Telescopes for Heart Surgery

In video-assisted mitral valve surgery, 30° telescopes with a diameter of 5 or 10 mm are in standard use. The mitral valve and the surrounding tissue are visualized by means of an access through the right intercostal space and the right atrium.

For endoscopic atrial ablation, most surgeons use 0° telescopes with a diameter of 5 or 10 mm to visualize the surgical field. This allows accurate positioning of the ablation device.

Furthermore, KARL STORZ offers the ENDOCAMELEON® with a variable direction of view of 0° to 120°. This allows adjustment of the viewing direction to any OR situation. The rigid telescope is particularly suitable for use in anatomically narrow working spaces, for example, in minimally invasive mitral valve surgery and atrial ablation.
EndoCAMeleon® HOPKINS® Telescope

Diameter 10 mm, length 32 cm
49003 AE  ENDOCAMeleon® HOPKINS® Telescope, diameter 10 mm, length 32 cm, autoclavable, variable direction of view 0°-120°, with adjusting knob for selecting the direction of view, fiber optic light transmission incorporated, color code: gold

Recommended Fiber Optic Light Cable
495 NCSC  Fiber Optic Light Cable, with straight connector, extremely heat-resistant, enhanced light transmission, with safety lock, diameter 4.8 mm, length 250 cm

Recommended Wire Tray
39501 BEC  Wire Tray for Cleaning, Sterilization and Storage of ENDOCAMeleon®, length 32 cm and one light cable, including holder for light post adaptor, silicone telescope holder and lid, external dimensions (w x d x h): 480 x 125 x 54 mm

HOPKINS® Telescopes

Diameter 10 mm, length 31 cm
49003 AA  HOPKINS® Straight Forward Telescope 0°, enlarged view, diameter 10 mm, length 31 cm, autoclavable, fiber optic light transmission incorporated, color code: green
49003 BA  HOPKINS® Forward-Oblique Telescope 30°, enlarged view, diameter 10 mm, length 31 cm, autoclavable, fiber optic light transmission incorporated, color code: red
49003 FA  HOPKINS® Telescope 45°, enlarged view, diameter 10 mm, length 31 cm, autoclavable, fiber optic light transmission incorporated, color code: black

Recommended Fiber Optic Light Cable
495 NE  Fiber Optic Light Cable, with straight connector, diameter 4.8 mm, length 300 cm

Diameter 5 mm, length 29 cm
49046 AA  HOPKINS® Straight Forward Telescope 0°, enlarged view, diameter 5 mm, length 29 cm, autoclavable, fiber optic light transmission incorporated, color code: green
49046 BA  HOPKINS® Forward-Oblique Telescope 30°, enlarged view, diameter 5 mm, length 29 cm, autoclavable, fiber optic light transmission incorporated, color code: red
49046 FA  HOPKINS® Telescope 45°, enlarged view, diameter 5 mm, length 29 cm, autoclavable, fiber optic light transmission incorporated, color code: black

Recommended Fiber Optic Light Cable
495 ND  Fiber Optic Light Cable, with straight connector, diameter 3.5 mm, length 300 cm

Recommended Wire Tray for 5 mm or 10 mm Telescopes
39501 B1  Wire Tray for Cleaning, Sterilization and Storage of one rigid endoscope, including holder for light post adaptors, silicone telescope holders and lid, external dimensions (w x d x h): 430 x 65 x 52 mm, for rigid endoscopes up to diameter 10 mm and working length 34 cm
4K Monitor Portfolio

In conjunction with the IMAGE1 S™ 4U camera system, new 4K monitors now complement the imaging chain from KARL STORZ. The monitors are available in various sizes and technologies (2D/3D) in order to meet the individual requirements of different interventions.

4K technology offers an extended color space combined with enhanced color saturation due to the implementation of the BT.2020 standard in the monitors.

Thanks to the special tempered safety glass, all monitors feature strong resistance to scratches and knocks.

With a screen diagonal of 32”, the monitors feature an enclosed glass surface that allows quick and easy wipe disinfection to guarantee optimal hygiene properties.
TM 440  **58" 4K Monitor**, screen resolution 3840 x 2160, image format 16:9, video inputs: DP 1.2a, DVI-D, 12G-SDI, HDMI 2.0, USB Type B, USB Type A, RS-232C, 9-pin mini sub D, video outputs: 12G-SDI, power supply 100-240 VAC, 50/60 Hz, wall mount with VESA 400 x 400 and VESA 400 x 200 adaptors

Suitable Mobile Cart for 58" 4K Monitor TM 440:

**WA 10007 OR1™ Cart for Monitor Set**, height-adjustable, for monitors 42-64", VESA pattern min. 100/100, max. 400/400, monitor weight max. 60 kg, monitor holder height-adjustable on 180 cm high column, four castors, floor area: 980 x 830 mm, total height: 195 cm

