

New KUHN Frontal Sinus Instruments

Through-Cutting Frontal Sinus Punches and Frontal Ostium Seekers



New KUHN Frontal Sinus Instruments

Through-Cutting Frontal Sinus Punches and Frontal Ostium Seekers

**Dr. Frederick A. Kuhn, Director, Georgia Nasal and Sinus Institute,
Savannah, Georgia, USA**

Advantages

The KUHN **Frontal Sinus Set** is a special set of through-cutting frontal sinus punches and frontal ostium seekers. It allows the careful, reliable removal of bony cell walls in frontal recess and sinus and preserves the critical mucous membranes of the frontal recess and ostium.

The set includes

1. KUHN **Through-Cutting Frontal Sinus Punches**

- Reaches into the frontal recess and the frontal sinus itself to remove cell walls
- Available in both front-to-back and side-to-side biting designs, with 60° and 90° bends



2. KUHN Frontal Sinus Ostium Seekers

- Longer design
- Available with both 77° and 90° bends
- Enables work in all quadrants of the frontal ostium and frontal sinus

"These through-cutting punches and seekers allow me to open frontal recesses and tackle challenging frontal sinuses while adhering to the most important tenet of sinus surgery- mucosal preservation."

*Christopher T. Melroy, M.D.
Georgia Nasal and Sinus Institute, Savannah, Georgia, USA*



The original KUHN-BOLGER set of frontal sinus instruments introduced in 1993 included six frontal recess giraffe forceps, two frontal sinus curettes and one frontal ostium seeker. These instruments provided distinct advantages over prior sinus instrumentation with their ability to reach up around the anterior attachment of the middle turbinate to the lateral nasal wall at the agger nasi region and into the frontal recess.

The next evolution in frontal sinus instrumentation was the development of through cutting forceps, which were required as our conception of frontal sinus anatomy improved. These punches simultaneously remove mucous membrane and bone, without inadvertently removing mucosa which needs to remain. The first set of punches was designed with a square jaw and functioned well, however if excessive force was applied while cutting thickened bone, the jaws tended to break. This weakness has been rectified with the newest set which has smaller stronger jaws.

This set includes forceps which are straight in line with the shaft and others with the jaws inclined at 45° from the shaft.

Visibility and access are known problems of working in the frontal recess, ostium and sinus, which are solved by use of the reverse light post 70° telescope and 90° instruments. Another little appreciated problem is the angular orientation of cell walls and bony partitions in the frontal sinus and recess. Once the cutting instrument or seeker is inserted into the area, it cannot be rotated to match the cell walls angle of presentation. Consequently the instrument tip must match the cell wall orientation and angle.

As a result there are front to back and side to side (right and left opening) biting punches with the jaws straight and at a 45° angle to the shaft. They are made with a 90° shaft angle and a 60° angle.

Consequently if one plans to do extensive frontal sinus work, both sets of punches are important to be able to reach and remove obstructing cell walls. In addition to the 2 sets of 6 punches, the original frontal ostium seeker has been expanded into a set of 5, which have a straight tip plus the tips bent at 90° in all four quadrants. They are available in 77° and 90° bends to fit different shaped frontal recesses. These instruments tips are intended for several functions: palpating various areas of the frontal sinus, fracturing cell walls which cannot be reached with the punches and retrieving fragments of bone or other tissue from the frontal sinus.

