Neuroendoscopy

Recommended Sets acc. to GAAB

KARL STORZ — ENDOSKOPE
THE DIAMOND STANDARD

Neuroendoscopy

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Neuroendoscopy represents a further step in appropriate minimally invasive neurosurgery, which means further minimizing damage to normal functional tissue with maximum efficacy in terms of pathology. However, endoscopy of the central nervous system is especially complicated: unlike arthroscopy or peritoneal and thoracic endoscopy, work in the ventricular system or in brain cysts is performed in liquor - under water so to speak - (except where complex drainage is necessary with heavy bleeding). Gas insufflation and any overpressure with fluid perfusion to optimize the endoscopic viewing field are not possible (with the exception of discoscopy). Hemostasis thus calls for maximum precision, where possible on a preventive basis, and maintaining absolute sterility is essential. For this reason, special endoscopes with small diameters are required for the delicate CNS, as well as specialized irrigation techniques, modified endoscopic instruments and surgical techniques.

For this purpose, a complete system has been developed for **the two fundamental techniques of neuroendoscopy:**

- **for neuroendoscopy via an air-filled cavity:** here the endoscopic procedure is performed using an existing **natural cavity**, which is enlarged as necessary (e.g. our set for transnasal neurosurgery) or via an **artificially prepared cavity,** e.g. with endoscopically assisted or controlled microsurgery or with surgery of the carpal and cubital tunnel. For transnasal and endoscopically assisted surgery we sometimes use the same endoscopes, which are fixed where possible with a holder at the optimum distance for a view of the process. Instruments are inserted around the endoscope using modified microsurgical instruments, with hemostasis and tissue ablation taking place according to the same principles, but with modified instruments as in microsurgery (monopolar, pseudomonopolar and bipolar coagulation, ultrasonic aspiration etc.). For intracerebral, purely endoscopic speculum access we use the same specula as for transnasal procedures, with a blunt trocar and neuronavigational positioning, where possible also with fixation to a holder.

  For the carpal and cubital tunnel the same endoscopes are used as for ventriculoscopy, just sometimes with altered access of the fiberoptic light cable (30° telescope) and a special slit cannula/hook knife with the (biportal) carpal tunnel technique.

- **for neuroendoscopy in liquor-filled cavities of the CNS:** here the liquor-filled cavity is accessed via puncture with a guide tube (‘operating sheath’); during puncture the blunt trocar in the operating sheath can be steered with neuronavigation while a particularly narrow ®← telescope (28018 AA) also permits ‘viewing through the trocar tip’ of puncture using the optical obturator. The operating sheath then accommodates the telescope and is used to steer the specially modified surgical instruments at the same time (for the CNS using uniportal ‘coaxial’ access in the vast majority of cases).
  Once again, there are 2 principles:

a) The channel endoscope. Here the sheath (e.g. DECQ endoscope) or the endoscope itself (e.g. the miniature endoscope 28162 AM) contains several channels which are used to steer instruments with an appropriate diameter and for irrigation (separate inlet and outlet). The advantages are the precise steering of instruments and mechanical protection of the endoscope. The disadvantage is the small effective lumen of the channels, which barely permits the removal of significant tumor or cyst

material or the implantation of stents or efficacious hemostasis. We thus apply this principle with especially small atraumatic outside sheath diameters of < 4 mm (28162 C), i.e. purely for ventriculostomy and cystostomy, e.g. with infants, possibly also in combination with a biopsy using straight 1 mm instruments that are easy to steer.

b) The space endoscope: Here the entire instrument channel of the operating sheath is available for manipulation (28162 BS). Diagnostic endoscopy is first of all performed with the optimum quality of the 4 mm ®← endoscope; in addition to the straight telescope, an overview of the entire cavity (ventricle, cyst) is available using angled telescopes (30°, 45°, 70°), which can be rotated through 360°. With the 120° telescope a 'retrograde' view is even possible (e.g. to check for complete capsule resection in the case of colloid cysts). For surgical manipulation the extremely narrow 2 mm ®← OR endoscope (28096 AGA) occupies little space in the guide channels so that instruments up to 3 mm in size can be used, with the irrigation cannula positioned alongside. Large tumor sections can be removed with the endoscope or stents inserted. The sensitive OR endoscope with a 6° field of view, which thus shows the instrument in the middle, should not be put down without the protection tube.

