Experience

In a modern and architecturally interesting environment you can become absorbed in discussions on topical subjects, in order to learn or perfect the latest operating techniques. Basic and advanced neuroendoscopy courses are offered, as well as courses for keyhole neurosurgery.

Our training includes courses for beginners as well as courses for the experienced surgeon who wants to learn more advanced neuroendoscopic techniques.

From a functional point of view, the Aesculapium is a new forum for communication in medicine. It offers all the technical facilities needed to demonstrate new operating techniques and technical highlights in the field of medicine: in the form of workshops, based on practical conditions; or for live operations that are transmitted by satellite to the lecture theatre of the Aesculapium. Video-conferences can be carried out at any time.

Exchanges of experiences and interdisciplinary dialogues with recognized international experts of specific viewpoints feature regularly in the calendar of events of the Aesculapium.



# Neuroendoscopy Courses 2005

In Neurosurgery we offer since 1996 comprehensive training course programs. The course „Endoscope-assisted keyhole Microneurosurgery“ comprises intensive hands-on sessions, clinical case discussions and live operations.

**Endoscopic workshops**

**Endoscope-assisted  
Keyhole Microneurosurgery**

17 – 21 January 2005	Tuttingen/Mainz
18 – 22 April 2005	Mainz/Mainz
4 – 8 July 2005	Tuttingen/Mainz
26 – 30 September 2005	Mainz/Mainz

 **AESCLAP  
AKADEMIE** Neurological Department  
Johannes-Gutenberg-Universität  
of Mainz, Germany

Photograph of a modern building with a curved facade.

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## Content

### Intraventricular neuroendoscopy

**NEW**

- MINOP® system ..... 6 - 13
- Ventriculoscope short/long ..... 14 - 16
- Monopolar electrodes ..... 17
- Storage racks ..... 18
- PaediScope® - the paediatric neuroendoscopy system ..... 20 - 21
- Flexible endoscope ..... 22 - 23

### Endoscope-assisted neurosurgery

**NEW**

- Angled neuroscopes ..... 26
- XS micro instruments specially designed for endoscope-assisted neurosurgery, in combination with the microscope ..... 27 - 29
- Viewing dissector ..... 30 - 31

### Endoscopic pituitary surgery

- MINOP TR® ..... 32 - 35

### Spinal neuroendoscopy

- EndoSpy® ..... 36 - 37
- Syringomyeloscope ..... 38 - 39

### Holding devices

**NEW**

- UNITRAC® arm, pneumatic ..... 40
- Large LEYLA arm, mechanical ..... 41
- NeuroPilot® micro manipulator ..... 42 - 43

### Video system

- Camera systems (1 chip / 3 chip) ..... 44
- Xenon Light sources ..... 45
- Monitors ..... 46
- Documentation ..... 47

### Electrosurgery, motor systems and accessories

- Combi electrosurgical unit (monopolar and bipolar) ..... 48
- Bipolar electrosurgical unit ..... 49
- HiLAN® XS ..... 50 - 51
- Microspeed® EC ..... 52 - 53
- Trolleys ..... 54 - 55

### Index

- References to literature ..... 56
- Numerical index ..... 57 - 59

# MINOP SYSTEM®

## The MINOP® system

The MINOP® system was developed in cooperation with Prof. Dr. Axel Perneczky from the Neurosurgical University Hospital in Mainz/Germany.

The MINOP® system is a multifunctional neuroendoscopy system primarily for use in intraventricular indications, although it can also be used for endoscope-assisted indications. It consists of various trocars with different diameters, rod lens endoscopes and a full range of instruments and accessories.



# MINOP SYSTEM®

The MINOP® project was supported by the German Federal Ministry of Education and Research.





#### ● Trocars

- Different shaft diameters (3.2, 4.6 or 6 mm)
- 1, 3 or 4 channels per trocar
- Blunt distal end for atraumatic insertion of trocar
- Trocar/endoscope with snap fastener lock for easy and vibrationless release/locking
- Straight working channel of ventriculoscope for rigid, detachable 2 mm instruments with tubular shaft
- Depth scale on the trocar shaft

#### ● Angled endoscopes

- 2.7 mm shaft diameter
- Lateral connection of camera and light source
- Free view and working area parallel to endoscope for simultaneous use of microscope and micro instruments
- Optimal handling of trocar and endoscope by central centre of gravity
- Endoscopes with the SDS symbol can be sterilised by Steris® and Sterrad®

#### ● Rigid instruments

- 2 mm shaft diameter
- 5 different jaw parts for efficient working
- Detachable for optimal cleaning, sterilisation and change of spare parts
- With rotation knob for easy and precise rotation of jaw part

#### ● Electrodes

- 6 monopolar and 1 bipolar electrode for efficient electro-surgical application

# Intraventricular Neuroendoscopy

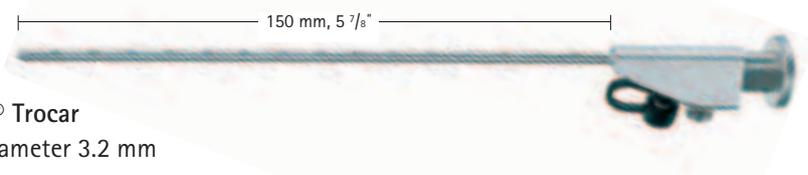


## Trocars

FF397R

MINOP® Trocar  
Outer diameter 3.2 mm

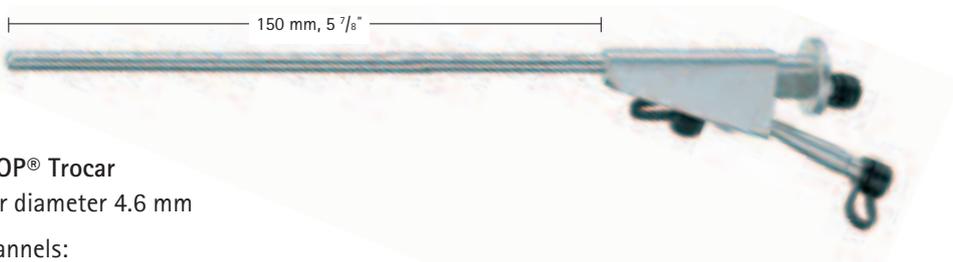
1 channel:  
optic or working channel, diam. 2.8 mm  
including obturator



FF398R

MINOP® Trocar  
Outer diameter 4.6 mm

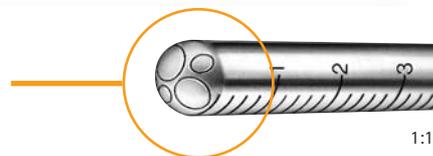
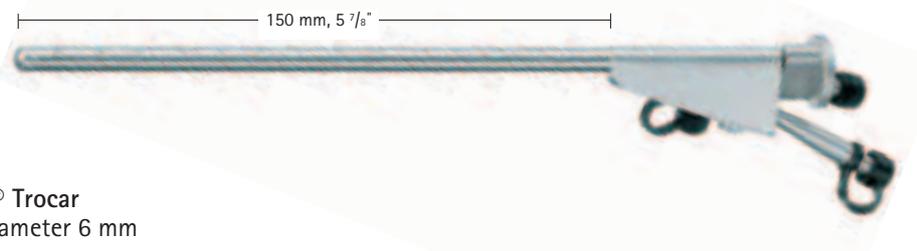
3 channels:  
■ optic channel diam. 2.8 mm  
■ irrigation channel diam. 0.8 mm  
■ overflow channel diam. 0.8 mm  
including obturator



FF399R

MINOP® Trocar  
Outer diameter 6 mm

4 channels  
■ optic channel, diam. 2.8 mm  
■ working channel, diam. 2.2 mm  
■ irrigation channel, diam. 1.4 mm  
■ overflow channel, diam. 1.4 mm  
including obturators





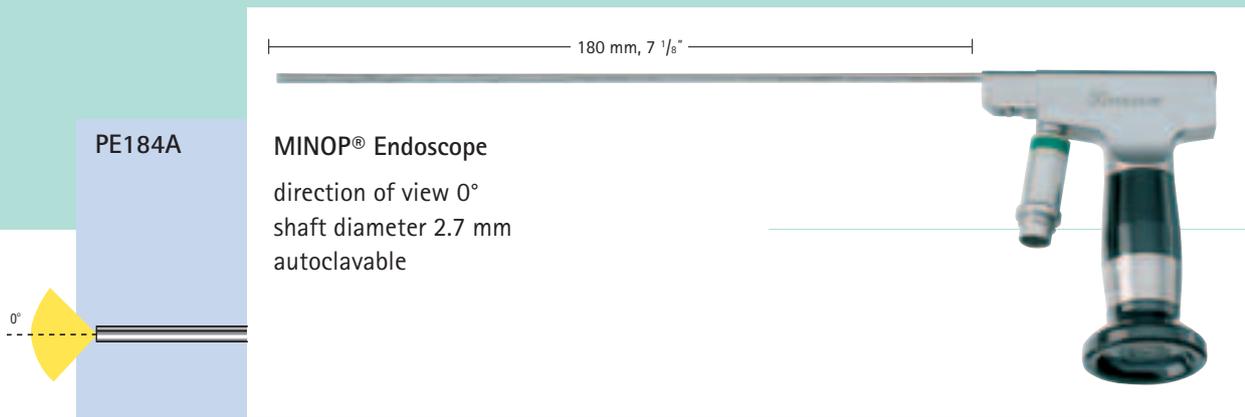
# MINOP SYSTEM®

## Angled endoscopes

PE184A

MINOP® Endoscope  
direction of view 0°  
shaft diameter 2.7 mm  
autoclavable

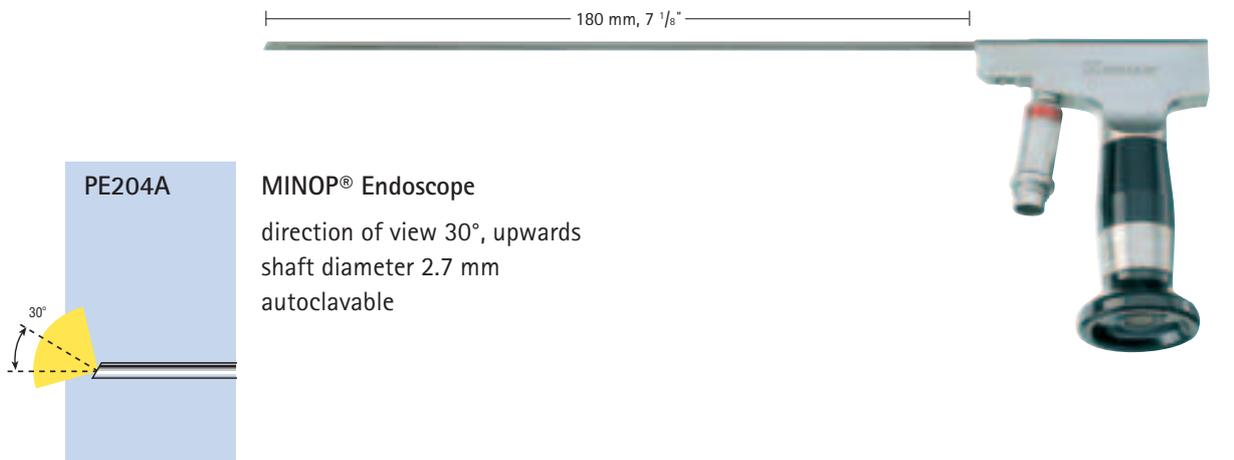
180 mm, 7 1/8"



PE204A

MINOP® Endoscope  
direction of view 30°, upwards  
shaft diameter 2.7 mm  
autoclavable

180 mm, 7 1/8"



Endoscopes with the SDS symbol can be sterilised by Steris® and Sterrad®

# Intraventricular Neuroendoscopy

Detachable instruments with tubular shaft



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



- |               |  |  |
|---------------|--|--|
| <b>FF385R</b> | MINOP® micro scissors<br>sharp / sharp |  |
| <b>FF386R</b> | MINOP® micro scissors<br>blunt / blunt |  |
| <b>FF387R</b> | MINOP® biopsy forceps                  |  |
| <b>FF388R</b> | MINOP® grasping and dissecting forceps |  |
| <b>FF389R</b> | MINOP® surgical micro forceps          |  |

**Ø 1mm** For bi-instrumental operation, 1mm instruments can be introduced short term through the irrigation channel of the trocar FF399R (e.g. for simultaneous grasping and fenestration of a cyst).



