

*A breath of fresh air
in rigid bronchoscopy*

Bronchoscope »Hemer«

Sampling channel for pressure and tidal gas measurement • Multiple lateral slits for improved ventilation
• Connector for jet ventilator • ISO standard cone for conventional ventilation systems • Length markers

Bronchoscope »Hemer«*

The new rigid bronchoscope for interventional applications

Procedures in surgical bronchology such as transbronchial fine needle biopsy, recanalisation with laser resection or argon plasma coagulation, dilatation, stent placement or cryotherapy are relative or absolute indications for rigid bronchoscopy. JET ventilation, ideally under general, intravenous anaesthesia allows free access to the bronchial system using the rigid bronchoscope. While the oxygenation of the patient under JET ventilation can be monitored with pulseoxymetry, methods of capnography and tidal gas analysis as well as methods for measuring pressure are not clinically established. If expiration is obstructed, the JET pressure brings with it the risk of barotrauma. To avoid endobronchial burns during argon plasma coagulation or laser resection, the inspiratory oxygen concentration must be reduced to such an extent that the oxygen concentration on expiration is 0.21.

Our aim was to develop a new rigid bronchoscope that would avoid the risks of barotrauma, hypo- or hyperventilation and endobronchial burns.

The pressure on inspiration resulting from the JET nozzle and entrainment reaches a plateau in the working channel at a distance of more than 10 cm from the instrument opening which can be measured without any significant change in pressure as far as the patient opening and subsequent bronchial system. As a result, it is possible to measure the inspiratory pressure at one point along the plateau which can be taken as being representative of the inspiratory pressure. To measure the pressure, the lumen of the working channel is connected to a sampling channel at a distance of 14 cm from the instrument opening.

Using the sampling channel, the pressure on inspiration and expiration, the oxygen concentration on inspiration and expiration and

the carbon dioxide concentration in the tidal gas can be measured at the same time. The automatic shutdown of the JET ventilators if the pressure is exceeded was successful in trials and allows pressure-controlled JET ventilation. For gas analysis, JET frequencies below 18/min should be selected. Pressure measurement and automatic shutdown of JET ventilators when the pressure is exceeded also functions during high frequency operation. The measuring devices for pressure and breath gas and the JET pressure control are connected via commercially available 3-way taps and connecting tubes to the Luer connector of the sampling channel.

The new rigid bronchoscope with sampling channel for pressure and tidal gas measurement and the proximal illumination insert is constructed of thin-walled stainless steel making the instrument light and convenient to use. The side slits are aligned in three rows with the emphasis towards the distal end to improve ventilation. The JET nozzle is secured firmly in the JET connector with a bayonet lock. The JET connector has an outer cone complying with the ISO standard so that conventional breathing systems can be connected.

With this new rigid bronchoscope with sampling channel for pressure and tidal gas, JET ventilation can be performed with the same quality and same safety level as conventional ventilation. The tidal gas analysis allows the oxygen concentration to be controlled and CO₂-controlled narcosis avoids hypoventilation. The bronchoscopist has a convenient instrument with a free lumen in various sizes allowing a suitable size bronchoscope and instrument set to be used.

Literature:

Pobloth, A. et al.
"Ein neues starres Bronchoskop mit Messröhre für Druck und Kapnometrie"
Pneumologie 2001; 55: 120-125

Reichle, G. et al.:
"Argonplasmakoagulation in der Bronchologie"
Pneumologie 2000; 54: 508-516