TM 350  **32" 4K/3D Monitor**, screen resolution 3840 x 2160, image format 16:9, video inputs: DisplayPort 1.2, 12G-SDI, 2 x DVI-D, RS-232C, HDMI 2.0, HDMI 1.4b, USB Mini B, USB Micro AB, video outputs: 2x DVI-D, 12G-SDI, power supply 100-240 VAC, 50/60 Hz, 5V DC output (1 A), wall mount with VESA 100 adaptor

TM 342*  **31" 4K Monitor**, screen resolution 3840 x 2160, image format 16:9, video inputs: DP 1.2a, 2x DVI-D, 12G-SDI, 3G-SDI, USB Type B, RS-232C, GPI, video outputs: DVI-D, 12G-SDI, 3G-SDI, power supply 100-240 VAC, 50/60 Hz, wall mount with VESA 100 and VESA 200 adaptors

TM 340**  **32" 4K Monitor**, screen resolution 3840 x 2160, image format 16:9, power supply 100-240 VAC, 50/60 Hz, wall mount with VESA 200 adaptor

* TM 342 not available in USA, Japan & China
** TM 340 for USA, Japan & China only
IMAGE1 S™ 3D – A Dimension Ahead

The IMAGE1 S™ 3D camera platform provides surgeons with excellent depth perception. Furthermore, the 3D stereoscopic imaging system is particularly valuable for activities that demand a high degree of spatial perception. Thanks to the modular system design, existing 2D systems can be upgraded to 3D.

- 3D system featuring video endoscopes with a diameter of 10 mm and VITOM® 3D
- Easy toggle between 3D and 2D
- Compatible with the IMAGE1 S™ platform
- Three innovative visualization technologies for easy tissue differentiation in 2D and 3D:
  - CLARA: Homogeneous illumination
  - CHROMA: Contrast enhancement
  - SPECTRA*: Spectral color shift and switch
- Provides type CF defibrillation protection when used with TIPCAM®1 S 3D LAP in conjunction with the IMAGE1 S™ camera control unit with CF-defib symbol on the connection port

* not for sale in the U.S.
### System Components

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>26605 AA</td>
<td><strong>TIPCAM®1 S 3D LAP</strong>, with two FULL HD image sensors, direction of view 0°, diameter 10 mm, length 32 cm, <strong>autoclavable</strong>, S-Technologies available, freely programmable camera head buttons, including video connecting cable, for use with IMAGE1 S™</td>
</tr>
<tr>
<td>26605 BA</td>
<td><strong>TIPCAM®1 S 3D LAP</strong>, with two FULL HD image sensors, direction of view 30°, diameter 10 mm, length 32 cm, <strong>autoclavable</strong>, S-Technologies available, freely programmable camera head buttons, including video connecting cable, for use with IMAGE1 S™</td>
</tr>
<tr>
<td>TC 200EN</td>
<td><strong>IMAGE1 S CONNECT®,</strong> connect module, for use with up to 3 link modules, resolution 1920 x 1080 pixels, with integrated KARL STORZ-SCB and digital Image Processing Module, power supply 100-120 VAC/200-240 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>TC 302</td>
<td><strong>IMAGE1 S D3-LINK™</strong>, link module, for use with TIPCAM®1 S 3D, power supply 100-120 VAC/200-240 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>TM 330</td>
<td><strong>32&quot; 3D Monitor</strong>, color systems PAL/NTSC, screen resolution 1920 x 1080, image format 16:9, power supply 100-240 VAC, 50/60 Hz, 5 V DC output (1 A), VESA 100 and VESA 200 mounts, Video inputs: 2x DVI-D, 2x 3G-SDI, VGA, S-Video, Composite, Component, Video outputs: DVI-D, 2x 3G-SDI, S-Video, Composite, Component including:</td>
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<tr>
<td></td>
<td><strong>External 24 VDC Power Supply</strong></td>
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<td></td>
<td><strong>Mains Cord</strong></td>
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<tr>
<td></td>
<td><strong>3x 3D Polarization Glasses</strong>, fogless</td>
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<tr>
<td></td>
<td><strong>Cable Cover</strong></td>
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<tr>
<td></td>
<td><strong>4x Mounting Screws M4</strong></td>
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<tr>
<td></td>
<td><strong>4x Mounting Screws M6</strong></td>
</tr>
<tr>
<td>9800 GF</td>
<td><strong>3D Polarization Glasses</strong>, fogless, passive, package of 2</td>
</tr>
<tr>
<td>9800 C</td>
<td><strong>3D Clip-on Glasses</strong>, circularly polarized</td>
</tr>
<tr>
<td>TL 300</td>
<td><strong>Cold Light Fountain POWER LED 300 SCB</strong>, with integrated KARL STORZ-SCB, high-performance LED module and one KARL STORZ light outlet, power supply 100-240 VAC, 50/60 Hz</td>
</tr>
<tr>
<td>495 TIP</td>
<td><strong>Fiber Optic Light Cable</strong>, with straight connector, extremely heat-resistant, enhanced light transmission, diameter 4.8 mm, length 300 cm</td>
</tr>
<tr>
<td>39501 XTC</td>
<td><strong>Wire Tray for Cleaning, Sterilization and Storage</strong> of TIPCAM®1 S 3D Video Endoscopes 26605 AA/BA and one light cable, <strong>autoclavable</strong>, external dimensions (w x d x h): 640 x 150 x 87 mm</td>
</tr>
</tbody>
</table>
VITOM® 3D – 3D Visualization for Open Heart Surgery