- |               |                                       |  |
|---------------|---------------------------------------|--|
| <b>FF373R</b> | Micro scissors                        |  |
| <b>FF374R</b> | Micro grasping and dissecting forceps |  |
| <b>FF378R</b> | Micro biopsy forceps                  |  |



# MINOP SYSTEM®



2mm

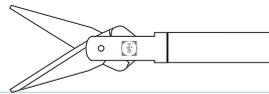
## Individual parts

Jaw part with inner tube for FF385R – FF389R



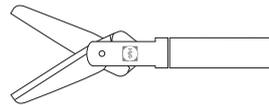
FF435R

MINOP® micro scissors  
sharp / sharp



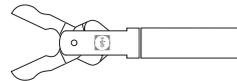
FF436R

MINOP® micro scissors  
blunt / blunt



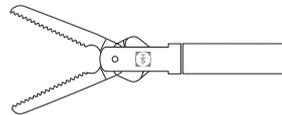
FF437R

MINOP® biopsy forceps



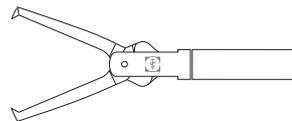
FF438R

MINOP® grasping and dissecting forceps



FF439R

MINOP® surgical micro forceps



FF432R

Instrument handle only  
for FF385R – FF389R



FF433R

Outer tube only  
for FF385R – FF389R

# Intraventricular Neuroendoscopy



## Monopolar Electrodes

	1:1		
<b>GK361R</b>		Blunt electrode, diam. 1.1 mm	
	1:1		
<b>GK363R</b>		Needle electrode, diam. 1.1 mm	
	1:1		
<b>GK364R</b>		Hook electrode, 45°, diam. 2.2 mm	
	1:1		
<b>GK365R</b>		Hook electrode, 70°, diam. 2.2 mm	
	1:1		
<b>GK362R</b>		Hook electrode, 90°, diam. 2.2 mm	
	1:1		
<b>GK366R</b>		Hook electrode, 180°, diam. 2.2 mm	
<b>GK245</b>		Monopolar cable suitable for GN300, GN640	

## Bipolar Electrodes

	1:1		
<b>GK360R</b>		Fork electrode, diam. 2.1 mm	
<b>GN073</b>		Bipolar cable suitable for GN060, GN300	



# MINOP SYSTEM®

## Storage racks

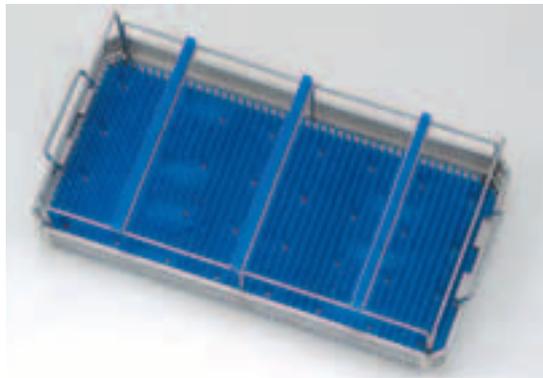
FF358R

Storage rack  
with silicone cushioning racks and lid  
for MINOP® trocars and endoscopes  
(not included)



FF359R

Storage rack  
with silicone cushioning racks  
for MINOP® micro instruments and electrodes  
(not included)



JK404

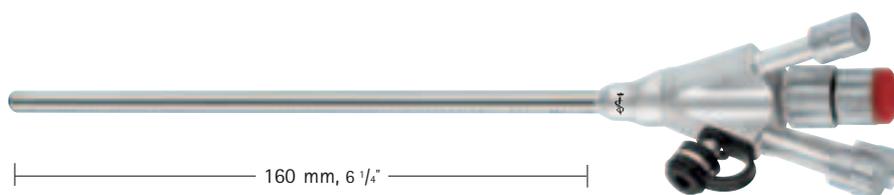
Container (Basic version)  
for storage racks FF358R and FF359R



# Intraventricular Neuroendoscopy

## Ventriculoscope System – short version for "freehand"-use

### Trocar



FF372R

Trocar, outer diam. 6.2 mm  
 4 channels  
 ■ optic channel, diam. 2.8 mm  
 ■ working channel, diam. 2.2 mm  
 ■ irrigation channel, diam. 1.4 mm  
 ■ overflow channel, diam. 1.4 mm  
 including obturators



### Endoscopes



PE183A

Wide angle endoscope, direction of view: 0°, diam. 2.7 mm

PE203A

Wide angle endoscope, direction of view: 30°, diam. 2.7 mm

### Flexible Instruments



FF395R

Micro scissors, sharp / sharp

FF390R

Micro scissors, blunt / blunt

FF392R

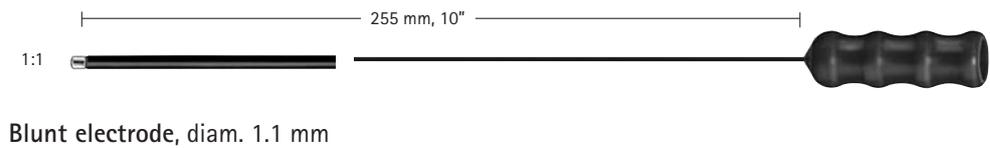
Micro biopsy forceps

FF394R

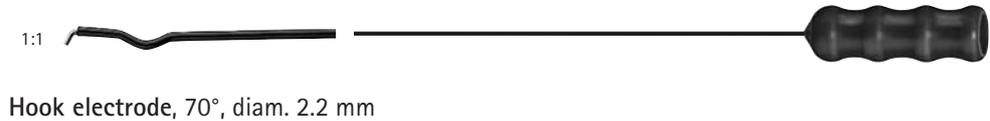
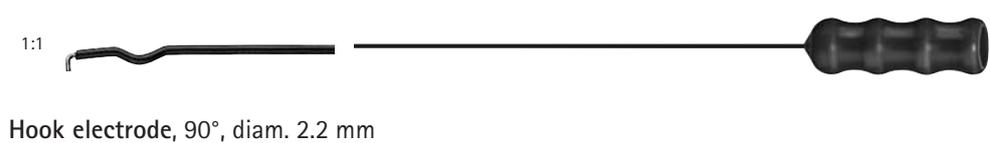
Micro grasping forceps, sharp



## Monopolar Electrodes

**GK361R**

**GK363R**

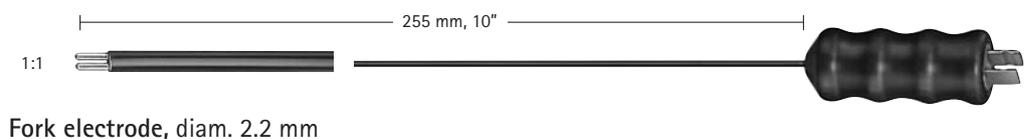
**GK364R**

**GK365R**

**GK362R**

**GK366R**

**GK245**

 Monopolar cable  
suitable for GN300, GN640


## Bipolar Electrode

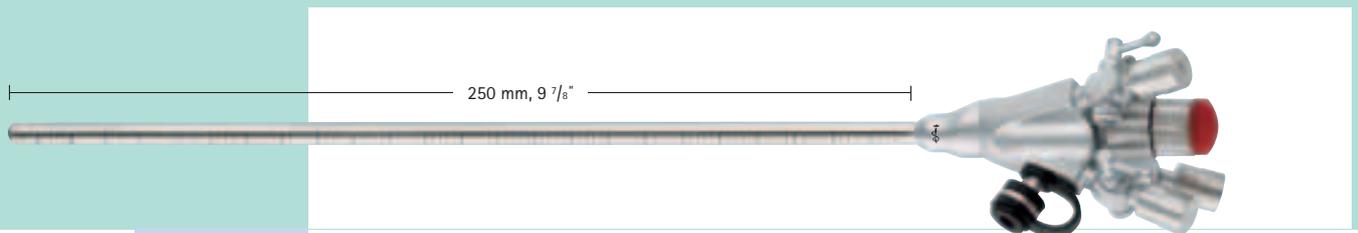
**GK350R**

**GN073**

 Bipolar cable  
suitable for GN060, GN300


# Intraventricular Neuroendoscopy

## Ventriculoscope System – Long version to be used with stereotactic frame

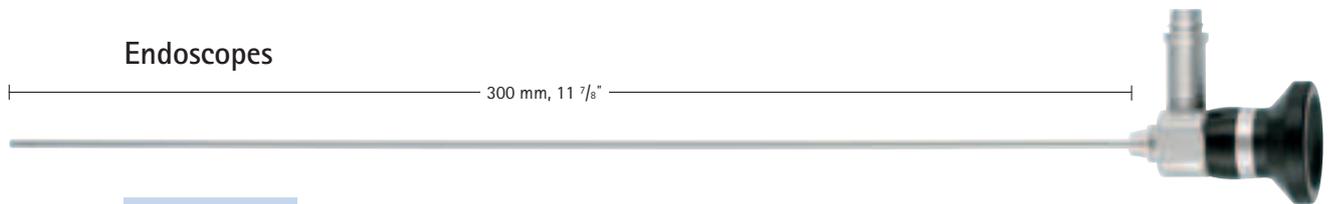
### Trocar



**FF370R** Trocar, outer diam. 6.2 mm  
 4 channels  
 ■ optic channel, diam. 2.8 mm  
 ■ working channel, diam. 2.2 mm  
 ■ irrigation channel, diam. 1.4 mm  
 ■ overflow channel, diam. 1.4 mm  
 including obturators



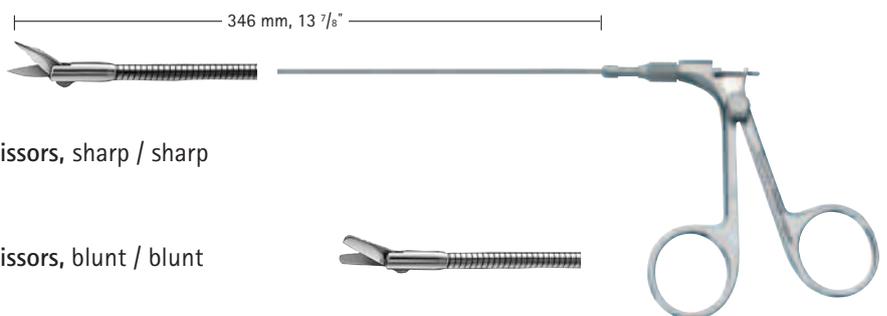
### Endoscopes



**PE188A** Wide angle endoscope, direction of view: 0°, diam. 2.7 mm

**PE208A** Wide angle endoscope, direction of view: 30°, diam. 2.7 mm

### Flexible Instruments



**FF365R** Micro scissors, sharp / sharp

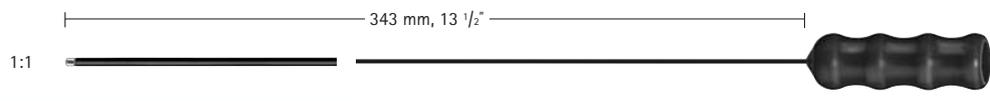
**FF360R** Micro scissors, blunt / blunt

