

Endoscopic Pituitary Surgery

according to CAPPABIANCA/CAVALLO/de DIVITIIS



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The endoscopic endonasal approach to the sellar region is a recent evolution of the conventional transsphenoidal technique performed with the operating microscope. This method can be designated as “pure” pituitary endoscopy and not only as a complement to the microscopic intervention – the term “pure” being applied to a surgical procedure in which the endoscope is the only optical device being used.

The endoscopic endonasal transsphenoidal approach to the sella is performed via an anterior sphenoidotomy, through the enlargement of the natural sphenoid ostium, with a rigid diagnostic endoscope as the sole visualizing tool, and without the use of a transsphenoidal retractor. Three main steps make up this surgical procedure: nasal, sphenoidal and sellar.

During the nasal step the rigid endoscope (18 cm in length, 4 mm in diameter) is inserted in the chosen nostril up to the middle turbinate, that is gently pushed laterally to enlarge the space between it and the nasal septum. The endoscope is then advanced inside the nasal cavity up to the choana and along its roof, in the sphenoid recess, until to reach the natural sphenoid ostium.

The sphenoid step starts with the coagulation of the sphenoid recess and the detachment of the nasal septum from the sphenoid prow using a microdrill. Once the anterior wall of the sphenoid sinus is exposed on both sides, it is removed all around with different bone punches. One or more septa inside the sphenoid sinus are removed with a nasal forceps.

During the sellar step, the endoscope can be held by a second surgeon in order to free both surgeon’s hands. Alternatively a longer scope (30 cm in length, 4 mm in diameter) can be used and fixed to an autostatic holder. After the endoscopic identification of all the anatomic landmarks around the sella, its floor is opened and the dura incised with a telescopic blade. The sellar lesion is then removed with different curettes depending on the size and position of the pituitary tumor. After lesion removal the sellar floor is repaired, when necessary, with different autologous or heterologous or synthetic materials, according to the common guidelines.

In the settings of continuous research for new and better instruments, constant and on-going development of surgical tools is necessary.

The main advantages of the endoscopic procedure arise from the absence of the nasal speculum and from the use of the endoscope instead of the microscope. Without the transsphenoidal retractor, the endoscope discloses its better properties, permitting a wider vision of the surgical field, with a close-up “look” inside the anatomy. The whole procedure is less traumatic. No post-operative nasal packing is necessary thus improving significantly the patient’s compliance. The percentage of complications is reduced, as compared to the traditional microsurgical approach. Treatment of recurrences is easier because the submucosal nasal phase is avoided and the anatomical orientation is much better.

Endoscopic Pituitary Surgery

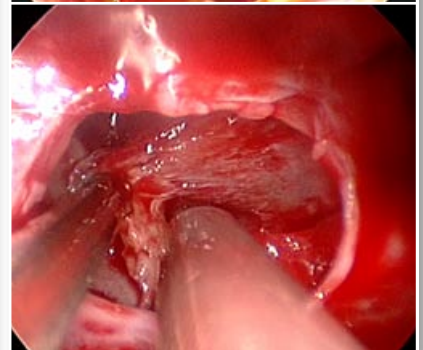
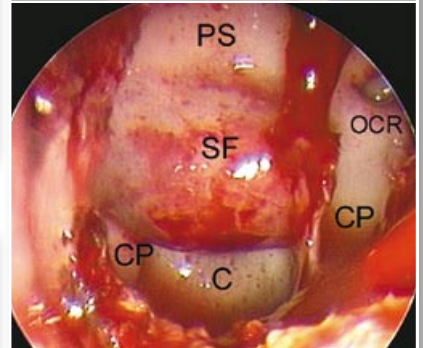
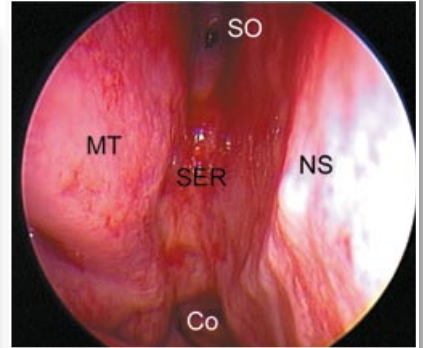
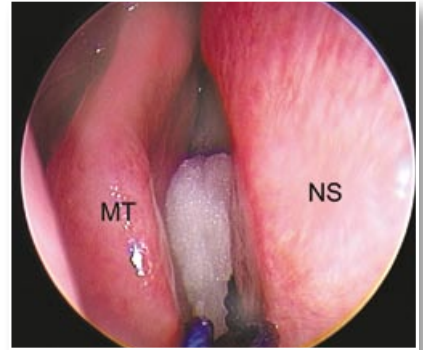
according to CAPPABIANCA/CAVALLO/de DIVITIIS



