

Borescopes

Endoscopy with highest image quality



Rigid endoscopes

Unequalled image quality for more than 65 years



Borescopes

Dr. Karl Storz started to produce ENT instruments in 1945. He wanted to develop devices and systems that enable physicians to look inside the human body.

After the Second World War, the available technology was still very limited: The examination site inside the body was illuminated by using miniature electrical lamps or by reflecting light from an external source through the endoscopic tube into the body.

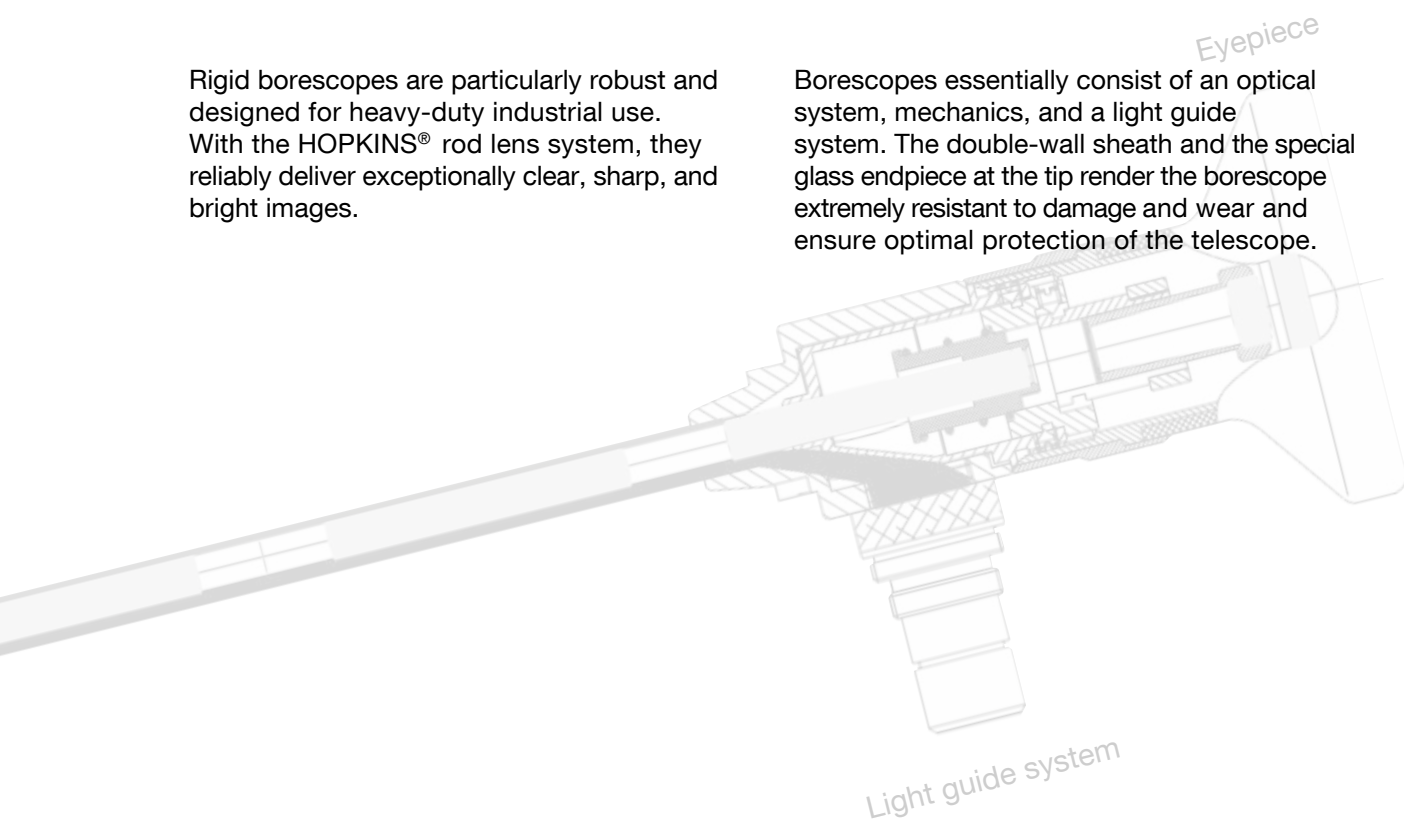
Dr. Karl Storz had a plan: He wanted to guide very bright, cold light into body cavities to ensure a brilliant view and simultaneously facilitate objective documentation through image transmission.