**FF362R** Micro biopsy forceps

**FF364R** Micro grasping forceps, sharp



## Monopolar Electrodes



**GK351R** Blunt electrode, diam. 1.1 mm



**GK353R** Needle electrode, diam. 1.1 mm

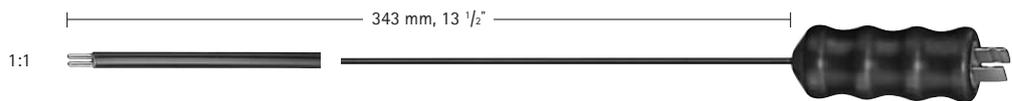


**GK352R** Hook electrode, 90°, diam. 2.2 mm

**GK245** Monopolar cable  
suitable for GN300, GN640



## Bipolar Electrode



**GK350R** Fork electrode, diam. 2.1 mm

**GN073** Bipolar cable  
suitable for GN060, GN300



# Intraventricular Neuroendoscopy

## Storage racks

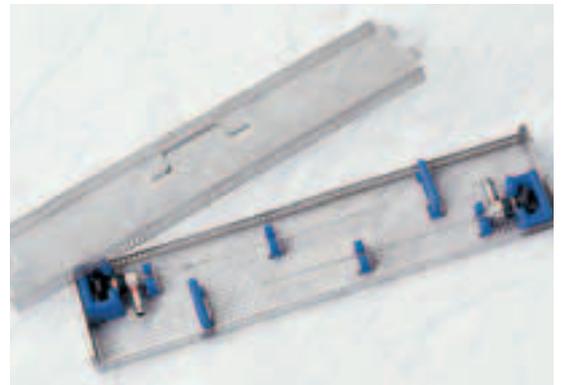
FF380R

Storage rack with silicone cushioning racks for ventriculoscope trocars, instruments and electrodes (not included)



JF433R

Storage rack with silicone cushioning racks and lid for straight ventriculoscope optics with diam. 2.7mm (not included)



JK402

Container (Basic version) for storage racks FF380R and JF322R





## proGAV – the adjustable MIETHKE gravitational valve



**3 Tesla**  
MRI compatible



### Aesculap Neurosurgery

#### Safe – Effective – Comfortable – Precise

- continuous adjustment between 0 and 20 cm H<sub>2</sub>O.
- effective protection against overdrainage
- "active-lock" mechanism protects from unintended readjustments by external magnetic fields
- 3 Tesla MRI compatible
- pressure verification without subjecting the patient to x-ray examinations
- easy, fast and uncomplicated treatment
- extremely precise valve technology

**B | BRAUN**  
SHARING EXPERTISE

Aesculap AG & Co KG · Am Aesculap-Platz · 78532 Tuttlingen · [www.aesculap.de](http://www.aesculap.de)

A-CH05010

# Intraventricular Neuroendoscopy

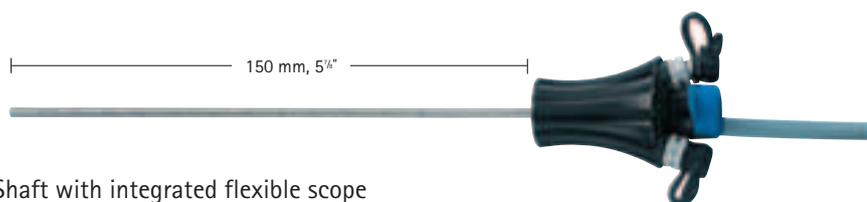
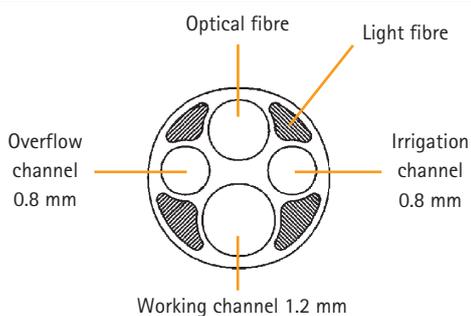
**NEW**

PaediScope® - the ventriculoscope system for paediatric neurosurgery



The new design of the PaediScope® with a long flexible shaft, which removes the ocular lens and the camera head from the operating field, offers the advantage of reduced weight, making the scope shaft easier to manipulate.

- 30.000 pixel fiber optic for unsurpassed picture quality
- 3 mm outer diameter for minimal invasive access
- Working channel for special designed instruments
- Irrigation and overflow channel
- All components autoclavable



PF010A\*

Shaft with integrated flexible scope

PF011A\*

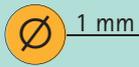
Ocular



\*For complete PaediScope®, please order PF010A and PF011A

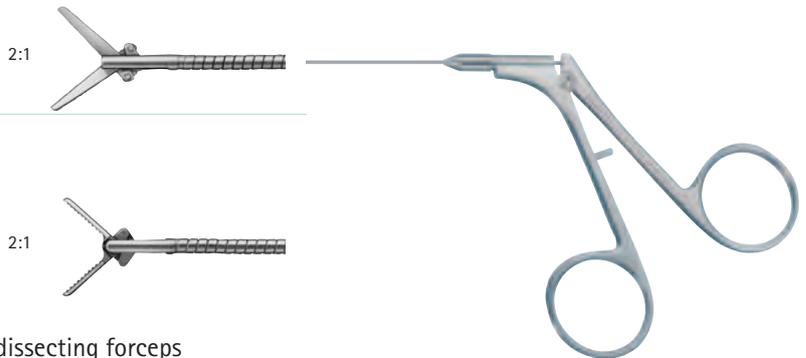


**NEW**



### Flexible Instruments

250 mm, 10"



FF373R

Micro scissors



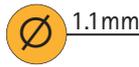
FF374R

Micro grasping and dissecting forceps



FF378R

Micro biopsy forceps



### Monopolar Electrodes

255 mm, 10"



GK363R

Needle electrode



GK361R

Blunt electrode



GK245

Monopolar cable  
suitable for GN300, GN640

FF379R

Storage tray  
with silicone cushioning racks and lid  
for complete PaediScope® System  
(not included)



# Intraventricular Neuroendoscopy

Flexible, steerable endoscope  
with working channel

PF901



#### Technical data:

Direction of view: 0° with 85° angle of view

Depth of field: 3 mm to ∞

#### Flexible working end:

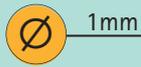
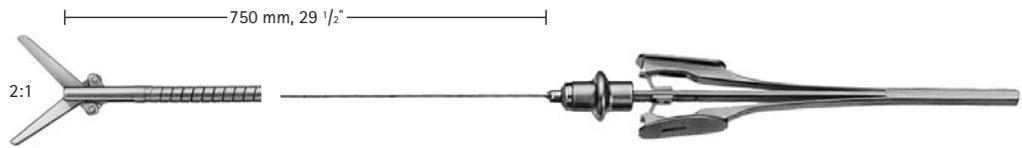
Length: 400 mm with linear markings

Diameter: 4.3 mm

Deflection: 140° up and down

Working channel: diam.1.4 mm

## Flexible micro instruments and electrodes


**Instruments**

**FF382R**

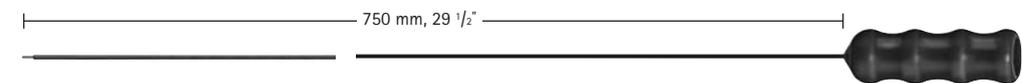
Flexible micro scissors (DBGM / Germ.Reg.Des.)


**FF383R**

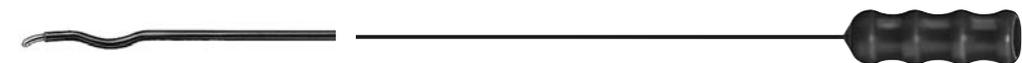
Flexible micro grasping forceps (DBGM / Germ.Reg.Des.)


**FF384R**

Flexible micro biopsy forceps (DBGM / Germ.Reg.Des.)