Patient positioning

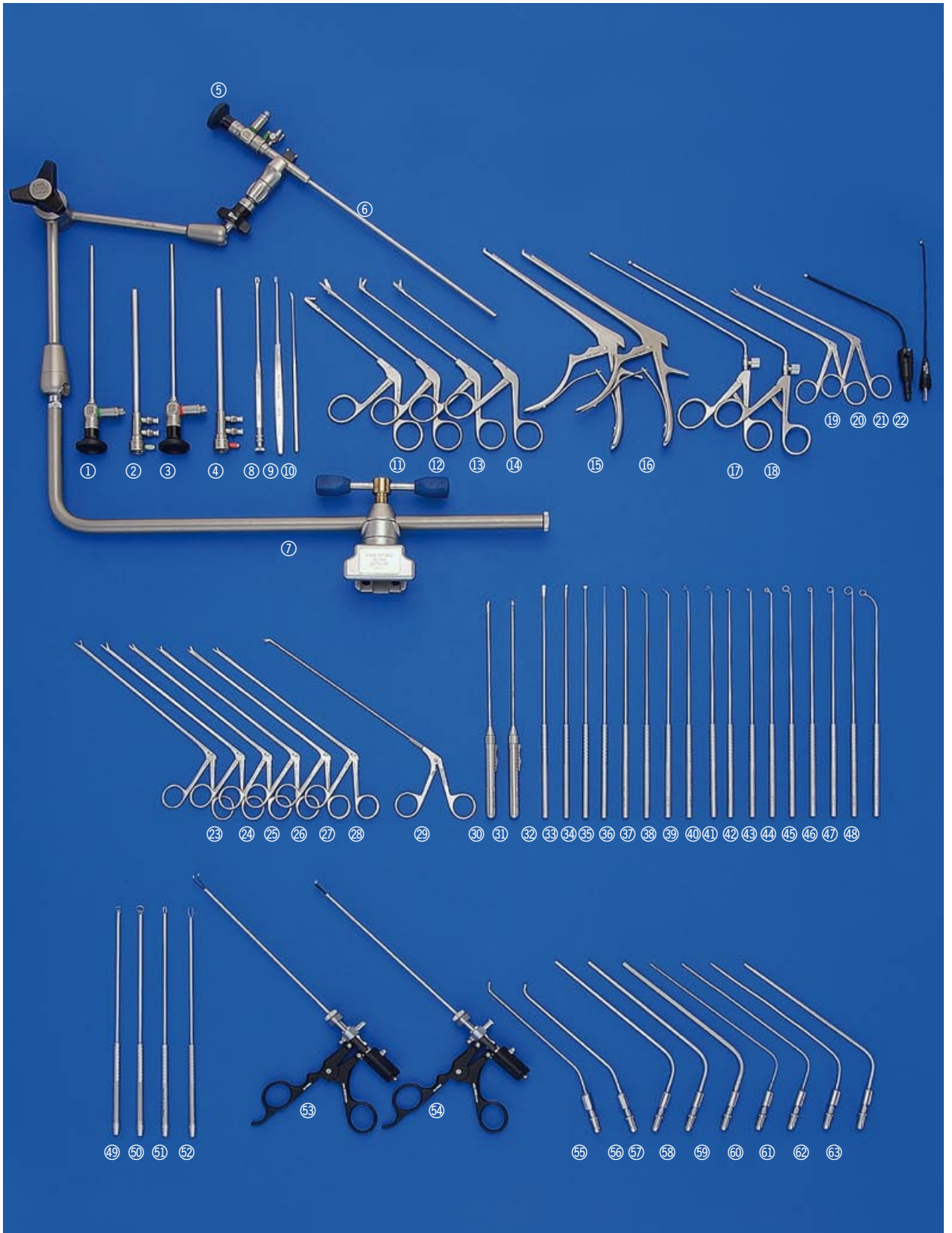


Operating room setup



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Recommended Set acc. to CAPPABIANCA/DE DIVITIIS



Endoscopic Visualization

- ① 28132 AA **HOPKINS® Straight Forward Telescope 0°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**
- ② 7230 AS **Irrigation Sheath**, O.D. 4.8 × 6.0 mm, working length 14 cm, for use with **HOPKINS® Telescopes 28132 AA**
- ③ 28132 BA **HOPKINS® Forward-Oblique Telescope 30°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable**
- ④ 7230 BS **Irrigation Sheath**, O.D. 4.8 × 6.0 mm, working length 14 cm, for use with **HOPKINS® Telescopes 28132 BA**
- ⑤ 28164 AA **HOPKINS® Straight Forward Telescope 0°**, enlarged view, diameter 4 mm, length 30 cm, **autoclavable**
- ⑥ 28164 ASA **Irrigation Sheath**, O.D. 4.8 × 6.0 mm, working length 24 cm, for use with **HOPKINS® Telescopes 28164 AA**
- ⑦ 28272 RKB **Holding System, autoclavable**
optional
- 28132 FA **HOPKINS® Forward-Oblique Telescope 45°**, enlarged view, diameter 4 mm, length 18 cm, **autoclavable** (not illustrated)
- 7230 FS **Irrigation Sheath**, O.D. 4.8 × 6.0 mm, working length 14 cm, for use with **HOPKINS® Telescopes 28132 FA** (not illustrated)
- 7219 AA **HOPKINS® Straight Forward Telescope 0°**, enlarged view, diameter 2.7 mm, length 18 cm, **autoclavable** (not illustrated)
- 28164 CAA **Irrigation Sheath**, O.D. 3.8 mm, working length 15 cm, for use with **HOPKINS® Telescopes 7219 AA** (not illustrated)

Nasal and Sphenoid Stage

- ⑧ 474001 **FREER Suction Elevator**, with stylet, length 19 cm
- ⑨ 628702 **Antrum Curette**, oblong small size, length 19 cm
- ⑩ 660500 **Sickle Knife**, length 18 cm
- ⑪ 459010 **STAMMBERGER RHINOFORCE® II Antrum Punch**, upside backward cutting, length 10 cm
- ⑫ 449211 **RHINOFORCE® II Nasal Scissors**, working length 13 cm, straight
- ⑬ 452501 B **MACKAY-GRÜNWARD RHINOFORCE® II Nasal Forceps**, through-cutting, tissue sparing, delicate, upturned 45°, size 1.8 x 3 mm, working length 13 cm
- ⑭ 452001 B **MACKAY-GRÜNWARD RHINOFORCE® II Nasal Forceps**, through-cutting, tissue sparing, delicate, straight, size 1.8 x 3 mm, working length 13 cm
- ⑮ 28164 MKB **KERRISON Punch**, upbiting 40° forward, size 2 mm, working length 17 cm
- ⑯ 28164 MKC **KERRISON Punch**, upbiting 40° forward, size 3 mm, working length 17 cm
- ⑰ 651050 **STAMMBERGER Punch**, circular cutting for sphenoid, ethmoid and choanal atresia, working length 18 cm, diameter 4.5 mm
- ⑱ 651055 **STAMMBERGER Punch**, circular cutting, for sphenoid, ethmoid and choanal atresia
- ⑲ 634824 **STRÜMPEL Forceps**, with oval, fenestrated cupped jaws, working length 12.5 cm
- ⑳ 634825 A **STRÜMPEL Forceps**, with oval, fenestrated, cupped jaws, 45° upturned, working length 12.5 cm
- ㉑ 839310 N **Unipolar Suction-Coagulation Tube**, insulated, with connector pin for unipolar coagulation, diameter 3 mm, working length 10 cm
- 28164 ED **Coagulation Ball Electrode**, diameter 2 mm, laterally curved, working length 13 cm (not illustrated)
- ㉒ 28164 EF **Coagulation Ball Electrode**, diameter 4 mm, laterally curved, working length 13 cm