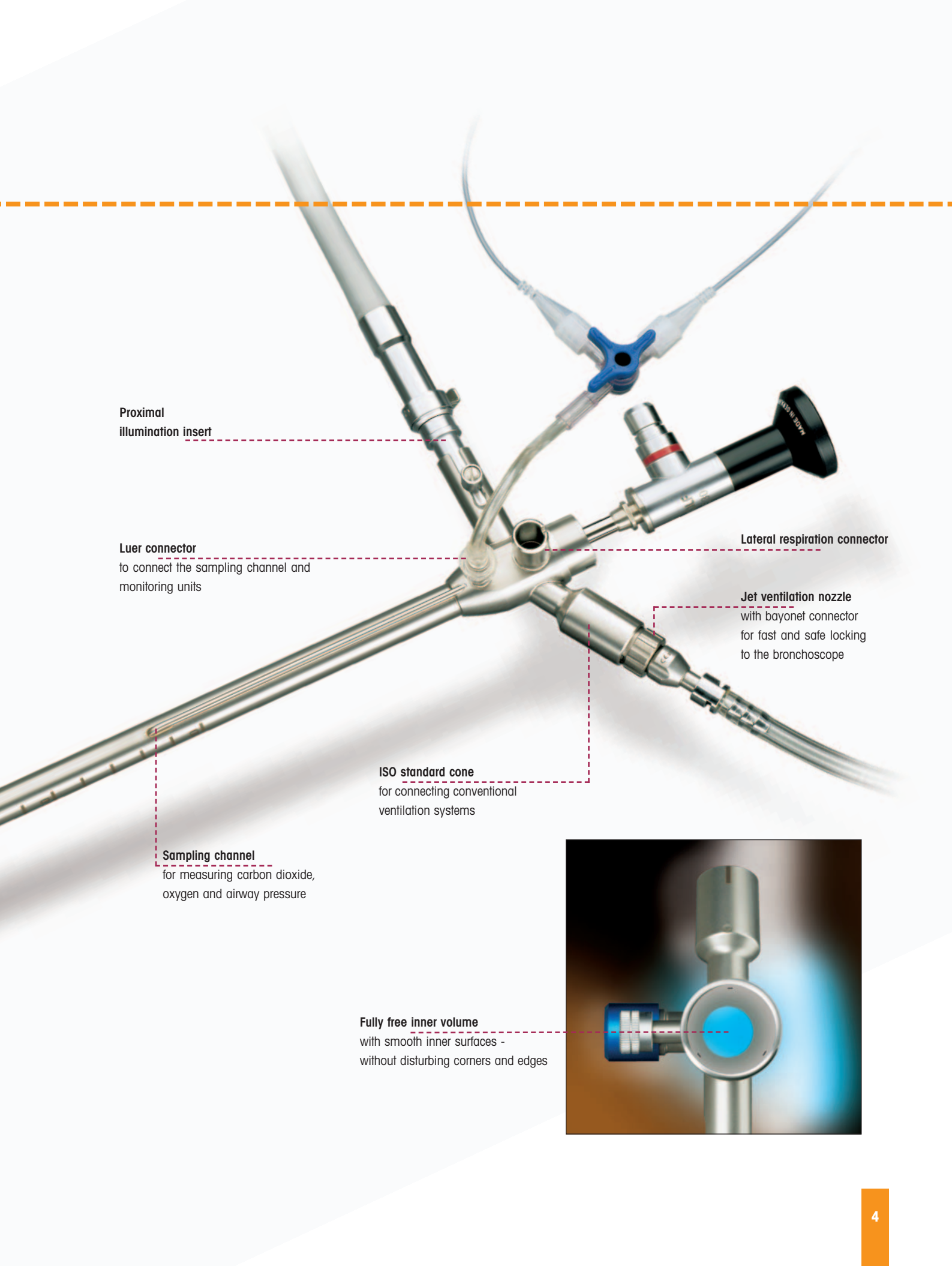
*Lungenklinik Hemer, Theo-Funccius-Str. 1, D-58675 Hemer

The bronchoscope »Hemer« was developed with the cooperation of **Dr. med. Alfred Pobloth** and **Dr. med. Günther Reichle**.



Improved ventilation
due to geometrically optimised
ventilation slits

New atraumatic shape
of the distal sheath tip



Proximal illumination insert

Luer connector
to connect the sampling channel and monitoring units

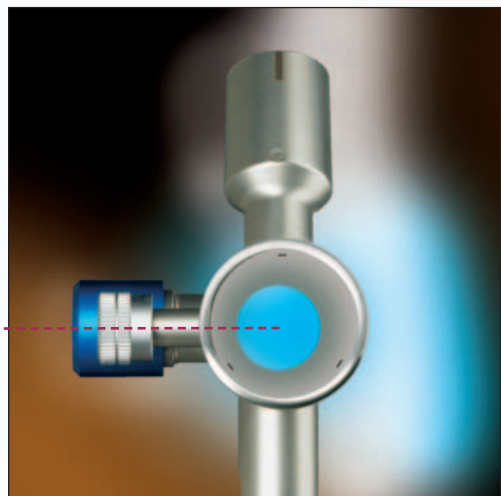
Lateral respiration connector

Jet ventilation nozzle
with bayonet connector for fast and safe locking to the bronchoscope