**Monopolar Electrodes**

**GK354R**

Straight electrode, flexible, 0.7 mm


**GK355R**

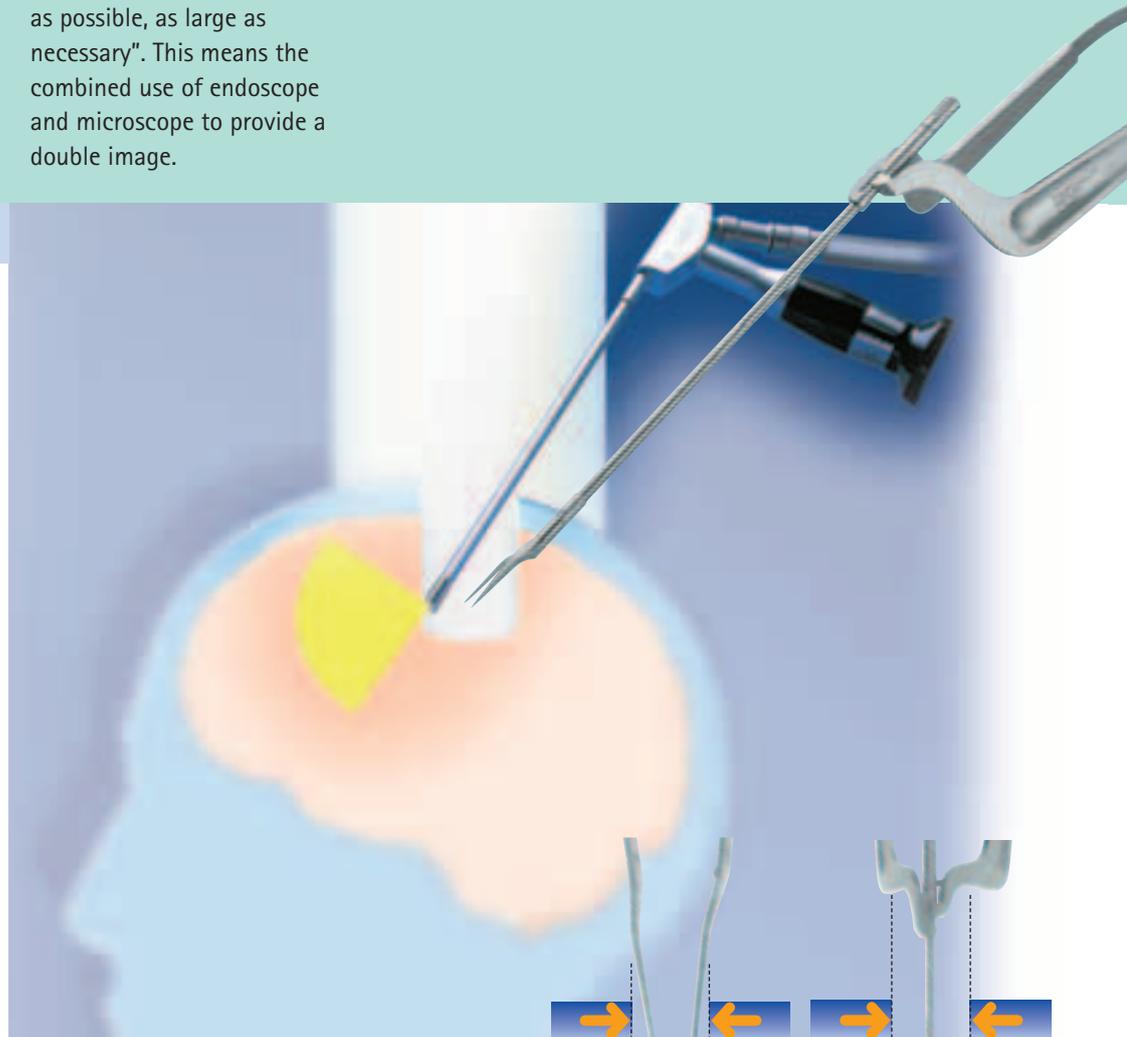
Hook electrode, flexible, 1.4 mm

**GK245**

 Monopolar cable  
suitable for GN300, GN640

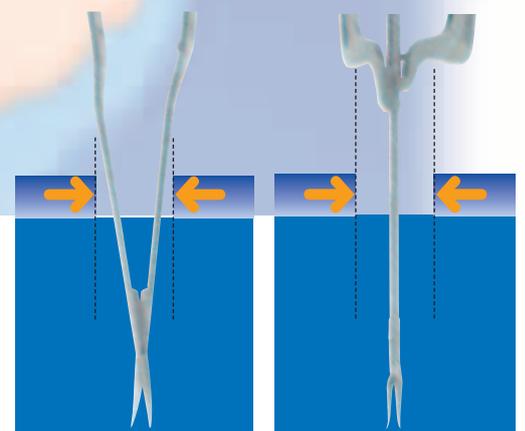

# Endoscope-assisted Neurosurgery (Keyhole Concept)

The keyhole concept is applied in endoscope-assisted neurosurgery, following the motto "optimally invasive: as small as possible, as large as possible, as large as necessary". This means the combined use of endoscope and microscope to provide a double image.



## Indications

- Intracranial tumor surgery
- Vascular malformation surgery, particularly in aneurysm surgery
- Operations in the posterior cranial fossa
- Acoustic neurinoma
- Vascular decompression



Classical Micro Instruments

XS Micro Instruments.  
Slim tubular shaft for axial freedom of movement



When it comes to small craniotomies or narrow operation sites, classical micro instruments clearly have their limits.

Owing to the way they are constructed (two shafts running distally from the handle that intersect in front of the jaw part) the shaft area of the instrument in particular obscures the microscopic field of view. Moreover, freedom of movement of instruments in small craniotomies and in narrow operation sites is severely limited.

A revolutionary new design has been realized in the manufacture of the XS Micro Instruments.

The XS Micro instruments were developed in cooperation with:

Prof. Dr. Axel Perneczky

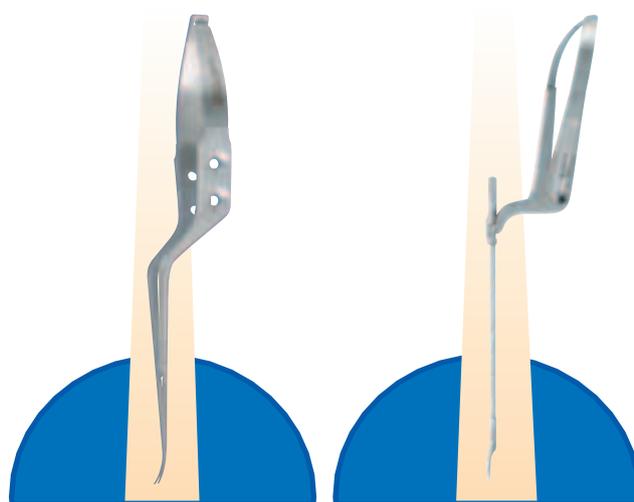
Neurosurgical University Hospital  
Mainz, Germany

Prof. Dr. Loris Cristante

Section of Neurosurgery  
University of Manitoba Medical School  
Winnipeg, Manitoba, Canada

### Features Angled Neuroscopes

- Brilliant image, rod lens system and different viewing directions (0°, 30°, 70°) enlarge the angle of vision and provide optimal illumination of details in the deep-seated operation site
- Angled endoscope design and lateral connection for camera and light source
  - Ergonomic handling by central centre of gravity
  - Permits parallel microscope image
  - Free working area for parallel use of micro instruments
- Autoclavable
  - Endoscopes with the SDS Symbol can be sterilised by Steris® and Sterrad®



Classical bayonet shape

Angled bayonet shape for enhanced sight lines and easier handling

### Product features XS Micro Instruments:

- Distal tubular shaft design
- Bayonet-shaped handle and jaw for better microscope vision and easier manipulation in small craniotomies
- Slim tubular shaft instruments can be separated into two pieces – easy component change and cleaning

# Endoscope-assisted Neurosurgery

## Angled Neuroscopes acc. PERNECZKY



PE486A

Angled neuroscope

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



PE506A

Angled neuroscope

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



PE526A

Angled neuroscope

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

JF324R

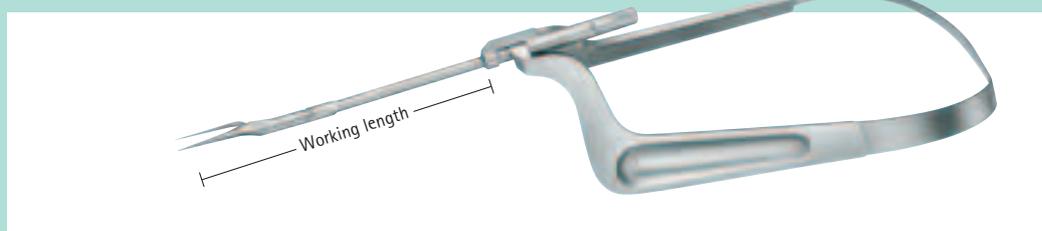
Storage tray  
with silicone cushioning racks and lid  
for 2 angled neuroscopes (not included)





## XS Micro Instruments acc. PERNECZKY / CRISTANTE

Instrument, complete, consists of: Jaw insert and handle

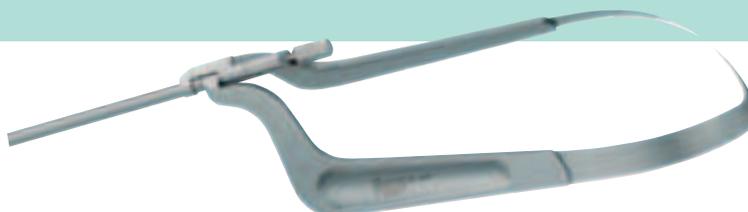


Working length	70 mm	100 mm	130 mm	
Total length	200 mm	230 mm	260 mm	
	XS Micro Scissors, straight, sharp / sharp	FM670R	FM671R	FM672R
	XS Micro Scissors, straight, blunt / blunt	FM690R	FM691R	FM692R
	XS Micro Scissors, curved, sharp / sharp	FM680R	FM681R	FM682R
	XS Micro Scissors, curved, blunt / blunt	FM700R	FM701R	FM702R
	XS Micro Forceps, Jaw 0.9 mm	FM710R	FM711R	FM712R
	XS Micro Tumor Grasping Forceps, Jaw 3 mm, sharp	FM720R	FM721R	FM722R

# Endoscope-assisted Neurosurgery

XS Micro Instruments acc. PERNECZKY / CRISTANTE

Instrument single parts: Handle



	Working length	70 mm	100 mm	130 mm
	Total length	200 mm	230 mm	260 mm
XS Micro Instrument Handle		FM730R	FM731R	FM732R

Instrument single parts: Jaw insert

	Working length	70 mm	100 mm	130 mm
	Total length	200 mm	230 mm	260 mm



XS Micro Scissors, straight, sharp / sharp		FM675R	FM676R	FM677R
--	--	--------	--------	--------



XS Micro Scissors, straight, blunt / blunt		FM695R	FM696R	FM697R
--	--	--------	--------	--------



XS Micro Scissors, curved, sharp / sharp		FM685R	FM686R	FM687R
--	--	--------	--------	--------



XS Micro Scissors, curved, blunt / blunt		FM705R	FM706R	FM707R
--	--	--------	--------	--------



XS Micro Forceps, Jaw 0.9 mm		FM715R	FM716R	FM717R
------------------------------	--	--------	--------	--------

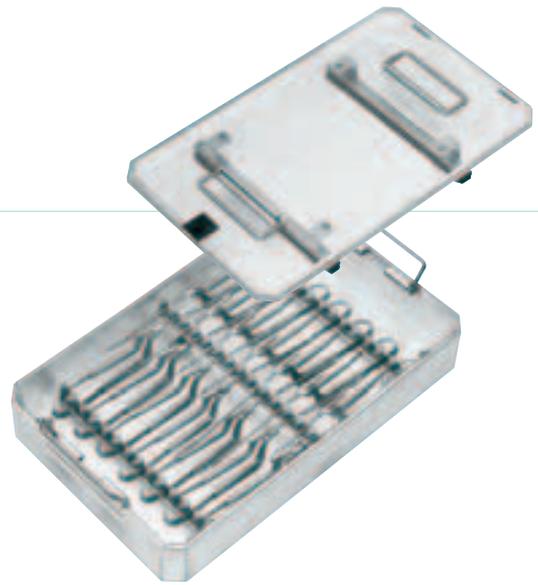


XS Micro Tumor Grasping Forceps, Jaw 3 mm, sharp		FM725R	FM726R	FM727R
--	--	--------	--------	--------



FM665R

Perforated basket with silicone  
cushioning racks and lid  
for storage of XS Micro Instruments  
(not included)



JK701

3/4 container (basic version)  
suitable for one perforated basket FM665R



# Endoscope-assisted Neurosurgery

## Viewing Dissector acc. PERNECZKY

### PA200

#### PERNECZKY viewing dissector

distal diameter: 1.4 mm  
total length: 1600 mm  
length of flexible part: 1300 mm  
angle of image: 80°  
direction of view: 0°  
high contrast image with accurate colour rendition  
gas sterilization

### JF660R

#### Tray for PA200

#### Main indications:

Endoscope-assisted microsurgery for

- aneurysms
- tumors
- epidural inspection
- spinal indications





Fixation to the LEYLA retractor FF270R with  
the fixation device FF274R.



# Endoscopic pituitary surgery

**NEW**

## MINOP<sup>®</sup> TR



Using an endoscope in pituitary surgery has the advantage, as in neuroendoscopy, of offering a direct view onto the operation site. Endoscopes with lateral viewing directions make it possible to achieve a better lateral view without additional opening of the sella floor. Tumour remains that can not be seen through the microscope can be made visible with the endoscope. Other advantages of the endoscopic procedure are narrower expansion of the speculum, if used, leading to less traumatisation, as well as a smaller access to the base of the skull, reducing the risk of postoperative CSF loss.