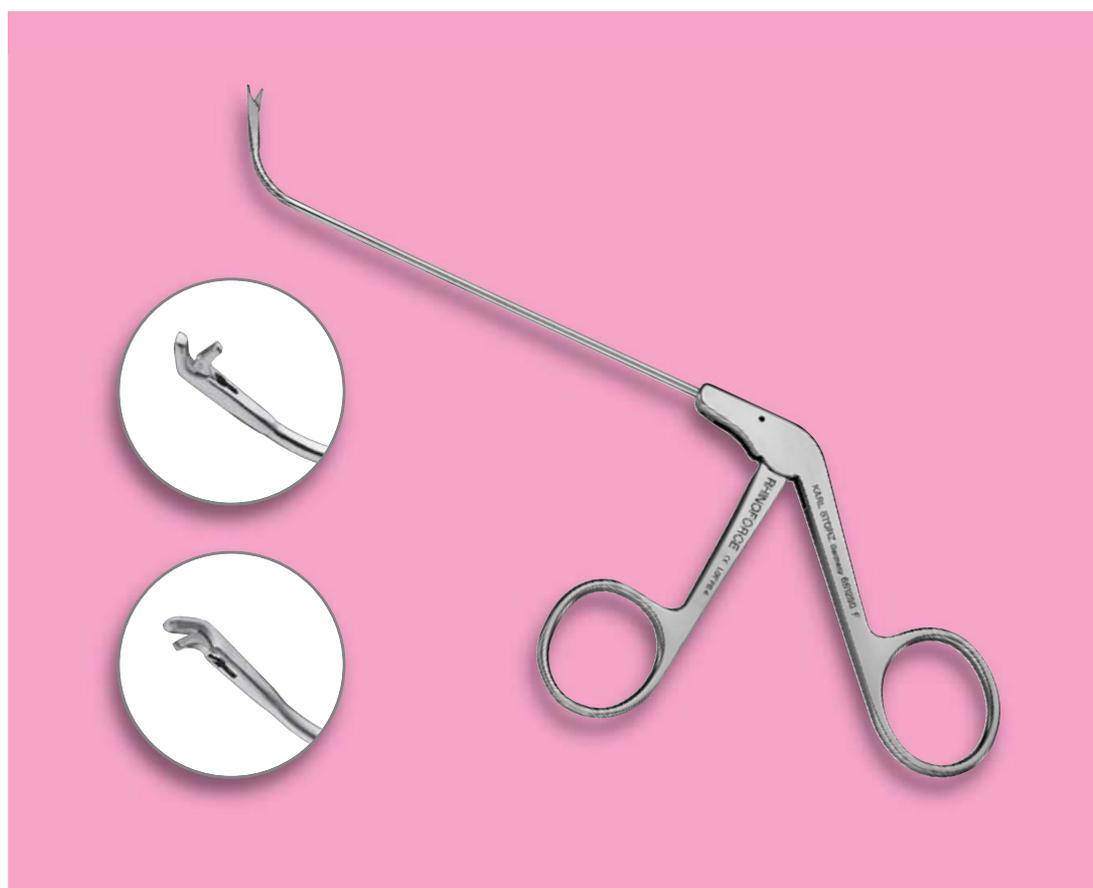
This involves understanding of the Agger Nasi Cells (1), four types of frontal recess cells (2), the interfrontal sinus septal cells (3) and the supra orbital ethmoidal cell (4). Techniques of frontal recess dissection (5) and the concept of an integrated approach to frontal sinus surgery (6) are important to this brochure.

A clinical example: Mucociliary clearance

Figures 1a and b illustrate the use of the side biting frontal sinus punches. 1a demonstrates the common wall between the right supra orbital ethmoidal cell laterally and the frontal sinus ostium medially. The side biting forceps will reach out laterally over the orbit to separate the two cells. This makes the frontal ostium larger and allows both sinuses/cells to empty into a larger common ante chamber.

3. KUHN Frontal Sinus Punches

KARL STORZ offers KUHN Frontal Sinus punches in both front-to-back and side-to-side biting designs, with 60° and 90° bends. Since they are designed to remove bone, they work best on mucous membrane when it is attached to a thin bony partition. The punches should be used with caution, however, on free-hanging mucous membrane since they may not cut cleanly and pull it out.



4. KUHN Frontal sinus seekers

Although successfully demonstrating its usefulness over the years, the frontal sinus seeker has had some important shortcomings. It was originally designed to remove fragments of the agger nasi cell cap, which were inadvertently pushed up into the frontal sinus. It was also useful for smoothing out and re-draping the mucosa around the internal frontal ostium.