Recommended Set acc. to CAPPABIANCA/DE DIVITIIS

Sellar Stage

- ②③ 663231 **Forceps**, with round spoon, diameter 2.5 mm, straight, working length 18 cm
- ②④ 663239 **Forceps**, with oval, fenestrated, cupped jaws, 2.5 mm wide, straight, working length 18 cm
- ②⑤ 663301 **Scissors**, straight, delicate, working length 18 cm
- ②⑥ 663304 **Scissors**, curved right, delicate, working length 18 cm
- ②⑦ 663305 **Scissors**, curved left, delicate, working length 18 cm
- ②⑧ 663307 **Scissors**, 45° upturned, delicate, working length 18 cm
- ②⑨ 663327 **Scissors**, curved up 45°, delicate, sheath 360° rotatable, working length 18 cm
- ③⑩ 28164 KK de DIVITIIS-CAPPABIANCA **Scalpel**, with telescopic blade, consisting of:
 - 28164 MA **Handle**
 - 28164 MB **Outer Sheath**
 - 28164 MS **Micro-Knife**, sickle-shaped
- ③⑪ 28164 M de DIVITIIS-CAPPABIANCA **Scalpel**, with telescopic blade, consisting of:
 - 28164 MA **Handle**
 - 28164 MB **Outer Sheath**
 - 28164 MC **Micro Knife**, pointed
- ③⑫ 28164 DM **Elevator**, sharp, slightly curved spatula, size 2 mm, with round handle, length 25 cm
- ③⑬ 28164 DS **Elevator**, sharp, slightly curved spatula, size 3 mm, with round handle, length 25 cm
- ③⑭ 28164 DB **Dissector**, sharp, round spatula, tip angled 45°, size 3 mm, with round handle, length 25 cm
- ③⑮ 28164 H CASTELNUOVO **Hook**, 90°, blunt, length 25 cm, with round handle
- ③⑯ 28164 KB **Curette**, round spoon, tip slightly angled, with round handle, length 25 cm
- ③⑰ 28164 RN CAPPABIANCA-de DIVITIIS **Curette**, round wire, I.D. 3 mm, tip angled 45°, with round handle, length 25 cm
- ③⑱ 28164 RE CAPPABIANCA-de DIVITIIS **Ring-Curette**, round wire, ductile, I.D. 3 mm, tip angled 45°, with round handle, length 25 cm
- ③⑲ 28164 RO CAPPABIANCA-de DIVITIIS **Curette**, round wire, I.D. 5 mm, tip angled 45°, with round handle, length 25 cm
- ④① 28164 RJ CAPPABIANCA-de DIVITIIS **Ring-Curette**, round wire, ductile, I.D. 5 mm, tip angled 45°, with round handle, length 25 cm
- ④② 28164 RI De DIVITIIS-CAPPABIANCA **Ring-Curette**, round wire, I.D. 3 mm, tip angled 90°, with round handle, length 25 cm
- ④③ 28164 RG **Same**, I.D. 5 mm
- ④④ 28164 RB de DIVITIIS-CAPPABIANCA **Curette**, round wire, I.D. 3 mm, distally curved shaft, with round handle, length 25 cm
- ④⑤ 28164 RA **Same**, I.D. 5 mm
- ④⑥ 28164 RV CAPPABIANCA-de DIVITIIS **Ring-Curette**, round wire, I.D. 3 mm, tip laterally angled 90°, with round handle, length 25 cm
- ④⑦ 28164 RD **Same**, I.D. 5 mm
- ④⑧ 28164 RW **Same**, I.D. 7 mm
- ④⑨ 28164 RF CAPPABIANCA-de DIVITIIS **Ring Curette**, round wire, I.D. 5 mm, vertical long curved, with round handle, length 25 cm
- ④⑩ 28164 RSB de DIVITIIS-CAPPABIANCA **Suction-Curette**, with round wire, I.D. 5 mm, tip angled 45°
- ⑤① 28164 RSC **Same**, I.D. 7 mm
- ⑤② 28164 RT CAPPABIANCA-de DIVITIIS **Suction Curette**, basket-shape, round wire, size 5 mm, length 25 cm
- ⑤③ 28164 RU **Same**, size 6.5 mm

Recommended Set acc. to CAPPABIANCA/DE DIVITIIS

- ⑤③ 28164 BDL **Take-apart® Bipolar Forceps**, width 1 mm, delicate jaws, distally angled 45°, vertical closing, outer diameter 3.4 mm, working length 20 cm, consisting of:
26284 HM **Handle**
26284 AS **Outer Tube**
26284 BS **Inner Tube**
28164 FGL **Bipolar Insert**
- ⑤④ 28164 BDM **Take-apart Bipolar Forceps**, width 1 mm, delicate jaws, distally angled 45°, horizontal closing, outer diameter 3.4 mm, working length 20 cm, consisting of:
26284 HM **Handle**
26284 AS **Outer Tube**
26284 BS **Inner Tube**
28164 FGM **Bipolar Insert**
- ⑤⑤ 662882 FRANK-PASQUINI **Suction Tube**, angular, O.D. 2.4 mm, tip curved upwards, ball end, with grip plate and cut-off hole, LUER, working length 13 cm
- ⑤⑥ 662885 **Same**, O.D. 3 mm
- ⑤⑦ 649183 FERGUSON **Suction Tube**, with cut-off hole and stylet, LUER, working length 15 cm, 10 Fr.
- ⑤⑧ 649184 **Same**, 12 Fr.
- ⑤⑨ 649185 **Same**, 15 Fr.
- ⑥⑩ 649179 B **Suction Tube**, malleable, with elongated cut-off hole and stylet, LUER, working length 15 cm, 4 Fr.
- ⑥⑪ 649180 B **Same**, 6 Fr.
- ⑥⑫ 649182 B **Same**, 8 Fr.
- ⑥⑬ 649183 B **Same**, 10 Fr.

4071170-1 **UNIDRIVE NEURO** (not illustrated)

Recommended Containers for Sterilization:

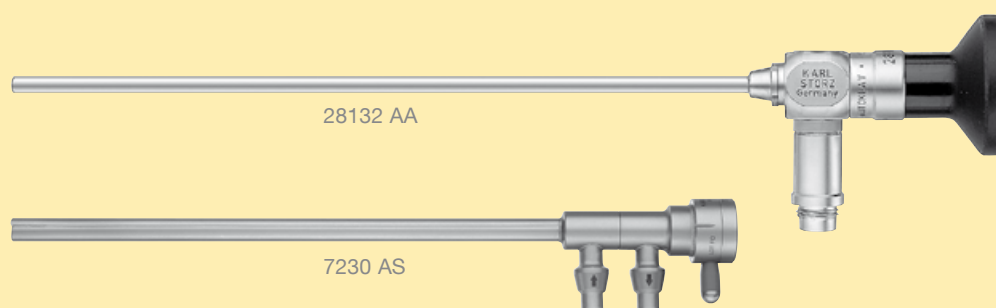
Telescopes: 39301 B (2x)
Instruments: 39360 AK
Articulated stand: 39301 J

Telescopes

The endoscopic endonasal transsphenoidal approach is performed using rigid endoscopes without any working channel. Most of the procedure is carried out with a 0° degree, 18 cm in length endoscope while the use of angled scopes is required only in selected conditions.

