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**Notes:**
- Telepresence Hygiene, Endoprotect is a section that likely covers hygiene and protection measures in endoscopy settings, ensuring safety and cleanliness during procedures involving bronchoscopes and tracheoscopes.
- The content is systematically organized into chapters and sections, ensuring a clear and logical flow for readers.
- Each section is accompanied by page numbers, specifying the precise location of the information within the document.
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KARL STORZ Endoscopy-America, Inc.

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## Basic Sets for Intubation

### LIPP/GOLECKI

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<tr>
<th>Order No.</th>
<th>8535 B DÖRGES (CL)</th>
<th>8401 AX BOEDEKER-DÖRGES C-MAC® Video Laryngoscope MAC #3</th>
<th>8401 BR BOEDEKER-DÖRGES C-MAC® Video Laryngoscope MAC #4</th>
<th>8401 HR C-MAC® Video Laryngoscope D-BLADE</th>
<th>8401 XDK-C-MAC® Pocket Monitor</th>
<th>8401 XDL C-MAC® Pocket Monitor</th>
<th>8401 Y2 Protection Cap</th>
<th>8539 LDX Battery Insert Set LED</th>
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### Intubation Set - C22- ULM model

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<th>8539 LDX Battery Insert Set LED</th>
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### Emergency Tracheoscope Set

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<th>8401 Y2 Protection Cap</th>
<th>8539 LDX Battery Insert Set LED</th>
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**Instrument Cart** see chapter 5

* CL = Cold Light
## Difficult Intubation

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<tr>
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<th>MAGILL Forceps 20 cm</th>
<th>MAGILL Forceps 25 cm</th>
<th>YOUNG Tongue Seizing Forceps</th>
<th>Fiberscope 3.7 x 65</th>
<th>Retromolar Endoscope</th>
<th>LED Battery Light Source</th>
<th>Laryngeal Masks and Laryngeal Tubes</th>
<th>Cricothyrotomy Set</th>
<th>Suction Tubes diameter 3 / 4 / 5.5 mm</th>
<th>Case/Bag</th>
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<tr>
<td>MAGILL Forceps</td>
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<td>27677 BH</td>
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Recommended Set for Difficult and Standard Intubation

Both in intraclinical but in particular in preclinical emergency medicine, difficulties in securing the airways – whether expected or unexpected – always present situations an anesthetist or emergency physician would like to avoid, but cannot always prevent. If intubation problems are foreseeable, an elective fiber optic intubation, preferably under topical anesthesia and light sedation should be regarded as the “gold standard.” If “cannot intubate” or even “cannot ventilate – cannot intubate” situations occur unexpectedly, fast and well-planned action becomes necessary in order to manage an acute life-threatening situation for the patient. Any person wanting to perform an intubation must be equipped to answer the question: “What do I do, if the intubation is unsuccessful?” Once the situation has occurred, there is no time for long considerations. For this reason, organizations such as the American Society of Anesthesiologists (ASA) or European Resuscitation Council (ERC) developed algorithms for such situations that range from a procedure using modified laryngoscope blades, instruments such as the laryngeal tube or laryngeal mask to cricothyrotomy, in order to enable the intubator to achieve the greatest benefit of his patients. The prerequisite for successful airway management is that the user has an advance plan for proceeding in case of difficulties; that he has both theoretical knowledge and practical experience in alternative techniques, and especially that these instruments also can be made available in a sufficiently short period of time. In the OR area, this problem can be handled relatively easily, but becomes already significantly more difficult for intubation problems in emergency patients on a ward. Under preclinical conditions, these problems are almost unmanageable.

This Airway Management Set was developed to provide the entire line of recommended instruments and equipment for expectedly and unexpectedly difficult airway management. With its relatively small dimensions, low weight and a LED battery-powered light source, this set can be used quickly and flexibly. In addition to flexible fiber optics, the BONFILS intubation endoscope, the laryngeal tube as well as standard and intubation laryngeal masks, this set also provides the user with instruments for a cricothyrotomy. This means that especially in a preclinical situation, the user is able to quickly select and use an appropriate alternative after an unsuccessful laryngoscopical intubation.

Prof. Dr. Dr. med. W. LIPP, M.D., N. GOLECKI,
Johannes Gutenberg University Mainz,
Germany

Special features:
• The set for all demands in Difficult Airway Management
• 2 different intubation endoscopes
• 5 different intubation laryngeal masks
• 2 laryngeal tubes, size 3 and 4
• Instruments for cricothyrotomy
• LED battery light source allows operation without AC power connection
• Sturdy case

Prof. Dr. med. W. LIPP, M.D., N. GOLECKI,
Johannes Gutenberg University Mainz,
Germany
Recommended Set for Difficult and Standard Intubation

11300 B3 LIPP/GOLECKI Airway Management Set, for the difficult airway including:

- **Intubation Fiberscope**, 3.7 mm x 65 cm
- BONFILS Retromolar Intubation Endoscope, 5 x 40, autoclavable
- Battery Light Source LED for Endoscopes
- Mask Adaption “MAINZ Adaptor”, blue, package of 5
- Laryngeal Tube, size 4
- Laryngeal Tube, size 3
- Spiral Tube, size 6, for single use
- Bronchoscope Insertion Tube, size 4
- Laryngeal Mask, standard, reusable, size 1
- Laryngeal Mask, standard, reusable, size 2
- Laryngeal Mask, standard, reusable, size 4
- Intubation Laryngeal Mask, reusable, size 3
- Intubation Laryngeal Mask, reusable, size 4
- Laryngeal Mask Tube, diameter 7 mm
- Laryngeal Mask Tube, diameter 7.5 mm
- LMA Tube Stabilizer
- MAGILL Forceps, length 25 cm
- Scalpel, for single use, package of 10
- COTTLE Nasal Speculum, blade length 55 mm, length 13 cm
- DÖRGES Emergency Laryngoscope Blade, cold light, universal size
- Handle Sleeve, ISO 7376
- Battery Insert, with 2 Batteries 121306 S and Xenon Lamp 8546 XA
- Case

For further product information see pages 32, 46, 51, 60 and 78-79
Instrument Carts see chapter 5
Components/Spare Parts see chapter 7
“Difficult airways” are more prevalent in preclinical emergency medicine than in clinical anesthesiology due to several factors. In the past, attempts to optimize this situation often failed due to the limited technical resources available to emergency response physicians. Whereas it is possible to fall back on fiberoptic intubation in clinical routine, this option is not available in the preclinical setting. Furthermore, the procedure does not work well due to the time constraints associated with emergency medicine.

Video laryngoscopy first offered anesthesiologists a new and promising procedure which quickly became viable for emergency response physicians. As blood and secretions in the pharynx may obstruct the telescope, conventional and direct laryngoscopy must be available as an option despite modern technology. One of the many distinguishing features of the C-MAC® video laryngoscope from KARL STORZ is the possibility to combine indirect, video laryngoscopic visualization with direct laryngoscopy via a standard MACINTOSH blade, without the need to change the laryngoscope.

Positive experiences with the C-MAC® in clinical settings quickly led to its use in emergency medicine. Transporting an additional monitor bag and problems positioning the monitor on or near the patient in the preclinical setting led to the further development of the C-MAC® to C-MAC® PM (Pocket Monitor) which features a high-contrast display directly at the laryngoscope handle.

C-MAC® PM is a standard laryngoscope on the CHRISTOPH 22 rescue helicopter in the meantime. Whereas intubation with the MACINTOSH blades 2, 3 and 4 are almost always successful, the use of a malleable intubation catheter is a useful aid for intubation with a curved D-BLADE. In addition to the MILLER blades in sizes 0 and 1, this tool is also included in the instrument set on the CHRISTOPH 22 helicopter.

The new, robust and water-resistant intubation bag -C22- offers clearly arranged storage for the C-MAC® PM in the emergency backpack. It also provides ample space for the aforementioned blades, a malleable intubation catheter, a set of tubes and fixing material.

Dr. B. HOSSFELD,
RTH CHRISTOPH 22, Ulm,
Germany

Special Features:
- Recommended bag for storing the entire intubation equipment
- Recommended intubation set for routine and difficult intubation
- Recommended intubation set for preclinical intubation and mobile settings
- Suitable for direct and indirect intubation
- For video intubation and standard intubation
- Laryngoscopes can accommodate suction catheters, O₂ catheters or AINTREE catheters
- C-MAC® PM with OTI* display and rechargeable Li-ion batteries
- Daylight-readable monitor
- All video laryngoscope components are IPX8 certified and validated for manual/machine reprocessing up to 60°C as well as HLD
- “High-Power LED” standard laryngoscope available as an alternative

- MAGILL forceps, modified by BOEDEKER, for video-assisted foreign body removal
- Padded bag designed for difficult working and environmental conditions in preclinical settings
- Bag made from tear-resistant PAX material; washable inside and outside and suitable for wipe disinfection

**“Open to intubate” without additional inconvenient switches or push buttons**
Intubation Set -C22-, ULM Model

Basic Set

8400 B  Intubation Set -C22-, ULM model
including:
BOEDEKER-DÖRGES C-MAC® Video Laryngoscope, MAC #3
BOEDEKER-DÖRGES C-MAC® Video Laryngoscope, MAC #4
C-MAC® Video Laryngoscope D-BLADE
C-MAC® Pocket Monitor Set
Charging Unit, for C-MAC® pocket monitor
Protective Cap
Handle Sleeve, ISO 7376
DÖRGES Emergency Laryngoscope Blade, cold light
Battery Insert Set LED, with cap
Bag for Intubation Set -C22-, ULM model
MAGILL Forceps, modified by BOEDEKER

8402 YE  Bag for Ulm Intubation Set -C22-, made of water-resistant and sturdy material, washable, including two compartments with several holding facilities for C-MAC® video laryngoscope blades with C-MAC® pocket monitor and conventional laryngoscopes, for use with C-MAC® Pocket Monitor 8401 XD, C-MAC® video laryngoscopes and conventional laryngoscopes

For further product information see pages 23, 32, 84-85, 90
Please note: The displayed instruments are not included in Bag 8402 YE.
Components/Spare Parts see chapter 7
Recommended Set for Difficult and Standard Intubation

Content:
1. Laryngoscope with modified MACINTOSH blade No. 4 (suitable for pediatric use)
2. Ventilation tracheoscope with light source (handle) gauge/length 9 mm/25 cm, 7 mm/20 cm, 6 mm/30 cm, 5 mm/20 cm with variable add-on (viewing window, rubber cuff for rigid telescope, suction window)
3. MAGILL forceps, large and small
4. Tongue seizing forceps
5. Grasping forceps for peanuts and soft foreign objects, grasping forceps with pike mouth for foreign objects
6. 3 Suction tubes, usable length 35 cm and 50 cm, misc. thickness

Indications:

1. Planned use
   a. Removal of foreign bodies (FB) in hypopharynx, laryngeal and trachea
   b. Expected difficult intubation (see algorithm) in the presence of tumors in the area of the pharynx
   c. Expected difficult intubation in the presence of tumors of the larynx and trachea

2. Unexpected Use
   a. Unexpected difficult intubation in the presence of tumors in the laryngeal, hypopharynx or tongue area
   b. Unexpected difficult intubation in the presence of swelling in the area of the larynx and upper trachea
   c. Unexpected difficult intubation in the presence of abscesses in the area of the floor of the mouth
   d. Unexpected difficult intubation in the presence of stenoses in the area of the laryngeal and upper trachea

Explanation:

Item 1a: In this situation, the planned use for removal of foreign bodies corresponds to the standardized procedure. The FB can be extracted with different grasping forceps. Depending on its location, the FB is visualized employing direct laryngoscopy using a MACINTOSH blade. If the FB is located below the glottis plane, the emergency tracheoscope is used. The latter also can be used for ventilation, if needed. The advantage of the modified MACINTOSH blade is its smaller width in the front part of the blade and the overall lower height and reduced curvature. This makes the blade usable for all ages (minimum weight: 22 lbs (10 kg)).

Items 1b and c: On the basis of a correct preoperative diagnosis (indirect laryngoscopy or direct laryngoscopy with a fiberscope) and the possibility of mask ventilation, the intubation is performed with the emergency ventilation bronchoscope/tracheoscope after anesthesia has been initiated. This always requires that the mouth can be opened and that the cervical spine is normally movable. Passage through mouth/pharynx must be possible; although the space required for the emergency tracheoscope is rather small. Extremely protruding upper incisors may, however, impede or even prevent its use. If no mask ventilation appears possible, a tracheostoma should be placed under local anesthesia (planned procedure!).

Item 2: In the case of an unexpected difficult intubation, the emergency tracheoscope can be used very quickly, since no complex technical equipment is necessary. In contrast to the fiberscope, the rigidity enables both axial as well as, naturally, a significant tangential force to be exerted. At the same time, this is associated with a potential for injury that should not be underestimated.

Tumors can be pushed aside; swelling due to abscesses, stenoses and swelling in the laryngeal area and under the glottis also can be passed with measured force and under visualization. In the process, the different gauges and lengths of the shaft must be taken into account. If there is significant mucus, suction can be applied through the instrument. In case of hemorrhages, the limit of the use is reached when anatomical structures can no longer be recognized safely. It should be noted that with a very narrow viewing angle the field of view is significantly smaller than with a fiberscope or rigid HOPKINS® wide angle telescope.

Contraindications/Problems:

- Clamped jaw
- Fixed or injured cervical spine
- There is no safe aspiration protection because no blockage is possible.
Recommended Set for Difficult and Standard Intubation

In general, the simplified algorithm for an unexpected difficult intubation is as follows (modified according to GEORGI et al, Katharinenhospital Stuttgart, Germany):

<table>
<thead>
<tr>
<th>Unexpected difficult airway</th>
<th>Mask ventilation possible</th>
<th>Mask ventilation impossible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elective Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Send for help</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Spec. laryngoscope blade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Mandrels/guides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● BONFILS Retromolar Intubation Endoscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Emergency ventilation tracheoscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Fiberoptical intubation using aids</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Successful</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unsuccessful</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verify Document</td>
<td>Larynx mask</td>
<td>Local/regional anesthesia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tracheotomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delay surgery</td>
</tr>
</tbody>
</table>

**Explanation:**
1. This algorithm only relates to the problem of the unexpected, difficult intubation. The plannable situation has been described above.
2a. If mask ventilation is adequate:
   I Use of special laryngoscope blades (potentially permit intubation without direct visualization)
   II BONFILS Retromolar Intubation Endoscope (intubation under direct visualization, directly achieves tube placement)
   III Emergency tracheoscope, when glottis ostium cannot be clearly visualized (tumor or swelling), and head can be hyperextended. Ventilation possible via emergency tracheoscope. Then, either establishment of tracheostoma or re-intubation using a tube exchange catheter.1)
   IV Fiberoptical intubation via MAINZ adaptor or endoscopy mask (intubation under direct visualization, achieves direct tube placement, but material- and personnel-intensive)
   V Larynx mask or intubation larynx mask or COMBITUBE® (if problem is not on glottis plane; achieves time savings, if it enables ventilation.)
   VI Operative airway under mask ventilation

2b. If mask ventilation is not adequate, the possible alternatives must be weighed very quickly.
   I Larynx mask or intubation larynx mask or COMBITUBE® (if problem is not on glottis plane; achieves time savings, if it enables ventilation.)
   II BONFILS Retromolar Intubation Endoscope (if laryngeal structure can be verified with direct laryngoscopy. Use possible very quickly, but only a conceivable alternative for experienced personnel).
   III Emergency tracheoscope, when cause is in laryngeal area (tumor or swelling), and head can be hyperextended. Ventilation possible via emergency tracheoscope. Then, either establishment of tracheostoma or re-intubation using a tube exchange catheter 1)
   IV Emergency coniotomy
1) Please note:
   This refers to unexpected difficult intubations only. An impossible passage of the mouth cavity therefore is of no concern, since it would have been foreseeable.

A. HENN-BEILHARZ, M. D., Katharinenhospital, Stuttgart, Germany
Emergency Tracheobronchoscopy Set

Basic Set

Recommended Set for Difficult and Standard Intubation

10330 F

Emergency Tracheoscope Set
including:
- Emergency Bronchoscope, size 6, length 30 cm
- Emergency Tracheoscope, size 9, length 25 cm
- Emergency Tracheoscope, size 7, length 20 cm
- Emergency Tracheoscope, size 5, length 20 cm
- FLUVOG Adaptor

Adaptor for Ventilation
- DÖRGES Emergency Laryngoscope Blade, cold light, universal size
- 2x Handle Sleeve, ISO 7376
- 2x Battery Insert, with 2 Batteries 121306 S and Xenon Lamp 8546 XA

Xenon Lamp, package of 6
- Forceps, for peanuts and soft foreign bodies
- Forceps, alligator, for hard foreign bodies
- MAGILL Forceps, length 20 cm
- MAGILL Forceps, length 25 cm
- YOUNG Tongue Seizing Forceps

Suction Tube, diameter 3 mm, length 35 cm
- Suction Tube, diameter 4 mm, length 35 cm
- Suction Tube, diameter 5.5 mm, length 35 cm

Case

For further product information see pages 23, 29, 103, 108, 111, 114-115
Instrument Carts see chapter 5
Components/Spare Parts see chapter 7
<table>
<thead>
<tr>
<th>LARYNGOSCOPE BLADES, COLD LIGHT (XENON/LED)</th>
<th>13-26</th>
</tr>
</thead>
<tbody>
<tr>
<td>HANDLES, HANDLE SLEEVES, BATTERY INSERTS</td>
<td>27-29</td>
</tr>
<tr>
<td>INSTRUMENTS</td>
<td>30</td>
</tr>
</tbody>
</table>
Illustrations may not be to scale.
MACINTOSH Laryngoscope Blades
Cold Light – Fiber Optic Light Carrier Incorporated

Cold Light

8546 8546 A 8546 LD1 8549 LDX 8548 8548 LDX1

8541 AA – E

8541 AA  MACINTOSH Laryngoscope Blade, size 5
8541 A  Same, size 4
8541 B  Same, size 3
8541 C  Same, size 2
8541 D  Same, size 1
8541 E  Same, size 0

Handles 8546, 8547 and 8548
see pages 27-28
MILLER Laryngoscope Blades
Cold Light – Fiber Optic Light Carrier Incorporated

Illustrations may not be to scale.
MILLER Laryngoscope Blades
Cold Light – Fiber Optic Light Carrier Incorporated

Cold Light

8537 A  MILLER Laryngoscope Blade, size 4
8537 B  Same, size 3
8537 C  Same, size 2
8537 D  Same, size 1
8537 E  Same, size 0

Handles 8546, 8547 and 8548
see pages 27-28
ILLUSTRATIONS MAY NOT BE TO SCALE.
PHILIPS Laryngoscope Blades
Cold Light – Fiber Optic Light Carrier Incorporated

8535 C/CA

8546
8546 A
8546 LD1
8549 LDX
8548
8548 LDX1

8535 C    PHILIPS Laryngoscope Blade, cold light, size 2
8535 CA   PHILIPS Laryngoscope Blade, cold light, size 1

Handles 8546 and 8548 see pages 27-28
The DÖRGES blade design allows it to replace the MACINTOSH laryngoscope blades, size 2 – 4, which are traditionally used. The working length of the blade is 120 mm, putting it exactly between the length of the MACINTOSH 3 and 4 to enable intubation under large anatomical conditions.