Eventually, a need developed to perform the same maneuvers posteriorly, medially and laterally. In many cases, the original seeker would not reach the ostium due to the difficult geometry encountered in particular patient anatomies. For this reason, the original seeker has been redesigned with longer tips.

The new KUHN frontal sinus seekers are available with both 77° and 90° bends. The 90° bend on the ball tip has now been augmented with one bent outward, one to the right, and one to the left. We commonly refer to each type of seeker as an “inny”, an “outy”, a “righty” and a “lefty”, respectively. Each is available with a plain tip angle as well.

This complete range of designs enables us to work in all quadrants of the frontal ostium to remove bone chips, to dissect between bone and mucous membrane, and occasionally to fracture thin bony fragments.

We still use the original KUHN-BOLGER instrument set, generally in conjunction with the new set where it performs the same functions of breaking cell walls and removing bone chips, as needed. The frontal sinus instruments are intended for use with angled telescopes. For example, 60° and 77° instruments with 30° and 45° telescopes and 90° instruments with 45° and 70° telescopes. Such combinations enable the instrument tip to reach from below the telescope and into the field of view. As an added benefit, all of these instruments perform well laterally in the maxillary sinus — in the office as well as in surgery.

45° Sinus Telescope

The 45° Sinus Telescope, which is 30 percent brighter, has been introduced as an extremely useful intermediary between conventional 30° and 70° telescopes. Another recent improvement is the “reverse” light post telescope, which moves the light post 180° to the opposite side of the telescope. This leaves the light post on the same side as the bevel at the distal end of the telescope, keeping the light cable away from instruments and the patient’s chin for unimpeded instrument use.

The light capacity in the new generation of KARL STORZ 0°, 70° and 30° HOPKINS® telescopes has been increased to the level of the 45° Sinus Telescope.

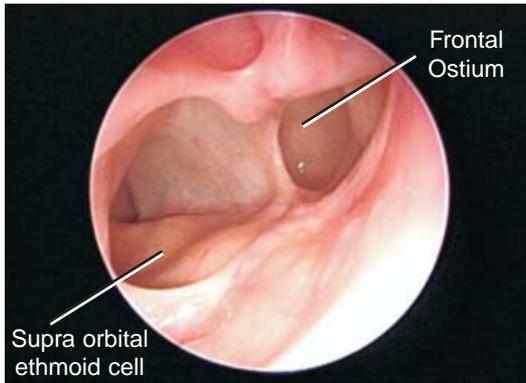


Figure 1a - Right frontal recess (70° view) demonstrating the frontal sinus anteriorly and the supra-orbital ethmoid cell posteriorly, separated by the common wall between them.

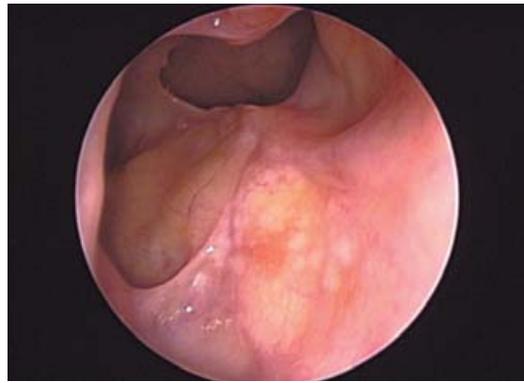


Figure 1b - Right frontal recess (70° view) demonstrating the post operative result after the common wall has been resected up into the frontal sinus utilizing a side biting KUHN Frontal Sinus through cutting forceps. The common drainage pathway is now much larger than either individual opening in Fig 1a.