The 30 cm in length endoscope is used together with the endoscope holder when the surgeon prefers to work with a fixed image on the screen.

The 2.7 mm in diameter endoscope is useful in pediatric patients or in narrow nasal cavities.



28132 AA	HOPKINS® Straight Forward Telescope 0° , enlarged view, diameter 4 mm, length 18 cm, autoclavable , fiber optic light transmission incorporated, color code: green.
7230 AS	Irrigation sheath , O.D. 4.8 × 6 mm, working length 14 cm, for use with HOPKINS® telescopes 28132 AA
28132 BA	HOPKINS® Forward-Oblique Telescope 30° , enlarged view, diameter 4 mm, length 18 cm, autoclavable
7230 BS	Irrigation Sheath , O.D. 4.8 × 6 mm, working length 14 cm, for use with HOPKINS® Telescopes 28132 BA
28164 AA	HOPKINS® Straight Forward Telescope 0° , enlarged view, diameter 4 mm, length 30 cm, autoclavable
28164 ASA	Irrigation Sheath , O.D. 5.0 mm, working length 24 cm, for use with HOPKINS® Telescopes 28164 AA
optional	
28132 FA	HOPKINS® Forward-Oblique Telescope 45° , enlarged view, diameter 4 mm, length 18 cm, autoclavable
7230 FS	Irrigation Sheath , O.D. 4.8 × 6 mm, working length 14 cm, for use with HOPKINS® Telescopes 28132 FA
7219 AA	HOPKINS® Straight Forward Telescope 0° , enlarged view, diameter 2.7 mm, length 18 cm, autoclavable
28164 CAA	Irrigation Sheath , O.D. 3.8 mm, working length 15 cm, for use with HOPKINS® Telescopes 7219 AA

Nasal Instruments



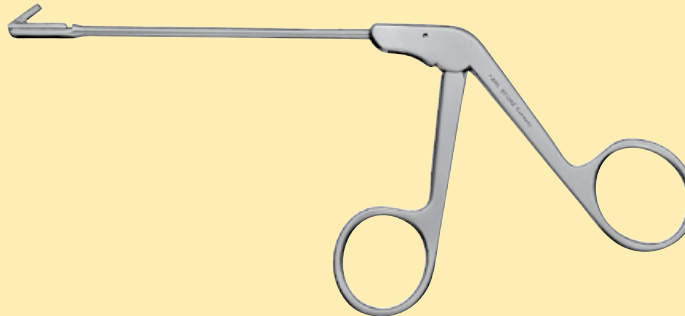
474001

FREER Suction Elevator, with stilet, length 19 cm



628702

Antrum Curette, oblong, small size, length 19 cm



459010

STAMMBERGER RHINOFORCE® II Antrum Punch, upside backward cutting, working length 10 cm



449211

RHINOFORCE® II Nasal Scissors, small model, straight, length of cut 10 mm, working length 13 cm



452501 B

MACKAY-GRÜNWARD RHINOFORCE® II Nasal Forceps, through-cutting, 45° upturned, delicate, tissue-sparing, 8 × 3 mm, size 1, working length 13 cm

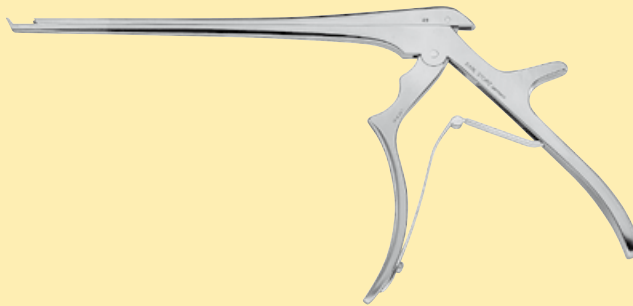


452001 B

MACKAY-GRÜNWARD RHINOFORCE® II Nasal Forceps, through-cutting, straight, delicate, tissue-sparing, 8 × 3 mm, size 1, working length 13 cm

Instrument Details

Nasal and Sphenoidal Phase



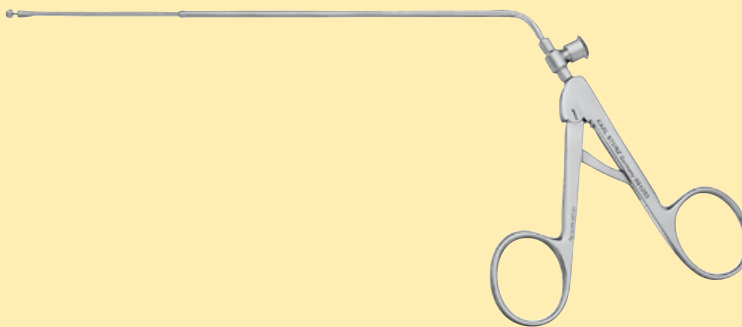
28164 MKB

Punch, upbiting 60° forward, size 2 mm, working length 17 cm



28164 MKC

Punch, upbiting 60° forward, size 3 mm, working length 17 cm



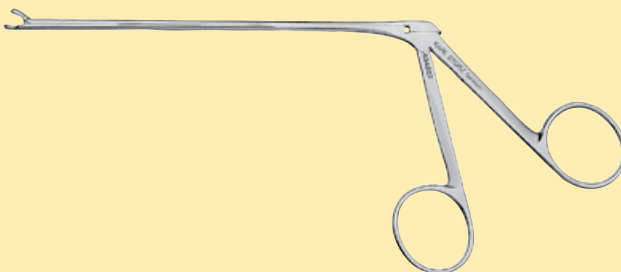
651050

STAMMBERGER Punch, circular cutting, for sphenoid, ethmoid and choanal atresia, diameter 4,5 mm, working length 18 cm



651055

STAMMBERGER Punch, circular cutting, for sphenoid, ethmoid and choanal atresia, diameter 3,5 mm, working length 18 cm



634824

STRÜMPEL Forceps, with oval, fenestrated, cupped jaws, straight, width 2.5 mm, working length 12.5 cm



634825 A

STRÜMPEL Forceps, with oval, fenestrated, cupped jaws, 45° upturned, width 2.5 mm, working length 12.5 cm

Mono- and bipolar instruments for bleeding management

The monopolar instruments are recommended for the coagulation of the nasal mucosa. The bipolar forceps (see page 15) are recommended for the coagulation of arterial bleedings, e.g. branches of the sphenopalatine artery, of the dura mater or the intercavernous sinus.