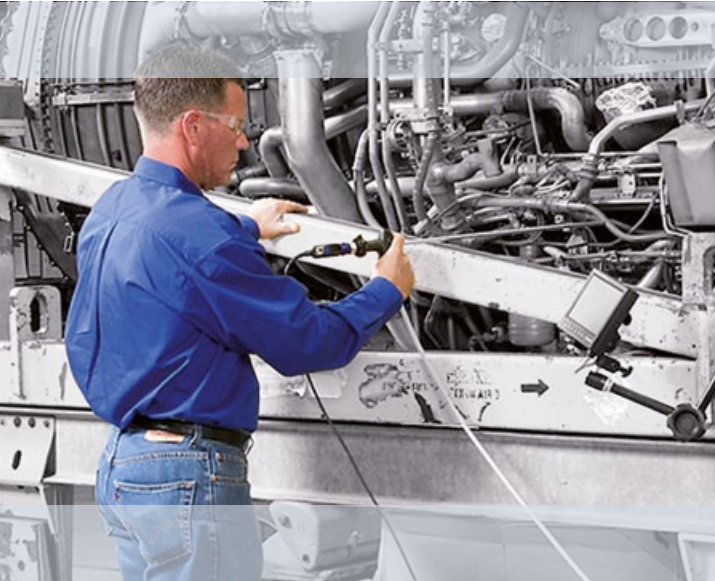
Rigid borescopes are particularly robust and designed for heavy-duty industrial use. With the HOPKINS® rod lens system, they reliably deliver exceptionally clear, sharp, and bright images.

Borescopes essentially consist of an optical system, mechanics, and a light guide system. The double-wall sheath and the special glass endpiece at the tip render the borescope extremely resistant to damage and wear and ensure optimal protection of the telescope.



Rigid endoscopes

Robust, reliable, universally usable



Definition

Borescopes can be rigid or semirigid. A rigid borescope, also known as rigid endoscope, borescope, miniature borescope, or swing-prism endoscope, is an endoscope that uses a lens system for image transmission.

A semirigid borescope, also known as semirigid endoscope, miniscope, mini endoscope, or needlescope, is an endoscope with a rigid sheath that uses a bundle of optical fibers for image transmission (see also: flexible endoscopes).

The endoscopes designed for everyday industrial use are particularly robust and incorporate finest technology that produces excellent images.

The so-called swing-prism borescope features a swing prism at its tip. Using a control handle, the direction of view can be infinitely adjusted between 0° and 140°. In addition, the sheath can be rotated by 400°. The result is the largest field of view available on the market.

Borescope diameters range from 1.6 mm to 10 mm in lens system models and from 1 mm to 1.6 mm in image guide models. For special applications, instruments with working lengths of up to 1.5 m are available.



Rigid endoscopes

Special features:

- Pressure resistant up to +5 bar
- Maximum stability under load thanks to double-wall sheath
- Metal protective layers to protect the optical system
- Resistant to oil, fuel, and solvents
- Temperature resistant up to 150°C (and above)
- Unlimited flexibility thanks to 340° sheath rotation

Special image characteristics:

- Optimal image brightness
- True-color images
- Maximum image sharpness
- Diopter adjustment/eyepiece focus
- Built-in fiber optic light guide
- Unequalled field size

Miniature borescope

Maximum image quality even in tight accesses and very small cavities



Even in miniature devices with an outer diameter of only 1 mm, the image quality of KARL STORZ borescopes is unmatched. Brilliant colors, brightly illuminated inspection sites, and sharp images set our telescopes apart.