The blade tip has a width of 11 mm, corresponding to the MACINTOSH laryngoscope blade, size 2, allowing intubation of emergency patients from one year of age to adult. The tapered shape of the blade is especially helpful. Along with the required length, the blade also has the correct width for the respective age group.

An inadvertent introduction of the blade too deeply in the case of children is also prevented by 2 approximating, weight-calibrated markings on the front and rear of the blade. The blade is only slightly curved, especially in the front, making intubation of small children easier.

The tapering of the blade from 0° at the tip to 20° at the rear permits a better view when introducing the blade horizontally. Together with the very low height of 16 mm, this also facilitates rapid intubation in emergency situations and when the mouth opening is limited, as well as its low profile enables fast intubation in emergency situations and where the mouth opening is restricted, especially when performed by less practiced persons.

By limiting the selection to just two intubation blades, uncertainty about choosing the correct blade size under urgent treatment conditions is greatly diminished.

Special Features:

- The special design of the blade makes it suitable for intubating small children, adolescents and adults.
- The thin front section makes this blade very suitable for ENT, e.g., constricted anatomical conditions due to hypertrophic tonsils.
- The overall low height of this blade permits easy intubation even when patients cannot open their mouth wide, e.g. in case of lockjaw or poor relaxation.

- Forward placement of the light outlet provides good illumination.
- Less space is required at the worksite with just one blade size (helpful for rescue services).
- Uniform blade sizes enable easier and standardized training, e.g. for emergency medical personnel.
8535 B  DÖRGES Emergency Laryngoscope Blade, cold light, universal size

DÖRGES Laryngoscope Blades see page 18
Handles 8546 and 8548 see pages 27-28
MACINTOSH Reclination Blades
Shown Full Size

Illustrations may not be to scale.
MACINTOSH Reclination Blades
Cold Light – Fiber Optic Light Carrier Incorporated

8546
8546 A
8546 LD1
8549 LDX
8548
8548 LDX1

8543 A
MACINTOSH Reclination Blade, cold light, size 4
8543 B
Same, size 3
8543 C
Same, size 2
8543 D
Same, size 1

Handles 8546 and 8548 see pages 27-28
Laryngoscope Blades for Pediatrics
Cold Light – Fiber Optic Light Carrier Incorporated

Illustrations may not be to scale.
Laryngoscope Blades for Pediatrics
Cold Light – Fiber Optic Light Carrier Incorporated

8547
8547 A
8547 B

8537 F – H

8537 F  Laryngoscope Blade for Pediatrics, cold light, large
8537 G  Same, medium
8537 H  Same, small

Handle 8547 see page 28
Laryngoscope Blades

- Laryngoscope Blades, TAKE-APART®
- MACINTOSH Laryngoscope Blades
- MILLER Laryngoscope Blades
- DÖRGES Laryngoscope Blades
- PHILIPS Laryngoscope Blades

- LED Cold Light
- Xenon Cold Light
- Warm Light

- Handles, battery-powered
- Handles, rechargeable

MACINTOSH Laryngoscope Blades, Cold Light
TAKE-APART® with replaceable fiber optic light carrier

- Optimum illumination due to new technology and increased number of fibers
- No trapped debris as laryngoscopes can be quickly and easily dismantled and reassembled
- Reduced and easy cleaning
- Cost-effective – fiber light carrier and source are easy to replace
MACINTOSH Laryngoscope Blades
Cold Light – TAKE-APART® with Replaceable Fiber Optic Light Carrier

Illustrations may not be to scale.
MACINTOSH Laryngoscope Blades
Cold Light – TAKE-APART® with Replaceable Fiber Optic Light Carrier

8542
8542 A
8542 B
8542 C
8542 D
8542 AS
8542 BS
8542 CS
8542 DS

MACINTOSH Laryngoscope Blade, with replaceable fiber optic light carrier, size 4

Same, size 3
Same, size 2
Same, size 1

Spare Fiber Optic Light Carrier, for 8542 A
Same, for 8542 B
Same, for 8542 C
Same, for 8542 D

Handles 8546, 8547 and 8548 see pages 27-28
Handles with LED Light Source
for Cold Light Laryngoscope Blades

Special Features:
- Rechargeable lithium-ion batteries
- Extremely bright LED of more than 50 lm/> 100,000 LUX (100 klx)
- Absolute white light due to LED technology (5500 K) 100,000 LUX (100 klx)
- Small handle with photo battery
- Special lens system allows optimal light adjustment at the blade connector
- LED provides a lifetime of more than 50,000 hours
- Burning time up to 240 min at 100% brightness
- Charging via inductive technology
- ISO 7376 compatible

Components/Spare Parts see chapter 7
Handles with Xenon Light Source
for Cold Light Laryngoscope Blades

8546

Handle Sleeve, ISO 7376, autoclavable, length 12 cm, for use with Battery Inserts 8546 A, 8546 LD, 8549 LD and cold light laryngoscopes

8546 A

Battery Insert, length 12 cm, with 2 Batteries 121306 S and Xenon Lamp 8546 XA

121306 S

Batteries, Alkaline “C”, LR 14, for Battery Inserts 8546 A, package of 2

8546 XC

Xenon Lamp, 2.5 V, for Battery Inserts 8546 A, 8547 A and 8547 B, package of 6

Especially suitable for use with blades sizes 0 and 1

8547

Handle Sleeve, ISO 7376, length 12 cm, autoclavable, for use with Battery Inserts 8547 A and 8547 B

8547 A

Battery Insert, length 12 cm, including 2 Batteries 121306 KS and Xenon Lamp 8546 XA

121306 KS

Batteries, Alkaline “AA”, LR 06, 2 Batteries 121306 K, for Battery Inserts 8547 A and Battery Insert Set High-Power LED 8549 LDX

8547 B

Rechargeable Battery Insert, length 12 cm, for Handle Sleeve 8547, with Xenon Lamp 8546 XA, charging via Inductive Charging Unit 8546 LE (see page 31)

8546 XC

Xenon Lamp, 2.5 V, for Battery Inserts 8546 A, 8547 A and 8547 B, package of 6
Inductive Battery Charger
for Rechargeable Laryngoscope Handles

Special Features:
● No open contacts
● No corrosion and contact problems
● No voltage peaks
● Batteries can be charged with or without handle sleeve, sterile packaging
● Compatible with previous models

8546 LE Inductive Charging Unit, for two battery inserts (8546 LD1, 8547 B), with fully integrated mains adaptor and power adaptor for EU, UK, USA and Australia, power supply 110 – 240 VAC, 50/60 Hz, suitable for low level disinfection

8546 R Reduction Sleeve, for Battery Insert 8547 B

11301 DH Holder, for Charging Units 11301 DG, 8546 LE and 8401 XDL
Instruments for Intubation and Inspection

**NEW** 809120
MAGILL Forceps, for children, modified by BOEDEKER, length 20 cm, suitable for endoscopic foreign body removal, for use with video and standard laryngoscopes size 1 and 2

809125
MAGILL Forceps, modified by BOEDEKER, length 25 cm, suitable for endoscopic foreign body removal, for use with video and standard laryngoscopes size 2 – 4

809020
MAGILL Forceps, for the introduction of endotracheal tubes, for children, length 20 cm

809025
Same, for adults, length 25 cm

794014
ROCHESTER-PEAN Artery Forceps, straight, length 14 cm
<table>
<thead>
<tr>
<th>VIDEO INTUBATION SYSTEMS</th>
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<tbody>
<tr>
<td><strong>EYEPiece Versions, Intubation Fiberscopes, Bonfils Retromolar Optical Stylets, C-MAC® Monitor and C-CAM™</strong></td>
</tr>
<tr>
<td><strong>V-MAC® Video Intubation Systems, DCI® Versions, Intubation Fiberscopes, DCI® Versions, Bonfils/Brambrink Retromolar Optical Stylets, Tele Pack X</strong></td>
</tr>
<tr>
<td><strong>C-MAC® Video Intubation Systems, Video Laryngoscopes, Pocket Monitor, Flexible Intubation Video Endoscope</strong></td>
</tr>
<tr>
<td><strong>C-CAM™ and C-Hub™</strong></td>
</tr>
</tbody>
</table>
Airway Management
See the Difference
Successful airway intubation and management can quite literally make the difference between life and death. Video-assisted intubation gives the entire team a clear view of all important situations. KARL STORZ offers a whole range of tools that can minimize complications of managing difficult airways and at the same time provide optimal visualization.

Anesthesia/OR
Pre-operative, operative and post-operative procedures are performed in this area – the classical area for endotracheal intubation. Hence this area is predestined for the entire Airway Management system. A distinction is made between expected and unexpected difficult airways and solution approaches are defined accordingly in an algorithm. KARL STORZ offers a comprehensive product portfolio for these solution approaches.

Intensive Care Unit
This is the area of the hospital with the most patients on respirators. However, endotracheal intubation is seldom performed as most patients arrive already intubated. Endotracheal intubation or extubation, and possibly reintubation, pose a major challenge for the team. The patient is not in a suitable state for intubation and complications often arise. The patient may require an emergency tracheotomy. The product line from KARL STORZ offers a comprehensive range of solutions to meet these needs.

Emergency Room
As practically all emergency cases enter the clinic here, unexpected difficult intubations are likely in this area. The team on call may have little experience with emergency intubation. The C-MAC® video laryngoscope system can provide rapid assistance in such cases.

Rescue Services
Endotracheal intubation is seldom used in the field. An estimated 150 – 200 intubations a year are performed on German rescue helicopters; even fewer intubations are carried out by ground-based rescue services. However, out-of-hospital intubations constitute up to 50% of unexpected difficult airways. This is more often due to adverse conditions than to anatomic contraints of the patient. The C-MAC® video laryngoscope system offers valuable assistance in these circumstances. Its weatherproof, robust design is geared towards the preclinical setting.

Education and Training
Endotracheal intubation with a laryngoscope remains the gold standard in airway management. This is an essential skill for all anesthesiologists, intensive care/emergency physicians and other emergency medical personnel. Only modern video systems and original laryngoscopes guarantee success in learning. The C-MAC® video laryngoscope offers a professional system for this purpose.
Airway Management

**Versatility**
Airway management is not confined to a single hospital area. In ORs, emergency rooms, intensive care units through to preclinical emergency settings, medical practitioners are confronted with the challenges of a difficult airway. KARL STORZ offers mobile and optimum solutions for managing difficult airway situations wherever and whenever they occur.

**All a Matter of Organization**
Our videocart – ranging from the simplest IV stand through to the airway management cart – combines ergonomics with functionality. It is, therefore, customized to meet your specific requirements. Our airway trolley provides the optimal solution for your equipment for any algorithm regardless of its definition.

**Optimal Visualization**
Video-assisted intubation using a laryngoscope offers tremendous advantages over conventional laryngoscopy. Indirect laryngoscopy widens the angle of view from approx. 10° to 80°. This factor alone enables most difficult intubation cases to be downgraded to standard intubation. The major advantage of the C-MAC® video laryngoscope is the fact that it allows optimal use of both direct and indirect laryngoscopy for teaching and training purposes or under critical lighting conditions.

**For the Greatest Challenges**
Spinal injuries, trauma patients, maxillofacial injuries – you can count on KARL STORZ to help you master the most difficult airway situations. We are the only company to offer such a comprehensive range of endoscopic solutions for difficult airway management.

**Solutions to Meet your Needs**
From the MACINTOSH laryngoscope to the MILLER laryngoscope through to the reclination laryngoscope or the DÖRGES emergency laryngoscope, KARL STORZ offers you a wide range of laryngoscopes. The main feature of these laryngoscopes, however, is the LED handle which offers unique benefits. All our laryngoscopes are, of course, compatible with DIN ISO 7376 standards.

**The Clever Alternative for Experts**
More durable than a flexible intubation fiberscope, the BONFILS intubation fiberscope offers a proven alternative for managing difficult airways. Portable, convenient to learn, and tube placement under full visualization are just some of the many benefits this fiberscope has to offer.
Tradition with a Future
From Video Laryngoscope to Video Laryngoscope System

2000

1st Generation:
KARL STORZ developed, in conjunction with Prof. ILIAS (Vienna, Austria), the first video laryngoscope for routine use in anesthesiology. This mobile instrument was equipped with the state-of-art TELE PACK monitor technology available at the time.

2001

2nd Generation:
The second model was developed in conjunction with Prof. BERCI/Dr. KAPLAN (Los Angeles, USA) and was equipped with MVM technology (Micro Video Module). This resulted in a smaller camera and, consequently, improved ease of use.

2003

3rd Generation:
V-MAC® – this innovative development employed DCI® technology (Direct Coupled Interface) and enabled several instruments to be connected to a DCI® camera system via a one-chip camera head.

2008

4th Generation:
The latest generation of video laryngoscopes are equipped with a CMOS chip, LED and Li-Ion batteries. This makes the video laryngoscope more mobile and portable and allows more flexible use.

2012

C-MAC® as System
FIVE (flexible intubation video endoscope) can be directly connected to the C-MAC® monitor. This marks the beginning of a complete system for airway management.
From Larygoscopy to the C-MAC® System
The History of Endotracheal Intubation

500 B.C.
Hippocrates – 1st references to tracheotomy

1543
Andreas Vesalius performs the 1st endotracheal intubation on an animal and recognizes its use for humans.

1869
Friedrich Trendelenburg – performs the 1st human tracheotomy for the purpose of administering general anesthesia.

1878
John Knox McEwan performs the 1st orotracheal intubation.

1895
Alfred Kirstein performs the 1st laryngoscopy.

Manuel Garcia is generally regarded as a pioneer in laryngoscopy when he viewed the vocal cords with the use of a dentist’s mirror.

Macintosh/Magill – the exchangeable blade is named after MACINTOSH; the curve of the endotracheal tube and the forceps used to position the tube after MAGILL.

The BONFILS retromolar endoscope from KARL STORZ represents the gold standard in flexible intubation fiberscopes and also offers a proven alternative for managing difficult airways.

Prof. Peter Bumm – Head of ENT at Augsburg Central Hospital (Zentralklinikum) in Germany performs the 1st video laryngoscopy using a rigid endoscope from KARL STORZ.

KARL STORZ develops the 1st video laryngoscope.

How it all began...
1941
Robert Arden Miller invents the MILLER laryngoscope blade.

1943
Sir Robert Reynolds Macintosh invents the MACINTOSH laryngoscope blade.

1945
Karl Storz founds his company in Tuttlingen (Germany) at the age of 34.

1969
1st endoscopic camera from KARL STORZ (16 mm film).

Prof. Berci/Dr. Kaplan develops, in conjunction with KARL STORZ, the 2nd generation of video laryngoscopes with MVM technology.

V-MAC® – the 3rd generation of video laryngoscopes with DCI® technology from KARL STORZ.

C-MAC® – the 4th generation of video laryngoscopes, now equipped with CMOS technology from KARL STORZ.

MILLER for C-MAC® – for pediatrics and neonatology. C-CAM™ for C-MAC® – a complete system unit for complete airway management.

D-BLADE for C-MAC® – the revolutionary blade for the difficult airway.

FIVE (Flexible Intubation Video Endoscope) for C-MAC®.

To be continued...

1941
Robert Arden Miller invents the MILLER laryngoscope blade.

1943
Sir Robert Reynolds Macintosh invents the MACINTOSH laryngoscope blade.

1945
Karl Storz founds his company in Tuttlingen (Germany) at the age of 34.

1969
1st endoscopic camera from KARL STORZ (16 mm film).
Meet the Experts
Dr. M. KAPLAN, Prof. Dr. D. WARD, Prof. Dr. G. BERCI

Ever since the introduction of the laryngoscope to clinical practice in anesthesiology, attempts have been made to optimize the shape of the laryngoscope blade. These innovations aim to achieve better visualization of the laryngeal structure and to improve the success rate of endotracheal intubation. Despite these modifications, tracheal intubation is not always successful, even in the case of patients having anatomical conditions where intubation is thought unlikely to be difficult.

According to our estimates, endotracheal intubation is performed on approx. 10 million patients in the US each year, 80% of which undergo direct laryngoscopy with transoral positioning of the endotracheal tube (ETT) in the trachea. An estimated 3% or 240,000 cases annually in the US encounter unexpected difficult intubation, a decisive factor being the poor visualization of the laryngeal structure.

The shape of the V-MAC® video laryngoscope optimizes visualization as it provides the user with an enlarged video image of the airway. In conventional laryngoscopy, the anesthesiologist views the airway through a “keyhole” which becomes even narrower when attempts are made to advance the endotracheal tube.

The V-MAC® video laryngoscope consists of a laryngoscope handle with an inbuilt standard MACINTOSH Blade, sizes 2, 3 and 4, the D-BLADE as well as a DÖRGES blade and MILLER sizes 0 and 1. The video laryngoscope is thus modified so that a video image of the airway structure is projected onto a video monitor, e.g., TELE PACK X. A DCI® camera (Direct Coupled Interface) can be simply and quickly incorporated into the modified handle. In our experience, learning to handle the instrument is very easy as most anesthesiologists are already familiar with the MACINTOSH blade.