839310 N

Unipolar Suction-Coagulation Tube, insulated, with connector pin for unipolar coagulation, diameter 3 mm, working length 10 cm



28164 ED

Unipolar Suction-Coagulation Tube, insulated, with connector pin for unipolar coagulation, diameter 3 mm, working length 10 cm



28164 EF

Unipolar Suction-Coagulation Tube, insulated, with connector pin for unipolar coagulation, diameter 4 mm, working length 13 cm

Instrument Details

Sellar Phase

Knives



660500

Sickle Knife, length 18 cm



28164 MP

Round Knife, vertical, 3.5 × 2.5 mm



28164 M

deDIVITIIS-CAPPABIANCA **Scalpel**, with retractable blade, consisting of:

28164 MA **Handle**

28164 MB **Sheath**

28164 MC **Micro Knife**, pointed



28164 KK

deDIVITIIS-CAPPABIANCA **Scalpel**, with retractable blade, consisting of:

28164 MA **Handle**

28164 MB **Sheath**

28164 MS **Micro Knife**, sickle-shaped

Curettes in different diameters for safe and effective pituitary adenoma removal

	Inner diameter 3 mm. Recommended for Micro-Adenoma	Inner diameter 5 mm. Recommended for Macro-Adenoma	Inner diameter 7 mm. Recommended for Macro-Adenoma
	28164 RN	28164 RO	-
	28164 RI	28164 RG	-
	28164 RB	28164 RA	-
	28164 RV	28164 RD	28164 RW
	-	28164 RF	-

Malleable Curettes



28164 RE CAPPABIANCA-de DIVITIIS **Ring Curette**, with round wire, malleable, inner diameter 3 mm, tip angled 45°, with round handle, length 25 cm



28164 RJ **Same**, inner diameter 5 mm

Double Function Curettes



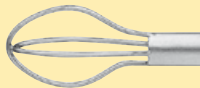
28164 RSB deDIVITIIS-CAPPABIANCA **Suction Curette**, blunt, inner diameter 5 mm, tip angled 45°, LUER, length 25 cm



28164 RSC **Same**, inner diameter 7 mm



28164 RT CAPPABIANCA-de DIVITIIS **Suction Curette**, with basket, round, size 5 mm, rotatable tube, LUER, length 25 cm



28164 RU CAPPABIANCA-de DIVITIIS **Suction Curette**, with basket, round, size 6.5 mm, rotatable tube, LUER, length 25 cm

Curettes with special tips



28164 KB **Curette**, round spoon, tip slightly angled, size 2 mm, with round handle, length 23 cm

Instrument Details

Sellar Phase

Dissectors for the sellar step of the procedure



28164 DB

Dissector, sharp, tip angled 45°, size 3 mm, length 25 cm, round spatula, with round handle



28164 DM

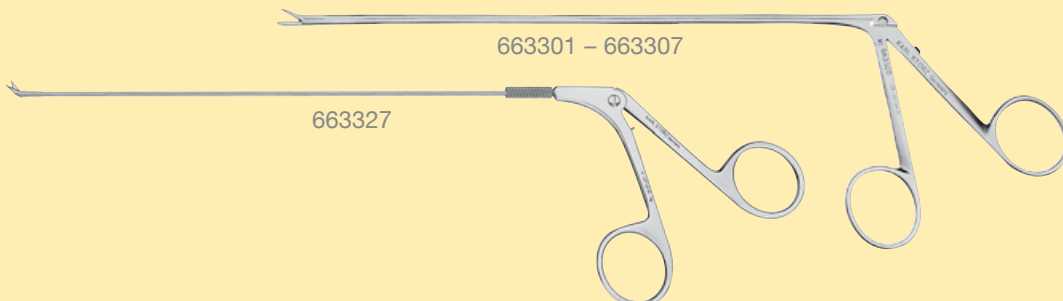
Elevator, sharp, slightly curved spatula, straight, size 3 mm, with round handle, length 25 cm



28164 DS

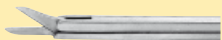
Elevator, sharp, slightly curved spatula, tip angled 15°, size 2 mm, with round handle, length 25 cm

Scissors for dural incision and intradural dissection



663301 – 663307

663327



663301

Scissors, delicate, straight, working length 18 cm



663304

Scissors, very delicate, curved to right, working length 18 cm



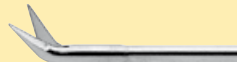
663305

Scissors, very delicate, curved to left, working length 18 cm



663307

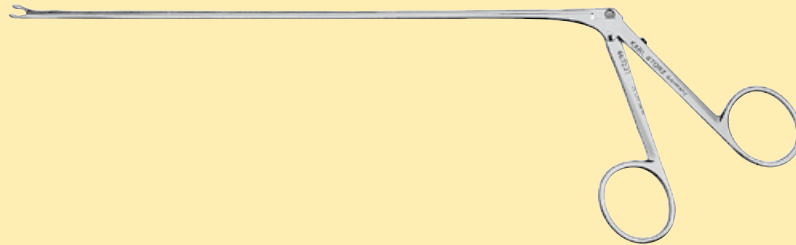
Scissors, very delicate, 45° upwards curved, working length 18 cm



663327

Scissors, delicate, 45° upwards curved, sheath 360° rotatable, working length 18 cm

Forceps



663231

Forceps, with round spoon, straight, diameter 2.5 mm, working length 18 cm

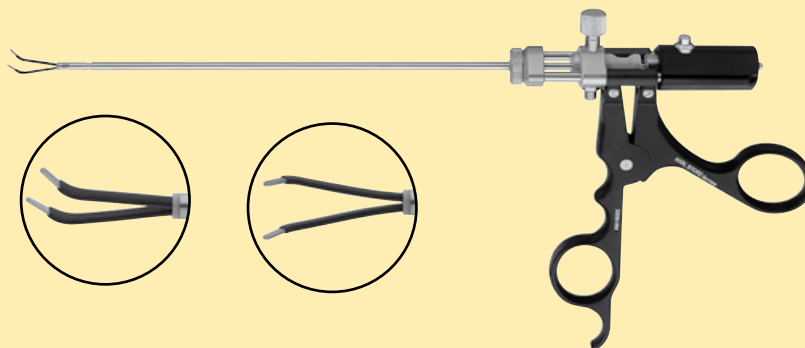


663239

Forceps, with oval, fenestrated, cupped jaws, 2.5 mm wide, straight, working length 18 cm