Miniature borescope

1–2 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	82060 ^{1,4}	1 mm	100 mm	50°
	82062 ^{1,4}	1 mm	230 mm	50°
	82070 ¹	1.2 mm	100 mm	70°
	82071 ¹	1.2 mm	137 mm	70°
	82340 AF ⁴	1.6 mm	100 mm	40°
	81390 A ²	1.6 mm	100 mm	90°
	82081	1.6 mm	170 mm	70°
	81590 A	1.6 mm	170 mm	90°
	82360 AF ⁴	1.9 mm	100 mm	40°
	82390 A ²	1.9 mm	100 mm	90°
30°	82590 A ²	1.9 mm	170 mm	90°
	82340 BF	1.6 mm	100 mm	40°
	81390 B ²	1.6 mm	100 mm	90°
	82360 BF	1.9 mm	100 mm	40°
	82390 B	1.9 mm	100 mm	90°
70°	82590 B ²	1.9 mm	170 mm	90°
	81390 C ²	1.6 mm	100 mm	90°
	82390 C ²	1.9 mm	100 mm	90°
	82590 C ²	1.9 mm	170 mm	90°



For additional protection, the following protective sheaths are available upon request:

Borescope diameter	1.0 mm	1.2 mm	1.6 mm	1.9 mm	2.9 mm
Outer diameter of protective sheath	1.2 mm	2.1 mm	2.4/2.8 mm	2.8 mm	3.8 mm

¹ Semirigid version with fiber optic image guide; ² Without eyepiece focus
 Temperature resistant up to 100°C ⁴ Mirror tube with 90° direction of view available

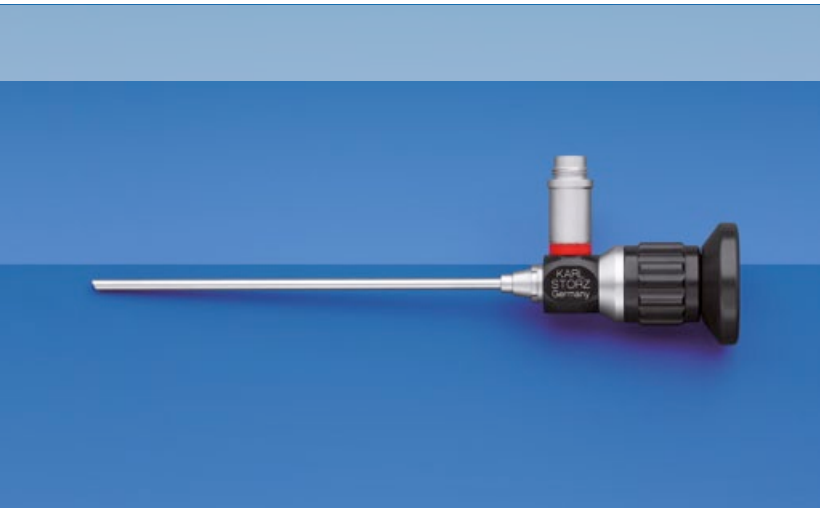
Mirror tubes for miniature borescopes

1.2–2.2 mm in diameter

Direction of view	Mirror tube	Diameter of mirror tube	Compatible borescope	Diameter of borescope	Angle of view
90°	82060 DA	1.2 mm	82060	1 mm	45°
	82062 DA	1.2 mm	82062	1 mm	45°
	82340 DA	1.9 mm	82340 AF	1.6 mm	45°
	82360 DA	2.2 mm	82360 AF	1.9 mm	45°