Video imaging has several distinct advantages for direct laryngoscopy. The system generates very clear video images which can be enlarged on the video monitor for better visual control. Should endotracheal larynx manipulation (ELM) be necessary to improve the view of the laryngeal structure, the anesthesiologist and the assistant are able to coordinate their movements because they can both observe the monitor at the same time. As the video images are projected from the distal end of the laryngoscope blade, this enables a view of the laryngeal structure when the endotracheal tube (ETT) is advanced from the oropharynx to the trachea.
We also found the V-MAC® video laryngoscope to be useful in thoracic cases where a double lumen tube (DLT) is first inserted under full visual control. Following a rapid changeover from the V-MAC® video laryngoscope to the flexible intubation fiberscope, the position of the double lumen tube (DLT) is checked and, after the patient is placed in the lateral position, is checked once more.

In the case of difficult intubation, CORMACK & LEHANE Grade 3 patients can be downgraded to C & L 2 before intubation.

Situations arise when a less experienced intubator has to perform Crash-/Rapid Sequence Intubation. Emergency rooms and intensive care units, which are often located away from the OR tracts for logistical reasons, serve as a good example. Any improved (laryngoscopic) visualization technique which can be applied in a life-threatening situation is invaluable to the user and patient.

The V-MAC® video laryngoscope is an excellent instruction tool for training anesthesiologists and other practitioners who need to learn the principles of intubation. The V-MAC® video laryngoscope has many diverse applications. We believe it will fill an important niche in teaching aids. Due to its improved visual control, the number of unsuccessful intubations and, hence the incidence of tissue trauma relating to intubation, will be decreased.

Dr. M. KAPLAN, Los Angeles, USA
Prof. Dr. D. WARD, Rochester, USA
Prof. Dr. G. BERCI, Los Angeles, USA
Meet the Experts
Prof. Dr. V. DÖRGES, M.D.

Benefits of Video Laryngoscopy

Intubation via direct laryngoscopy provides the user with an angle of view of approx. 10° – 15°. The special camera technology of the video laryngoscope directs the observer’s eye to the blade tip, providing an angle of view of approx. 60° – 80°. This principle of video laryngoscopy offers the user a more detailed laryngeal view which greatly increases patient safety. Improved visualization of the video laryngoscope means that the instrument exerts considerably less force on the patient’s jaw. In conjunction with the special teeth protector on KARL STORZ video laryngoscopes, this greatly reduces the risk of dental damage resulting from intubation.

Not only does the video laryngoscope from KARL STORZ provide a decisive advantage for daily use and difficult airway management, it is also a very effective teaching tool for novices. The trainee can observe the entire procedure for securing the airway on the monitor and not over the shoulder of the instructor – with little success – as is the case in direct laryngoscopy or intubation. It also enables the instructor to supervise the trainee at each step and, if necessary, offer more appropriate help.

The acquisition of still images and video sequences for laryngoscopy and intubation has been further simplified and can be controlled with buttons on the laryngoscope handle and on the monitor. This data is ideally suited for training and documentation purposes, especially in the case of difficult intubation.

Based on 65 years of experience in endoscopy and 15 years of experience in the field of video laryngoscopy, the new C-MAC® video laryngoscope from KARL STORZ combines various technical disciplines.

Direct laryngoscopy

standard angle of view approx. 15°

Video laryngoscopy

enlarged view approx. 60°
Meet the Experts

Prof. Dr. V. DÖRGES, M.D.

Great attention has been paid to actual market requirements such as hygiene, mobility, universal use and robustness in the process.

As a result, the system is suitable for routine clinical procedures in the OR, intensive care medicine and emergency hospitalization, as well as preclinical procedures using ground or air-based life-saving equipment.

The stainless steel laryngoscope blade corresponds to the European closed version and, therefore, meets all hygienic standards. Furthermore, the blade’s optimized (minimized) height and flattened proximal end ensures minimal discomfort for the patient, even when the oral aperture is greatly restricted. The original MACINTOSH blade shape is available in sizes 2, 3 and 4. A special curved blade design, the D-BLADE, is available for difficult airways in adults. MILLER 0 and 1 blade shapes are available for use in neonatology and pediatrics.

The CMOS chip provides optimal visualization via the approx. 60° angle of view and high-power LED illumination. In addition, fogging of the telescope due to the heating-up of the LED is practically eliminated. The blade tip appears at the top of the image border. The C-MAC® system is ready for use within seconds. Rechargeable lithium-ion batteries guarantee use for two hours – equivalent to approx. 200 intubations.

The monitor is made of shock-resistant plastic and is also splash-proof (IP54). A resolution of 800 x 480 pixels makes the screen very fast. The laryngoscope enables detail screens as well as video sequences to be captured and stored on a SD card in a JPEG or MPEG4 format. To ensure rapid documentation, only SDHC cards class 10 should be used. Consequently, menu navigation is straightforward.

The plug is mounted on the rear to avoid impact – the VESA 75 norm enables easy connection of other accessories here.

The C-MAC® from KARL STORZ also stands out as its total weight is less than 1.5 kg (including a laryngoscope). The C-MAC® system can be stored in a practical, water-repellent protective bag and is, therefore, ideal for preclinical use.
KARL STORZ provides the instruments you need to meet the special challenges of patients who cannot be intubated with conventional methods. Nasopharyngeal awake intubation is regarded as the gold standard of difficult airway management. We offer solutions for any challenge!

**Special Features:**
- Sheath stiffness adapted to anesthesiological requirements
- Suitable for both fiber optic intubation and bronchoscopy
- Patented sheath surface special treatment requires only minimal lubrication and provides optimal tube insertion
- Developed for use in the OR, ICU, ER
- Even safer tube introduction due to video-assisted control on the monitor
- Tube position of ETT, LMA, DLT can be verified
- Video-assisted monitoring for percutaneous tracheostomy
- Adaptable for foreign body removal or bronchial lavage

Our versatile intubation fiberscopes can be used in all clinical settings whether in intensive care units or emergency rooms as well as for patients with anticipated difficult airways during induction. The various sheath diameters enable you to select the ideal instrument for your patient and allow a swift reaction thanks to the compact, flexible LED light sources.

- Various outer diameters: 2.8; 3.7; 5.2 mm
- Diameter of working channel ranging from 1.2 to 2.3 mm
- Extremely bright, white light due to the LED light source with rechargeable Li-Ion batteries
- Intubation fiberscope can be directly connected to the C-MAC® monitor with the mobile camera head C-CAM™
- Suitable and validated for the following low-temperature reprocessing methods up to a max. of 60 °C: manual/mechanical cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards
Intubation Fiberscopes
Eyepiece Versions

2.8 x 65 Intubation Fiberscope with optimized imaging

Intubation Fiberscope 11301 AA1 is ideal for use in neonatology due to its small outer diameter of 2.8 mm. This fiberscope is the only one of its size that has a working channel with 1.2 mm.

Intubation Fiberscope 11301 AA1 features a connector for suction valves for single or multiple use.

The special sheath surface combined with increased stiffness improves the gliding properties of the ETT over standard intubation fiberscopes.

The use of a mobile LED light source enables independent work under optimal lighting conditions.

Benefits:
- Effective suction possible via the 1.2 mm working channel
- Suitable for use with endotracheal tubes as of 3.5 mm
- Increased stiffness and smoother passage of the ETT
- Ready for immediate use and easy to clean and reprocess
- Optimized for use with mobile light sources
- Intubation fiberscope can be connected to the C-MAC® monitor via the mobile C-CAM™ camera head
- Practical tube fixation via special adaptor

Intubation Fiberscope 2.8 x 65, 11301 AA1
Deflection up/down: 140°/140°
Direction of view: 0°
Angle of view: 90°
Working length: 65 cm
Working channel inner diameter: 1.2 mm
Distal tip outer diameter: 2.8 mm

Optional Accessories for Intubation Fiberscopes see page 49 and pages 77 ff.
Intubation Fiberscopes
Eyepiece Versions

2.8 x 50 Intubation Fiberscope without suction port

Intubation Fiberscope 11301 AB1 is ideal for use in neonatology due to its small outer diameter of 2.8 mm. This fiberscope is the only one of its size that has a working channel of 1.2 mm.

Intubation Fiberscope 11301 AA1 features a connector for suction valves for single or multiple use.

The special sheath surface combined with increased stiffness improves the gliding properties of the ETT over standard intubation fiberscopes.

The use of a mobile LED light source enables independent work under optimal lighting conditions.

Benefits:
- Effective suction possible via the 1.2 mm working channel
- Suitable for use with endotracheal tubes as of 3.5 mm
- Increased stiffness and smoother passage of the ETT
- Ready for immediate use and easy to clean and reprocess
- Optimized for use with mobile light sources
- Intubation fiberscope can be connected to the C-MAC® monitor via the mobile C-CAM™ camera head
- Practical tube fixation via special adaptor

Intubation Fiberscope 11301 AB1

**Intubation Fiberscope 2.8 x 50, without suction valve**
- Deflection up/down: 140°/140°
- Direction of view: 0°
- Angle of view: 90°
- Working length: 50 cm
- Working channel inner diameter: 1.2 mm
- Distal tip outer diameter: 2.8 mm

Optional Accessories for Intubation Fiberscopes see page 49 and pages 77 ff.
3.7 x 65 Intubation Fiberscope with optimized imaging

The 3.7 x 65 intubation fiberscope is a universal working instrument as it provides gold standard intubation for both adult and pediatric patients. Due to its small diameter, it is an excellent tool for the placement of double lumen tubes. Using a mobile LED light source and C-CAM™, the intubation fiberscope can be directly connected to the C-MAC® monitor for a monitor-assisted intubation solution that is both mobile and flexible – also suitable for electronic documentation.

Benefits:
- Effective suction possible via 1.5 mm working channel
- Suitable for use with endotracheal tubes as of 4 mm
- Increased stiffness and smoother passage of the ETT
- Practical tube fixation via special adaptor
- Ready for immediate use and easy to clean and reprocess
- Optimized for use with mobile light sources
- Intubation fiberscope can be connected to the C-MAC® monitor via the mobile C-CAM™ camera head

Optional Accessories for Intubation Fiberscopes see page 49 and pages 77 ff.
**Intubation Fiberscopes**

**Eyepiece Versions**

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**5.2 x 65 Intubation Fiberscope with optimized imaging**

The 5.2 x 65 intubation fiberscope creates an ideal balance between image size, working channel size and fiber optics. Effective suction is possible via the 2.3 mm working channel. The fiberscope is also suitable for removing foreign bodies or for bronchial lavage in the intensive care unit. Using a mobile LED light source and C-CAM™, the intubation fiberscope can be directly connected to the C-MAC® monitor for a monitor-assisted intubation solution that is both mobile and flexible – also for electronic documentation.

**Benefits:**
- Effective suction possible via the large 2.3 mm working channel
- Suitable for use with endotracheal tubes as of 5.5 mm
- Increased stiffness and smoother passage of the endotracheal tube
- Practical tube fixation via special adaptor
- Ready for immediate use and easy to clean and reprocess
- Optimized for use with mobile light sources
- Intubation fiberscope can be connected to the C-MAC® monitor via the mobile C-CAM™ camera head

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**Intubation Fiberscope 5.2 x 65,**

- Deflection up/down: 140°/140°
- Direction of view: 0°
- Angle of view: 110°
- Working length: 65 cm
- Working channel inner diameter: 2.3 mm
- Distal tip outer diameter: 5.2 mm

---

**Optional Accessories for Intubation Fiberscopes** see page 49 and pages 77 ff.
## Intubation Fiberscopes
### Eyepiece Versions

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Intubation Fiberscopes</th>
<th>Eyepiece</th>
<th>Deflection up/down</th>
<th>Direction of view</th>
<th>Angle of view</th>
<th>Working length</th>
<th>Total length</th>
<th>Working channel</th>
<th>Inner diameter</th>
<th>Distal tip outer diameter</th>
<th>Recommended ETT diameter as of*</th>
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</thead>
<tbody>
<tr>
<td>2.8 x 65</td>
<td>11301 AA1</td>
<td></td>
<td></td>
<td>0°</td>
<td>90°</td>
<td>65 cm</td>
<td>98 cm</td>
<td>1.2 mm</td>
<td>2.8 mm</td>
<td>3.5 mm</td>
<td>4.5 mm</td>
</tr>
<tr>
<td>2.8 x 50</td>
<td>11301 AB1</td>
<td></td>
<td></td>
<td>0°</td>
<td>90°</td>
<td>50 cm</td>
<td>83 cm</td>
<td>1.2 mm</td>
<td>2.8 mm</td>
<td>3.5 mm</td>
<td>4.5 mm</td>
</tr>
<tr>
<td>3.7 x 65</td>
<td>11302 BD2</td>
<td></td>
<td></td>
<td>0°</td>
<td>90°</td>
<td>65 cm</td>
<td>93 cm</td>
<td>1.5 mm</td>
<td>3.7 mm</td>
<td>4.5 mm</td>
<td>8.0 mm</td>
</tr>
<tr>
<td>5.2 x 65</td>
<td>11301 BN1</td>
<td></td>
<td></td>
<td>0°</td>
<td>110°</td>
<td>65 cm</td>
<td>93 cm</td>
<td>2.3 mm</td>
<td>5.2 mm</td>
<td>5.5 mm</td>
<td>8.0 mm</td>
</tr>
</tbody>
</table>

### Accessories included in delivery:
- **Case**
- **Pressure Compensation Cap**, for ventilation during gas sterilization
- **Leakage Tester**, with bulb and manometer
- **LIPP Tube Holder**, for intubation fiberscopes
- **Plug**, for Luer-Lock connector for cleaning, black, autoclavable, package of 10
- **Irrigation Adaptor**, for machine cleaning, reusable, for fiberscopes
- **Suction Valve**, for single use, package of 20
- **Cleaning Brush**, tapered, outer diameter 3 – 5 mm, for working channel 1.8 – 2.8 mm, length 116 cm
- **Long Cleaning Brush**, for working channel 1.2 – 1.7 mm, length 110 cm
Please note that the accuracy of the ETT diameter may vary depending on the manufacturer’s quality.

For product information on flexible bronchoscopes see catalogs THORAX and ENT
Instrument Carts see chapter 5
The expert instrument for multiple applications in airway management combines technical sophistication with utmost reliability

Unexpected difficult airways are always a challenge in airway management. With the BONFILS optical stylet and its versatile intubation techniques, this situation can be brought back to a controlled status. The endotracheal tube is guided into the trachea under direct vision and the possibility of simultaneous application of oxygen provides more safety. Moreover, KARL STORZ offers a solution to meet the most stringent hygiene requirements – the autoclavable SILVER LINE.
BONFILS Retromolar Optical Stylets

Eyepiece Versions

Special Features:
- SILVER LINE – autoclavable
- Particularly suitable for the unexpected difficult airway
- Use in the case of minimal mouth opening (> 1 cm) possible
- Introduction of the tube under visualization: What you see is what you get!
- Continuous O₂ flow via tube adaptor between tube and instrument
- One-person intubation possible
- Connect and intubate – thanks to the mobile LED “Power of Light” light source
- Quick and easy cleaning
- Suitable and validated for the following low-temperature reprocessing methods up to bis max. 60 °C: manual/machine cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards
- Recommended for video-assisted intubation with C-CAM™ to C-MAC® monitor

Components/Spare Parts see chapter 7

LED Battery Light Source for Endoscopes (11301 D1/D3), optional, see page 60
# BONFILS Retromolar Optical Stylets

## Eyepiece Versions

<table>
<thead>
<tr>
<th>Optical Stylers</th>
<th>Eyepiece</th>
<th>Order No.</th>
<th>Distal bending</th>
</tr>
</thead>
<tbody>
<tr>
<td>BONFILS 3.5 x 35</td>
<td>10332 B1</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>BONFILS 5 x 40</td>
<td>10331 B2K</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

### Accessories included in delivery:

- **27677 BM**  
  **Case**, internal dimensions (w x d x h): 490 x 290 x 85 mm

- **27677 C**  
  **Plastic Case**, without inserts, internal dimensions (w x d x h): 480 x 285 x 80 mm

- **10332 BA**  
  **Tube Holder for ETT**, with O₂ application connection, inner diameter 3.5 mm

- **10331 BA**  
  **Tube Holder**, inner diameter 5 mm

---

AN-DAM-F 10 US  
52
<table>
<thead>
<tr>
<th>Angle of view</th>
<th>Working length</th>
<th>Total length</th>
<th>Distal tip outer diameter</th>
<th>Recommended ETT diameter as of*</th>
<th>Case</th>
<th>Tube Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>35 cm</td>
<td>52 cm</td>
<td>3.5 mm</td>
<td>4 mm</td>
<td>27677 BM</td>
<td>10332 BA</td>
</tr>
<tr>
<td>110°</td>
<td>40 cm</td>
<td>54 cm</td>
<td>5 mm</td>
<td>5.5 mm</td>
<td>27677 BM</td>
<td>10331 BA</td>
</tr>
</tbody>
</table>

* Please note that the accuracy of the ETT diameter may vary depending on the manufacturer's quality.

Instrument Carts see chapter 5
LED Battery Light Source for Endoscopes (11301 D1/D3), optional, see page 60
C-CAM™ transforms the C-MAC® video laryngoscope into an all-round system unit for complete airway management. The C-MAC® monitor is at the core of all imaging systems. C-CAM™ is a high-grade CMOS camera with VGA resolution which can be connected to all KARL STORZ endoscopes with eyepieces. Illumination is ensured through the Power-LED battery light sources. Consequently, this is the first battery-powered video system to guarantee high-quality documentation. KARL STORZ has once again proven that high quality and mobility are not mutually exclusive.
C-MAC® Monitor
for visual endotracheal intubation

Special Features:
- Resistant ABS plastic housing
- Splash-proof according to IP54
- 7" TFT wide view angle display with resolution of 800 x 480 pixels
- Ready for use within seconds
- Documentation of still images (JPEG) and videos (MPEG4) on SD memory card
- VESA 75 norm for connecting and attaching racks
- Soft keys enable use within seconds
- Cinch video output for connecting external monitor
- System open for further components
- Battery operating time for up to 2 hours
- World power supply 100 – 240 VAC, 50/60 Hz
- Operation with line voltage and rechargeable lithium-ion batteries
- Additional standards: RTCA/DO-160F, EMI Test Report (German air rescue service DRF Luftrettung)

Monitor for CMOS Endoscopes, screen size 7", documentation can be stored directly on SD card, rechargeable Li-Ion batteries, power adaptor for EU, UK, USA and Australia, power supply 110 – 240 VAC, 50/60 Hz, additional standards: RTCA/DO-160F, EMI Test Report (German air rescue service DRF Luftrettung), suitable for wipe disinfection

C-CAM™ Camera Head, 8-pin, one-chip CMOS camera head, resolution 640 x 480, focal length f = 20 mm, compatible with C-HUB™ 20 2901 01 and C-MAC® 8402 ZX-1

C-CAM™ Camera Head, 6-pin, one-chip CMOS camera head, resolution 640 x 480, focal length f = 20 mm, compatible with C-MAC® 8401 ZX
Video Intubation System

The system allows a changeover of instruments in seconds, a decisive advantage in critical situations. But also in an emergency, where there is no time for video-assisted intubation, we offer the right adaptor solutions. New perspectives for the teaching and further training of medical personnel are also provided. The system design differs considerably from other providers where you can only find so-called “stand-alone” solutions without any compatibility.
TELE PACK X is a compact, portable and flexible system that has been developed for use in a large number of fields. It can be used in doctors’ practices as well as in emergency rooms. The TELE PACK X monitor offers maximum resolution and very high color fidelity for a first-class video playback. To enable swift and easy work, TELE PACK X combines all that is needed: monitor, camera and light source. Consideration has also been given to documentation: integrated data management enables comprehensive recording of examinations or surgical interventions. Multiple USB ports and an SD card slot are available to store the data.