The VITOM® 3D system provides many surgical disciplines with a revolutionary solution for the visualization of microsurgical and open surgical interventions. Application possibilities are similar to that of the operating microscope. The most important functions are controlled via the IMAGE1 PILOT which is mounted to the OR table in close proximity to the surgeon.

- Small, light and compact
- Lower acquisition costs and creates synergistic effects with endoscopy by using the same video tower
- Ergonomic work
- Improved workflow – the OR team can view the procedure in the same image quality as the surgeon
- Provides type CF defibrillation protection when used with VITOM® 3D in conjunction with the IMAGE1 S™ camera control unit with CF-defib symbol on the connection port
Overview

- **VITOM® 3D**
  - with integrated illuminator
  - TH 200

- **Fiber Optic Light Cables**
  - TH 001
  - 495 VIT

- **Holding Arm for VITOM® 3D**
  - 26272 HSP

- **Sterile Cover for VITOM® 3D**
  - TH 001

- **Holding Arm for IMAGE1 PILOT**
  - TC 014
  - 041150-20*

- **IMAGE1 PILOT**
  - TC 014
  - 041150-20*

- **IMAGE1 PILOT Sterile Cover**
  - TC 014
  - 041150-20*

- **IMAGE1 PILOT Camera System**
  - TC 201
  - TC 302

- **Cold Light Fountain Power LED 300 SCB**
  - TL 300

- **3D Monitors**
  - TM 350, TM 263

- **3D Polarization Glasses, 3D Clip-on Glasses**
  - TM 003
  - 9900 C

More detailed information regarding accessories is available in the current Microscopy Highlights brochure.

Note: VITOM® 3D can also be used for other fields of application such as, for example, NEUROSURGERY, HAND and PLASTIC SURGERY or SPINE SURGERY.
Access Routes in Minimally Invasive Heart Surgery

MIC Retractor

The intercostal space is intrinsically narrow. Consequently, a retractor should be slender yet sturdy enough to expand the ribs to a sufficient width without protruding too far into the portal. The slim design of the BISLERI MIC retractor meets these requirements. The bendable retractor arms and the movable blades allow ideal positioning on the thorax, regardless of the access route selected.

Trocars

The trocar length of 6.5 cm, which is specifically designed to meet the needs of minimally invasive heart surgery, allows more straightforward use. Even when the trocar is completely inserted, there is still a sufficient distance maintained to the heart to avoid injuries. In addition, the 45° insufflation stopcock with the LUER-Lock connector allows the positioning of several trocars in neighboring intercostal spaces.
BISLERI MIC Retractor

49130  BISLERI MIC Retractor, for thoracotomy, with bendable retractor arms and movable blades including:
- Retractor Frame
- Retractor Arm
- Wing Screw
  - 2x Movable Blades, short, size 4 x 5 cm
  - 2x Movable Blades, long, size 4 x 6 cm

Trocars

Sizes 6 and 11 mm – with insufflation stopcock

49160 HA  Trocar, with blunt tip, with insufflation stopcock, size 6 mm, working length 6.5 cm, color code: black
including:
- Cannula, with Luer-Lock stopcock angled 45°
- Trocar only
- Silicone Leaflet Valve

49103 HA  Trocar, with blunt tip, with insufflation stopcock, size 11 mm, working length 6.5 cm, color code: green-white
including:
- Cannula, with Luer-Lock stopcock angled 45°
- Trocar only
- Silicone Leaflet Valve
Reusable Retractors for Endoscopic Vessel Harvesting

KARL STORZ offers completely reusable systems for the minimally invasive endoscopic removal of the radial artery and the great saphenous vein in bypass surgery. These sets consist of a retractor and additional instrumentation.