Rigid borescopes

2.8 and 2.9 mm in diameter



Borescopes

2.8 and 2.9 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	83290 AF	2.9 mm	100 mm	90°
	83570 AX ³		170 mm	70°
	83390 AF		240 mm	90°
	83490 AF			
	83590 AF		300 mm	
30°	83370 B ²	2.9 mm	100 mm	70°
	83290 BF1	2.8 mm		90°
	83570 BX	2.9 mm	170 mm	70°
	83390 BF		240 mm	90°
	83490 BF			
	83590 BF		300 mm	
70°	83260 CF	2.9 mm	100 mm	55°
	83360 CF		170 mm	
	83460 CF		240 mm	
	83560 CF		300 mm	

² Without eyepiece focus

³ Concentric illumination

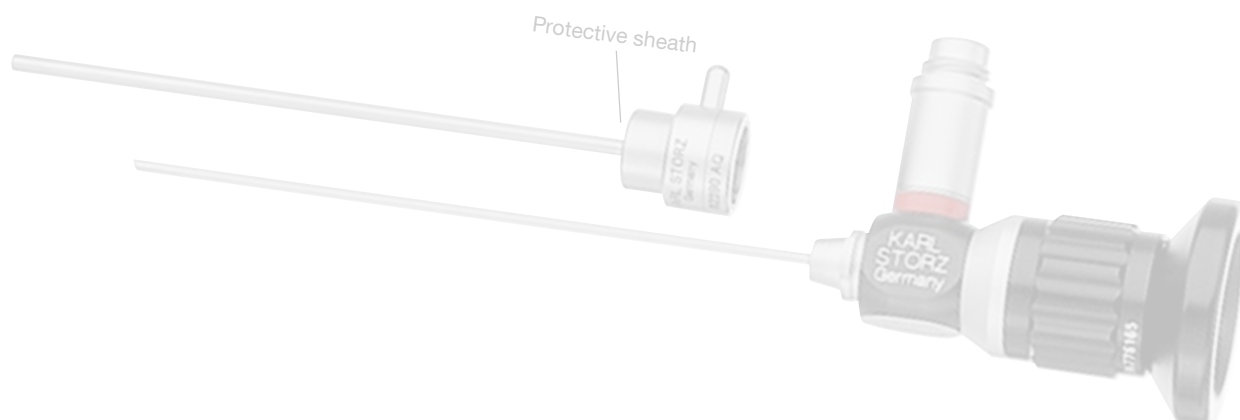


2.8 and 2.9 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
90°	83270 DF	2.9 mm	100 mm	70°
	83370 DF		170 mm	
	83470 DF		240 mm	
	83570 DF		300 mm	

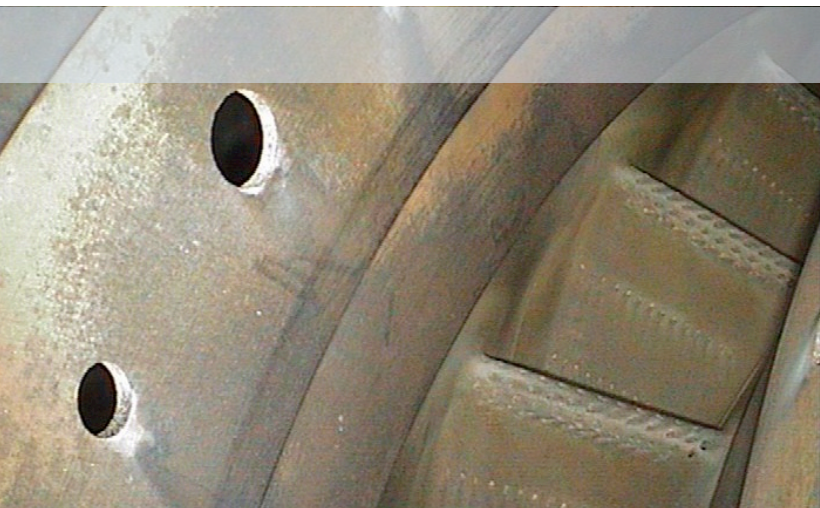
For additional protection, the following protective sheaths are available upon request:

Borescope diameter	2.8/2.9 mm	Outer diameter of protective sheath	3.8 mm
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Rigid borescopes

3.8 mm in diameter



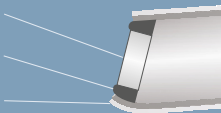
BF1 borescopes

All borescopes designated "BF1" feature special reinforcement at the distal end.