**Crystal clear display**
- 15” LCD display
- Image rotation
- 24-bit color intensity for natural color rendition
- DVI video output for connecting HD monitors

**Flexible storage possibilities**
- SD card slot for high storage capacity
- USB ports for external hard drives, USB sticks and post-script printers
- Picture gallery for records
- Playback of saved videos
- Print-ready patient report documentation

**Natural illumination**
- HiLux 50 Watt high-performance light source
- Natural colour rendition close to daylight with a color temperature of 6000 K
- Up to 1000 hours lamp operating time

**Easy control combined with utmost safety**
- Membrane keyboard for wipe-down disinfection
- Hot keys for rapid and direct adjustment
- Arrow keys for intuitive control
- Connection socket for pedal control

**Additional information**
- Sturdy, portable housing
- Ergonomically designed handle for convenient transport
- World power supply unit: 100 – 240 VAC, 50/60 Hz
- Dimensions (w x h x d): 450 x 350 x 150 mm
- Weight: 7 kg
TELE PACK X

Sample Configuration

20 0450-01-EN TELE PACK X, endoscopic video unit for use with TELECAM one-chip camera heads and video endoscopes, incl. 50 W HiLux light source, 15" LCD TFT screen, USB/SD memory module, color systems PAL/NTSC, with integrated Image Processing Module, power supply 100 – 240 VAC, 50/60 Hz including:

USB Silicone Keyboard, with touchpad, US character set
USB Flash Drive, 4 GB
Mains Cord
Mains Cord, US version

TELECAM One-chip Camera Heads and Fiber Optic Light Cable

20 2331 02 TELECAM DX II Camera Control Unit, color system NTSC, 30 mm
20 2331 03 TELECAM DX II Camera Control Unit, color system NTSC, 38 mm
20 2120 30 TELECAM One-Chip Camera Head, color system PAL
20 2121 30 TELECAM One-Chip Camera Head, color system NTSC
20 2120 40 TELECAM One-Chip Camera Head, autoclavable, color system PAL
20 2121 40 TELECAM One-Chip Camera Head, autoclavable, color system NTSC
495 NTA Fiber Optic Light Cable, diameter 2.5 mm, length 230 cm
495 NA Fiber Optic Light Cable, diameter 3.5 mm, length 230 cm

Specifications:

<table>
<thead>
<tr>
<th>Power input</th>
<th>100 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>100-240 VAC</td>
</tr>
<tr>
<td>Dimensions</td>
<td>450 x 350 x 150 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>7 kg</td>
</tr>
</tbody>
</table>
| Interface | - video interface: DVI-D (in/out)  
             - audio: 3.5 mm phonejack (1x lateral, 1x rear), Line in, Line out  
             - footswitch port: 5-pin socket for two-pedal footswitch  
             - printer port: USB  
             - printer language: PostScript |
| Light source | - lamp: metal halid 50 W  
               - color temperature: 5700 K  
               - average service life: approx. 1000 h |
| Image format | JPG |
| Video codec | MPEG-4 |
| Video format | PAL/NTSC |
| Memory interface | USB 2.0, SD memory card (SDHC compatible) |
| TFT monitor | - screen size: 15"  
               - resolution: 1024 x 768  
               - contrast: 700:1 |
| Loudspeaker output | 2 W |

Keyboards with foreign-language character sets and further accessories for TELE PACK X see catalog TELEPRESENCE

Components/Spare Parts see chapter 7
KARL STORZ offers a wide range of instruments for the expected and unexpected difficult airway management. Therefore, it is absolutely necessary to provide a battery light source which fulfills the high standard required in this field. With over 100 lm/approx. 150 klx brightness, 5500 K color temperature and weighing under 120 g, the LED Battery Light Source BRITE LITE sets new standards in airway management. The LED life cycle is approx. 50,000 hours.

“All the brightness you need!”
Battery Light Source LED BRITE LITE

Accessories for Intubation Fiberscopes and Endoscopes

Special Features:
- Battery light source with extremely high light intensity >100 lm / > 150 klx
- Available as battery and rechargeable version
- Absolute white light due to LED technology
- Special light focus allows optimal light adjustment at the endoscope connector
- LED provides up to 50,000 hours lifetime
- Burning time of 120 min
- Waterproof, fully immersible for cleaning and disinfection (11301 D1/D3)

11301 D1/D3/DE/DF

11301 D1  Battery Light Source LED for Endoscopes, with fine screw thread, brightness > 100 lm / > 150 klx, burning time > 120 min, weight approx. 150 g, waterproof and fully immersible for manual cleaning and disinfection, with 2 Photo Batteries 121306 P

11301 D3  Same, with coarse thread

121306 P  Photo Battery, lithium, 3 V, CR 123 A

11301 DE  Battery Light Source LED for Endoscopes, rechargeable, with click connection, brightness > 110 lm / >150 klx, color temperature 5500 K, lithium-ion batteries, charging time 60 min, burning time at 100% brightness 40 min, weight approx. 150 g ready for use, suitable for wipe disinfection

11301 DF  Same, with fast screw thread

11301 DG  Charging Unit, for 11301 DE/11301 DF, for two LED battery light sources, with fixed integrated power supply and adaptor for EU, UK, USA and Australia, power supply 110 – 240 VAC, 50/60 Hz, suitable for wipe disinfection

11301 DH  Holder, for Charging Units 11301 DG, 8546 LE and 8401 XDL
The system allows a changeover of instruments in seconds, a decisive advantage in critical situations. But also in an emergency, where there is no time for video-assisted intubation, we offer the right adaptor solutions. New perspectives for the teaching and further training of medical personnel are also provided. The system design differs considerably from other providers where you can only find so-called “stand-alone” solutions without any compatibility.
Special Features:

- Visualization of intubation process through telescope in distal region of laryngoscope blade
- Excellent for teaching and training purposes
- Suitable for difficult intubation
- Exchangeable DCI® video camera in handle
  - bright and clear image
  - rapid changeover to other DCI® video instruments
- Suitable and validated for the following low-temperature reprocessing methods up to a max.
  of 60 °C: manual/mechanical cleaning and disinfection, sterilization with Steris® AMSCO
  V-PRO 1, Sterrad™ (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc.
  to US standards
- The integrated electronic filter of the ENDOVISION® TELECAM (EF) is optimally matched to the video laryngoscope, completely eliminating the Moiré effect
- Compatible with the KARL STORZ ENDOVISION® TELECAM SL product line and TELE PACK X
  with integrated image processing module

8401 A/B/K

8401 A
BERCI-KAPLAN DCI® Video Laryngoscope,
for DCI® technology, with MACINTOSH
laryngoscope blade, size 3, angle of view 60°

8401 B
Same, MACINTOSH laryngoscope
blade, size 4

8401 C
Same, with DÖRGES emergency
laryngoscope blade, universal size

8401 K
Same, with MACINTOSH
laryngoscope blade, size 2

Illustrations may not be to scale.
BERCI-KAPLAN and DÖRGES

V-MAC® Video Laryngoscope

for visual endotracheal intubation

8401 D/G
8401 E

8401 D  BERCI-KAPLAN DCI® Video Laryngoscope, for DCI® technology, with MILLER laryngoscope blade, size 0, angle of view 60°

8401 E  Same, with MILLER laryngoscope blade, size 3

8401 G  Same, with MILLER laryngoscope blade, size 1

8401 H  DÖRGES DCI® Video Laryngoscope, with special curved blade for the difficult airway, DCI® technology, angle of view 60°
What is DCI®?
The DCI® (Direct Coupled Interface or direct coupling) intubation system offers you all endoscopic possibilities for successful airway management. Our proven endoscope program with a standard eyepiece cup (1) has been expanded to include the DCI® system (2) with direct coupling. You can now operate all of our DCI® video laryngoscopes, flexible intubation fiberscopes and our BONFILS and BRAMBRINK Optical Stylets with a single camera.

How does it work?
The light cable (1) and the signal cable (2) for digital imaging are integrated in the DCI® camera in an ergonomically designed housing. The camera is connected to the DCI® endoscope and ready for use in a single hand movement. The light inlet and imaging ports are positioned on the endoscope side where the eyepiece cup is normally found.

The development of our DCI® video laryngoscope in 2001 was based on the simple idea of integrating an endoscopic system within a standard laryngoscope blade. In this system, the camera is incorporated in an ergonomically designed handle. Various laryngoscopes can be connected to the handle. Anatomical structures are displayed in a magnified form on a monitor. The field of view is enhanced up to 60°, a dramatic improvement over conventional laryngoscopy. The DCI® video laryngoscope is the optimal solution for teaching and training routine intubation under total visual control.

Options in an emergency
With the aid of the DCI® emergency adaptor (1), you can transform any DCI® telescope into a standard telescope with an eyepiece cup (2). You then have the option of connecting a LED battery light source (3) or a conventional light cable (4) to the endoscope.

Compatibility through and through
The practical eyepiece adaptor (1) enables you to transform any DCI® camera into a conventional endoscope camera with an eyepiece cup within seconds. This means that you can use existing instruments and still profit from the benefits offered by the DCI® intubation system.
KARL STORZ provides the instruments you need to meet the special challenges of patients who cannot be intubated using conventional methods. Nasopharyngeal awake intubation is regarded as the gold standard of anticipated difficult airway management. We offer solutions for any challenge!

**Intubation Fiberscopes**

**DCI® Versions**

Our versatile intubation fiberscopes can be used in all clinical settings whether in the intensive care unit/emergency room or in the case of patients with anticipated difficult airways during induction. The various sheath diameters means that you can always select the ideal instrument for your patient.

**Special Features:**
- Sheath stiffness adapted to anesthesiological requirements
- Suitable for both fiber optic intubation and bronchoscopy
- Patented sheath surface special treatment requires only minimal lubrication and provides optimal tube insertion
- Developed for use in the OR, ICU, ER
- Even safer tube introduction due to video-assisted control on the monitor
- Tube position of ETT, LMA, DLT can be verified
- Video-assisted monitoring for percutaneous tracheostomy
- Adaptable for foreign body removal or bronchial lavage
- Various outer diameters: 2.8; 3.7; 5.2 mm
- Diameter of working channel ranging from 1.2 to 2.3 mm
- Suitable and validated for the following low-temperature reprocessing methods up to a max. of 60 °C: manual/mechanical cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards
**2.8 x 50 Intubation Fiberscope with optimized imaging**

The 2.8 x 50 intubation fiberscope is a universal working instrument as it provides gold standard intubation for both adult and pediatric patients. Due to its small diameter, it is an excellent tool for the placement of double lumen tubes. It can be directly connected to the TELE PACK X system with the DCI® II camera head for a monitor-assisted intubation solution that is both mobile and flexible.

**Benefits:**
- Effective suction possible via the large 1.5 mm working channel
- Suitable for use with endotracheal tubes as of 4 mm
- Increased stiffness and smoother passage of the endotracheal tube
- Ready for immediate use and easy to clean and reprocess

---

**DCI® Intubation Fiberscope 2.8 x 50**

- Deflection up/down: 140°/140°
- Direction of view: 0°
- Angle of view: 88°
- Working length: 50 cm
- Working channel inner diameter: 1.2 mm
- Distal tip outer diameter: 2.8 mm

---

**Optional Accessories for Intubation Fiberscopes** see page 71 and pages 79 ff.
3.7 x 65 Intubation Fiberscope with optimized imaging

The 3.7 x 65 intubation fiberscope is a universal working instrument as it provides gold standard intubation for both adult and pediatric patients. Due to its small diameter, it is an excellent tool for the placement of double lumen tubes. It can be directly connected to the TELE PACK X system with the DCI® II camera head for a monitor-assisted intubation solution that is both mobile and flexible.

Benefits:
- Effective suction possible via the large 1.5 mm working channel
- Suitable for use with endotracheal tubes as of 4 mm
- Increased stiffness and smoother passage of the endotracheal tube
- Ready for immediate use and easy to clean and reprocess

Optional Accessories for Intubation Fiberscopes see page 71 and pages 79 ff.
5.2 x 65 Intubation Fiberscope with optimized imaging

The 5.2 x 65 intubation fiberscope creates an ideal balance between image size, working channel size and fiber optics. In case of emergency, suction is possible via the 2.3 mm working channel. The fiberscope is also suitable for removing foreign bodies or for bronchial lavage in the intensive care unit. It can be directly connected to the TELE PACK X system with the DCI® II camera head for a monitor-assisted intubation solution that is both mobile and flexible.

Benefits:
- Effective suction possible via the large 2.3 mm working channel
- Suitable for use with endotracheal tubes > 5.5 mm
- Increased stiffness and smoother passage of the endotracheal tube
- Ready for immediate use and easy to clean and reprocess

11301 BND1

DCI® Intubation Fiberscope 5.2 x 65,
- Deflection up/down: 140°/140°
- Direction of view: 0°
- Angle of view: 110°
- Working length: 65 cm
- Working channel outer diameter: 2.3 mm
- Distal tip outer diameter: 5.2 mm

Optional Accessories for Intubation Fiberscopes see page 71 and pages 79 ff.
## Intubation Fiberscopes
### DCI® Versions

<table>
<thead>
<tr>
<th>Intubation Fiberscopes</th>
<th>DCI®</th>
<th>Deflection up/down</th>
<th>Direction of view</th>
<th>Angle of view</th>
<th>Working length</th>
<th>Total length</th>
<th>Working channel inner diameter</th>
<th>Distal tip outer diameter</th>
<th>Recommended ETT diameter as of*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.8 x 50</strong></td>
<td>11301 ABD1</td>
<td>0°</td>
<td>88°</td>
<td>50 cm</td>
<td>78 cm</td>
<td>1.2 mm</td>
<td>2.8 mm</td>
<td>3.5 mm</td>
<td>3.5 mm</td>
</tr>
<tr>
<td><strong>3.7 x 65</strong></td>
<td>11302 BDD2</td>
<td>0°</td>
<td>90°</td>
<td>65 cm</td>
<td>93 cm</td>
<td>1.5 mm</td>
<td>3.7 mm</td>
<td>4.5 mm</td>
<td>4.5 mm</td>
</tr>
<tr>
<td><strong>5.2 x 65</strong></td>
<td>11301 BND1</td>
<td>0°</td>
<td>110°</td>
<td>65 cm</td>
<td>93 cm</td>
<td>2.3 mm</td>
<td>5.2 mm</td>
<td>5.5 mm</td>
<td>5.5 mm</td>
</tr>
</tbody>
</table>

### Accessories included in delivery:

- **11025 E**
  - Pressure Compensation Cap, for ventilation during gas sterilization
- **13242 XL**
  - Leakage Tester, with bulb and manometer
- **11301 CF**
  - LIPP Tube Holder, for intubation fiberscopes
- **29100**
  - Plug, for LUER-Lock connector for cleaning, black, autoclavable, package of 10
- **11301 CD**
  - Irrigation Adaptor, for machine cleaning, reusable, for fiberscopes
- **11301 CE**
  - Suction Valve, for single use, package of 20
- **11275CL2/10**
  - Cleaning Brush, tapered, outer diameter 3 – 5 mm, for working channel 1.8 – 2.8 mm, length 116 cm
- **11276CL/10**
  - Long Cleaning Brush, for working channel 1.2 – 1.7 mm, length 110 cm

*As of current data.
Please note that the accuracy of the ETT diameter may vary depending on the manufacturer's quality.