ISO standard cone
for connecting conventional ventilation systems

Sampling channel
for measuring carbon dioxide, oxygen and airway pressure

Fully free inner volume
with smooth inner surfaces - without disturbing corners and edges



Ventilation and Monitoring

with the new rigid bronchoscope »Hemer«

Ventilation



- **Jet ventilation unit** with FiO₂ setting
- **Jet ventilation unit** with pressure cutoff
- Optimum ventilation + O₂ reduction for laser and APC application
- Optimum ventilation + avoidance of barotrauma



Monitoring ...

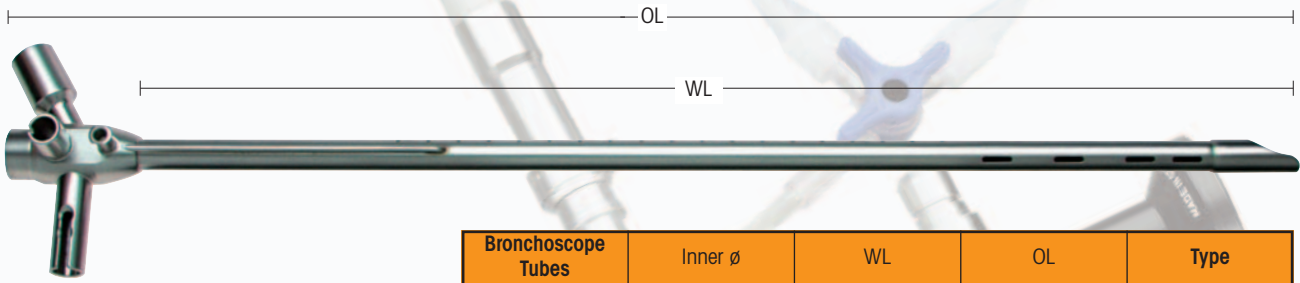


- **Gas analysis**
- **Pulsoxymetry**
- **Pressure measurement**
- Optimum ventilation by measuring expired CO₂ and control of FiO₂
- Avoidance of hypoxaemia
- Pressure measurement to avoid trauma and for pressure-controlled jet ventilation

Jet ventilation with optimised monitoring
... for greater patient safety

Bronchoscope »Hemer«

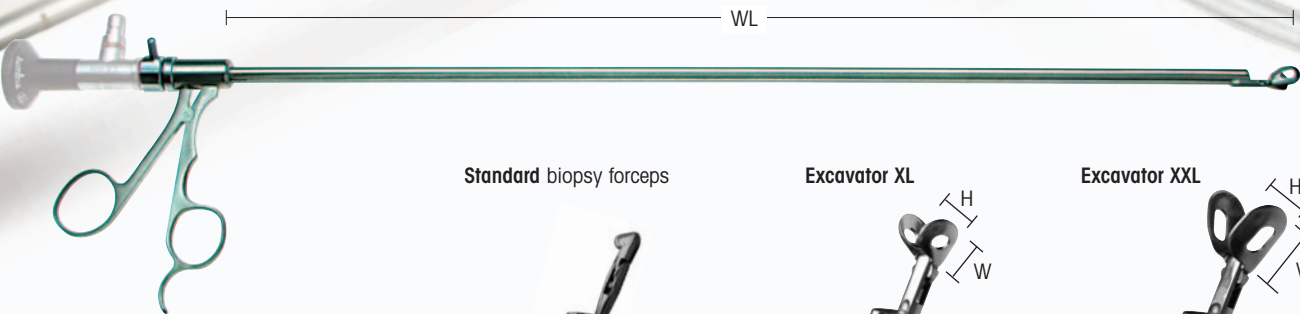
Bronchoscope Tubes



Particularly suitable for interventional bronchoscopy.