- Resterilizable and completely reusable – providing significant cost savings
- Various models for artery and vein harvesting that are specifically adapted to the anatomy
- HOPKINS® telescope for visualization of the operative field in excellent image quality
Endoscopic Vein Harvesting

LUTZ Recommended Set

49205 FDZ Endoscopic Vein Retractor, FREIBURG model, for harvesting the great saphenous vein, distal width 25 mm, working length 27 cm, with integrated channel for smoke evacuation, with integrated guide in handle for fiber optic light cable, autoclavable, for use with HOPKINS® Telescope 49205 FA including:

Cleaning Adaptor, for telescope channel
Cleaning Brush

49205 FA HOPKINS® Forward-Oblique Telescope 45°, diameter 5 mm, length 29 cm, autoclavable, fiber optic light transmission incorporated, color code: black

49201 VR Ring Dissector, for blunt exposure of the vessel, distal angled to right, size 3 mm, working length 41 cm

49201 VL Same, distal angled to left

38751 MW ROBI® METZENBAUM Scissors, CLERMONT-FERRAND model, rotating, dismantling, with connector pin for bipolar coagulation, with LUER-Lock irrigation connector for cleaning, double action jaws, curved jaws, slender scissor blades, for cutting and bipolar coagulation, size 5 mm, length 43 cm

49205 L LUTZ Clip Applicator, rotating, angled jaws, size 5 mm, working length 43 cm, for use with Clips 8665 T

8665 T Clip, titanium LT 200, medium, 5 mm, sterile, package of 36 cartridges with 6 clips each

49751 FG ROBI® LUTZ Forceps, CLERMONT-FERRAND model, rotating, dismantling, with connector pin for bipolar coagulation, double action jaws, width of jaws 2 mm, distally angled 45°, for grasping and coagulation of vessels, size 5 mm, length 43 cm

Endoscopic Artery Harvesting

BISLERI Recommended Set

49205 FCZ BISLERI Endoscopic Radial Artery Retractor, for harvesting the arteria radialis, distal width 20 mm, working length 27.5 cm, with U-shaped instrument guide, with integrated channel for smoke evacuation, with integrated guide in the handle for fiber optic light cable, autoclavable, for use with HOPKINS® Telescope 49205 FA including:

Cleaning Adaptor, for telescope channel
Cleaning Brush

49205 FA HOPKINS® Forward-Oblique Telescope 45°, diameter 5 mm, length 29 cm, autoclavable, fiber optic light transmission incorporated, color code: black

49201 VR Ring Dissector, for blunt exposure of the vessel, distal angled to right, size 3 mm, working length 41 cm

49201 VL Same, distal angled to left

38751 MW ROBI® METZENBAUM Scissors, CLERMONT-FERRAND model, rotating, dismantling, with connector pin for bipolar coagulation, with LUER-Lock irrigation connector for cleaning, double action jaws, curved jaws, slender scissor blades, for cutting and bipolar coagulation, size 5 mm, length 43 cm

38751 CS ROBI® Grasping Forceps, CLERMONT-FERRAND model, rotating, dismantling, with connector pin for bipolar coagulation, single action jaws, narrow jaws, for dissection, grasping and bipolar coagulation of fine structures, size 5 mm, length 43 cm
Headlight KS70

Special Features:

- Long service life with a battery lifespan of up to 18 hours facilitates use in the OR
- Optimal wearing comfort due to balanced, lightweight design and ergonomic headband
- High-performance LED in combination with liquid lens technology for optimal depth illumination
- Luminous field can be focused using the focus ring – adjustable from 30-150 mm at a working distance of 400 mm
- Light intensity in maximum mode is 32,000 Lux (working distance 400 mm / illuminated field diameter 30 mm)
Headlights

094220  LED Headlight KS70, white light, lightweight model, control unit and rechargeable battery box on headband, charging unit, illumination area adjustable from 30-150 mm in diameter with 40 cm working distance including:
- Control Unit
- Battery Box
- 2x Battery Pack
- Charger USB
- Headband
- Neoprene Cushion for Headband

094230  LED Headlight KS70, yellowish light, lightweight model, control unit and rechargeable battery box on headband, charging unit, illumination area adjustable from 30-150 mm in diameter with 40 cm working distance including:
- Control Unit
- Battery Box
- 2x Battery Pack
- Charger USB
- Headband
- Neoprene Cushion for Headband
Imaging and OR Integration

KARL STORZ OR1™
Future-oriented integration meets innovative data management

KARL STORZ SE & Co. KG, Dr.-Karl-Storz-Straße 34, 78532 Tuttlingen/Germany
www.karlstorz.com
Further information and an overview of Cardiovascular Surgery products from KARL STORZ can be viewed on

www.karlstorz.com
in the Human Medicine section, Cardiovascular Surgery

It is recommended to check the suitability of the product for the intended procedure prior to use.