Product information on flexible bronchoscopes see catalogs THORAX and ENT
Instrument Carts see chapter 5
Unexpected difficult airways are always an additional challenge in airway management. With the BONFILS Optical Stylet and its versatile intubation techniques, this situation can be brought under control. The endotracheal tube is guided into the trachea under direct vision and the possibility of simultaneous application of oxygen provides more safety. KARL STORZ now offers a wide range of BONFILS and BRAMBRINK intubation endoscopes with outer diameters of 2 and 5 mm. All endotracheal tubes from 2.5 mm up to 8 mm can be used with this range of instruments.
BONFILS/BRAMBRINK
Retromolar Optical Stylets
DCI® Versions

Optical Stylets

Special Features:
- Particularly suitable for the unexpected difficult airway
- Use in the case of minimal mouth opening (> 1 cm) possible
- Introduction of the tube under visualization: What you see is what you get!
- Continuous O₂ flow via tube adaptor between tube and instrument
- One-person intubation possible
- Connect and intubate – thanks to the DCI® video intubation system
- Quick and easy cleaning
- Suitable and validated for the following low-temperature reprocessing methods up to bis max. 60 °C: manual/machine cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards
- Recommended for video-assisted intubation with the DCI® camera to TELE PACK X
- We offer a complete product range of sizes to accommodate all patients

For product information on TELE PACK X documentation terminal and DCI® camera see catalog TELEPRESENCE
Instrument Carts see chapter 5
# BONFILS/BRAMBRINK Retromolar Optical Stylets

**DCI® Versions**

<table>
<thead>
<tr>
<th>Optical Stylets</th>
<th>DCI®</th>
<th>Distal bending</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRAMBRINK 2 x 22</td>
<td>11605 CV</td>
<td><img src="image1" alt="Image" /></td>
</tr>
<tr>
<td>BONFILS 5 x 40</td>
<td>10331 BD1</td>
<td><img src="image2" alt="Image" /></td>
</tr>
<tr>
<td>BONFILS 3.5 x 35</td>
<td>10332 BD1</td>
<td><img src="image3" alt="Image" /></td>
</tr>
</tbody>
</table>

**Accessories included in delivery:**

- 27677 BM **Case**, internal dimensions (w x d x h): 490 x 290 x 85 mm
- 27677 D **Case**, internal dimensions (w x d x h): 310 x 215 x 75 mm
- 10332 BA **Tube Holder for ETT**, with O₂ application connection, inner diameter 3.5 mm
- 10331 BA **Tube Holder**, inner diameter 5 mm

---

[Image 1](image1) [Image 2](image2) [Image 3](image3)
<table>
<thead>
<tr>
<th>Angle of view</th>
<th>Working length</th>
<th>Total length</th>
<th>Distal tip outer diameter</th>
<th>Recommended ETT diameter as of*</th>
<th>Case</th>
<th>Tube Holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>80°</td>
<td>22 cm</td>
<td>32 cm</td>
<td>2 mm</td>
<td>2.5 mm</td>
<td>27677 D</td>
<td>10332 BA</td>
</tr>
<tr>
<td>110°</td>
<td>40 cm</td>
<td>54 cm</td>
<td>5 mm</td>
<td>5.5 mm</td>
<td>27677 BM</td>
<td>10331 BA</td>
</tr>
<tr>
<td>110°</td>
<td>35 cm</td>
<td>49 cm</td>
<td>3.5 mm</td>
<td>4 mm</td>
<td>27677 BM</td>
<td>10331 BA</td>
</tr>
</tbody>
</table>

* Please note that the accuracy of the ETT diameter may vary depending on the manufacturer’s quality.

For product information on TELE PACK X documentation terminal and DCI® camera
see catalog TELEPRESENCE
Instrument Carts see chapter 5
LED Battery Light Source for Endoscopes (11301 D1/D3), optional, see page 60
TELE PACK X is a compact, portable and flexible system that has been developed for use in a large number of fields. It can be used in doctors’ practices as well as in emergency rooms. The TELE PACK X monitor offers maximum resolution and very high color fidelity for a first-class video playback. To enable swift and easy work, TELE PACK X combines all that is needed: monitor, camera and light source. Consideration has also been given to documentation: integrated data management enables comprehensive recording of examinations or surgical interventions. Multiple USB ports and an SD card slot are available to store the data.

Crystal clear display
- 15” LCD display
- Image rotation
- 24-bit color intensity for natural color rendition
- DVI video output for connecting HD monitors

Flexible storage possibilities
- SD card slot for high storage capacity
- USB ports for external hard drives, USB sticks and post-script printers
- Picture gallery for records
- Playback of saved videos
- Print-ready patient report documentation

Natural illumination
- HiLux 50 Watt high-performance light source
- Natural colour rendition close to daylight with a color temperature of 6000 K
- Up to 1000 hours lamp operating time

Easy control combined with utmost safety
- Membrane keyboard for wipe-down disinfection
- Hot keys for rapid and direct adjustment
- Arrow keys for intuitive control
- Connection socket for pedal control

Additional information
- Sturdy, portable housing
- Ergonomically designed handle for convenient transport
- World power supply unit: 100 – 240 VAC, 50/60 Hz
- Dimensions (w x h x d): 450 x 350 x 150 mm
- Weight: 7 kg
**TELE PACK X**

Sample Configuration

20 0450 01-EN **TELE PACK X**, endoscopic video unit for use with TELECAM one-chip camera heads and video endoscopes, incl. 50 W HiLux light source, 15” LCD TFT screen, USB/SD memory module, color systems PAL/NTSC, with integrated Image Processing Module, power supply 100 – 240 VAC, 50/60 Hz

including:

- **USB Silicone Keyboard**, with touchpad, US character set
- **USB Flash Drive**, 4 GB
- Mains Cord
- Mains Cord, US version

**TELECAM One-chip Camera Heads and Fiber Optic Light Cables**

20 2620 30 **DCI® II One-Chip Camera Head**, color system **PAL**

495 DV **Fiber Optic Light Cable**, diameter 2.5 mm, length 320 cm

**Specifications:**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input</td>
<td>100 W</td>
</tr>
<tr>
<td>Power supply</td>
<td>100-240 VAC</td>
</tr>
<tr>
<td>Dimensions</td>
<td>450 x 350 x 150 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>7 kg</td>
</tr>
</tbody>
</table>
| Interface                | - video interface: DVI-D (in/out)  
- audio: 3.5 mm phonejack (1x lateral, 1x rear), Line in, Line out  
- footswitch port: 5-pin socket  
- for two-pedal footswitch  
- printer port: USB  
- printer language: PostScript |
| Light source             | - lamp: metal halid 50 W  
- color temperature: 5700 K  
- average service life: approx. 1000 h |
| Image format             | JPG                          |
| Video codec              | MPEG-4                       |
| Video format             | PAL/NTSC                     |
| Memory interface         | USB 2.0; SD memory card (SDHC compatible) |
| TFT monitor              | - screen size: 15”  
- resolution: 1024 x 768  
- contrast: 700:1 |
| Loudspeaker output       | 2 W                          |

**Keyboards with foreign-language character sets and further accessories for TELE PACK X**

see catalog TELEPRESENCE

**Components/Spare Parts** see chapter 7
# Accessories

*for Flexible Intubation Fiberscopes*

## Fiber Optic and Fluid Light Cables

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>495 FO</td>
<td>Fluid Light Cable, diameter 3 mm, length 180 cm</td>
</tr>
<tr>
<td>495 FP</td>
<td>Same, length 250 cm</td>
</tr>
</tbody>
</table>

## Fiber Optic Light Cables

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>495</td>
<td>Fiber Optic Light Cable, diameter 2.5 mm, length 320 cm, for use with DCI® Camera Heads</td>
</tr>
<tr>
<td></td>
<td>20 2620 30, 20 2621 31, 22 2600 31-3 and 22 2601 31-3</td>
</tr>
<tr>
<td>495 NA</td>
<td>Fiber Optic Light Cable, diameter 3.5 mm, length 230 cm</td>
</tr>
<tr>
<td>495 NT</td>
<td>Fiber Optic Light Cable, diameter 2.5 mm, length 180 cm</td>
</tr>
<tr>
<td>495 NTF</td>
<td>Same, length 350 cm</td>
</tr>
<tr>
<td>495 NTW</td>
<td>Fiber Optic Light Cable, with 90º deflection to the cold light fountain on the fountain side, diameter 2.5 mm, length 180 cm</td>
</tr>
<tr>
<td>495 NTXS</td>
<td>Same, length 230 cm</td>
</tr>
</tbody>
</table>

## Adaptors

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 2600 31</td>
<td>Adaptor, for use of DCI® telescopes with standard camera heads</td>
</tr>
<tr>
<td>20 2600 30</td>
<td>Adaptor, for connection of standard eyepiece telescopes with DCI® camera heads</td>
</tr>
</tbody>
</table>

*Additional Fiber Optic and Fluid Light Cables*, see catalog TELEPRESENCE
Accessories for Flexible Intubation Fiberscopes

11301 CA  **Leaflet Valve**, for single use, package of 20

11301 CB  **Suction Valve**, reusable

11301 CD  **Irrigation Adaptor**, for machine cleaning, reusable, for fiberscopes

11301 CE  **Suction Valve**, for single use, package of 20

6927691  **Adaptor for Two-Way Stopcock**, Luer-Lock, with O₂ tube connection

600007   **Luer-Lock Tube Connector**, male, tube diameter 6 mm

11301 CF  **LIPP Tube Holder**, for intubation fiberscopes
KARL STORZ offers a wide range of instruments and possibilities to ensure that airway management is successful. The broad range of KARL STORZ products offers you all possibilities – for dealing with standard or unexpectedly difficult intubation. In addition, all of our fiberscopes are powered by a LED battery light source, ensuring that even in an emergency you will never be left in the dark.
C-MAC® Video Laryngoscope
for visual endotracheal intubation

Monitor/Electronic Module

Special Features:
- Resistant ABS plastic housing
- Splash-proof according to IP54
- 7" TFT wide view angle display with resolution of 800 x 480 pixels
- Ready for use within seconds
- Documentation of still images (JPEG) and videos (MPEG4) on SD memory card
- VESA 75 norm for connecting and attaching racks
- Soft keys enable use within seconds
- Cinch video output for connecting external monitor
- System open for further components
- Operating time with lithium-ion batteries of about 2 hours
- World power supply 100 – 240 VAC, 50/60 Hz
- Operation with line voltage and rechargeable lithium-ion batteries
- Processing of the electronic module: Suitable and validated for the following low-temperature reprocessing methods up to bis max. 60 °C: manual/machine cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards
- Additional standards: RTCA/DO-160F, EMI Test Report (German air rescue service DRF Luftrettung)

8402 ZX-1 Monitor/Electronic Module, for C-MAC® Monitor 8402 ZX-1, for use with C-MAC® video laryngoscopes
BERCI-KAPLAN
C-MAC® Video Laryngoscope
for visual endotracheal intubation

Video Laryngoscope

Special Features:
- European closed laryngoscope blade design
- Angle of view approx. 80°
- Ergonomically designed handle
- CMOS technology with LED illumination
- Proximal slanted blade
- Available with or without suction
- Processing video laryngoscopes: suitable and validated for the following low-temperature reprocessing methods up to bis max. 60 °C: manual/machine cleaning and disinfection, sterilization with Steris® AMSCO V-PRO 1, Sterrad® (50S, 100S, 200S, NX, 100NX) and ETO gas; High-Level Disinfection (HLD) acc. to US standards

● Blade tips of all blade types visible for safe navigation

MACINTOSH
- For direct and indirect laryngoscopy
- Original English MACINTOSH blade shape

D-BLADE
- Special curved blade shape for difficult intubation

MILLER
- For pediatrics and neonatology in the day-to-day clinical routine, teaching and training as well difficult airway management

8401 DXC/GXC
8401 KXC/AXC/BXC

NEW 8401 DXC MILLER C-MAC® Video Laryngoscope, CMOS technology, size 0, for use with Electronic Modules 8401 X and 8402 X
NEW 8401 GXC Same, size 1
8401 KXC BERCY-KAPLAN C-MAC® Video Laryngoscope #2, CMOS technology, with MACINTOSH laryngoscope blade, size 2, for use with Electronic Modules 8401 X and 8402 X
8401 AXA Same, size 3
8401 BXC Same, size 4
BOEDEKER-DÖRGES
C-MAC® Video Laryngoscope
for visual endotracheal intubation

8401 AX  BOEDEKER-DÖRGES C-MAC® Video Laryngoscope #3, CMOS technology, with MACINTOSH laryngoscope blade, size 3, with catheter introduction sizes 14 – 16 Fr., for use with Electronic Modules 8401 X and 8402 X
8401 BX  Same, size 4, with catheter introduction sizes 16 – 18 Fr.
8401 HX  C-MAC® Video Laryngoscope D-BLADE, CMOS technology, with DÖRGES laryngoscope blade, for difficult intubation, with catheter introduction sizes 16 – 18 Fr., for use with Electronic Modules 8401 X and 8402 X
C-MAC® S for single use has the same outstanding features that distinguish C-MAC® metal performance blades. As a result, great value was also attached to maintaining the original MACINTOSH blade design. The D-BLADE is, of course, available as C-MAC® S. The imager enables blades to be exchanged within seconds and, as a camera, it forms the interface to the C-MAC® monitor. The C-MAC® S video laryngoscope is just as flexible and mobile as other C-MAC® laryngoscopes. Consequently, the instrument is ideally suited for all emergency and preclinical situations as it practically eliminates the need for complex transportation and re-processing procedures. With C-MAC® S you continue to profit from all the familiar benefits offered by the C-MAC® system: the only difference is that the C-MAC® S blade is designed for single use.
C-MAC® S Video Laryngoscope

Video Laryngoscope for Single Use

Special Features:
- Blade and handle form one continuous piece: optimum protection against infections
- D-BLADE with short handle
- Original English MACINTOSH blade shape
- Sturdy plastic material
- Compatible with C-MAC® monitor
- Blade tip always under direct view for safe navigation
- Ergonomically designed handle
- Compact design

C-MAC® S Imager:
- Handling oriented towards hygiene
- Reprocessing of the imager: suitable and validated for the following low-temperature reprocessing methods up to bis max. 60 °C: manual/machine cleaning and disinfection, sterilization with EtO gas; High-Level Disinfection (HLD) acc. to US standards
- Compatible with C-MAC® monitor
- Blade can be exchanged within seconds

051113-10* BERCI-KAPLAN C-MAC® S Video Laryngoscope MAC #3, with MACINTOSH laryngoscope blade, size 3, for single use, sterile, package of 10, for use with C-MAC® Monitor 8402 ZX-1 and C-MAC® S Imager 8402 XS

051114-10* Same, size 4

mtp medical technical promotion gmbh,
Take-Off GewerbePark 46, D-78579 Neuhausen ob Eck, Germany
051116-10* C-MAC® S Video Laryngoscope D-BLADE, with DÖRGES laryngoscope blade, sterile, package of 10, for use with C-MAC® Monitor 8402 ZX-1 and C-MAC® S Imager 8402 XS

8402 XS C-MAC® S Imager, for C-MAC® Monitor 8402 ZX-1, suitable for manual and mechanical disinfection up to 60 °C and High-Level Disinfection (HLD) acc. to US standards, for use with C-MAC® S-Video Laryngoscopes 051113-10, 051114-10 and 051116-10

mtp medical technical promotion gmbh,
Take-Off GewerbePark 46, D-78579 Neuhausen ob Eck, Germany
The new C-MAC® PM is so small, flexible and mobile that it fits into any pocket. This video laryngoscope is as easy to use as a direct laryngoscope, yet offers all the advantages of indirect laryngoscopy.

Robust and easy to handle, the C-MAC® PM is suitable for preclinical use. Moreover, its compactness makes it ideal for various emergency situations. The pocket monitor was specifically developed for special preclinical and clinical emergency situations; its 2.4” monitor delivers a contrast-rich image even in bright sunlight. Consequently, it is the ideal complement to the C-MAC® system.
C-MAC® PM – The Pocket Monitor

Special Features:
- Exchange of video laryngoscope within seconds
- Compatible with all C-MAC® video laryngoscopes (D-BLADE, MACINTOSH sizes 2-4, MILLER sizes 0 & 1)
- One hour operating time
- Rechargeable Li-ion battery with capacity control and intelligent power management
- High-resolution 2.4" LED display with 240 x 320 pixels for optimal view
- No additional on/off buttons thanks to the “Open-to-Intubate-Display” (OTI)
- Important for preclinical use: classified for protection class IPX8
- Due to the closed design, the entire pocket monitor unit can be fully immersed in disinfection solution which allows for easy and smooth reprocessing
- Suitable and validated for the following low-temperature reprocessing methods up to max. 60 °C: manual/mechanical cleaning and disinfection
- Additional standard: RTCA/DO-160F

8401 XDK
C-MAC® Pocket Monitor, Set, unit with LCD monitor and power supply for all C-MAC® laryngoscopes, screen size 2.4", monitor movable via two rotation axis, rechargeable Li-Ion batteries, 1 h operation time, 2 h charging time, power management with capacity indicator: switches off automatically after 10 min, protection class IPX8, additional standard: RTCA/DO-160F, validated for up to a max. of 60 °C, manual/mechanical cleaning and disinfection, for use with C-MAC® video laryngoscopes including:
Protection Cap

8401 XDL
Charging Unit, for C-MAC® Pocket Monitor 8401 XD, with fix integrated power supply and adaptor for EU, UK and USA, power supply 110 – 240 VAC, 50/60 Hz, suitable for wipe disinfection

Intubation Set -C22-, Model ULM 8400 B and Bag for Intubation Set -C22-, Model ULM 8402 YE
see pages 6-7
Components/Spare Parts see chapter 7
The new flexible 5.5 x 65 intubation video endoscope from KARL STORZ sets a new direction for airway management. The convenient 4:3 rectangular image format provides a better overview of the working area. Similar to the C-MAC® video laryngoscope, the 5.5 x 65 scope delivers clear, pixel-free images without a Moiré pattern. The flexible intubation endoscope can be directly connected to the C-MAC® monitor. This enables immediate changeover to the video laryngoscope, if required. The flexible 5.5 x 65 intubation video endoscope is a further component within the C-MAC® system.
FIVE – Flexible Intubation Video Endoscope for C-MAC®

Special Features:

- Compatible with C-MAC® monitor and C-HUB™
- Compact design
- Ergonomically designed handle
- Lightweight at 385 g
- High image resolution
- Video imaging in 4:3 format
- Possible to exchange components within seconds

- Integrated LED light source
- Suitable and validated for the following low-temperature reprocessing methods up to max. 60 °C: manual/machine cleaning and disinfection, sterilization with Sterrad® (100S, NX, 100NX) and EtO gas; High-Level Disinfection (HLD) acc. to US standards

11301 BNX

Flexible Intubation Video Endoscope 5.5 x 65, CMOS technology, with suction valve, for use with C-MAC® Monitor 8402 ZX-1 and C-HUB™ 20 2901 01
Deflection up/down: 140°/140°
Direction of view: 0°
Angle of view: 85°
Working length: 65 cm
Total length: 93 cm
Working channel inner diameter: 2.3 mm
Distal tip outer diameter: 5.5 mm
Accessories
Flexible Intubation Video Endoscopes

29100  **Plug**, for LUER-Lock connector for cleaning, **black**, **autoclavable**, package of 10

11301 CD1  **Irrigation Adaptor**, for machine cleaning, reusable, for Flexible Intubation Video Endoscope 11301 BNX

11301 CE1  **Suction Valve**, for single use, package of 20, for use with Flexible Intubation Video Endoscope 11301 BNX

11301 CFX  **Tube Holder**, for use with Flexible Intubation Video Endoscope 11301 BNX

27677 FV  **Case**

11025 E  **Pressure Compensation Cap**, for ventilation during gas sterilization

13242 XL  **Leakage Tester**, with bulb and manometer

11276CL/10  **Long Cleaning Brush**, for working channel 1.2 – 1.7 mm, length 110 cm