Sapphire glass endpiece for greater protection of the optical system

Protective ring

Rounded tip for optimal protection



Borescopes

3.8 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	84184 AF ⁵	3.8 mm	50 mm	80°
	84384 AF ⁵		170 mm	
	84304 AF1 ^{3,5}			100°
	84484 AF ⁵		240 mm	80°
	84584 AF ⁵		300 mm	
	84504 AF1 ^{3,5}		300 mm	100°
	84684 AF ⁵		360 mm	80°
	84604 AF ⁵			100°
30°	84184 BF ⁵	3.8 mm	50 mm	80°
	84284 BF		85 mm	
	84384 BF		150 mm	
	84304 BF1			
	84484 BF		220 mm	80°
	84584 BF		280 mm	
	84504 BF		280 mm	100°
	84684 BF		340 mm	80°
	84604 BF		340 mm	100°

³ Concentric illumination

⁵ Non-rotating sheath



3.8 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
70°	84184 CF ⁵	3.8 mm	50 mm	80°
	84384 CF		150 mm	
	84484 CF		220 mm	
	84584 CF		280 mm	
	84684 CF		340 mm	
90°	84184 DF ⁵	3.8 mm	50 mm	80°
	84384 DF		150 mm	
	84484 DF		220 mm	
	84584 DF		280 mm	
	84684 DF		340 mm	
120°	84184 EF ⁵	3.8 mm	50 mm	80°
	84384 EF		150 mm	
	84484 EF		220 mm	
	84584 EF		280 mm	
	84684 EF		340 mm	

³ Concentric illumination

⁵ Non-rotating sheath

For additional protection, the following protective sheaths are available upon request:

Borescope diameter	3.8 mm	Outer diameter of protective sheath	5 mm
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Rigid borescopes

4.3 mm – 5.8 mm in diameter



Borescopes

4.3 and 4.5 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
90°	84506 DF	4.3 mm	490 mm	100°
	84706 DF		650 mm	
0°	84505 AF ⁵	4.5 mm	490 mm	
	84705 AF ⁵		690 mm	
30°	84505 BF	4.5 mm	490 mm	
	84705 BF		690 mm	
70°	84505 CF	4.5 mm	490 mm	
	84705 CF		650 mm	

⁵ Non-rotating sheath

For additional protection, the following protective sheaths are available upon request:

Borescope diameter	4.3 mm	Outer diameter of protective sheath	5 mm
	4.5 mm		5.5 mm



5.8 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	85370 AF	5.8 mm	300 mm	67°
30°	85370 BF		300 mm	
90°	85370 DF		300 mm	
	85570 DF		470 mm	
120°	85370 EF		300 mm	

For additional protection, the following protective sheaths are available upon request:

Borescope diameter	5.8 mm	Outer diameter of protective sheath	7 mm
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Rigid borescopes

6.5 mm in diameter



6.5 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	86190 AF ⁵	6.5 mm	90 mm	90°
	86270 AF ⁵		200 mm	67°
	86290 AF ⁵			90°
	86370 AF ⁵		320 mm	67°
	86390 AF ⁵			90°
	86490 AF ⁵		440 mm	
	86570 AF ⁵		560 mm	67°
	86590 AF ⁵			90°
30°	86190 BF	6.5 mm	90 mm	
	86390 BF		320 mm	
	86590 BF		560 mm	