Bronchoscope Tubes	Inner ϕ	WL	OL	Type
6 x 400	6.5 mm	355 mm	400 mm	8214.064
7 x 400	7.5 mm			8214.074
8 x 430	8.5 mm	385 mm	430 mm	8214.084
9 x 430	9.5 mm			8214.094
10 x 430	10.5 mm			8214.104
12 x 350	12.0 mm	305 mm	350 mm	8214.124

"Excavator" Biopsy Forceps by Reichle



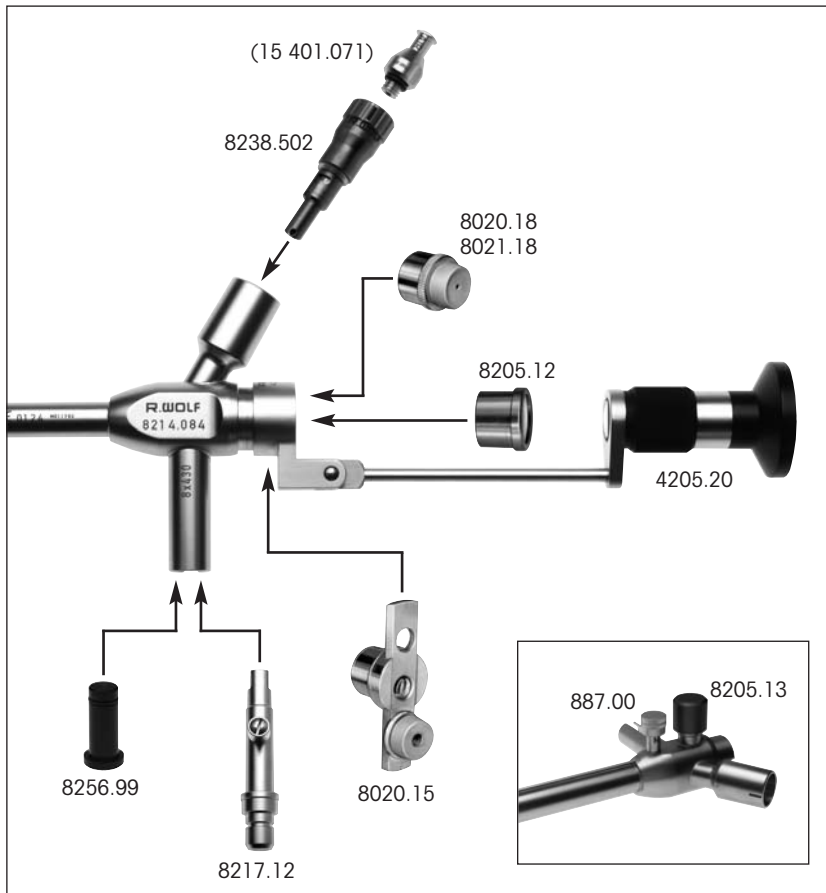
The "Excavators" are particularly suitable for removing large portions of tissue and can also be used in conjunction with laser resection or argon plasma coagulation (APC).

Required telescope: 8465.30

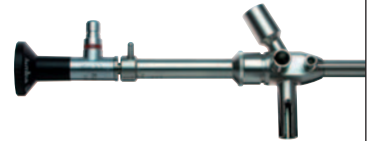
	WL	W x H	Suitable Tubes	Type
Excavator XL	474 mm	9 x 9 mm	8214.094 8214.104 8214.124	8466.651
Excavator XXL	483 mm	12 x 9 mm		8466.652

Bronchoscope »Hemer«

Accessories



Telescope adapter



Suitable Tubes	Matching Telescope	Type
8214.084 8214.094 8214.104	8465.30	8215.714
8214.064 8214.074		8215.715
8214.124		8215.716

The telescope adapter guarantees a safe connection between the telescope and bronchoscope tube. It prevents the telescope slipping accidentally.

Nozzle for jet ventilation

(only for bronchoscope 8214.xxx)

incl.:

Luer connector (15401.071)8238.502

Sealing cap

with telescope sealing cap for telescopes

Ø 5.5 mm8020.18

Ø 4 mm, 3.4 mm and 2.7 mm8021.18

Adjustable telescope magnifier4205.20

also:

Sealing cap with monitoring window

(with outer cone, blue)8205.12

Universal sealing cap by Lehnhardt

incl. 2 telescope sealing caps

(89.01, 89.03)8020.15

Spare telescope sealing caps

(pack of 10)

for telescopes

Ø 5.5 mm89.03

Ø 4 mm89.02

Ø 3.4 mm and 2.7 mm89.01

Proximal illumination insert8217.12

Stopper8256.99

Sealing cap8205.13

LUER sealing cap887.00

Cold light connector

ACM8087.00

Storz8088.00

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