8401 YZ  **Protection Cap**, for the C-MAC® video laryngoscope and electronic module, to protect plug contact during reprocessing, cap is reusable
Optional Accessories:

11001 KL  Biopsy Forceps, flexible, spoon-shaped, round, double action jaws, diameter 1.8 mm, working length 120 cm

11002 KS  Grasping Forceps, flexible, alligator jaws, double action jaws, diameter 1.8 mm, working length 120 cm

11301 CA  Leaflet Valve, for single use, package of 20

11301 CB1 Suction Valve, reusable, for use with Flexible Intubation Video Endoscope 11301 BNX

6927691  Adaptor for Two-Way Stopcock, Luer-Lock, with O₂ tube connection

600007  Luer-Lock Tube Connector, male, tube diameter 6 mm

39402 AS  Plastic Container for Flexible Endoscopes, specially suited for gas and hydrogen peroxide (Sterrad® NX and 100 NX) sterilization and storage, for use with one flexible endoscope, external dimensions (w x d x h): 21.6" X 6.7" X 3.6"
Accessories
C-MAC® Video Laryngoscope

9700 GCX  **Stand**, with storage basket, for C-MAC® monitor, for use with 9700-CLP Clamp

9700-CLP  **Clamp**, for fixation of C-MAC® monitor to stand, for use with Monitors 8401 ZX/8402 ZX-1

9700 SH  **Holder**, attaches to 9700 GCX Stand and accommodates 2 flexible or semirigid intubation endoscopes, for use with 9700TUBE/10 clear protection tubes

9700 BA  **Basket**, additional, with installation set for 9700 GCX Stand

9700 CM-MAT  **Mat**, blue silicone, with small diamond grid for 9700 GCX Stand and wire basket

9700TUBE/10  **Tubes**, clear plastic protection, for single use, 10/pkg
Accessories
C-MAC® Video Laryngoscope

8402 YD*  **Protective Bag**, blue, for C-MAC® system, made of water-resistant and sturdy material, washable, separate compartments for the monitor and two C-MAC® video laryngoscopes with electronic module

8402 YD-1*  **Same, red**
8402 YD-2*  **Same, orange**
8402 YD-3*  **Same, NATO-olive**

809125  **MAGILL Forceps**, modified by BOEDEKER, length 25 cm, suitable for endoscopic foreign body removal, for use with video laryngoscopes size 2 – 4

809120  **MAGILL Forceps**, for children, modified by BOEDEKER, length 20 cm, for use with video laryngoscopes size 1 and 2

39501 LC2  **Wire Tray for Cleaning, Sterilization and Storage** for two C-MAC® and D-BLADE video laryngoscope blades incl. electronic module, with holder for fixing and sealing electrical connections, external dimensions (w x d x h): 260 x 120 x 170 mm

8401 YZ  **Protection Cap**, for the C-MAC® video laryngoscope and electronic module, to protect plug contact during reprocessing, cap is reusable

* Crash test carried out by Furtwangen University of Applied Sciences (Germany): C-MAC® system in a protective bag dropped from a height of 5 – 9 meters showed no noteworthy damage.

Please note: The instruments displayed are not included in the sterilization and storage tray.
Nothing could be easier!

C-CAM™ transforms the C-MAC® video laryngoscope into an all-round system unit for complete airway management. The C-MAC® monitor is at the core of all imaging systems. C-CAM™ is a high-grade CMOS camera with VGA resolution which can be connected to all KARL STORZ endoscopes with eyepieces. Illumination is ensured through the Power-LED battery light sources. Consequently, this is the first battery-powered video system to guarantee high-quality documentation. KARL STORZ has once again proven that high quality and mobility are not mutually exclusive.

The C-HUB™ is the interface for computer and/or monitor connectivity. The signal from the front end is transmitted directly to a computer or monitor with the aid of the C-HUB™. The enhanced output can be directly linked to any computer via a USB/S-VHS connection. Thanks to the safety offered by galvanic isolation in the C-HUB™, medical products can now be connected to non-medical products (e.g. computer/monitor).

C-HUB™ is the perfect signal converter from C-MAC®/C-CAM™ to USB or S-Video.
**C-CAM™ and C-HUB™**

20 2901 32  **C-CAM™ Camera Head**, 8-pin, one-chip CMOS camera head, resolution 640 x 480, focal length $f = 20$ mm, compatible with C-HUB™ 20 2901 01 and C-MAC® 8402 ZX-1

20 2901 31  **C-CAM™ Camera Head**, 6-pin, one-chip CMOS camera head, resolution 640 x 480, focal length $f = 20$ mm, compatible with C-MAC® 8401 ZX

20 2901 01  **C-HUB™ Camera Control Unit**, for use with C-CAM™ 20 2901 32, Electronic Module 8402 X or compatible CMOS video endoscopes, Interfaces: USB 2.0, S-Video output (NTSC), power socket including:

- C-HUB™ Power Supply
- S-Video (Y/C) Connecting Cable
- USB Connecting Cable

*Components/Spare Parts* see chapter 7
BRONCHOSCOPES AND TRACHEOSCOPES
FOR FOREIGN BODY REMOVAL
Foreign Body Removal

Rigid Tracheo-Bronchoscopy for Foreign Body Extraction

Rigid endoscopy is an indispensable and accepted technique for removing solid foreign bodies (FB) from the central airway. The acute aspiration of foreign bodies lodged in the lumen is potentially life-threatening. Foreign body aspiration occurs most frequently in young children and the elderly. Of the broad spectrum of FB, foodstuffs are most commonly aspirated. A distinction is made between organic, inorganic, radiopaque and non-radiopaque FB.

Characteristic of foreign body aspiration is a sudden fit of coughing and asphyxiation followed by respiratory distress or an asymptomatic interval. FB may lodge in the larynx, trachea or bronchi, however, they can also approach the bifurcation of the trachea. The exchange of gas is affected to a greater or lesser degree. Anamnesis, a clinical examination or an imaging procedure leads to diagnosis. An esophageal foreign body should be ruled by differential diagnosis.

If the presence of a FB in the airway is confirmed, rigid endoscopy should be mainly employed, especially in children, patients having difficulty breathing, or for retrieving a FB which is large, sharp, capable of expanding or multiple FBs. If the presence of a FB cannot be confirmed, diagnosis can be backed up or dismissed either by means of a flexible fiberbronchoscope (FFB) requiring topical anesthesia or a standard larynx mask under general anesthesia.

Primary FB extraction with the FFB is justified in the case of a small FB, stable gas exchange and available instrumentation. If the FFB is inserted through the rigid endoscope tube, both techniques ideally complement each other, especially in the case of peripheral FB localization. Even when there are factors against the use of rigid endoscopy (instable/immobile neck, complete lockjaw), the FFB is still the instrument of choice, if necessary in conjunction with invasive measures such as surgical tracheotomy. Thoracic surgical interventions are the exception and are usually necessary in the case of complications caused by a chronic FB.

For laryngeal or tracheal FB localization, the rigid emergency tracheoscope or another tracheoscope of a suitable size and length is employed. The rigid bronchoscope, which has side vents on the lower end of the scope to aid the contralateral approach to ventilation, is suitable for retrieving a FB lodged in the lower tracheal and bronchial areas due to its length.

Any rigid endoscope that can be positioned beneath the glottis can function as a stable working and ventilation channel and, thus, stabilize the airway. In comparison to a FFB inserted via a tracheal tube, the qualitatively better HOPKINS® telescopes used in conjunction with optical forceps are suitable. The wide range of instruments available allows precise, atraumatic, effective endoscopy without pressure of time. The suction capacity is unmatched.

In rigid endoscopy, an adapted Total Intravenous Anesthesia (TIVA) with appropriate standard monitoring is recommended for patients of any age group. The Klein endoscope model – regardless of the respiration method used – enables respiratory monitoring, primarily as capnography, thus offering respiration control not previously feasible. Depending on the respiration procedure used (manual positive pressure ventilation, automatic low or high frequency jet ventilation), simultaneous handling of instruments and ventilation is possible. Rigid tracheo-bronchoscopy in children requires great caution and skill.

The anesthesiologist experienced in upper airway management and FFB is predestined to learn the skills necessary to handle the “rigid scope” from colleagues in other specialist disciplines. The emergency tracheoscope (intubation tracheoscope, “emergency tube”) or another rigid endoscope is considered to be the ultima ratio in the “cannot intubate – cannot ventilate” situation, if the larynx mask or combitube is not effective, or prior to invasive airway access (coniotomy).

(References with author)

R. GOTTSCHALL, M. D.,
Klinik für Anästhesiologie und Intensivtherapie,
Klinikum der Friedrich-Schiller-Universität, Jena,
Germany
Universal Bronchoscopes for Adults
Standard model with fiber optic light carrier for distal illumination

10318 B Universal Bronchoscope, with Fiber Optic Light Carrier 10318 L, size 8.5, length 43 cm
10318 C Same, size 7.5
10318 D Same, size 6.5
10315 M Glass Window Plug
10315 N Rubber Telescope Guide
10315 P FLUVOG Adaptor, with sliding glass window plug, sealing cap, notched lens and keyhole opening, movable
10318 K Injection Cannula, for positive pressure assisted ventilation system, Luer-Lock, outer diameter 3.5 mm
10318 S Instrument Guide, for suction catheter
10338 TRA Adjustable Magnifier, autoclavable, swing-away type, with ring adaption
10924 D Adaptor, for respirator
10924 DL Adaptor, for respirator, long version
HOPKINS® Telescopes and Optical Forceps
for removal of foreign bodies

Special Features:

- The jaws of the forceps and the region of biopsy are well visualized prior to and during the procedure
- Foreign bodies can now be removed quickly under optical control
- With anti-fogging device for the telescope

For use with bronchoscopes for adults 10318 B/C/D and 10318 BP/CP/DP:

10320 AA  HOPKINS® Straight Forward Telescope 0°, diameter 5.5 mm, length 50 cm, autoclavable, fiber optic light transmission incorporated, color code: green
10320 BA  HOPKINS® Forward-Oblique Telescope 30°, diameter 5.5 mm, length 50 cm, autoclavable, fiber optic light transmission incorporated, color code: red
10350 HF  Optical Forceps, alligator, for hard foreign bodies, large jaws, with spring-action handle
10350 KF  Optical Forceps, for peanuts and soft foreign bodies, with spring-action handle
10350 L  Optical Forceps, spoon-shaped, round, for biopsy
10350 U  Optical Forceps, universal, for biopsy, for the removal of foreign bodies and denatured tissue

NEW 10350 MS  Optical Forceps, large jaws, blunt, serrated, for removing large foreign bodies, for use with HOPKINS® Telescope 10320 AA
Universal Bronchoscopes for Adults

with proximal illumination

Special Features:

- Absence of distal light carrier does not restrict inner diameter
- Prismatic Light Deflector 10101 FA inserted proximally ensures best illumination and enables full use of lumen through operating instruments
- Excellent view of operation area
- Smooth lumen allows insertion of flexible bronchoscopes

10318 BP  Bronchoscope Tube Universal, without distal fiber optic light carrier, for use with proximally insertable Prismatic Light Deflector 10101 FA, size 8.5, length 43 cm

10318 CP  Same, size 7.5

10318 DP  Same, size 6.5

10101 FA  Prismatic Light Deflector, autoclavable, with connection to fiber optic light cable

10314 BM  Glass Window Plug

10314 BN  Rubber Telescope Guide

10314 P  FLUVOG Adaptor, with observation window, cap with rubber seal and with window, adjustable

10318 K  Injection Cannula, for positive pressure assisted ventilation system, LUER-Lock, outer diameter 3.5 mm

10318 S  Instrument Guide, for suction catheter

10924 D  Adaptor, for respirator

10924 DL  Adaptor, for respirator, long version
Optical Forceps

Special Features:
- The jaws of the forceps and the region of biopsy are well visualized prior to and during the procedure.
- Foreign bodies can now be removed quickly under optical control.
- The spring-action handle of the grasping forceps prevents excess pressure being applied to the foreign body.
- The depth of cut during biopsy is much easier to assess.

For use with HOPKINS® Telescope 10328 AA and Universal Bronchoscopes 10318 B – DP, size 8.5 to 6.5

10328 AA  HOPKINS® Straight Forward Telescope 0°, diameter 4.5 mm, length 50 cm, autoclavable, fiber optic light transmission incorporated, color code: green

10352 H  Optical Forceps, alligator, for hard foreign bodies

10352 KF  Optical Forceps, for peanuts and soft foreign bodies, with spring-action handle

10352 L  Optical Forceps, spoon-shaped, round, for biopsy

10352 U  Optical Forceps, universal, for biopsy, for removal of foreign bodies and denatured tissue
Special Features:

- Absence of distal light carrier does not restrict inner diameter
- Prismatic Light Deflector 10101 FA inserted proximally ensures best illumination and enables full use of lumen through operating instruments

- Excellent view of operation area
- Lateral channel for introducing suction catheters and fine instruments

DOESEL-HUZLY Bronchoscope, size 6, length 30 cm

DOESEL-HUZLY Bronchoscope, size 4, length 26 cm

DOESEL-HUZLY Bronchoscope, size 3.5, length 18.5 cm

DOESEL-HUZLY Bronchoscope, size 3.5

Glass Window Plug

Rubber Telescope Guide, for use with telescopes and optical forceps

FLUVOG Adaptor, with sliding glass window plug, sealing cap, notched lens and keyhole opening, movable

Guide Piece, for suction catheter, short, bronchoscope for children and infants

Adjustable Magnifier, autoclavable, swing-away type, with ring adaption

Adaptor, for respirator

Adaptor, for respirator, long version

Injection Cannula, for positive pressure assisted ventilation system, LUER-Lock, outer diameter 3.5 mm

Injection Cannula, for positive pressure assisted ventilation system, LUER-Lock, outer diameter 2.7 mm, for use with Bronchoscopes 10339 E/EE/F
Optical Forceps and Scissors
for Pediatric Bronchoscopes size 6 – 3.5, length 30 cm – 18.5 cm

Special Features:
- Newly designed forceps enable removing of foreign bodies under precise optical control not previously possible
- Small size of forceps allows them to be introduced through pediatric bronchoscopes as of size 3.5 and larger in lengths ranging from 18.5 up to 30 cm

- Foreign bodies can be removed quickly and with utmost safety
- Better assessment of the depth of cut when taking biopsies

For use with HOPKINS® Telescope 10324 AA and Bronchoscopes 10339 A – CD

10324 AA  HOPKINS® Straight Forward Telescope 0°, diameter 2.9 mm, length 36 cm, autoclavable, fiber optic light transmission incorporated, color code: green

10378 CF  Optical Forceps, 2 x 2 teeth, for grasping coins and flat foreign bodies, with spring-action handle

10378 HF  Optical Forceps, alligator, for grasping hard foreign bodies, with spring-action handle

10378 KF  Optical Forceps, with KILLIAN bean jaws, for grasping peanuts and soft foreign bodies, with spring-action handle

10378 KSF  Optical Forceps, VANCOUVER model, for grasping peanut fragments and soft foreign bodies, with spring-action handle

10378 L  Optical Forceps, spoon-shaped, for biopsy

10378 S  Optical Scissors

10378 U  Optical Forceps, universal, for biopsy and foreign bodies removal

10378 M  Optical Forceps, spoon-shaped, oval, for biopsy, large model
Optical Forceps
for Pediatric Bronchoscopes size 4 – 3.5, length 26 cm – 18.5 cm

Special Features:
- Newly designed forceps for hard and soft foreign bodies enable removal under precise optical control not previously possible
- Small size of forceps allows them to be introduced through pediatric bronchoscopes as of size 3.5 cm and larger in lengths of 26 cm – 18.5 cm
- Foreign bodies can be removed quickly and with utmost safety
- Better assessment of the depth of cut when taking biopsies

For use with HOPKINS® Telescope 10020 ATA and Bronchoscopes 10339 CC/GG/DD/D

- 10020 ATA: HOPKINS® Straight Forward Telescope 0°, diameter 2.9 mm, length 30 cm, autoclavable, fiber optic light transmission incorporated, color code: green
- 10377 CF: Optical Forceps, 2 x 2 teeth, for grasping coins and flat foreign bodies, with spring-action handle
- 10377 HF: Optical Forceps, alligator, for grasping hard foreign bodies, with spring-action handle
- 10377 KF: Optical Forceps, with KILLIAN bean jaws, for grasping peanuts and soft foreign bodies, with spring-action handle
- 10377 L: Optical Forceps, spoon-shaped, for biopsy
- 10377 U: Optical Forceps, universal, for biopsy and foreign bodies removal

10020 ATA
10377 CF/HF/KF

10020 ATA
10377 CF/10377 HF/10377 KF/10377 L/10377 U

10377 L/U
Bronchoscopic Forceps

double action jaws

For use with Bronchoscopes 10318 B/C/D and 10318 BP/CP/DP:
Sheath diameter 2.5 mm, working length 50 cm
10370 H  Forceps, alligator, for hard foreign bodies, double action jaws, sheath diameter 2.5 mm, working length 50 cm
10370 J  Same, pointed, serrated, for coins and flat foreign bodies
10370 K  Same, for peanuts and soft foreign bodies
10370 L  Same, spoon-shaped, round, for biopsy
10370 U  Same, universal, for biopsy and foreign bodies removal

For use with Bronchoscopes 10339 A – F and 10341 A/CD:
Forceps with sheath diameter 2 mm, working length 35 cm, for use with Bronchoscopes 10339 A – EE
10371 H  Forceps, alligator, for hard foreign bodies, double action jaws, sheath diameter 2 mm, working length 35 cm
10371 J  Same, pointed, serrated, for coins and flat foreign bodies
10371 K  Same, for peanuts and soft foreign bodies
10371 L  Same, spoon-shaped, round, for biopsy
10371 U  Same, universal, for biopsy and foreign bodies removal

Forceps with sheath diameter 2 mm, working length 45 cm, for use with Bronchoscopes 10339 A – F
10371 HL  Forceps, alligator, for hard foreign bodies, double action jaws, sheath diameter 2 mm, working length 45 cm
10371 JL  Same, pointed, serrated, for coins and flat foreign bodies
10371 KL  Same, for peanuts and soft foreign bodies
10371 LL  Same, spoon-shaped, round, for biopsy
10371 UL  Same, universal, for biopsy and foreign bodies removal