⁵ Non-rotating sheath



6.5 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
70°	86190 CF	6.5 mm	90 mm	90°
	86290 CF		200 mm	
	86370 CF		320 mm	67°
	86390 CF		320 mm	90°
	86490 CF		440 mm	
	86570 CF		560 mm	67°
	86590 CF			90°
90°	86190 DF	6.5 mm	90 mm	90°
	86290 DF		200 mm	
	86370 DF		320 mm	67°
	86390 DF		320 mm	90°
	86470 DF		440 mm	67°
	86490 DF			90°
	86570 DF		560 mm	67°
	86590 DF			90°
120°	86270 EF	6.5 mm	200 mm	67°
	86370 EF		320 mm	
	86570 EF		560 mm	

For additional protection, the following protective sheaths are available upon request:

Borescope diameter	6.5 mm	Outer diameter of protective sheath	8 mm
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Rigid borescopes

8 mm in diameter



AX borescopes

All borescopes designated as "AX, BX, CX, DX" feature the HOPKINS® II rod lens system for even brighter and higher-contrast images.

8 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
0°	88270 AF ⁵	8 mm	200 mm	67°
	88370 AX ^{3,5,6}		300 mm	
	88373 AX ^{3,5,6,8}		300 mm	
	88570 AX ^{5,6}		500 mm	67°
	88590 AF ⁵		560 mm	90°
	88770 AF ^{5,7}		780 mm	67°
30°	88370 BX ⁶	8 mm	300 mm	67°
	88373 BX ^{6,8}		300 mm	67°
	88390 BF		320 mm	90°
	88570 BF		560 mm	67°
	88770 BF ⁷		780 mm	
70°	88270 CF	8 mm	200 mm	67°
	88370 CX ⁶		300 mm	67°
	88373 CX ^{6,8}		300 mm	
	88390 CF		320 mm	90°
	88570 CX ⁶		500 mm	67°
	88590 CF		560 mm	90°
	88770 CF ⁷		780 mm	67°

³ Concentric illumination

⁵ Non-rotating sheath

⁶ With HOPKINS® II telescopes

⁷ Upon request

⁸ Temperature resistant up to 250°

For additional protection, the following protective sheaths are available upon request:

Borescope diameter	8 mm	Outer diameter of protective sheath	10 mm
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8 mm in diameter

Direction of view	Model	Diameter	Length	Angle of view
90°	88170 DF	8 mm	90 mm	67°
	88270 DF		200 mm	
	88370 DX ⁶		300 mm	
	88373 DX ^{6,8}		300 mm	67°
	88390 DF		320 mm	90°
	88470 DF		440 mm	67°
	88570 DX ⁶		500 mm	67°
	88590 DF		560 mm	90°
	88770 DF ⁷		780 mm	67°
120°	88370 EF	8 mm	320 mm	67°
	88570 EF		560 mm	

8/12 mm in diameter

0°	88970 AF ^{5,7}	8 mm/12 mm	1140 mm	67°
70°	88970 CF ⁷		1140 mm	
90°	88870 DF ⁷		970 mm	
	88970 DF ⁷		1140 mm	
	89070 DF ⁷		1300 mm	
	89170 DF ⁷		1480 mm	
120°	88970 EF ⁷		1140 mm	

⁵ Non-rotating sheath

⁶ With HOPKINS® II telescopes

⁷ Upon request

Borescopes 8/12 mm

The outer diameter is 8 mm for a length of 700 mm measured from the objective lens; for the remaining length up to the eyepiece, it is 12 mm.

Swing-prism borescopes

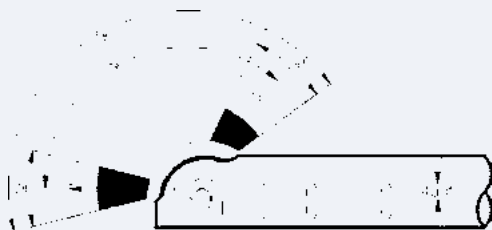
6 mm and 8 mm in diameter, 28° and 50° angle of view