The MINOP<sup>®</sup> TR endoscopic pituitary system for the transnasal approach has been developed in cooperation with Prof. Dr. Axel Perneczky and Dr. Wesley King to be compatible with the existing MINOP<sup>®</sup> system. It consists of a special irrigation and suction trocar which cleans the distal endoscope lens during the approach through the nose and the sphenoidal cavity.

The trocar is simply connected to an irrigation bag and a suction device. The irrigation procedure can be activated with the foot switch when the lens is dirty. Permanent suction assists the cleaning effect and the flow of air also minimises fogging of the lens.

### Advantages of the system:

- Compatible with the MINOP<sup>®</sup> system
- Only one special cleaning trocar required for 0° and 30° endoscope – makes changing scopes during surgery easier
- Simple to assemble and use
- Optimal results are achieved through simple adjustment of irrigation pressure and suction
- Permanent suction keeps endoscope lens free from residue

The MINOP<sup>®</sup> TR System was developed in cooperation with:

#### **Prof. Dr. Axel Perneczky**

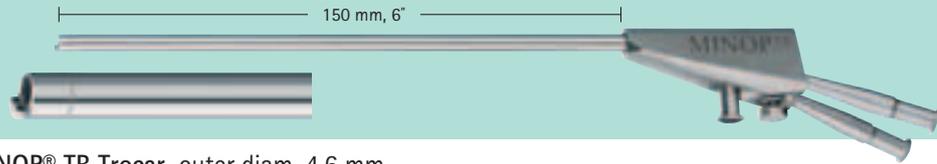
Neurosurgical University Hospital  
Mainz, Germany

#### **Dr. Wesley King**

Department of Neurosurgery  
The Mount Sinai Medical Center  
New York, USA



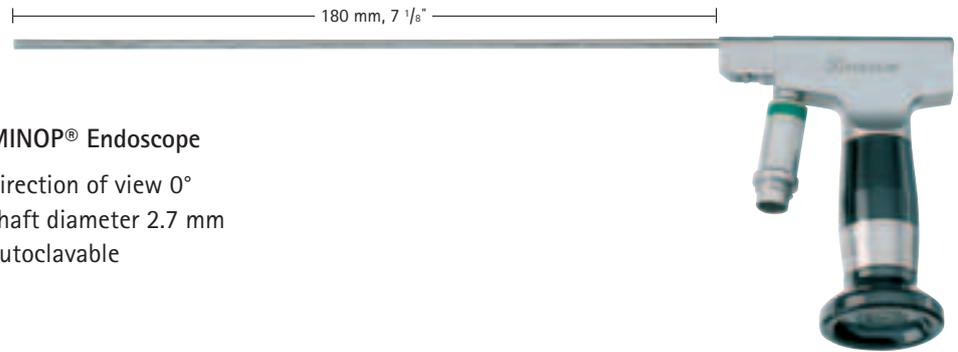
**NEW**



**FH601R**

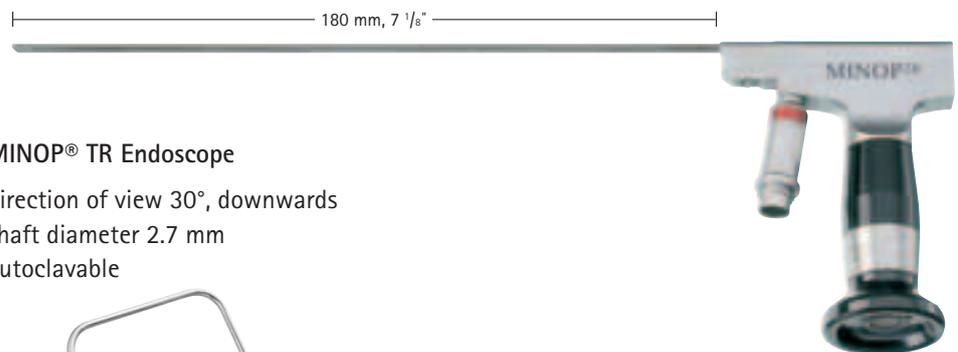
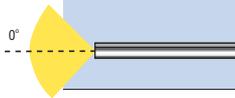
**MINOP® TR Trocar, outer diam. 4.6 mm**  
3 channels  
■ optic channel, diam. 2.8 mm  
■ irrigation channel, diam. 0.8 mm  
■ suction channel, diam. 0.8 mm

Endoscopic  
pituitary surgery



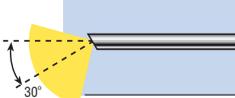
**PE184A**

**MINOP® Endoscope**  
direction of view 0°  
shaft diameter 2.7 mm  
autoclavable



**PE206A**

**MINOP® TR Endoscope**  
direction of view 30°, downwards  
shaft diameter 2.7 mm  
autoclavable



**FH600**

**MINOP® Foot switch**

**FH602**

**MINOP® TR tube set for FH601R**  
length: 4.5 m, diameter: 4 mm  
with Luer-Lock and puncture needle, sterile,  
package contains 5 single use sets



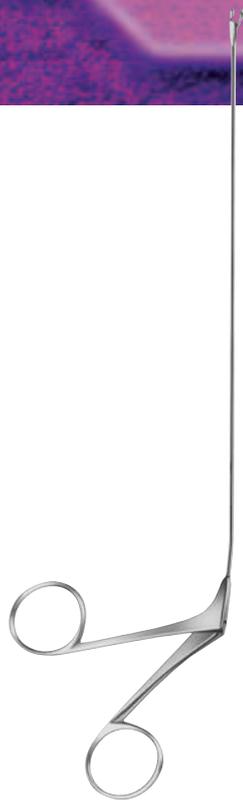
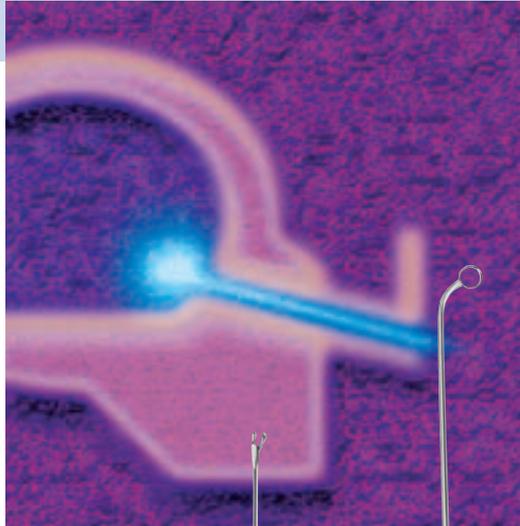
**FF358R**

**Storage rack**  
with silicone cushioning racks and lid  
for MINOP® trocars and endoscopes  
(not included)



# Endoscopic pituitary surgery

## Instrumentation for pituitary surgery





OK090R	Self retaining nasal speculum, 90 x 7 mm
FK902R	KERRISON punch, length 180 mm, jaw width 3 mm, regular footplate
FK906R	KERRISON punch, length 180 mm, jaw width 1 mm, thin footplate
GF351R	FERGUSSON suction cannula, length 110 mm, diam. 2 mm
GF353R	FERGUSSON suction cannula, length 110 mm, diam. 3 mm
GK788R	YASARGIL coagulation forceps, bayonet-shape, length 235 mm, jaw width 0.4 mm
GK719R	Coagulation forceps, angled, length 215 mm, jaw width 1mm
GK560R	LANDOLT bipolar coagulation grasping forceps, length 150 mm
FD222R	Forceps, scoop-shaped, length 165 mm
FD226R	Scissors, straight, length 165 mm
BB057R	Scalpel handle, bayonet-shaped, 250 mm
BB367R	Microsurgery blades, sterile, package of 10 pieces
FF616R	NICOLA curette, malleable, cutting to the right length 260 mm, diam. 6.5 mm
FF617R	NICOLA curette, malleable, cutting to the left length 260 mm, diam. 6.5 mm
FF618R	NICOLA curette, malleable, length 260 mm, diam. 6.5 mm

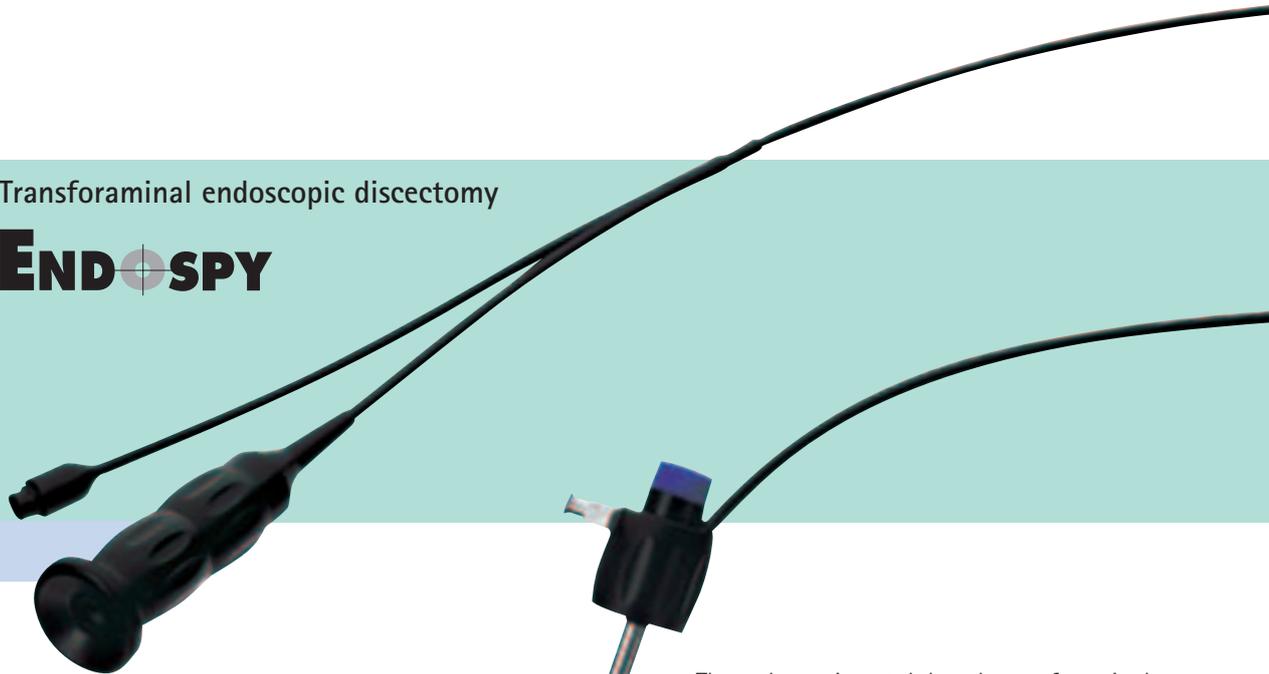
For more information and instruments, see Neurosurgery General Catalogue C20111