Sheath diameter 2.5 mm, working length 50 cm
10370 L
10370 U
10371 L
10371 U
Bronchoscopic Forceps

double action jaws

Forceps with sheath diameter 1.5 mm, working length 35 cm, for use with Bronchoscopes 10339 A – F

Sheath diameter 1.5 mm, working length 35 cm

10372 HL  Forceps, alligator, for hard foreign bodies, double action jaws, sheath diameter 1.5 mm, working length 35 cm
10372 JL  Same, pointed, serrated, for coins and flat foreign bodies
10372 KL  Same, for peanuts and soft foreign bodies
10372 LL  Same, spoon-shaped, round, for biopsy
10372 UL  Same, universal, for biopsy and foreign bodies removal

Forceps with sheath diameter 1.5 mm, working length 25 cm, for use with Bronchoscopes 10339 D/E/F

Sheath diameter 1.5 mm, working length 25 cm

10372 H  Forceps, alligator, for hard foreign bodies, double action jaws, sheath diameter 1.5 mm, working length 25 cm
10372 J  Same, pointed, serrated, for coins and flat foreign bodies
10372 K  Same, for peanuts and soft foreign bodies
10372 L  Same, spoon-shaped, round, for biopsy
10372 U  Same, universal, for biopsy and foreign bodies removal
Accessories for Bronchoscopy
Suction Tubes, Cotton Carriers, Sponge Holders and Catheters

Description of Instruments see page 111
## Accessories for Bronchoscopy

**Suction Tubes, Cotton Carriers, Sponge Holders and Catheters**

<table>
<thead>
<tr>
<th>Working length 50 cm</th>
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<tbody>
<tr>
<td>10380 A</td>
<td>Suction Tube, diameter 4 mm</td>
</tr>
<tr>
<td>10380 D</td>
<td>Same, diameter 2.5 mm</td>
</tr>
<tr>
<td>10380 H</td>
<td>Same, diameter 5 mm</td>
</tr>
<tr>
<td>10383 A</td>
<td>Suction Tube, with cut-off hole, diameter 4 mm</td>
</tr>
<tr>
<td>10381 A</td>
<td>Suction Tube, with rubber tip, straight, diameter 4 mm</td>
</tr>
<tr>
<td>10382 A</td>
<td>Same, curved</td>
</tr>
<tr>
<td>10390 AN</td>
<td>Coagulating Suction Tube, insulated, with connector pin for unipolar coagulation, diameter 4 mm</td>
</tr>
<tr>
<td>10384 A</td>
<td>Cotton Applicator</td>
</tr>
<tr>
<td>10385 A</td>
<td>Sponge Holder</td>
</tr>
<tr>
<td>10387 A</td>
<td>Sponge Holder, with spring handle</td>
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<td>10388 A</td>
<td>Sponge Holder, for sterile smears</td>
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<tr>
<td>10380 AK</td>
<td>Suction Tube, diameter 4 mm</td>
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<tr>
<td>10380 B</td>
<td>Same, diameter 3 mm</td>
</tr>
<tr>
<td>10380 CB</td>
<td>Same, diameter 2 mm</td>
</tr>
<tr>
<td>10383 B</td>
<td>Suction Tube, with cut-off hole, diameter 3 mm</td>
</tr>
<tr>
<td>10383 BL</td>
<td>Same, diameter 5.5 mm</td>
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<tr>
<td>10381 B</td>
<td>Suction Tube, with rubber tip, straight, diameter 2 mm</td>
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<tr>
<td>10382 B</td>
<td>Same, curved</td>
</tr>
<tr>
<td>10390 BN</td>
<td>Coagulating Suction Tube, insulated, with connector pin for unipolar coagulation, diameter 3 mm</td>
</tr>
<tr>
<td>10384 B</td>
<td>Cotton Applicator</td>
</tr>
<tr>
<td>10385 B</td>
<td>Sponge Holder</td>
</tr>
<tr>
<td>10387 B</td>
<td>Sponge Holder, with spring handle</td>
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<tr>
<th>Working length 30 cm</th>
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<tbody>
<tr>
<td>10383 DD</td>
<td>Suction Tube, with cut-off hole, diameter 2 mm</td>
</tr>
<tr>
<td>10383 F</td>
<td>Same, diameter 3 mm</td>
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</table>

<table>
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<tr>
<th>Working length 25 cm</th>
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<tbody>
<tr>
<td>10380 C</td>
<td>Suction Tube, diameter 2 mm</td>
</tr>
<tr>
<td>10383 C</td>
<td>Suction Tube, with cut-off hole, diameter 2 mm</td>
</tr>
<tr>
<td>10383 CC</td>
<td>Same, diameter 1 mm</td>
</tr>
<tr>
<td>10383 D</td>
<td>Same, diameter 3 mm</td>
</tr>
<tr>
<td>10383 E</td>
<td>Same, diameter 4 mm</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>For use through the working channel under control of HOPKINS® telescope:</th>
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</thead>
<tbody>
<tr>
<td>10468 B  Suction Catheter, 7 Fr., with Adaptor 10479 B</td>
</tr>
<tr>
<td>10468 C  Same, 6 Fr., with Adaptor 10479 C</td>
</tr>
<tr>
<td>10468 D  Same, 4 Fr., with Adaptor 10479 F</td>
</tr>
</tbody>
</table>
Accessories for Bronchoscopy
Instruments for Aspiration, Irrigation and Thin Needle Biopsy

10432 N  **Aspirator**, for collecting secretions, with cut-off hole, with Spare Glass 10432 E, can be connected to suction tubes or suction catheters

10432 T  **Same**, without cut-off hole

10432 ED  **Collection Device**, plastic, for single use, with lid, package of 100, for use with HUZLY Aspirator and Bronchus Irrigator 10434 and Intermediate Ring 10434 Z

10434  **HUZLY Aspirator and Bronchus Irrigator**, with Graduated Container 10455 A and Rubber Bulb 437000. After switching manifold from “Irrigation” to “Suction”, the injected irrigation fluid is immediately withdrawn again together with the bronchial secretion

10434 A/B

10434 A  **Suction Tube**, diameter 4 mm, length 50 cm, for use with HUZLY Aspirator and Bronchus Irrigator 10434

10434 B  **Same**, diameter 3 mm, length 35 cm

10386 A/B

10386 A  **Foreign Body Basket**, with ring handle, working length 50 cm

10386 B  **Same**, working length 35 cm
Rigid Intubation Tracheoscope

The intubation tracheoscope (emergency tracheoscope, “emergency tube”, ventilating laryngoscope) is regarded as a standard instrument in Ear, Nose, and Throat medicine for various clinical situations and patients of every age group (Meyer 1995; Blazon and Schuss 2001). It combines the features of a direct, straight laryngoscope blade and a rigid tracheoscope. A battery-operated handle provides illumination at the distal end, thus enabling operation without an AC power connection. A cold light source (8546 F) is optional and qualitatively better. The lateral approach, in which a short tube (together with the norm connector) is attached to the anesthesia circuit system or respiratory balloon, enables ventilation as soon as the proximal end of the tube is sealed. Possible leakage can be compensated for by a high flow of fresh gas or tamponage of the pharynx.

Handling is similar to that of the straight intubation blade. The instrument can be used with both hands. An extreme lateral (retromolar) passage through the oropharynx allows faster access to the larynx and relieves pressure on the maxillary region. Following visualization of the glottis, passage through the vocal cords as far as the tracheal lumen is achieved under visual control by rotating the angulated tube by 90° in axis. This procedure can be practised on an intubation trainer or on elective patients.

The instrument has the following advantages and disadvantages:

The advantages are that it can be put to immediate use; requires little space in the oropharynx; allows permanent visual control; overcomes stenosis resulting from axial and tangential force; enables immediate ventilation once trachea is reached; permits the use of rigid forceps and suction tubes with a large diameter; provides the option of secondary intubation via airway exchange catheters; allows the combined use of rigid and flexible telescopes which can be viewed on video (expansion of field of view, binocular view, supervision); and ensures airway stabilization if tracheal intubation is obstructed (subglottal stent). The disadvantages are the unaccustomed and restricted monocular field of view, potential injury and the general arguments against using the rigid scope. A potential risk of aspiration due to the absence of tracheal sealing does not seem particularly relevant to clinical practice.

Errors in airway management continue to be the main causes of serious complications (Krier and Runck 2002). Anesthesiologists are less familiar with the significance of the intubation tracheoscope in upper airway management, especially in “cannot intubate-cannot ventilate” situations. The domain of flexible fiberoptic intubation (elective awake intubation) in difficult airway management is undisputed. However, there are limitations which raise questions about the use of flexible instruments (respiratory emergency, limited view, if suction capacity is exceeded, or in the case of impossible intubation due to severe narrowing) which require the use of alternative procedures. Sudden, unpredicted, and unexpected difficult airways where neither intubation with conventional intubation aids, face masks and pharyngeal airway, nor larynx masks and combitubes achieve emergency oxygenation, are indications for coniotomy. A typical example is a distended supraglottal tumour (Henn-Beilharz 2001; Schwarzkopf et al 2001). If no anatomical landmarks are evident in the throat (perforating/blunt trauma, excessive soft tissue hematoma), a timely invasive procedure may fail. In the algorithm of unexpected difficult airway, the “rigid scope” should serve as an indication for temporary airway stabilization or as an alternative to or preceding (emergency) coniotomy and/or secondary tracheostomy to enable temporary translaryngeal stabilization for the purposes of oxygenation or ventilation. For these reasons, the intubation tracheoscope or any other suitable rigid tracheoscope can be recommended as a complementary instrument for airway management in fields other than ENT. In individual cases, coniotomy and/or surgical tracheostomy is thus avoidable.

(References with author)

R. GOTTSCHELL, M. D.,
Klinik für Anästhesiologie und Intensivtherapie,
Klinikum der Friedrich-Schiller-Universität, Germany
Emergency Bronchoscopes, Emergency Tracheoscopes

10312 AM  Emergency Bronchoscope, with fiber optic light carrier, size 9, outer diameter 11.2 mm, length 40 cm
10312 DM  Same, size 7, outer diameter 9.2 mm, length 40 cm
10312 HM  Same, size 6, outer diameter 8 mm, length 30 cm
10312 JM  Same, size 5, outer diameter 7.5 mm, length 30 cm
10312 KM  Same, size 4, outer diameter 6.5 mm, length 20 cm

10313 AM  Emergency Tracheoscope, with fiber optic light carrier, size 9, outer diameter 11.2 mm, length 25 cm
10313 DM  Same, size 7, outer diameter 9.2 mm, length 20 cm
10313 EM  Same, size 5, outer diameter 7.5 mm, length 20 cm

10314 BM  Glass Window Plug
10314 BN  Rubber Telescope Guide
807520  Adaptor for Ventilation

8546  Handle Sleeve, ISO 7376, autoclavable, length 12 cm, for use with Battery Inserts 8546 A, 8546 LD, 8549 LD and cold light laryngoscopes
8546 A  Battery Insert, length 12 cm, with 2 Batteries 121306 S and Xenon Lamp 8546 XA
121306 S  Batteries, Baby-Cell, LR 14, for Battery Inserts 8544 A and 8546 A, package of 2

For use with Cold Light Fountain
8546 F  Handle, with connector pin for fiber optic light cable
495 NL  Fiber Optic Light Cable, diameter 3.5 mm, length 180 cm

Recommended HOPKINS® telescopes:
for 10312 AM/10312 DM: Telescopes 10320 AA/10320 BA
for 10312 HM/10312 JM: Telescopes 10324 AA/10324 BA
for 10312 KM: Telescope 10020 ATA
for 10313 AM/10313 DM/10313 EM: Telescope 10020 ATA
Emergency Bronchoscopes, Emergency Tracheoscopes

For Bronchoscopes and Tracheoscopes length 30 or 20 cm:

- **10372 UL** Forceps, universal, for biopsy and foreign bodies removal, double action jaws, sheath diameter 1.5 mm, working length 35 cm
- **10381 B** Suction Tube, straight, with rubber tip, diameter 2 mm, working length 35 cm
- **10385 B** Sponge Holder, working length 35 cm

Minimum Instrument Set for Bronchoscopes length 40 cm:

- **10371 UL** Forceps, universal, for biopsy and foreign bodies removal, double action jaws, sheath diameter 2 mm, working length 45 cm
- **10381 A** Suction Tube, straight, with rubber tip, diameter 4 mm, working length 50 cm
- **10385 A** Sponge Holder, working length 50 cm
Handles with LED Light Source
for Cold Light Laryngoscope Blades

Special Features:
- Rechargeable lithium-ion batteries
- Extremely bright LED of more than 50 lm/> 100 klx
- Absolute white light due to LED technology (5500 K)
- Small handle with photo battery
- Special lens system allows optimal light adjustment at the blade connector
- LED provides a lifetime of more than 50,000 hours
- Burning time up to 240 min at 100% brightness
- Charging via inductive technology
- ISO 7376 compatible

8546 Handle Sleeve, ISO 7376, autoclavable, length 12 cm, for use with Battery Inserts 8546 A, 8546 LD, 8549 LD and cold light laryngoscopes

8546 LD1 Battery Insert, rechargeable, length 12 cm, for Handle Sleeve 8546, with high-power LED, 56 lm/> 100 klx, lithium-ion battery insert, burning time at 100% brightness 240 min, charging via Inductive Charging Unit 8546 LE

8549 LDX Battery Insert Set LED, length 12 cm, for Handle Sleeve 8546 and cold light laryngoscopes, with high-power LED, > 56 lm/> 100 klx, burning time at 100% brightness > 120 min
including:
- Battery Insert, high-power LED
- 2x Battery, Mignon-Cell, LR 06, 1.5 V
- Cap

8546 LE Inductive Charging Unit, for two battery inserts (8546 LD1, 8544 B, 8545 B, 8547 B), with fully integrated mains adaptor and power adaptor for EU, UK, USA and Australia, power supply 110 – 240 VAC, 50/60 Hz, suitable for wipe disinfection

Components/Spare Parts see chapter 7
29005 BWK  **Basic Equipment Cart**, rides on 4 antistatic dual wheels, 2 equipped with locking brakes, main switch in side boom, 1x drawer unit with lock, integrated cable conduit in both vertical beams, 2x horizontal cable conduits, one with cable manager, 1x set of non-sliding stands for units

Dimensions:
- Equipment cart: 530 x 1090 x 645 mm (w x h x d),
- Shelf: 430 x 480 mm (w x d),
- Caster diameter: 125 mm

**Please note:** The displayed instruments are not included with the instrument cart.
### Accessories for Instrument Cart 29005 BWK

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<td>29005 IFH</td>
<td><strong>Holder for Flexible Endoscopes</strong>, for mounting to standard tubes, incl. installation accessories</td>
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<tr>
<td>11301 BC</td>
<td><strong>ProShield Protective Tube</strong>, for flexible telescopes, for single use, unsterile, distal closed, package of 10, for use with <strong>Holder for Flexible Endoscopes 29005 IFH</strong></td>
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<tr>
<td>10330 BE</td>
<td><strong>Fixation Device</strong>, for <strong>Holder 10330 BC/BD to Standard Equipment Rail 29003 GS, 25 x 10 mm</strong></td>
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<tr>
<td>10330 BC</td>
<td><strong>Holder</strong>, for BONFILS Retromolar Intubation Fiberscope 10330 B, made of plexiglass, distal open</td>
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<tr>
<td>29005 KH</td>
<td><strong>Camera Holder</strong>, adjustable height, can be installed in T-grooves of leg columns, suitable for all KARL STORZ endoscopy cameras</td>
</tr>
<tr>
<td>29005 KHN</td>
<td><strong>Camera Mount</strong>, for mounting to <strong>Standard Equipment Rail 29003 GS</strong>, suitable for all KARL STORZ endoscopy cameras</td>
</tr>
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</table>
Accessories for Instrument Cart 29005 BWK

29005 SKO  **Drawer Unit with Lock**, load capacity max. 50 kg, dimensions: 430 x 125 x 480 mm (w x h x d), for Equipment Cart 29005 HNO/AN/BWK/GI/BGI/DRS

29003 S  **Irrigator Rod**, with 4 bottle hooks, for mounting to equipment cart series 29005, incl. two multifunctional holders, length 130 cm

29003 GS  **Standard Equipment Rail**, for mounting on side with equipment carts of series 29003 and 29005

ET03-0337088  **Pulley**, for mounting standard bars with diameter 25 mm, for use with Equipment Rail 29003 GS

29003 PBK  **Power Box**, socket board with 6 mains sockets, 6 grounding plugs for Equipment Carts 29005 HNO/AN/BGI/BWK

29003 TBK  **Isolation Transformer**, 230 VAC, 1200 VA, 6 special mains socket expulsion fuses, 6 grounding plugs, for Equipment Cart 29005 DRS/BGI/BWK/GI/HNO/AN
20 0200 85  **TROLL-E Airway Mobile Stand**, rides on 4 antistatic dual wheels, 2 equipped with locking brakes, for mounting monitors with VESA 75/100 connection, integrated cable conduit in vertical beam and cable manager, load capacity for monitor: max. 15 kg,
Dimensions:
Mobile stand: 670 x 1660 x 670 mm (w x h x d),
Caster diameter: 100 mm
Trolley is delivered unassembled.
including:
**Subrack for Mobile Stand**
**Beam Module**, with tube
**Drawer**
**Equipment Rail**
**Cross Tube Adaptor**
**Stainless Steel Round Pipe**, length 25 cm

**Please note:** The Monitor 9515 NB is recommended.
The displayed instruments are not included with the instrument cart.