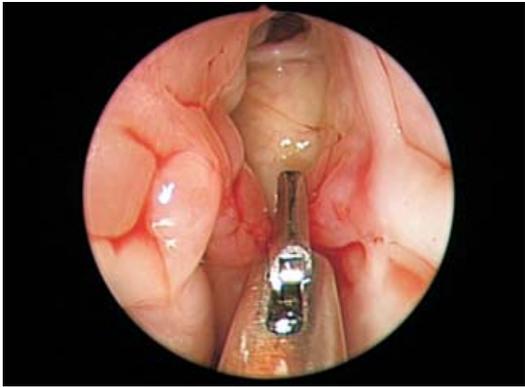


Figure 2 illustrates a KUHN front to back opening through cutting frontal sinus punch positioned to remove a bony partition in the frontal recess, posterior to the ostium.



Figure 3a - 90° through cutting frontal sinus punch (side to side opening) positioned below a cell wall lateral to the right frontal ostium. This demonstrates how the 90° angle projects the tip of the forceps into the 70° telescope's field of view.

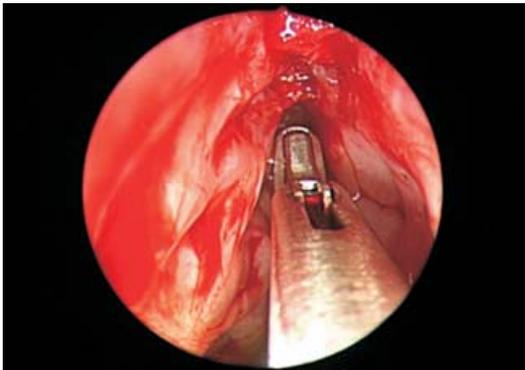


Figure 3b - 60° KUHN through cutting frontal sinus punch (front to back opening) in the anterior ethmoid sinus. This demonstrates the instrument at the anterior ethmoid skull base posterior to the frontal recess and how it can be used to resect cell walls along the ethmoid roof.



Figure 4 - 90° "Righty" KUHN frontal ostium seeker paired with a 70° telescope to explore and fracture a cell wall on the left medial orbital wall, lateral to the frontal ostium.

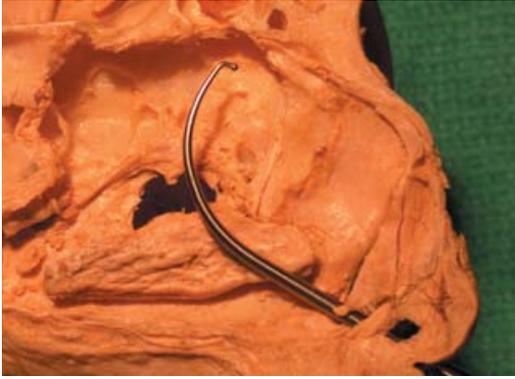


Figure 5 – 90° KUHN “Inny” Seeker. The instrument shaft is bent up at 90° and tip is bent inward at 90° to allow manipulation of bone or soft tissue anteriorly in the frontal recess or the sinus, which cannot otherwise be accessed.

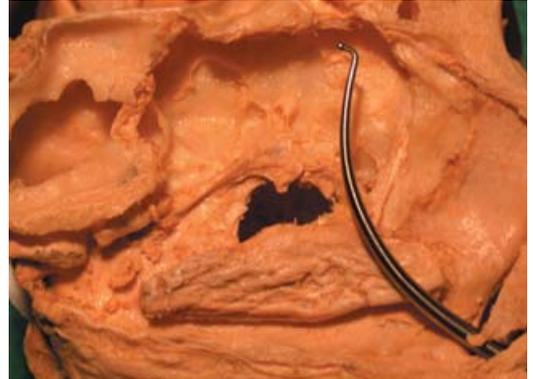


Figure 6a – 70° KUHN “Outy” Seeker. The instrument shaft is bent up at 70° and the tip is bent outward at 90° to allow manipulation of bone or soft tissue posteriorly in the frontal recess or the sinus, which cannot otherwise be accessed.