# Spinal neuroendoscopy

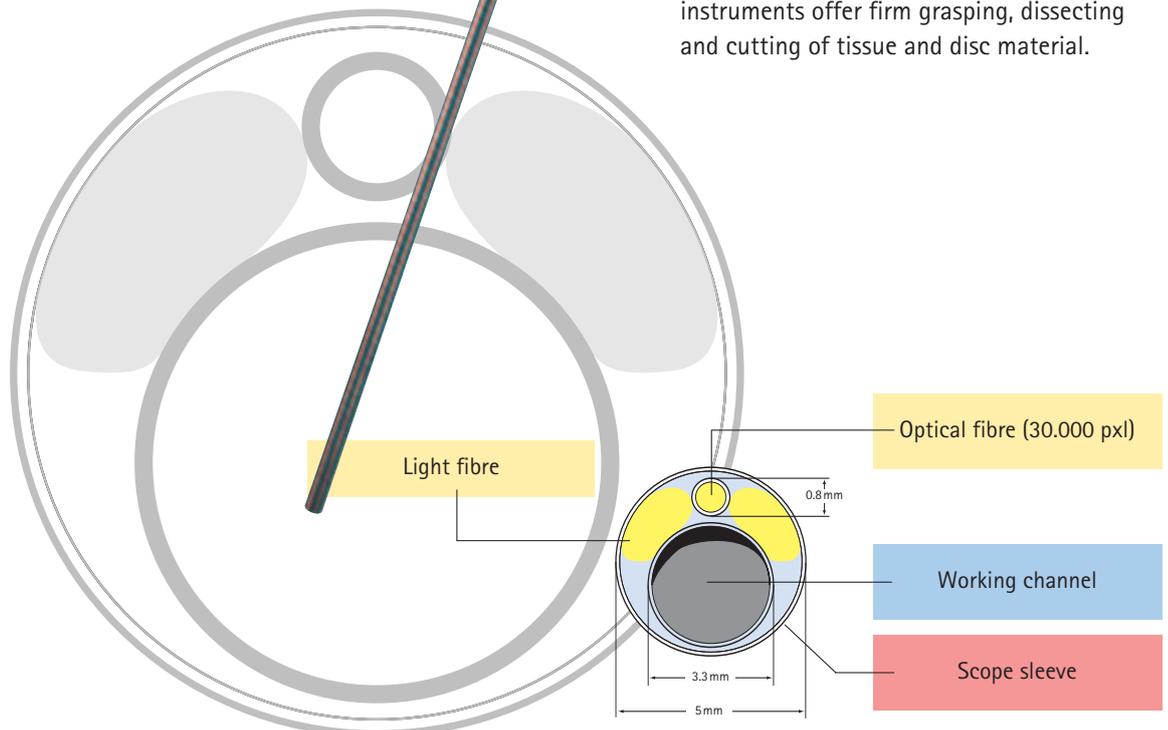
Transforaminal endoscopic discectomy

## ENDOSPY



Through a uni-portal dorsal, transforaminal approach this new system allows disc material removal under direct visualization of the epidural space. The reusable flexible scope system combined with a 3.3 mm working channel enables instrument maneuvers without restriction by optical components.

The 2.5 mm detachable modular tube shaft instruments offer firm grasping, dissecting and cutting of tissue and disc material.





FG065	EndoSpy®-Set
	Content
PF001	Ocular
PF005	Flexible scope with rigid scope sleeve (suitable for gas sterilization)
FG121R	Set of dilatation tubes with working cannula, outer diameter 3 -7.5 mm
BT078R	Exploration hook 45° angled 300 mm shaft length
BT079R	Exploration hook 90° angled 300 mm shaft length
FG090R	Micro knife 300 mm shaft length
PM020R	Micro scissors pointed jaw sharp/sharp
PM507R	Biopsy forceps
PM145R	MARYLAND tissue grasping forceps
JF222R	Perforated basket
JF936	Silicone pads

Please order separately

FG106	Guide wire 0.8 mm length 400 mm, blunt tip
FG107S	Guide wire 1.2 mm length 400 mm, blunt tip
FG108S	Guide wire 1.2 mm length 400 mm, pointed tip
FG089R	Micro dissector 300 mm shaft length
FG098R	Nucleus forceps toothed
FG122R	Set of dilatation tubes outer diameter 3.0 - 7,5 mm, beveled tip
GK360R	Bipolar fork electrode diam. 2.1 mm, 255 mm shaft length
SK048C	Tubing connection Luer-Lock
GA242300	Suction and irrigation tube
EJ446255	additional sealing caps for working cannula (package with 20 pieces)
EJ670202	additional sealing caps for scope sleeve (package with 20 pieces)

# Spinal neuroendoscopy

## Syringomyeloscope

<b>PF612</b>	<b>Syringomyeloscope</b>
outer diam.	2.3 mm
length	1000 mm
working channel	diam. 1 mm (suitable for 400 µ laser fibers)
depth marking	each 50 mm





- extremely high flexibility over entire length
- wide-angle endoscope
- large illuminating fibre content for optimum illumination
- suitable for gas sterilization

### Main indications

Neuroscopic treatment of septated syringomyelia, subdural hematomas, cysts, epiduroscopy



# Spinal neuroendoscopy

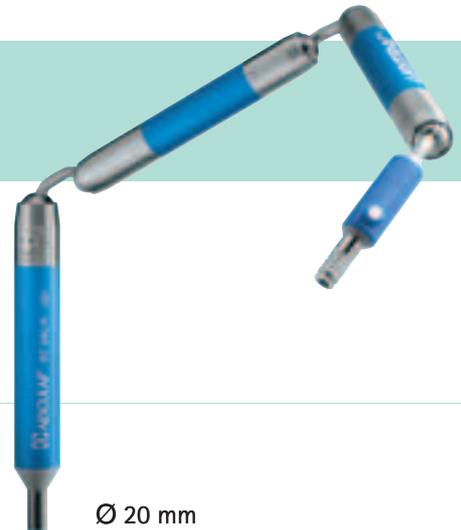
## Holding devices

RT040R

**UNITRAC®**

Flexible holding device with pneumatic fixation

- UNITRAC®, the universal retraction and holding system with special accessories for neuroendoscopy
- Pneumatically-assisted system for direct connection to OR compressed air supply
- Integrated safety systems prevent collapse of holding arm if OR compressed air supply is interrupted
- Simple to assemble onto the OR table railing
- Single handed use
- Fast and sterile set-up in the OR
- All components fully autoclavable



Ø 20 mm

## Fixation devices for UNITRAC®

FF280R

Flexible fixing element with ball joint suitable for RT040R and FF169R



RT090R

Flexible fixing element with sprocket suitable for RT040R and RT091R



## Compressed air hose system for UNITRAC® RT040R

AESFULAP-Dräger system, for complete exhaust air release

GA460 3 m, spiral

GA464 3 m, straight

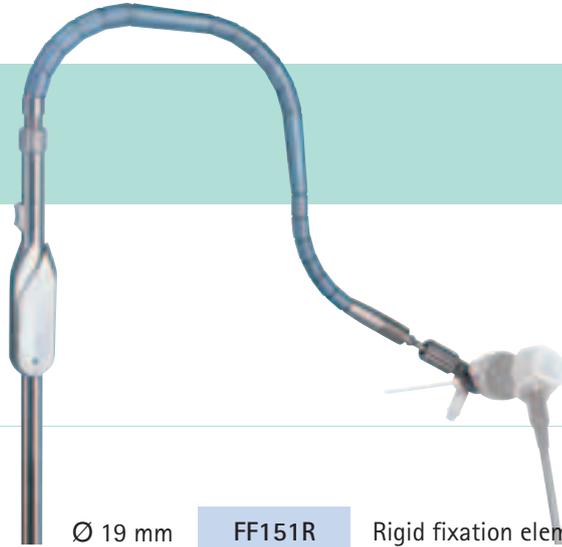
GA466 5 m, straight

AESFULAP-Standard hose system, for pressureless exhaust air release outside the operation area

GA461 3 m, with diffusor

GA463 3 m, without diffusor

GA465 5 m, without diffusor



FF169R

**Large LEYLA arm**

Flexible holding device with mechanic fixation

Ø 19 mm

FF151R

Rigid fixation element suitable for RT040R and FF169R

**Adapter for UNITRAC® and large LEYLA arm**

RT079R

**Adapter**

for fixation of angled neuroscopes PE486A, PE506A, PE526A



RT081R

**Adapter**

for PEEK-inserts RT082P – RT089P for fixation of trocars



RT082P

**PEEK-insert**

with inner diameter 6.2 mm (for fixation of long or short ventriculoscope trocar FF370R or FF372R)

RT083P

**PEEK-insert**

with inner diameter 6 mm (for fixation of MINOP® trocar FF399R)

RT084P

**PEEK-insert**

with inner diameter 4.6 mm (for fixation of MINOP® trocar FF398R and FH601R)

RT085P

**PEEK-insert**

with inner diameter 3.2 mm (for fixation of MINOP® trocar FF397R)

RT089P

**PEEK-insert**

with inner diameter 3 mm (for fixation of PaediScope® PF010A)



# Spinal neuroendoscopy

neuro-pilot

**NEW**

## Micro Manipulator for Neuroendoscopes



NeuroPilot® **IV+EA** for **IntraVentricular** and **Endoscope-Assisted** indications with all Aesculap neuroendoscopes



NeuroPilot® **IV** for **IntraVentricular** indications with the long Aesculap ventriculoscope FF370R

NeuroPilot® is a new, unique steering device for neuroendoscopes. After positioning of the neuroendoscope in situ finest corrections or adjustments are necessary, to receive the optimal endoscopic image. With traditional holding devices only a rough positioning is possible; a precise and fine steering of the neuroendoscope is mainly not possible.

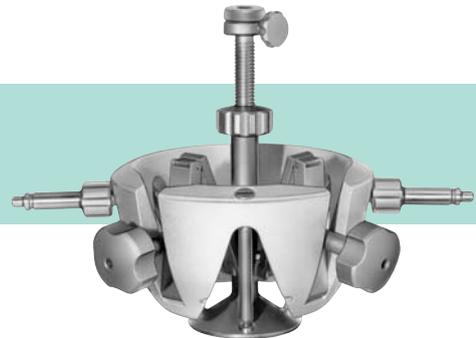
NeuroPilot® offers a number of unique advantages:

- Optimal fixation of the neuroendoscope in the NeuroPilot® and the holding device UNITRAC®
- Precise steering of the neuroendoscope by three screws in the three-dimensional space
- Safe manoeuvring of the neuroendoscope by defined movements in the sub-millimeter area
- Optimal positioning of the neuroendoscope in situ

NeuroPilot® was developed in cooperation with:  
Prof. Dr. Axel Perneczky  
Neurosurgical University Hospital  
Mainz, Germany

**NEW**

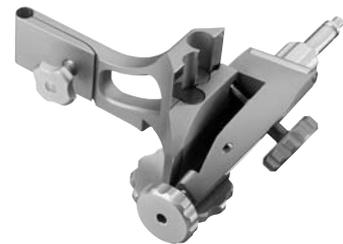
Micro manipulator for Neuroendoscopes



**RT059R** NeuroPilot® IV for intraventricular indications with the long Aesculap ventriculoscope FF370R

**RT067P** Insert for long ventriculoscope FF370R with diam. 6.2 mm

**RT060R** NeuroPilot® IV+EA for intraventricular and endoscope-assisted indications with all Aesculap neuroendoscopes



**RT061R** Insert for angled neuroscopes PE486A - PE526A with diam. 4 mm

**RT062R** Insert for short ventriculoscope FF372R with diam. 6.2 mm

**RT063R** Insert for MINOP® trocar FF397R with diam. 3.2 mm

**RT064R** Insert for MINOP® trocars FF398R and FH601R with diam. 4.6 mm

**RT065R** Insert for MINOP® trocar FF399R with diam. 6 mm

**RT066R** Insert for PaediScope® PF010A with diam. 3 mm



# Cameras

- Micro-lens-on-chip technology   ■ DIGI-Technology
- Resolution > 460 horizontal lines, 3-Chip Camera, 750 horizontal lines
- Small Scope Funktion   ■ Automatic white balance   ■ Min. light sensitivity: 1 Lux
- Dynamic Gain   ■ Remote Control