Bipolar instruments for bleeding management

The bipolar forceps are recommended for the coagulation of arterial bleedings, e.g. branches of the spheno-palatine artery, of the dura mater or the intercavernous sinus



28164 BDL

Take-apart Bipolar Forceps, width 1 mm, delicate jaws, distally angled 45°, vertical closing, outer diameter 3.4 mm, working length 20 cm, consisting of:

26284 HM **Handle**
26284 AS **Outer Tube**
26284 BS **Inner Tube**
28164 FGL **Bipolar Insert**

28164 BDM

Take-apart Bipolar Forceps, width 1 mm delicate jaws, distally angled 45°, horizontal closing, outer diameter 3.4 mm, working length 20 cm, consisting of:

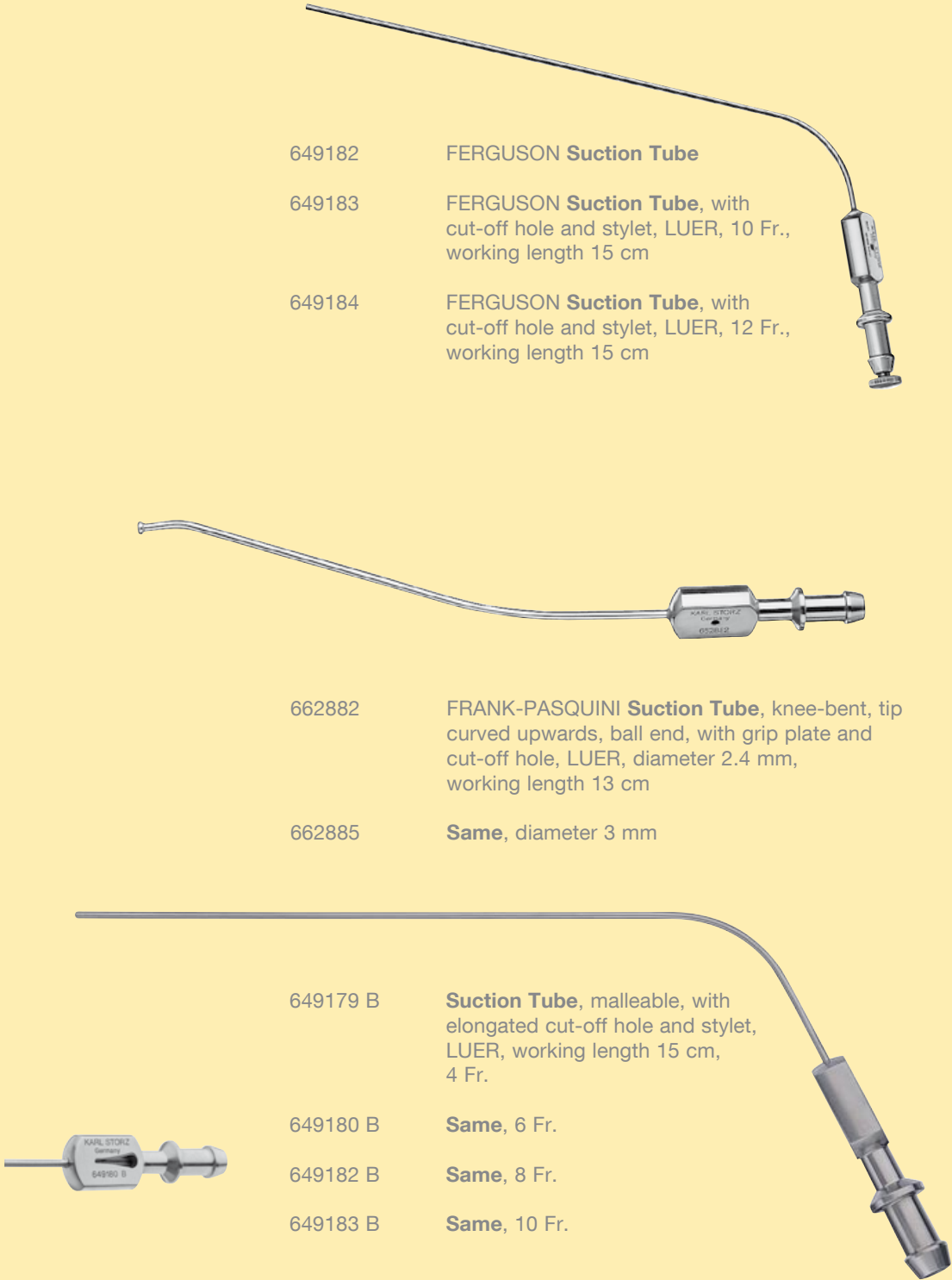
26284 HM **Handle**
26284 AS **Outer Tube**
26284 BS **Inner Tube**
28164 FGM **Bipolar Insert**