Figure 6b – 90° KUHN “Outy” Seeker. The instrument shaft is bent up at 90° and the tip is bent outward at 90° to allow manipulation of bone or soft tissue posteriorly in the frontal recess or the sinus, which cannot otherwise be accessed.



Figure 7 – Left frontal recess stenosis secondary to scarring and bony cellular partitions left at surgery.

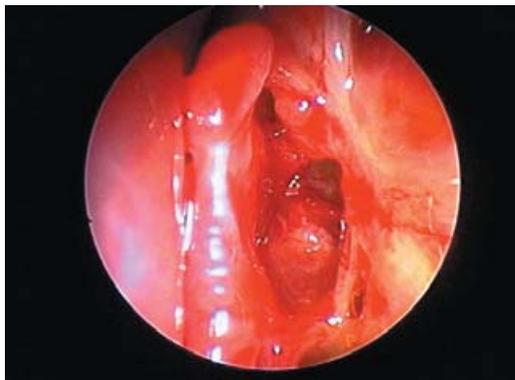


Figure 8 – Left frontal recess, demonstrating middle turbinate remnant, frontal recess and frontal sinus opening posteriorly. There is still tissue anterior to the ostium, which subsequently will be removed.

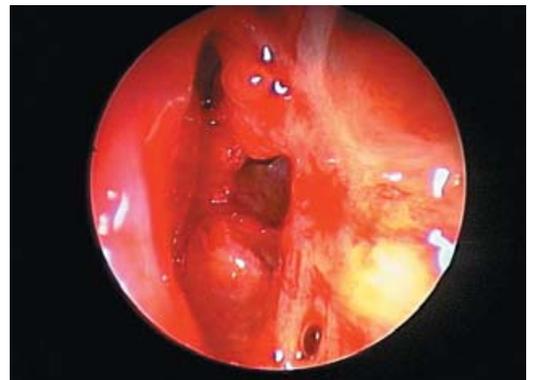
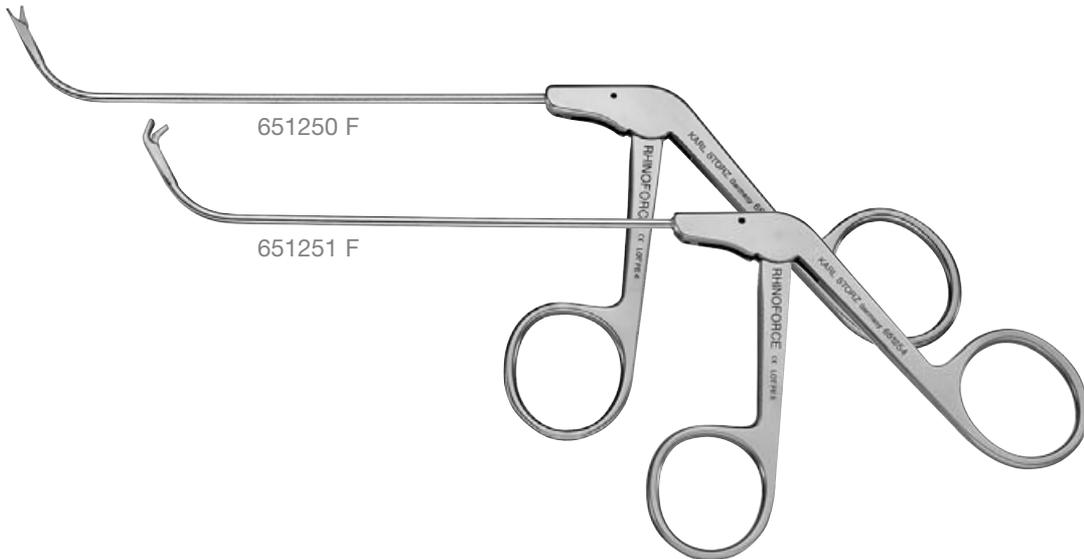


Figure 9 – Left frontal sinus ostium following endoscopic frontal sinusotomy in office setting.