**DAVID**

**DAVID<sup>3</sup>**



PV140

PAL David 1-Chip Camera

PV430

PAL David 3-Chip Camera

PV142

NTSC David 1-Chip Camera

PV432

NTSC David 3-Chip Camera

consisting of:

- Camera control unit
- Camera head and camera cable
- Endocoupler
- S-VHS connecting cable

consisting of:

- Camera control unit
- Camera head and camera cable
- Endocoupler
- S-VHS connecting cable

## Accessories David 1-Chip Camera

PV961

Composite connecting cable, 2 m

PV963

Y/C connecting cable, 2 m

PV967

Remote control cable, 1.7 m

JG904

Sterile cover, disposable, package of 25

JG910

Antifog Solution, single use, disposable of 10

## Accessories David 3-Chip Camera

PV425

RGB connecting cable, 2.3 m, 15 pin/15 pin

PV963

Y/C connecting cable, 2 m

PV967

Remote control cable, 1.7 m

JG904

Sterile cover, disposable, package of 25

JG910

Antifog Solution, single use, disposable of 10



# Xenon Light Source

- Xenon technology provides a very high light intensity and ensures an optimum colour reproduction
- The AXeL light source sets new standards regarding the operating noise due to the integrated special "whisper ventilators"
- The light source design is compact and light ■ The light intensity is continuously adjustable
- The light source is fully compatible with light guide cables of other manufacturers by using suitable adapters

**AXeL 180**

**AXeL 300**



OP930

Xenon Light Source 180 W

#### Technical Data

Lamp	Xenon
Lamp power	180 W
Lamp voltage	15 V/12.0 A
Light intensity	continuously adjustable
Colour temperature	6000 K
Weight	6.4 kg
Dimensions (w x h x d)	305 x 125 x 305 mm
Standard	EN 60601-1

#### Accessories

OP931

Xenon spare lamp, 15 V/180 W

#### Adapter for Xenon light source:

OP936

Wolf

OP937

Olympus (Xenon)

OP938

Circon ACMI

Light guide cables (autoclavable)  
diam.: 4.8 mm

OP906

Length: 180 cm

OP913

Length: 250 cm

OP914

Length: 350 cm

OP932

Xenon Light Source 300 W

#### Technical Data

Lamp	Xenon
Lamp power	300 W
Lamp voltage	17 V/15 A
Light intensity	continuously adjustable
Colour temperature	6000 K
Weight	7.6 kg
Dimensions (w x h x d)	305 x 125 x 305 mm
Standard	EN 60601-1, EN 60601-1-2

#### Accessories

OP933

Xenon spare lamp 17 V/300 W

#### Adapter for Xenon light source:

OP936

Wolf

OP937

Olympus (Xenon)

OP938

Circon ACMI

Light guide cables (autoclavable)  
diam.: 4.8 mm

OP906

Length: 180 cm

OP913

Length: 250 cm

OP914

Length: 350 cm

# Monitors



PV941

15" Flat panel display "Touch Screen"

#### Technical details

Screen size	15" (38 cm)
Resolution (Pixel)	1027 x 768 (XGA)
Weight	4.3 kg
Dimensions (w x h x d)	387 x 301 x 81 mm

#### Additional technical data

Menu control	7 languages
Video Signal inputs/outputs	DVI-I (analog and digital VGA) SDI 1x In/1x Out S-VHS 1x In/1x Out RS 232 (9 pin D-sub) 24 V Power Input

#### Additional accessories

PV885

Articulating arm for adaptation to Aesculap trolley

PV918

Base for all flat panel displays



PV915

15" Flat panel display

#### Technical details

Screen size	15" (38 cm)
Resolution (Pixel)	1024 x 768 (XGA)
Weight	4.3 kg
Dimensions (w x h x d)	387 x 301 x 81 mm

#### Additional technical data

Standard	UL 2601-1, EN 60601-1 EN 60601-1-2
Inputs	DVI-I (analog and digital VGA) RGB Sync (15 pin D-sub) S-VHS, Composite RS 232 (9 pin D-sub) 24 V Power Input
Mounting system	VESA-Standard
Power supply	Input 100-240 V AC, 50-60 Hz Output 24 V DC

PV919

19" Flat panel display

#### Technical details

Screen size	19.1" (38 cm)
Resolution (Pixel)	1280 x 1024 (SXGA)
Weight	6.4 kg



# Documentation



PV920

DVD System PAL/NTSC

### Technical details

DVD System	DVD-R/-RW; DVD+R/+RW
Capturing video sequences	On hard drive, directly to DVD/CD or network
Video Signal Inputs	1 x S-VHS
Video Signal Outputs	1 x DVI-D 1 x Analog VGA (15 pin D-sub) 1 x S-VHS 2 x RS232 parallel (9 pin D-sub)
Standard	EN60 601-1, EN 60601-1-2
Dimensions (w x h x d)	305 x 125 x 305 mm
Weight	8 kg
Accessories (included)	Power cord
Archiving	still images, video sequences, audio data

### Additional accessories

PV428

Serial connecting cable from Eddy DVD to PV941 Flat Panel Display, 3 m



PV914

Colour Video Printer PAL/NTSC, RGB compatible

### Technical details

Printing method	Colour sublimation
Paper size	144 mm x 100 mm (DIN A 6)
Image size	127 mm x 92 mm
Pixels	1524 x 1458 (PAL) 2032 x 1452 (NTSC)
Colour gradation	> 16.7 million colours
Resolution	403 dpi (dots per inch)
Printing time	approx. 16 sec.
Video inputs	1 x Composite 1 x S-VHS 1 x RGB 2 x Remote control
Video outputs	1 x Composite 1 x S-VHS 1 x RGB
Interface	RS-232-C
Standards	UL 2601-1, EN 60601-1 CSA 601.1
Dimensions (w x h x d)	212 x 125 x 395 mm
Weight	approx. 6.5 kg
Power requirements	100-120 V, 220-240 V, 50/60 Hz

PV916

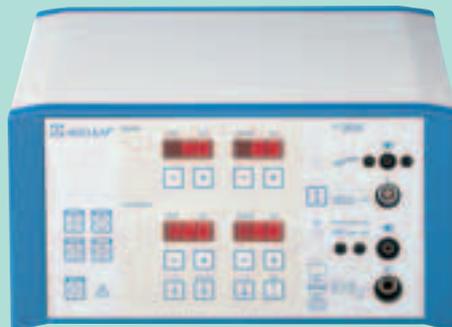
Print paper and print cartridge, pack of 200 prints, for PV914

# Combi Electrosurgical Unit

Electrosurgery unit (bipolar and monopolar),  
microprocessor-controlled with membrane keypad

Monopolar: Cut, Contactcoag, SprayCoag – functions

Bipolar: Coagulation and cut function



**GN300** Electrosurgical unit, mono- and bipolar, without power cord and accessories

**GN325** Vario dual foot pedal,  
explosion-proof, cable 4 m long



**GK101** Universal neutral electrode,  
128 cm<sup>2</sup> conductive area  
50 pieces in Peel-pack

**GK245** Monopolar cable  
for Aesculap electrodes, length 3.5 m



**GN073** Bipolar cable  
for Aesculap electrodes, length 3.5 m



**GN249** Neutral electrode cable, length 3.5 m



**GN245** Neutral electrode cable, length 5 m



## Bipolar Electrosurgical Unit GN060

Electrosurgery unit (only bipolar)  
microprocessor-controlled with membrane keypad

Two operating modes:

- Micro: 0.1 – 10 W at 50 Ohm, adjustable in intervals of 0.1 W
- Macro: 1 – 50 W at 100 Ohm, adjustable in intervals of 1 W

4 memories available

Automatic switch-on option available



**GN060**

Electrosurgical unit, bipolar, without power cord and accessories

**GK226**

Foot-switch  
explosion-proof, plastic housing,  
cable 4 m long



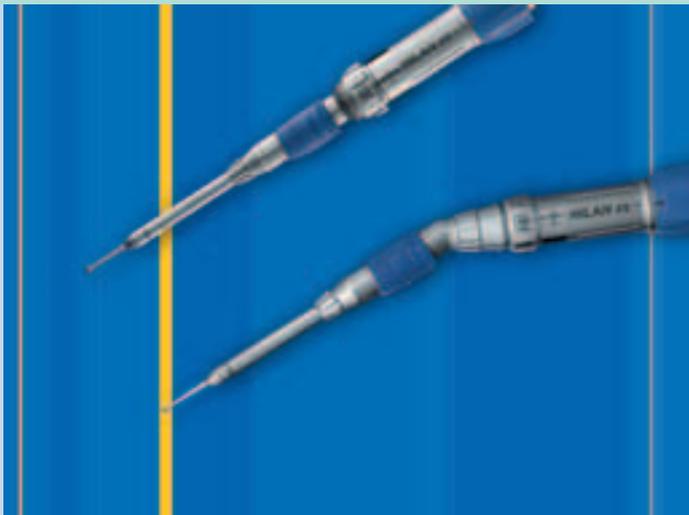
**GN073**

Bipolar cable  
for Aesculap electrodes and bipolar forceps,  
cable 3.5 m long



More accessories and  
information, see  
Electrosurgery catalogue  
C 304 81

# HiLAN<sup>®</sup> XS – Pneumatic High Speed Power System



## HILAN<sup>®</sup> XS SYSTEM ADVANTAGES

- 100.000 rpm
- Easy handling
- Keyless assembly
- High performance, starting already at 6 bar/87 psi
- Very quiet
- No intraoperative lubrication required
- Excellent long term running capabilities
- Compatible with low-speed systems and skull perforator
- Suitable for mechanical cleaning with ECCOS<sup>®</sup>

More accessories and information, see Power System Catalogue O227 or HiLAN<sup>®</sup> XS brochure O260

## System components

GA740	High speed motor for bone dissection and craniotomy
GA513	Pneumatic hose for small Aesculap motors (3 m)
GA521	Foot switch
GA466	Pneumatic hose with Aesculap-Dräger connection (5 m)



## Accessories Craniotomy

GB740R Hi-Line XS craniotome, without dura guard

GB742R Hi-Line XS dura guard, standard, length II



GE520R Hi-Line XS craniotome burr, length II

## Accessories for high speed bone dissection

GB757R Hi-Line XS hand piece, angled, length II



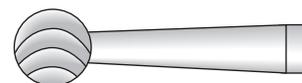
GE504R Hi-Line XS Rosen burr, length II, Ø 2.3 mm

GE506R Hi-Line XS Rosen burr, length II, Ø 3.1 mm

GE507R Hi-Line XS Rosen burr, length II, Ø 4.0 mm

GE508R Hi-Line XS Rosen burr, length II, Ø 5.0 mm

GE509R Hi-Line XS Rosen burr, length II, Ø 6.0 mm



GE514R Hi-Line XS Diamond burr, length II, Ø 2.3 mm

GE516R Hi-Line XS Diamond burr, length II, Ø 3.1 mm

GE517R Hi-Line XS Diamond burr, length II, Ø 4.0 mm

GE518R Hi-Line XS Diamond burr, length II, Ø 5.0 mm

GE519R Hi-Line XS Diamond burr, length II, Ø 6.0 mm



## Skull perforation with safety perforator

GA522R Perforator driver

GB106R HUDSON chuck for GA522R

GB302R Safety perforator with HUDSON-shaft, Ø 9/12mm

GA536 STERILIT® Hi oilspray for high speed motors and handpieces



# Microspeed® EC Motor System – Electronic High Speed Power System

micro  
speed<sup>®</sup><sub>EC</sub>



The electronic precision power system for high and low speed applications in neurosurgery