Suction Tubes

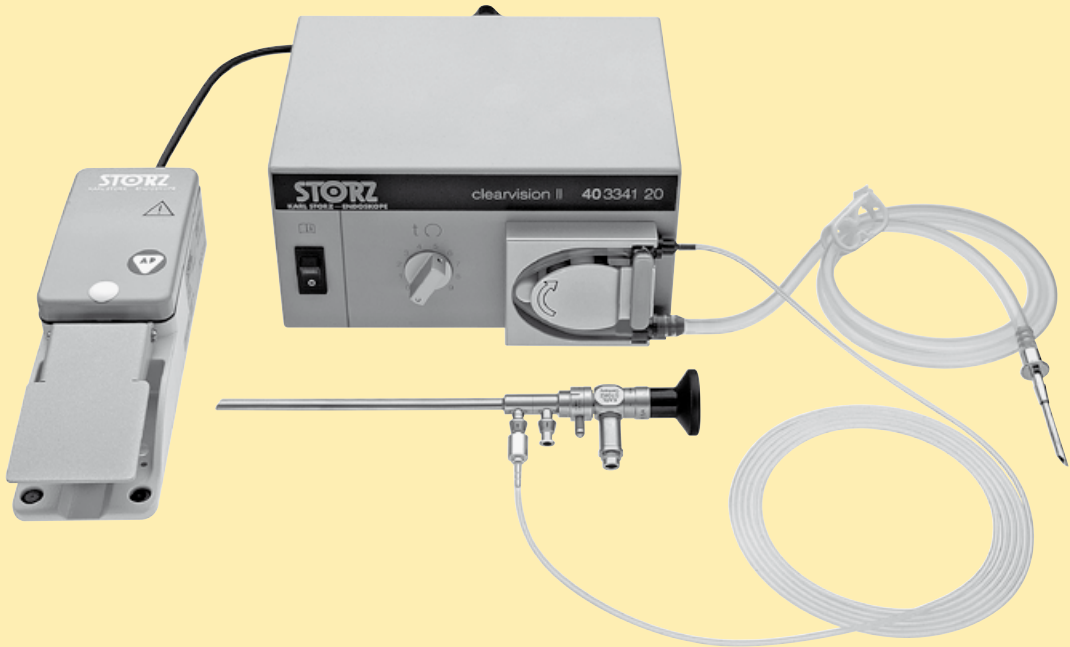
- 649182 **FERGUSON Suction Tube**
- 649183 **FERGUSON Suction Tube**, with cut-off hole and stylet, LUER, 10 Fr., working length 15 cm
- 649184 **FERGUSON Suction Tube**, with cut-off hole and stylet, LUER, 12 Fr., working length 15 cm

- 662882 **FRANK-PASQUINI Suction Tube**, knee-bent, tip curved upwards, ball end, with grip plate and cut-off hole, LUER, diameter 2.4 mm, working length 13 cm
- 662885 **Same**, diameter 3 mm

- 649179 B **Suction Tube**, malleable, with elongated cut-off hole and stylet, LUER, working length 15 cm, 4 Fr.
- 649180 B **Same**, 6 Fr.
- 649182 B **Same**, 8 Fr.
- 649183 B **Same**, 10 Fr.



CLEARVISION® II System for intraoperative cleaning of the front lens



- 403341 01 CLEARVISION® II Set,**
lens irrigation system for telescopes,
power supply: 100–240 VAC, 50/60 Hz
consisting of:
- 403341 20 CLEARVISION® II**
 - 400 A Mains Cord**
 - 200102 30 Footswitch**
 - 403341 40 Silicone Tubing Set, sterilizable**

Irrigation sheath				Compatible HOPKINS® telescope			
Detail	Cat. No.	O.D.	Working length	Cat. No.	Direction of view	O.D.	Working length
	7230 AS	4.8 x 6 mm	14 cm	28132 AA	0°	4 mm	18 cm
	7230 BS	4.8 x 6 mm	14 cm	28132 BA	30°	4 mm	18 cm
	7230 CS	4.8 x 6 mm	14 cm	28132 CA	70°	4 mm	18 cm
	7230 FS	4.8 x 6 mm	14 cm	28132 FA	45°	4 mm	18 cm



40711701-1 UNIDRIVE® NEURO

consisting of:

- 207117 20-1 UNIDRIVE® NEURO with KARL STORZ-SCB®, power supply:**
100 – 120, 230 – 240 VAC, 50/60 Hz
- 400 A Mains Cord**
- 200126 30 Two-Pedal Footswitch**, two-stage,
with proportional function
- 207116 40 Silicone Tubing Set**, for irrigation,
sterilizable
- 207116 21 Clip-Set**, for use with Tubing Set
207116 40
- 200901 70 SCB Connecting Cable**, length 100 cm



- 252479 INTRA Drill Handpiece**, angled, extra long, 18 cm,
for use with 12.5 cm long drills with long shaft,
transmission 1:1 (40,000 rpm)



- 649600 L Standard Straight Shaft Burr**, stainless,
length 12.5 cm, size 014 – 070, set of 11
- 649700 L Diamond Straight Shaft Burr**, stainless,
length 12.5 cm, set with 10 pieces, size 014 – 070
- 649700 GL Rapid Diamond Straight Shaft Burr**, with smooth shaft,
with coarse grit diamond coating for precise drilling and
abrasion without light hand pressure and generating
minimal heat, length 12.5 cm, size 023 – 070, set of 9

Cold Light Fountain XENON 300 SCB



- 20 1331 01-1 **KARL STORZ XENON 300 Cold Light Fountain**, with integrated KARL STORZ SCB, integrated anti-fog pump, one 300 W xenon lamp and one KARL STORZ light outlet, power supply: 100–125/220–240 VAC, 50/60 Hz consisting of:
- | | |
|--------------|---|
| 20 1331 20-1 | XENON 300 |
| 400 A | Mains Cord |
| 610 AFT | Silicon Tubing Set , length 250 cm |
| 20 0901 70 | SCB Connecting Cable , length 100 cm |
- 201330 27 **XENON Spare Lamp Module**, 300 watt, 15 volt
- 201330 28 **XENON Spare Lamp**, only, 300 watts, 15 volt

- Maximum resolution and the consistent use of the 16:9 aspect ratio guarantee FULL HD
- Endoscopic camera systems have to be equipped with three-CCD chips that support the 16:9 input format as well as capturing images with a resolution of 1920 x 1080 pixels

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

- Up to 6 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 and supports ergonomic viewing
- The brilliance of color enables optimal diagnosis
- Lateral view is enhanced by 32% when the endoscope is withdrawn slightly, providing the same image enhancement as a standard system. Any vertical information loss is restored and the lens remains clean



22201020-1xx

22201011U102 IMAGE 1 HUB™ HD Camera Control Unit (CCU) with SDI Module

for use with IMAGE 1™ HD and standard one- and three-chip camera heads, max. resolution 1920 x 1080 Pixel, with integrated KARL STORZ SCB® and integrated digital Image Processing Module, color systems PAL/NTSC, power supply 100 – 240 VAC, 50/60 Hz

consisting of:

- | | |
|----------------------|---|
| 222010 20-102 | IMAGE 1 HUB™ HD (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 |
| 202032 70 | Special RGB Connecting Cable |
| 2x 202210 70 | Connecting Cable , for controlling peripheral units, length 180 cm |
| 200400 86 | DVI Connecting Cable , length 180 cm |
| 200901 70 | SCB Connecting Cable , length 100 cm |
| 202001 30U | Keyboard , with English character set |

Specifications:

Signal-to-noise ratio	AGC	Video output	Input
IMAGE 1 HUB™ HD Three-chip camera systems ≥ 60 dB	Micro-processor-controlled	- Composite signal to BNC socket - S-Video signal to 4-pin Mini DIN socket (2x) - RGBS signal to D-Sub socket - SDI signal to BNC socket (only IMAGE 1 HUB™ HD 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 - USB port (only IMAGE 1 HUB™ HD with ICM) (2x)	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

SDI – Serial Digital Interface: optimized to display medical images on Flat Screens, Routing with OR1™ and digital recording with AIDA-DVD-M

ICM: USB-connector for recording video streams and stills on USB storage media or for connection of USB printers for direct printing of the recorded stills

IMAGE 1™ HD

HD camera head



222200 55-3

222200 55-3 **50 Hz** **IMAGE 1™ H3-Z,**
60 Hz **Drei-Chip HD Kamerakopf**

max. resolution 1920 x 1080 pixels, progressive scan, soakable, gas and plasmasterilizable, with integrated Parfocal Zoom Lens, focal length f = 15 – 31 mm (2x), 2 freely programmable camera head buttons, for use with color system PAL/NTSC

Image sensor	3x 1/3" CCD-Chip
Pixel output signal H x V	1920 x 1080
Dimensions	Diameter 32-44 mm, length 114 mm
Weight	246 g
Min. sensitivity	F 1,4/1,17 Lux
Lens	Integrated Parfocal Zoom Lens, f = 15-31 mm
Grip mechanism	Standard eyepiece detector,
Cable	non-detachable
Cable length	300 cm

KARL STORZ HD Flat Screens Color systems PAL/NTSC	Version	Order No.	Screen diagonal	Max. screen resolution	Video input							
				1920 x 1200	Composite signal to BNC socket	S-Video to 4-pin socket	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	9524 NB	24"	●	●	●	●	●	●	●	●	
		9526 NB	26"									
	Desktop with pedestal	9524 N	24"									
		9526 N	26"									

The following accessories are included:

- 400 A Mains Cord
- 9523 PS **External 24VDC Power Supply**
- 9419 NSF Pedestal

Data Management and Documentation

KARL STORZ AIDA® compact HD

The Compact Documentation Solution

AIDA compact HD from KARL STORZ combines all the required functions for integrated and precise documentation of endoscopic procedures and open surgeries in a single system.



AIDA compact HD:
Voice control

Data Acquisition

AIDA compact HD records still images, video sequences (in HD quality) and spoken comments of findings and intraoperative procedures directly from the sterile area. Recordings are activated via touch screen, voice control, footswitch or camera head buttons.

Live display of camera images on the touch screen enables immediate monitoring and selection of the recorded data.



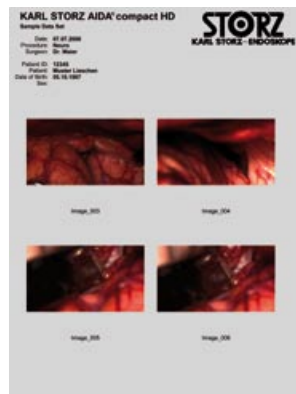
AIDA compact HD:
Review screen

Flexible Review

Before final archiving, the saved data can be viewed or listened to on the review screen. Data no longer required can be simply deleted.

Individual images, video and audio sequences can be renamed and given more meaningful names. A pre-defined selection list with keywords simplifies and speeds up data entry. Furthermore, a comment field is available for entering relevant details of an intervention.

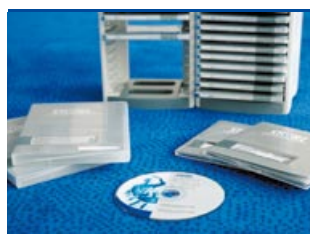
A voice entry of the case report can even be recorded while viewing video and image files.



AIDA compact HD: Automatic creation of standard reports

Automated Data Archiving

Once a treatment is completed, AIDA compact HD automatically stores the data on a DVD or CD-ROM, creates a standard report and prints it as an overview if required.



AIDA compact HD:
Efficient archiving

Multisession and Multipatient

Efficient data archiving is assured as several treatments can be saved on a DVD, CD-ROM or a USB stick.

Data Management and Documentation

KARL STORZ AIDA® compact HD

Special features:

- Digital storage of still images with a resolution of 1920 x 1080, video sequences in 720p and audio files
 - Communication Package DICOM/HL7 (optional)
 - Sterile, ergonomic operation via touch screen, voice control, camera head buttons and/or footswitch
 - Automatic recognition of connected camera systems at HD-SDI/SD-SDI inputs (of IMAGE1™ camera systems at SD-SDI input only)
 - Efficient archiving on DVD, CD-ROM or USB stick, multisession and multipatient
 - Network storage possible
 - Automatic creation of standard reports
 - Computers and monitors for use in the OR area certified according to EN 60601-1
 - Compatible with KARL STORZ Communication Bus (SCB) and OR1™ connect Serie
- KARL STORZ AIDA® compact HD as an attractive, digital alternative to video printers, video recorders and dictating machines**



20 0406 08U KARL STORZ AIDA® compact HD System

Documentation system for digital storage of still images, video sequences and audio files,
power supply: 115/230 VAC, 50/60 Hz
consisting of:

- 20 0460 20 **KARL STORZ AIDA® control II**, with integrated DVD/CD writer
- 20 0405 77 **AIDA compact II HD-Frame Grabber Card**
- 20 0902 34U **PS/2 Compact Keyboard**, English, with drape
- 20 0404 02-17 **AIDA® compact II HD Software**, with voice control and software protection
- 20 040275 **KARL STORZ USB Stick**, with 2 GB
- 2x 202210 70 **Connecting Cable**
- 536 MK **BNC-Connecting Cable**, length 180 cm
- 536 MKD **BNC-Connecting Cable**, length 30 cm
- 20 0400 86 **DVI-Connecting Cable**, length 180 cm
- 400 A **Mains Cord**
- 20 0400 87 **MiniDIN Cable Plug**, to BNC female

Specifications:

Video Systems	- PAL - NTSC
Signal Inputs	- S-Video (Y/C) - Composite - RGBS - SDI - HD-SDI - DVI
Image Formats	- JPG - BMP

Video Formats	- MPEG2
Audio Formats	- WAV
Storage Media	- DVD+R - DVD+RW - DVD-R - DVD-RW - CD-R - CD-RW - USB stick

ENDOWORLD



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THE DIAMOND STANDARD