Prof. Dr. habil. M. R. GAAB
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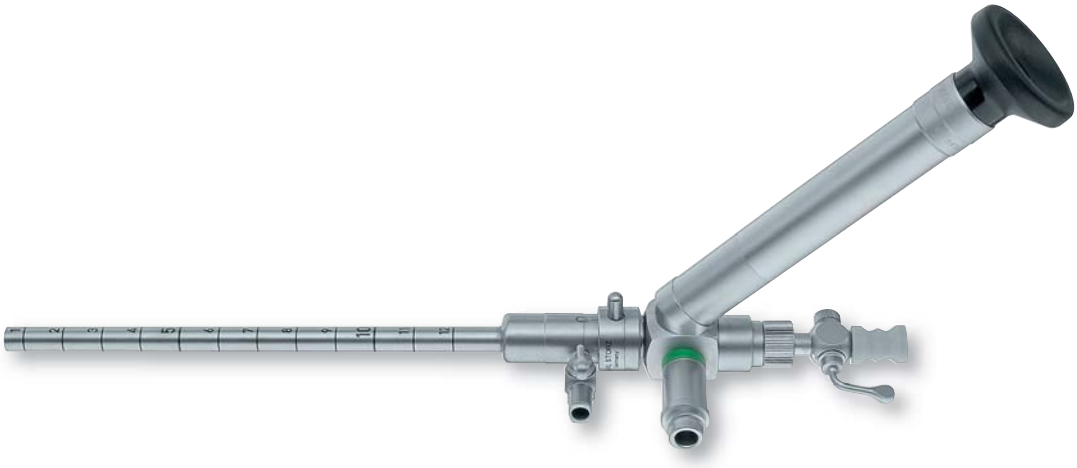
The GAAB Neuroendoscope

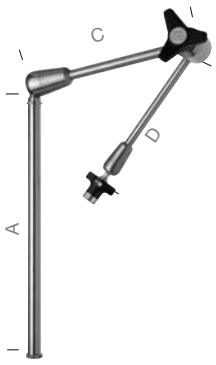
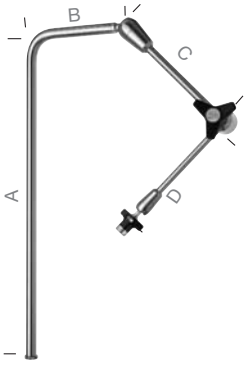
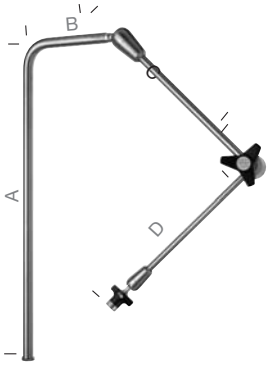
The optical system of the GAAB neuroendoscope remains unchanged, but the telescope sheath has been modified and enhanced. In the sensitive neuroendoscope with 6° field of view, the light cable and telescope, which were previously located side-by-side and insulated, are now encased in a kidney-shaped sheath, which also provides extra strength. The outer diameter of the operating sheath, on the other hand, remains unchanged at 6.5 mm. To ensure the same-sized working channel, the centering of the telescope has been optimized. The kidney-shaped sheath thus strengthens the telescope without making the working channel narrower.

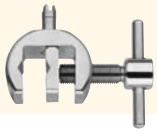
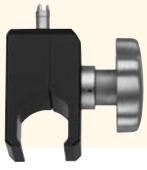


The existing obturators are compatible with the new system.

Another innovation is the holding systems from KARL STORZ, with a quick-release coupling. You can find an overview of the holding systems on the next page.

Haltesysteme

Socket	Articulated stand					
28172 HK	28272 HA		28272 HB		28272 HC	
						
28172 HR	A 30 cm	B –	A 48 cm	B 15 cm	A 48 cm	B 15 cm
	C 20 cm	D 17 cm	C 20 cm	D 17 cm	C 27 cm	D 24 cm

Clamping jaw	Catalog number of the entire holding system		
28272 UG	28272 KGA	28272 KGB	28272 KGC
	28272 RGA	28272 RGB	28272 RGC
	**Clamping Jaw,** metal, with fastener KSLock, for use with all square headed KARL STORZ telescopes, clamping range 16.5 up to 23 mm		
28272 UK	28272 KKA	28272 KKB	28272 KKC
	28272 RKA	28272 RKB	28272 RKC
	**Clamping Jaw,** metal, with fastener KSLock, for use with instrument and telescope sheaths, clamping range 4.8 up to 12.5 mm		
28272 UL	28272 KLA	28272 KLB	28272 KLC
	28272 RLA	28272 RLB	28272 RLC
	**Clamping Jaw,** universal, with fastener KSLock, clamping range 0 up to 18 mm		
28272 UF	28272 KFA	28272 KFB	28272 KFC
	28272 RFA	28272 RFB	28272 RFC
	**Clamping Jaw,** with fastener KSLock, for use with all KARL STORZ polymer housing fiberscopes		