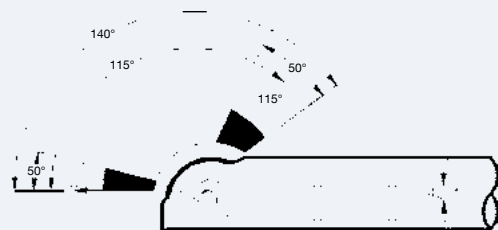
Product features:

- 400° sheath rotation
- One-handed full adjustment of direction of view in 2 dimensions (swing and rotation)
- Index for direction of view (rotation) displayed in the image
- Proven HOPKINS® telescope for high contrast, bright images with sharp margins
- Illumination optimally adapted to pivoting range through optimal light distribution
- Illumination akin to ring light around the objective lens
- Light, ergonomic handle with distinct forward inclination for fatigue-free working
- Universal handle for left-handed and right-handed users

28° angle of view



50° angle of view






Inspected field	Outer diameter	Angle of view	Working length / item no.					
			315 mm	370 mm	470 mm	505 mm	640 mm	670 mm
-14°-114°	6 mm	28°	86730 SF			86030 SF	86B30 SF	
0°-140°	8 mm	50°		88550 SF	88650 SF			88850 SF

Protective sheaths





Outer diameter of protective sheath	7.5 mm	86730 SQ			86030 SQ	86B30 SQ	
	10 mm		88550 SQ	88650 SQ			88850 SQ

Robust storage case



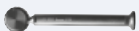

	80130 D1 Storage Case , for transporting endoscopes of working lengths up to 560 mm	80130 DX Large Storage Case , for transporting endoscopes of working lengths up to 780 mm
	680 x 415 x 122 mm (w x h x d)	900 x 415 x 122 mm (w x h x d)

Accessories



Accessories	Order no.	Product name
	80130 D5	Storage Case, for transporting endoscopes of working lengths up to 1.5 m Dimensions 1690 x 92 x 70 (w x h x d)
	80600	Multipurpose Stand, for stable mounting of endoscopes and cameras, consisting of: <ul style="list-style-type: none">- Articulated stand with a joint in the center and ball joints at both ends, equipped with a mounting plate for holding a camera or endoscope holder, total length approx. 50 cm.- Tripod (collapsible) for setting up the stand on an even surface.- Tension rod with Vee guide for attaching the stand to a circular pipe, tabletop, etc. The stand can be moved in any direction and can be locked into any position using a central lever.
		Endoscope holder
	80601 S3	2.9 mm diameter
	80601 S4	3.8 mm diameter
	80601 S5	5.8 mm diameter
	80601 S6	6.5 mm diameter
	80601 S8	8.0 mm diameter
	80601 S10	10.0 mm diameter
	80600 H	Tension Rod for 80600, tension rod with Vee guide, for attaching a videoscope to the Multipurpose Stand 80600



Accessories	Order no.	Product name	
	80231	Magnification Attachment, fitted onto the eyepiece using a claw coupling. It allows twofold enlargement of the diameter of the endoscopic image and enhances image details if used with a rigid borescope.	
	80130 D1	Storage Case, for transporting endoscopes of working lengths up to 560 mm; dimensions: 680 x 415 x 122 mm (w x h x d)	
		Attachments for image deflection ensure comfortable endoscopy, even in confined spaces where it is difficult or impossible to get a direct view through the eyepiece.	
		Deflection	
		60°	90°
	80228		160 mm
	80226	350 mm	
	80229		350 mm
	80229 XL		710 mm