Recommended Set KUHN Frontal Sinus Instruments

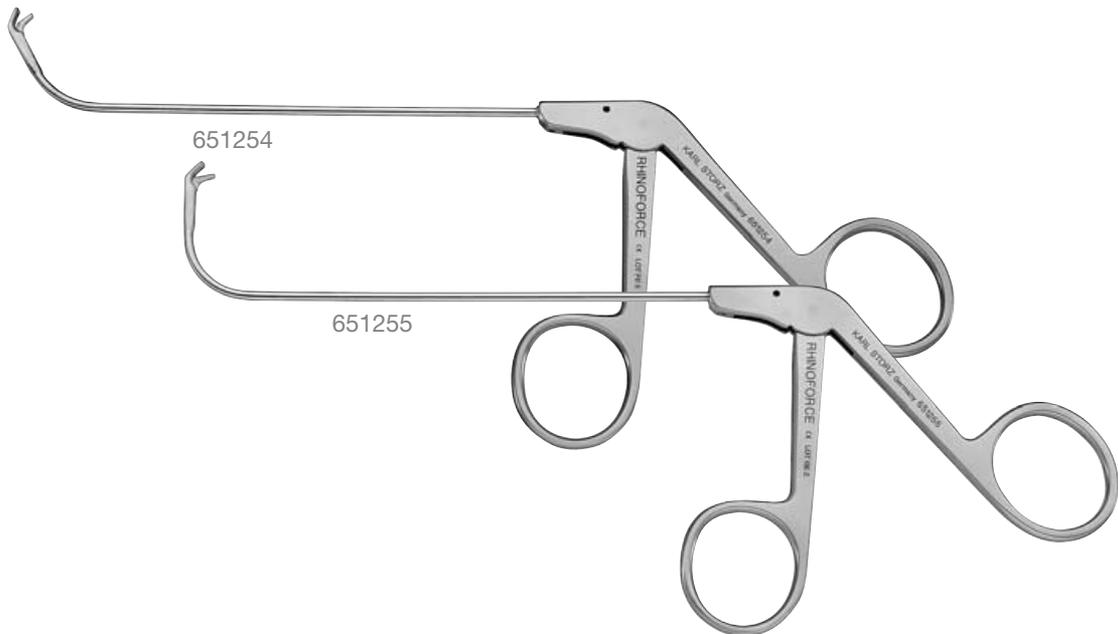


- 651250 F KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, backward opening, sheath 60° upturned, working length 12 cm
- 651250 FL KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, left side opening, sheath 60° upturned, working length 12 cm
- 651250 FR KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, right side opening, sheath 60° upturned, working length 12 cm



- 651251 F KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, backward opening, sheath 90° upturned, working length 12 cm
- 651251 FL KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, left side opening, sheath 90° upturned, working length 12 cm
- 651251 FR KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, through-cutting, width of cut 1.5 mm, right side opening, sheath 90° upturned, working length 12 cm

Recommended Set KUHN Frontal Sinus Instruments



651254

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, backward opening, through-cutting, width of cut 1.5 mm, sheath 60° upturned, working length 12 cm

651254 L

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, left side opening, through-cutting, width of cut 1.5 mm, sheath 60° upturned, working length 12 cm

651254 R

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, right side opening, through-cutting, width of cut 1.5 mm, sheath 60° upturned, working length 12 cm



651255

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, backward opening, through-cutting, width of cut 1.5 mm, sheath 90° upturned, working length 12 cm

651255 L

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, left side opening, through-cutting, width of cut 1.5 mm, sheath 90° upturned, working length 12 cm

651255 R

KUHN RHINOFORCE® II **Frontal Sinus Forceps**, flat jaws, 45° upturned, right side opening, through-cutting, width of cut 1.5 mm, sheath 90° upturned, working length 12 cm