- Automatic motor recognition
- Integrated irrigation pump
- ECCOS®-system for mechanical cleaning

## System components

GA650	Microspeed® control unit
GA662	Foot control, single pedal
GA661	Motor connection cord
GD656	High speed motor 100W
GD657	Low speed motor 100W



More accessories and information, see Power Systems Catalogue 0227 or Microspeed® brochure 0183



## Accessories Craniotomy

GB740R Hi-Line XS craniotome, without dura guard



GB742R Hi-Line XS dura guard, standard, length II



GE520R Hi-Line XS craniotome burr, length II

## Accessories for high speed bone dissection



GB757R Hi-Line XS hand piece, angled, length II

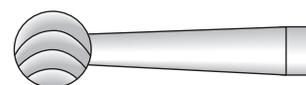
GE504R Hi-Line XS Rosen burr, length II, Ø 2.3 mm

GE506R Hi-Line XS Rosen burr, length II, Ø 3.1 mm

GE507R Hi-Line XS Rosen burr, length II, Ø 4.0 mm

GE508R Hi-Line XS Rosen burr, length II, Ø 5.0 mm

GE509R Hi-Line XS Rosen burr, length II, Ø 6.0 mm



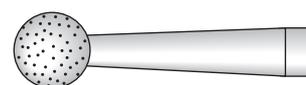
GE514R Hi-Line XS Diamond burr, length II, Ø 2.3 mm

GE516R Hi-Line XS Diamond burr, length II, Ø 3.1 mm

GE517R Hi-Line XS Diamond burr, length II, Ø 4.0 mm

GE518R Hi-Line XS Diamond burr, length II, Ø 5.0 mm

GE519R Hi-Line XS Diamond burr, length II, Ø 6.0 mm



## Skull perforation with safety perforator

GA522R Perforator driver

GB106R HUDSON chuck for GA522R

GB302R Safety perforator with HUDSON-shaft, Ø 9/12mm



GA536 STERILIT® Hi oilspray for high speed motors and handpieces

# Trolleys

## Large Trolley „Metro Classic“



PV890

Trolley „Metro Classic“

PV891

Trolley „Metro Classic IT“

- with integrated Isolation Transformer (2000 VA)

- with integrated system monitoring

PV883

Irrigator stand, one-hand height adjustment, 90 cm total height

PV885

Articulating arm for flat screen

PV884

Camera holder for 1- and 3 Chip cameras

PV893

Power plug Euro

PV894

Power plug UK/Ireland

PV895

Power plug USA/Canada/Japan

- Sturdy and non-tilting construction
- Modular trolley design
- Special antistatic castors
- Optimum stability for units
- Rubber bumpers on the base frame
- Easy cleaning and disinfection
- Smart cable management

### Technical Data:

Dimensions (w x h x d)	935 x 1580 x 700 mm
Weight (without load)	82 kg
Max. load capacity of cart	210 kg
Standing Area (w x d)	710 x 440 mm
Max. load capacity of shelf	40 kg
Standard	EN 60601-1 EN 60601-1-1 EN 60601-1-2

Safety Class acc. to EN 60601-1	I
Classification acc. to norm 93/42/EEC	I



## Small Trolley „Metro Junior“



PV880

Trolley „Metro Junior“

- Sturdy and non-tilting construction
- Modular trolley design
- Special antistatic castors
- Optimum stability for units
- Rubber bumpers on the base frame
- Easy cleaning and disinfection
- Smart cable management

PV881

- Trolley „Metro junior IT“
- with integrated Isolation Transformer (1120 VA)
  - with integrated system monitoring

### Technical Data:

Dimensions (w x h x d)	835 x 1580 x 750 mm
Weight (without load)	89 kg
Max. load capacity of trolley	210 kg
Standing Area (w x d)	560 x 440 mm
Max. load capacity of shelf	40 kg
Standard	EN60601-1 EN 60601-1-1 EN 60601-1-2

PV883

Irrigator stand, one-hand height adjustment, 90 cm total height

PV885

Articulating arm for flat screen

PV884

Camera holder for 1- and 3 Chip cameras

PV893

Power plug Euro

PV894

Power plug UK/Ireland

PV895

Power plug USA/Canada/Japan

Safety Class acc. to EN 60601-1	I
Classification acc. to norm 93/42/EEC	I

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# Numerical Index

Catalogue Number	Page	Catalogue Number	Page	Catalogue Number	Page
BB057R	35	FF389R	10	FM665R	29
BB367R	35	FF390R	14	FM670R	27
		FF392R	14	FM671R	27
BT078R	37	FF394R	14	FM672R	27
BT079R	37	FF395R	14	FM675R	28
		FF397R	8	FM676R	28
EJ446255	37	FF398R	8	FM677R	28
EJ670202	37	FF399R	8	FM680R	27
		FF432R	11	FM681R	27
FD222R	35	FF433R	11	FM682R	27
FD226R	35	FF435R	11	FM685R	28
		FF436R	11	FM686R	28
FF151R	41	FF437R	11	FM687R	28
FF169R	41	FF438R	11	FM690R	27
FF280R	40	FF439R	11	FM691R	27
FF358R	13, 33	FF616R	35	FM692R	27
FF359R	13	FF617R	35	FM695R	28
FF360R	16	FF618R	35	FM696R	28
FF362R	16			FM697R	28
FF364R	16	FG065	37	FM700R	27
FF365R	16	FG089R	37	FM701R	27
FF370R	16	FG090R	37	FM702R	27
FF372R	14	FG098R	37	FM705R	28
FF373R	10, 21	FG106	37	FM706R	28
FF374R	10, 21	FG107S	37	FM707R	28
FF378R	10, 21	FG108S	37	FM710R	27
FF379R	21	FG121R	37	FM711R	27
FF380R	18	FG122R	37	FM712R	27
FF382R	23			FM715R	28
FF383R	23	FH600	33	FM716R	28
FF384R	23	FH601R	33	FM717R	28
FF385R	10	FH602	33	FM720R	27
FF386R	10			FM721R	27
FF387R	10	FK902R	35	FM722R	27
FF388R	10	FK906R	35	FM725R	28

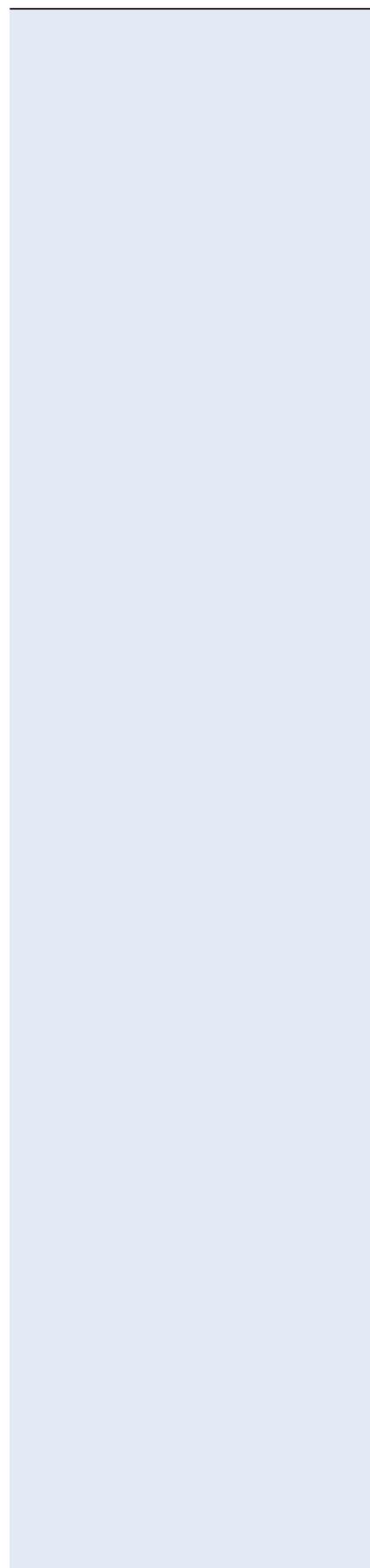
# Numerical Index

Catalogue Number	Page	Catalogue Number	Page	Catalogue Number	Page
FM726R	28	GE508R	51, 53	GN249	48
FM727R	28	GE509R	51, 53	GN300	48
FM730R	28	GE514R	51, 53	GN325	48
FM731R	28	GE516R	51, 53	JF222R	37
FM732R	28	GE517R	51, 53	JF324R	26
GA242300	37	GE518R	51, 53	JF433R	18
GA460	40	GE519R	51, 53	JF660R	30
GA461	40	GE520R	51, 53	JF936	37
GA463	40	GF351R	35	JG904	44
GA464	40	GF353R	35	JG910	44
GA465	40	GK101	48	JK402	18
GA466	40, 50	GK226	49	JK404	13
GA513	50	GK245	12, 15, 17, 21, 23, 46	JK701	29
GA521	50	GK350R	17	OK090R	35
GA522R	51	GK351R	17	OP906	45
GA536	51, 53	GK352R	17	OP913	45
GA650	52	GK353R	17	OP914	45
GA661	52	GK354R	23	OP930	45
GA662	52	GK355R	23	OP931	45
GA740	50	GK360R	12, 15, 37	OP932	45
GB106R	51, 53	GK361R	12, 15, 21	OP933	45
GB169R	53	GK362R	12, 15	OP936	45
GB302R	51, 53	GK363R	12, 15, 21	OP937	45
GB520R	51, 53	GK364R	12, 15	OP938	45
GB534R	51, 53	GK365R	12, 15	PA200	30
GB537R	51, 53	GK366R	12, 15	PE183A	14
GD656	52	GK560R	35	PE184A	9, 33
GD657	52	GK719R	35	PE188A	16
GE504R	51, 53	GK788R	35		
GE506R	51, 53	GN060	49		
GE507R	51, 53	GN073	12, 15, 17, 48, 49		
		GN245	48		



Catalogue Number	Page
PE203A	14
PE204A	9
PE206A	33
PE208A	16
PE486A	26
PE506A	26
PE526A	26
PF901	22
PF001	37
PF005	37
PF010A	21
PF011A	21
PF612	38
PM020R	37
PM145R	37
PM507R	37
PV140	44
PV142	44
PV425	44
PV428	47
PV430	44
PV432	44
PV880	55
PV881	55
PV883	54, 55
PV884	54, 55
PV890	54
PV891	54
PV893	54, 55
PV894	54, 55
PV895	54, 55
PV914	47

Catalogue Number	Page
PV915	46
PV916	47
PV918	46
PV919	46
PV920	47
PV941	46
PV961	44
PV963	44
PV967	44
PV885	46, 55
RT040R	40
RT059R	43
RT060R	43
RT061R	43
RT062R	43
RT063R	43
RT064R	43
RT065R	43
RT066R	43
RT067P	43
RT079R	41
RT081R	41
RT082P	41
RT083P	41
RT084P	41
RT085P	41
RT089P	41
RT090R	40
SK048C	37





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