KARL STORZ Industrial Group

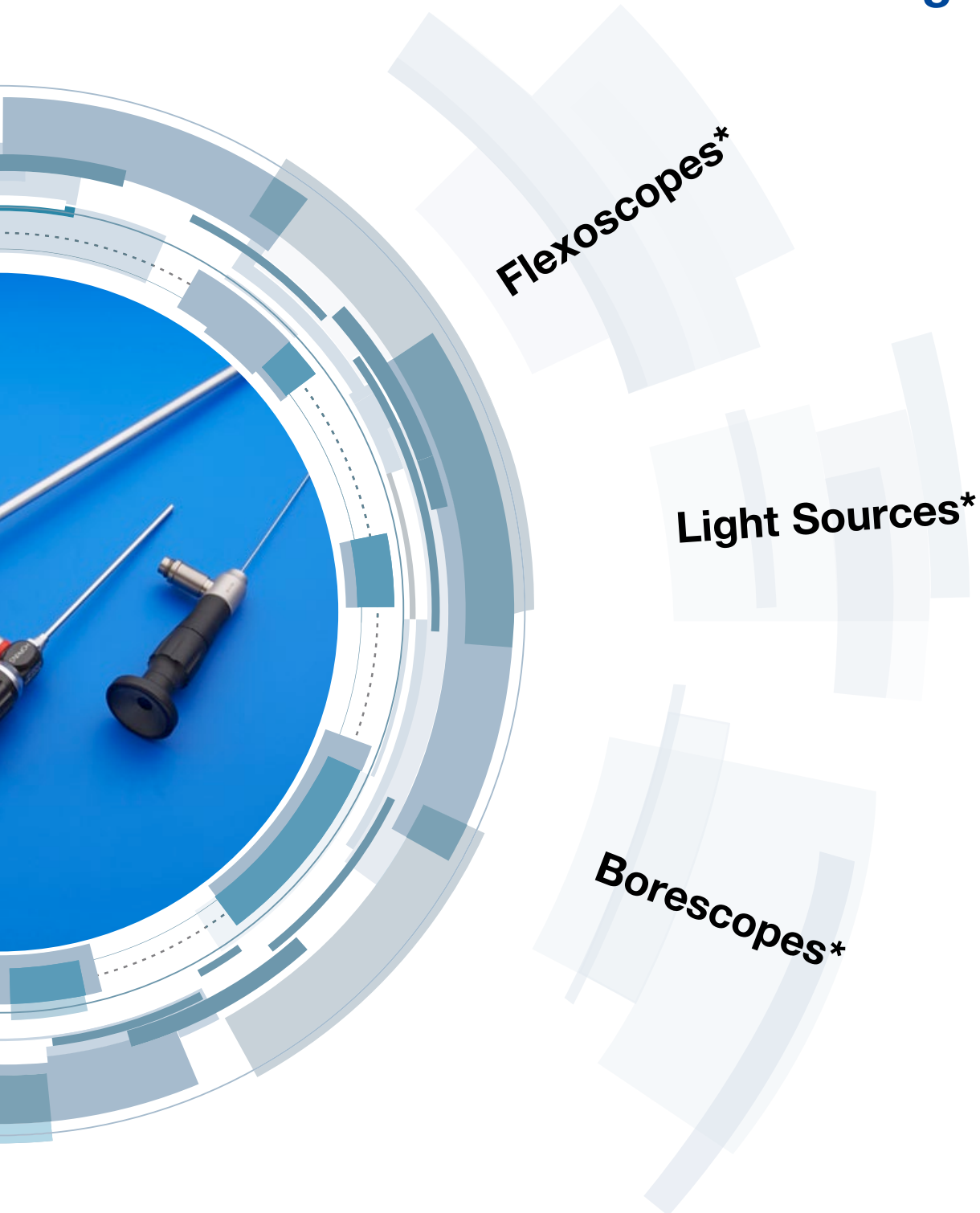
**Measurement
Systems and
Documentation***

Videoscopes*

**Portable
Systems***



Product groups



At KARL STORZ, we are constantly advancing all of our products. For that reason, please understand that changes may be made to the scope of supply, design, equipment, and technology. Therefore, the information, illustrations, and descriptions contained herein cannot be made the basis for any claims whatsoever.

* For an up-to-date overview of the individual product groups, please refer to the product brochures of the KARL STORZ Industrial Group.



Let's get Industrial!

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