**Components/Spare Parts** see chapter 7
**TROLL-E C-MAC® Mobile Stand**, rides on 4 antistatic dual wheels, 2 equipped with locking brakes, with stainless steel tube,
Dimensions:
Mobile stand: 670 x 1500 x 670 mm (w x h x d),
Caster diameter: 100 mm
Trolley is delivered unassembled.
including:
**Subrack for Mobile Stand**
**Top Cover**, with guide sleeve
**Stainless Steel Tube**, length 135 cm
**Equipment Rail**
**Cross Tube Adaptor**
**Stainless Steel Round Pipe**, length 25 cm

**Please note:** The displayed instruments are not included with the instrument cart.
**Components/Spare Parts** see chapter 7
Accessories

**20 0200 47**  
**Shelf**, incl. installation accessories, max. capacity 12 kg, dimensions: 455 x 350 mm (w x d), for use with subracks for Mobile Stands 20020060 and 20020061

**20 0200 68**  
**Subdrawer**, incl. installation accessories, with lock, max. load capacity within drawer 5 kg, dimensions: 485 x 130 x 350 mm (w x h x d), for use with subracks for Mobile Stands 20 0200 60 and 20 0200 61

**11301 BC**  
**ProShield Protective Tube**, for flexible telescopes, for single use, unsterile, distal closed, package of 10, for use with Holder for Flexible Endoscopes 29005 IFH

**29005 AK**  
**Wire Basket**, for accessories, for mounting to equipment rail, dimensions: 300 x 100 x 200 mm (w x h x d)

**10330 BE**  
**Fixation Device**, for Holder 10330 BC/BD to Standard Equipment Rail 29003 GS, 25 x 10 mm

**10330 BC**  
**Holder**, for BONFILS Retromolar Intubation Fiberscope 10330 B, made of plexiglass, distal open

**29005 IFH**  
**Holder for Flexible Endoscopes**, for mounting to standard tubes, incl. installation accessories
COMPONENTS
SPARE PARTS
Introduction

The chapter “Components / Spare Parts” contains detailed information on KARL STORZ instruments. For easy location and reference, an index is available which lists the order number of the spare parts as well as those of the entire instrument, set or unit.

Example:

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<th>Components / Spare Parts</th>
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<tr>
<td>BONFILS Retromolar Optical Stylet</td>
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Spare parts

- **495 F**
  - Receptacle, diameter 9 mm, for Wolf fiber optic light cable

- **495 G**
  - Screw Base, for KARL STORZ fiber optic light cable and Olympus/Winter & Ibe

- **10331 BA**
  - Tube Holder for ETT, for tube fixation, with O₂ application connection, inner diameter 5 mm

- **10332 BA**
  - Tube Holder for ETT, with O₂ application connection, inner diameter 3.5 mm

Hotline

Queries concerning products, exchange, maintenance and cleaning can be addressed to the KARL STORZ EP1 Hotline: 07461/708-980, from Monday to Thursday from 7-18 h and Friday from 7-17 h.

Spare parts assigned to instrument with catalog page reference and order numbers for individual components/spare parts.
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<td>Battery Insert Set LED, with cap</td>
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</tr>
<tr>
<td>8402 YE</td>
<td>Bag for Intubation Set -C22-, ULM model</td>
<td></td>
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<tr>
<td>809125</td>
<td>MAGILL Forceps, modified by BOEDEKER</td>
<td></td>
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Components / Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Catalog page</th>
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<tbody>
<tr>
<td>10330 F</td>
<td>Emergency Tracheoscope Set</td>
<td>10</td>
</tr>
<tr>
<td>10312 HM</td>
<td>Emergency Bronchoscope, size 6, length 30 cm</td>
<td></td>
</tr>
<tr>
<td>10313 AM</td>
<td>Emergency Tracheoscope, size 9, length 25 cm</td>
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<tr>
<td>10313 DM</td>
<td>Emergency Tracheoscope, size 7, length 20 cm</td>
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<tr>
<td>10313 EM</td>
<td>Emergency Tracheoscope, size 5, length 20 cm</td>
<td></td>
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<tr>
<td>10314 P</td>
<td>FLUVOG Adaptor</td>
<td></td>
</tr>
<tr>
<td>807520</td>
<td>Adaptor for Ventilation</td>
<td></td>
</tr>
<tr>
<td>8535 B</td>
<td>DÖRGES Emergency Laryngoscope Blade, cold light</td>
<td></td>
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<tr>
<td>8546</td>
<td>Handle Sleeve, ISO 7376</td>
<td></td>
</tr>
<tr>
<td>8546 A</td>
<td>Battery Insert, with 2 Batteries 121306 S and Xenon Lamp 8546 XA</td>
<td></td>
</tr>
<tr>
<td>8546 XC</td>
<td>Xenon Lamp, package of 6</td>
<td></td>
</tr>
<tr>
<td>10371 K</td>
<td>Forceps, for peanuts and soft foreign bodies</td>
<td></td>
</tr>
<tr>
<td>10371 H</td>
<td>Forceps, alligator, for hard foreign bodies</td>
<td></td>
</tr>
<tr>
<td>809020</td>
<td>MAGILL Forceps, length 20 cm</td>
<td></td>
</tr>
<tr>
<td>809025</td>
<td>MAGILL Forceps, length 25 cm</td>
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</tr>
<tr>
<td>802700</td>
<td>YOUNG Tongue Seizing Forceps</td>
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<tr>
<td>10383 B</td>
<td>Suction Tube, diameter 3 mm, working length 35 cm</td>
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</tr>
<tr>
<td>10380 AK</td>
<td>Suction Tube, diameter 4 mm, working length 35 cm</td>
<td></td>
</tr>
<tr>
<td>10383 BL</td>
<td>Suction Tube, diameter 5.5 mm, working length 35 cm</td>
<td></td>
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<tr>
<td>27677 BH</td>
<td>Case</td>
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# Battery Inserts

## Components / Spare Parts

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<tr>
<td>8546 A</td>
<td>Battery Insert</td>
<td>28, 114</td>
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### Spare Parts

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<tr>
<td>8938191</td>
<td>Cap</td>
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## Components / Spare Parts

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<thead>
<tr>
<th>Component</th>
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<th>Catalog page</th>
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</thead>
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<tr>
<td>8547 A</td>
<td>Battery Insert</td>
<td>28</td>
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### Spare Parts

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
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<tr>
<td>8938291</td>
<td>Cap</td>
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## Components / Spare Parts

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Catalog page</th>
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</thead>
<tbody>
<tr>
<td>8548 LDX1</td>
<td>Battery Insert Set</td>
<td>27</td>
</tr>
<tr>
<td>8548 LD1</td>
<td>Battery Insert, high-power LED</td>
<td></td>
</tr>
<tr>
<td>121306 P</td>
<td>Photo Battery, CR 123 A</td>
<td></td>
</tr>
<tr>
<td>8938292</td>
<td>Cap</td>
<td></td>
</tr>
<tr>
<td>8549 LDX</td>
<td>Battery Insert Set LED</td>
<td>27, 116</td>
</tr>
<tr>
<td>8549 LD</td>
<td>Battery Insert, high-power LED</td>
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</tr>
<tr>
<td>121306 KS</td>
<td>Alkaline “AA” Battery, LR 06, 1.5 V</td>
<td></td>
</tr>
<tr>
<td>8938292</td>
<td>Cap</td>
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</tbody>
</table>
### Handle Sleeves, Inductive Charging Unit

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8546 Handle Sleeve</td>
<td>8902590</td>
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<td></td>
<td>27, 28, 114, 116</td>
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</tbody>
</table>

**Spare Parts**

- 8902590 Socket

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8547 Handle Sleeve</td>
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<td></td>
<td>28</td>
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**Spare Parts**

- 8902590 Socket

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
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</thead>
<tbody>
<tr>
<td>8548 Handle Sleeve</td>
<td>8902590</td>
</tr>
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**Spare Parts**

- 8902590 Socket

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
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<tbody>
<tr>
<td>8546 LE Inductive Charging Unit</td>
<td>8546 R</td>
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<td></td>
<td>29, 116</td>
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</table>

**Spare Parts**

- 8546 R Reduction Sleeve
## C-MAC® Video Laryngoscopes

### Components / Spare Parts

<table>
<thead>
<tr>
<th>8402 ZX-1 Monitor for CMOS Endoscopes</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55, 82</td>
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### Spare Parts

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>ET38-1717618</td>
<td><strong>Plug Adaptor UK Standard</strong>, to mains adaptor for C-MAC® video laryngoscope</td>
</tr>
<tr>
<td>ET38-1717707</td>
<td><strong>Europlug Adaptor</strong>, to mains adaptor for C-MAC® video laryngoscope</td>
</tr>
<tr>
<td>ET27-30-0004370</td>
<td><strong>Adaptor Cable</strong></td>
</tr>
<tr>
<td>ET38-1800496</td>
<td><strong>Plug Adaptor Australia/Japan</strong>, to mains adaptor for C-MAC® video laryngoscope</td>
</tr>
<tr>
<td>ET38-1717715</td>
<td><strong>Plug Adaptor USA/Japan</strong>, to mains adaptor for C-MAC® video laryngoscope</td>
</tr>
<tr>
<td>8401 XA</td>
<td><strong>Cable Adaptor for C-MAC®</strong>, 6-pin to 8-pin adaptor, dustproof according to IP50, for connecting 8-pin instruments to C-MAC® Monitor 8401 ZX</td>
</tr>
<tr>
<td>ET27-30-0004369</td>
<td><strong>Primary Adaptor USA</strong></td>
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</table>

- **Power Supply**, for charging and starting up C-MAC® 8401 ZX and 8402 ZX-1, with 4 adaptors for Europe, Great Britain, USA/Japan and Australia, power supply 100 – 240 VAC, 50/60 Hz
## C-MAC® PM – Pocket Monitor, Charging Unit

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8401 XDK</td>
<td></td>
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<tr>
<td>C-MAC® Pocket Monitor Set</td>
<td>89</td>
</tr>
<tr>
<td>8401 XD</td>
<td></td>
</tr>
<tr>
<td>C-MAC® Pocket Monitor</td>
<td></td>
</tr>
<tr>
<td>8401 YZ</td>
<td></td>
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<tr>
<td>Protection Cap</td>
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## Components / Spare Parts

<table>
<thead>
<tr>
<th>Components / Spare Parts</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8401 XDL</td>
<td></td>
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<tr>
<td>Charging Unit, for C-MAC® pocket monitor</td>
<td>89</td>
</tr>
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### Spare Parts

<table>
<thead>
<tr>
<th>Power Supply, C-HUB™</th>
<th>ET27-30-0003207 Plug USA/JP, for Power Supply 20290120-PS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ET27-30-0003206 Plug UK, for Power Supply 20290120-PS</td>
</tr>
<tr>
<td></td>
<td>ET27-30-0003148 Primary Plug Europe, for Power Supply 20290120-PS</td>
</tr>
</tbody>
</table>
## Intubation Fiberscopes

### Components / Spare Parts

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Model</th>
<th>Catalog Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11301 AA1</td>
<td>Intubation Fiberscope 2.8 x 65</td>
<td></td>
<td>44, 48</td>
</tr>
<tr>
<td>11301 AB1</td>
<td>Intubation Fiberscope 2.8 x 50</td>
<td></td>
<td>45, 48</td>
</tr>
<tr>
<td>11302 BD2</td>
<td>Intubation Fiberscope 3.7 x 65</td>
<td></td>
<td>46, 48</td>
</tr>
<tr>
<td>11301 BN1</td>
<td>Intubation Fiberscope 5.2 x 65</td>
<td></td>
<td>47, 48</td>
</tr>
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</table>

### Spare Parts

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>495 F</td>
<td><strong>Receptacle</strong>, diameter 9 mm, for Wolf fiber optic light cable</td>
</tr>
<tr>
<td>11301 CE</td>
<td><strong>Suction Valve</strong>, for single use, package of 20</td>
</tr>
<tr>
<td>495 G</td>
<td><strong>Screw Base</strong>, for KARL STORZ fiber optic light cable and Olympus/Winter &amp; Ibe</td>
</tr>
<tr>
<td>11301 CF</td>
<td><strong>LIPP Tube Holder</strong>, for intubation fiberscopes</td>
</tr>
<tr>
<td>11301 CB</td>
<td><strong>Suction Valve</strong>, reusable</td>
</tr>
<tr>
<td>29100</td>
<td><strong>Plug</strong>, for LUER-Lock connector for cleaning, black, autoclavable, package of 10</td>
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</tbody>
</table>
## Intubation Fiberscopes

### Components / Spare Parts

<table>
<thead>
<tr>
<th>Part No</th>
<th>Description</th>
<th>Catalog page</th>
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</thead>
<tbody>
<tr>
<td>11301 ABD1</td>
<td>DCI® Intubation Fiberscope 2.8 x 50</td>
<td>67, 70</td>
</tr>
<tr>
<td>11301 BND1</td>
<td>DCI® Intubation Fiberscope 5.2 x 65</td>
<td>69, 70</td>
</tr>
<tr>
<td>11302 BDD2</td>
<td>DCI® Intubation Fiberscope 3.7 x 65</td>
<td>68, 70</td>
</tr>
</tbody>
</table>

### Spare Parts

- **11301 CB**
  - **Suction Valve**, reusable

- **11301 CF**
  - **LIPP Tube Holder**, for intubation fiberscopes

- **11301 CE**
  - **Suction Valve**, for single use, package of 20

- **29100**
  - **Plug**, for LUER-Lock connector for cleaning, black, autoclavable, package of 10
## Components / Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Catalog page</th>
</tr>
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<tbody>
<tr>
<td>11301 BNX</td>
<td>Flexible Intubation Video Endoscope 5.5 x 65</td>
<td>91</td>
</tr>
</tbody>
</table>

### Spare Parts

- **11301 CB1**
  - *Suction Valve*, reusable

- **11301 CE1**
  - *Suction Valve*, for single use, package of 20

- **11301 CFX**
  - *Tube Holder*

- **29100**
  - *Plug*, for LUER-Lock connector for cleaning, black, autoclavable, package of 10
### Components / Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Catalog page</th>
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<tr>
<td>10331 B2K</td>
<td>BONFILS Retromolar Optical Stylet, Basic Set</td>
<td>51, 52</td>
</tr>
<tr>
<td>10332 B1</td>
<td>BONFILS Retromolar Optical Stylet</td>
<td>51, 52</td>
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### Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>495 F</td>
<td><strong>Receptacle</strong>, diameter 9 mm, for Wolf fiber optic light cable</td>
</tr>
<tr>
<td>495 G</td>
<td><strong>Screw Base</strong>, for KARL STORZ fiber optic light cable and Olympus/Winter &amp; Ibe</td>
</tr>
<tr>
<td>10331 BA</td>
<td><strong>Tube Holder for ETT</strong>, for tube fixation, with O₂ application connection, inner diameter 5 mm</td>
</tr>
<tr>
<td>10332 BA</td>
<td><strong>Tube Holder for ETT</strong>, with O₂ application connection, inner diameter 3.5 mm</td>
</tr>
</tbody>
</table>

### Components / Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10331 BD1</td>
<td>BONFILS Retromolar DCI® Optical Stylet</td>
<td>73, 74</td>
</tr>
<tr>
<td>10332 BD1</td>
<td>BONFILS Retromolar DCI® Optical Stylet</td>
<td>73, 74</td>
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### Spare Parts

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>10331 BA</td>
<td><strong>Tube Holder for ETT</strong>, for tube fixation, with O₂ application connection, inner diameter 5 mm</td>
</tr>
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</table>
### Adaptor for Two-Way Stopcock, HOPKINS® Telescopes

<table>
<thead>
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<th>Components / Spare Parts</th>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6927691 Adaptor for Two-Way Stopcock, LUER-Lock with O₂ tube connection</td>
<td>79, 93</td>
</tr>
</tbody>
</table>

![Diagram of Adaptor for Two-Way Stopcock]

**Spare Parts**

- 6377091 Spring Cap
- 6377790 Stopcock, for working channel

### Components / Spare Parts

<table>
<thead>
<tr>
<th>Catalog page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10320 AA HOPKINS® Straight Forward Telescope 0°</td>
</tr>
<tr>
<td>10320 BA HOPKINS® Forward-Oblique Telescope 30°</td>
</tr>
<tr>
<td>10324 AA HOPKINS® Straight Forward Telescope 0°</td>
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</tbody>
</table>

**Spare Parts**

- 495 F Receptacle, diameter 9 mm, for Wolf fiber optic light cable
- 495 G Screw Base, for KARL STORZ fiber optic light cable and Olympus/Winter & Ibe
## C-HUB™, TELE PACK X

### Components / Spare Parts

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>20290101</td>
<td>C-HUB™ Camera Control Unit</td>
<td>97</td>
</tr>
<tr>
<td>20290120-PS</td>
<td>C-HUB™ Power Supply</td>
<td></td>
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<tr>
<td>547 S</td>
<td>S-Video (Y/C) Connecting Cable</td>
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<tr>
<td>20200073</td>
<td>USB Connecting Cable</td>
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### Components / Spare Parts

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<th>Catalog page</th>
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<tbody>
<tr>
<td>20045001-EN</td>
<td>TELE PACK X</td>
<td>58, 77</td>
</tr>
<tr>
<td>20040240US</td>
<td>USB Silicone Keyboard, with touchpad, US character set</td>
<td></td>
</tr>
<tr>
<td>20040280</td>
<td>KARL STORZ USB Flash Drive, 4 GB</td>
<td></td>
</tr>
<tr>
<td>400 F</td>
<td>Mains Cord, length 300 cm</td>
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<tr>
<td>400 B</td>
<td>Mains Cord, US version</td>
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# Instrument Cart

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<thead>
<tr>
<th>Components / Spare Parts</th>
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<tbody>
<tr>
<td>20020085 TROLL-E Airway Mobile Stand</td>
<td>121</td>
</tr>
<tr>
<td>20020060 Subrack for Mobile Stand</td>
<td></td>
</tr>
<tr>
<td>20020063 Beam Module, with tube</td>
<td></td>
</tr>
<tr>
<td>20020067 Drawer</td>
<td></td>
</tr>
<tr>
<td>20020049 Equipment Rail</td>
<td></td>
</tr>
<tr>
<td>ET43-303127 Cross Tube Adaptor</td>
<td></td>
</tr>
<tr>
<td>ET43-302703 Stainless Steel Round Pipe, length 25 cm</td>
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<table>
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<tr>
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<tbody>
<tr>
<td>20020086 TROLL-E C-MAC® Mobile Stand</td>
<td>122</td>
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<tr>
<td>20020060 Subrack for Mobile Stand</td>
<td></td>
</tr>
<tr>
<td>20020064 Top Cover, with guide sleeve</td>
<td></td>
</tr>
<tr>
<td>20020065 Stainless Steel Tube, length 135 cm</td>
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<tr>
<td>20020049 Equipment Rail</td>
<td></td>
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<tr>
<td>ET43-303127 Cross Tube Adaptor</td>
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</tr>
<tr>
<td>ET43-302703 Stainless Steel Round Pipe, length 25 cm</td>
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