Recommended Set KUHN Frontal Sinus Instruments



629826

KUHN Frontal Sinus Seeker
double-ended, No. 2, both sides curved 90°,
one tip straight, one tip reverse angle,
length 22 cm



629827

KUHN Frontal Sinus Seeker
double-ended, No. 3,
one side curved 77°, other side curved 90°,
both tips forward angle, length 22 cm



629828

KUHN Frontal Ostium Seeker
double-ended, No. 4, both sides curved 90°,
tips bent right and left, length 22 cm



629829

KUHN Frontal Ostium Seeker
double-ended, No. 5, both sides curved 77°,
tips bent right and left, length 22 cm

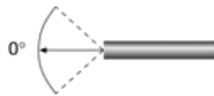


629830

KUHN-BOLGER Frontal Ostium Seeker
double-ended, No. 6, both sides curved 77°,
one tip straight, other tip reverse angle,
length 22 cm

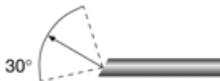


HOPKINS® II Telescopes – Autoclavable



7230 AA

HOPKINS® Straight Forward Telescope 0°
enlarged view, diameter 4 mm, length 18 cm, **autoclavable**.
Fiber optic light transmission incorporated.
Color code: green.



7230 BA

HOPKINS® Forward-Oblique Telescope 30°
enlarged view, diameter 4 mm, length 18 cm, **autoclavable**.
Fiber optic light transmission incorporated.
Color code: red.



7230 FA

HOPKINS® Forward-Oblique Telescope 45°
enlarged view, diameter 4 mm, length 18 cm, **autoclavable**.
Fiber optic light transmission incorporated.
Color code: black.



7230 FVA

HOPKINS® Forward-Oblique Telescope 45°
enlarged view, diameter 4 mm, length 18 cm, **autoclavable**.
Connection for fiber optic light cable on upper side.
Fiber optic light transmission incorporated.
Color code: black.



7230 CA

HOPKINS® Lateral Telescope 70°
enlarged view, diameter 4 mm, length 18 cm, **autoclavable**.
Fiber optic light transmission incorporated.
Color code: yellow.



WWW.KARLSTORZ.COM

ENDOWORLD®

References

1. KUHN, F.A., BOLGER, W.E. AND TISDAL, R.G. (1991)
"The agger nasi cell in frontal recess obstruction: An anatomic, radiologic and clinical correlation,"
Operative Techniques in Otolaryngology - Head and Neck Surgery, Vol. 2, No. 4,
pp. 226-231.
2. BENT, J.P., CUILTY-SILLER, C. AND KUHN, F.A. (1994)
"The frontal cell in frontal sinus obstruction." *American Journal of Rhinology*, Vol. 8,
No. 4, pp. 185-191.
3. MERRITT, R., BENT, J.P. AND KUHN, F.A. (1996)
"The intersinus septal cell." *The American Journal of Rhinology*, Vol. 10, pp. 299-302.
4. OWEN, R.G. AND KUHN, F.A. (1997)
"The supraorbital ethmoid cell," *Otolaryngology/Head and Neck Surgery*, Vol. 116,
pp. 254-261.
5. KUHN, F.A. (1996)
"Operative techniques Chronic Frontal Sinusitis: The endoscopic frontal recess approach,"
Operative Techniques in Otolaryngology-Head and Neck Surgery,
Vol. 7, pp. 222-229.

KARL STORZ GmbH & Co. KG
Mittelstraße 8, 78532 Tuttlingen, Germany
Postfach 230, 78503 Tuttlingen, Germany
Phone: +49 7461/708-0
Fax: +49 7461/708-105
E-Mail: info@karlstorz.de
www.karlstorz.com

KARL STORZ Endoscopy-America, Inc.
600 Corporate Pointe
Culver City, CA 90230-7600, USA
Phone.: +1/310/338 8100
+1/800/421 0837
Fax: +1/310/410 5527
E-Mail: info@ksea.com