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①	28162 PK	**Injection Needle,** diameter 1.7 mm
②	28161 LD	**Deflecting Mechanism,** for LASER probe, with proximal bend protection, with ring-grip handle, diameter 2.9 mm, length 38 cm
③	28162 U	**Grasping Forceps,** single action jaws, diameter 2.7 mm, working length 30 cm
④	28162 ZE	**Biopsy Forceps,** single action jaws, diameter 2.7 mm, working length 30 cm
⑤	28162 EP	**Scissors,** pointed, single action jaws, diameter 2.7 mm, working length 30 cm
⑥	28162 EM	**Scissors,** pointed, slightly curved jaws, double action jaws, diameter 1.7 mm, working length 30 cm
⑦	28162 Z	**Biopsy Forceps,** double action jaws, diameter 1.7 mm, working length 30 cm
⑧	28160 TVX	**Forceps,** for ventriculostomy, flexible, diameter 1.7 mm, working length 30 cm
⑨	28762 KB	**Coagulating Electrode,** bipolar, diameter 1.7 mm
⑩	28762 K	**Coagulating Electrode,** unipolar, diameter 1.7 mm
⑪	28272 KKA	**Holding System, autoc lavable consisting of:** 28172 HK **Socket,** with clamp for fixation to the operating table's sliding rail 28272 HA **Articulated Stand,** straight 28272 UK **Clamping Jaw,** metal, with axial intake
⑫	28096 AGA	HOPKINS® **Wide Angle Straight Forward Telescope** 6°, stable version, with angled eyepiece, with instrument channel diameter 3 mm, length 15 cm, **autoclavable,**fiber optic light transmission incorporated, color code: green
⑬	28162 BS	**Operating Sheath,** O.D. 6.5 mm, working length 13 cm, with graduated scale, with lateral stopcock and Inlet for catheter, for use with 28096 AGA
⑭	28162 BO	**Obturator** included with 28162 B
⑮	28162 BB	**Obturator** included with 28162 B, with central hole 2 mm for stereotactic positioning
⑯	28162 BD	**Optical Obturator,** for positioning of operating sheath 28162 B under visual control, for use with HOPKINS® telescope 28018 AA
⑰	28132 BWA	HOPKINS II® **Wide Angle Forward-Oblique Telescope** 30°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable,** fiber optic light transmission incorporated, color code: red
⑱	28132 AA	HOPKINS II® **Straight Forward Telescope** 0°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable,** fiber optic light transmission incorporated, color code: green
⑲	28018 AA	HOPKINS® **Straight Forward Telescope** 0°, diameter 2.7 mm, length 18 cm, **autoclavable,** fiber optic light transmission incorporated, color code: green#
⑳	28132 FA	HOPKINS II® **Forward-Oblique Telescope** 45°, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: black
㉑	7219 FA	HOPKINS® **Forward-Oblique Telescope** 45°, diameter 2.7 mm, length 18 cm, **autoclavable**, fiber optic light transmission incorporated, color code: black
㉒	28162 EA	**Telescope Bridge,** for use with HOPKINS II® telescopes 28162 AA and 28132 AA through operating sheath 28162 B
㉓	28162 E	**Telescope Bridge,** for use with HOPKINS II® telescopes 28162/28132 BA/BWA/CA through operating sheath 28162 B
㉔	28160 SF	**Suction Catheter,** flexible, diameter 3.0 mm, working length 45 cm, disposable
㉕	28162 SN	**Irrigation Tube, autoclavable,** with LUER-Lock
㉖	533 TVA	**Adaptor, autoclavable**, permits telescope changing under sterile conditions
	28162 GB	**Balloon Catheter**, O.D. 1.0 mm, single use, 10 pieces (not pictured)

Recommended Containers for Sterilization:
Telescopes: 39301 A (3x)
Angled Telescopes: 39314 G
Instruments: 39360 BK

IMAGE1™ HD

HD camera control unit

- **Genuine HD is guarenteed by a maximum resolution and the consistent use of the native 16:9 aspect ratio from image capture, signal transmission to display devices.**
- **HD-compatible endoscopic video camera systems must be equipped with a CCD chip supporting the 16:9 input format and require that image capture be performed at a resolution of 1920 x 1080 pixels.**

The benefits of High Definition (HD) for medical applications are:

- **5 times higher input resolution of the camera delivers more detail and depth of focus.**
- **Using 16:9 format during image acquisition enlarges the field of vision.**
- **The 16:9/16:10 format of the widescreen monitor supports ergonomic viewing.**
- **Enhanced color brilliance for optimal diagnosis.**
- **Progressive scan technology provides a steady, flicker-free display and helps eliminate eyestrain and fatigue.**

22 2010 11U102 **IMAGE1™ HD hub camera control unit** (CCU)

for use with IMAGE1™ HDTV and standard one and three-chip camera heads, max. resolution 1920 x 1080 pixels, with integrated **KARL STORZ-SCB®** and integrated image processing module, color system **PAL/NTSC,** power supply 100–240 VAC, 50/60 Hz

consisting of:

22 2010 20U102	**IMAGE1™ HD hub (with SDI) camera control unit**
400 A	**Mains Cord**
3 x 536 MK	**BNC/BNC Video Cable**, length 180 cm
547 S	**S-Video (Y/C) Connecting Cable**, length 180 cm
20 2032 70	**Special RGB Connecting Cable**
2x **20** 2210 70	**Connecting Cable**, for controlling peripheral units, length 180 cm
20 0400 86	**DVI Connecting Cable**, length 180 cm
20 0901 70	**SCB Connecting Cable**, length 100 cm
20 2001 30U	**Keyboard**, with English character set

Specifications:

Signal-to-noise ratio	AGC	Video output	Input
IMAGE1™ Three-chip camera systems ≥ 60 dB	Microprocessor-controlled	- Composite signal to BNC socket - S-Video signal to 4-pin Mini DIN socket (2x) - RGB signal to D-Sub socket - DV signal to DV socket (only IMAGE1™ with DV module) - SDI signal to BNC socket (only IMAGE1™ with SDI module)(2x) - HDTV signal to DVI-D socket (2x)	Keyboard for title generator, 5-pin DIN socket

Control output /input	Dimensions w x h x d (mm)	Weight (kg)	Power supply	Certified to:
- KARL STORZ-SCB® at 6-pin Mini DIN socket (2x) - 3.5 mm stereo jack plug (ACC 1, ACC 2), - Serial port at RJ-11	305 x 89 x 335	2.95	100-240 VAC, 50/60 Hz	IEC 601-1, 601-2-18, CSA 22.2 No. 601, UL 2601-1 and CE acc. to MDD, protection class 1/CF

IMAGE1™ HD
HD camera head

22 2200 50-3/**22** 2201 50-3

22 2200 50-3 **50 Hz** **IMAGE1™ H3, three-chip HD camera head**

max. resolution 1920 x 1080 pixel progressive scan, 50 Hz,
with 2 freely programmable camera head buttons,
with integrated parfocal zoom, focal length f = 14 – 30 mm (2x)

22 220150-3 **60 Hz** **IMAGE1™ H3, three-chip HD camera head**

max. resolution 1920 x 1080 pixel, progressive scan, 60 Hz,
with 2 freely programmable camera head buttons,
with integrated parfocal zoom focal length f = 14 – 30 mm (2x)

Specifications:

Image sensor	Pixels	Dimensions	Weight	Lens
IMAGE1™ three-chip camera head 3x ⅓ CCD chip	1920 (H) x 1080 (V) pixels per chip	31 x 114 x 48 mm (w x h x d)	210 g	Integrated parfocal zoom lens, f = 14–30 mm

Standard IMAGE1™ camera heads may also be connected to IMAGE1™ HD hub camera control unit (CCU).

KARL STORZ HD flat screens Color systems PAL/NTSC	Version	Art no.	Screen diagonal	Max. screen resolution	Video input						
			58.5 cm (23")	1920 x 1200	Composite signal to BNC socket	S-Video to 4-pin Mini DIN socket	RGB to 5x BNC socket	VGA to 15-pin HD-D-Sub socket	SDI to BNC socket	HD-SDI to BNC socket	DVI to DVI-D socket
	Wall-mounted with VESA 100-adaption	9523 NB	●	●	●	●	●	●	●	●	●
	Desktop with pedestal	9523 N									

The following accessories are included:

400 A **Mains cord**
9523 PS **External 24 VDC power supply**
9419 SF **Pedestal** (only 9523 N)

Cold Light Fountain XENON 300 SCB®

201340 01	**KARL STORZ Cold Light Fountain XENON NOVA 300**, 300 W XENON lamp, power supply: 100–120/220–240 VAC, 50/60 Hz, including:
400 A	**Mains Cord**
495 NCS	**Fiber Optic Light Cable**, size 4.8 mm, length 250 cm, heat resistant

Notes

EndoWorld®

www.karlstorz.com

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