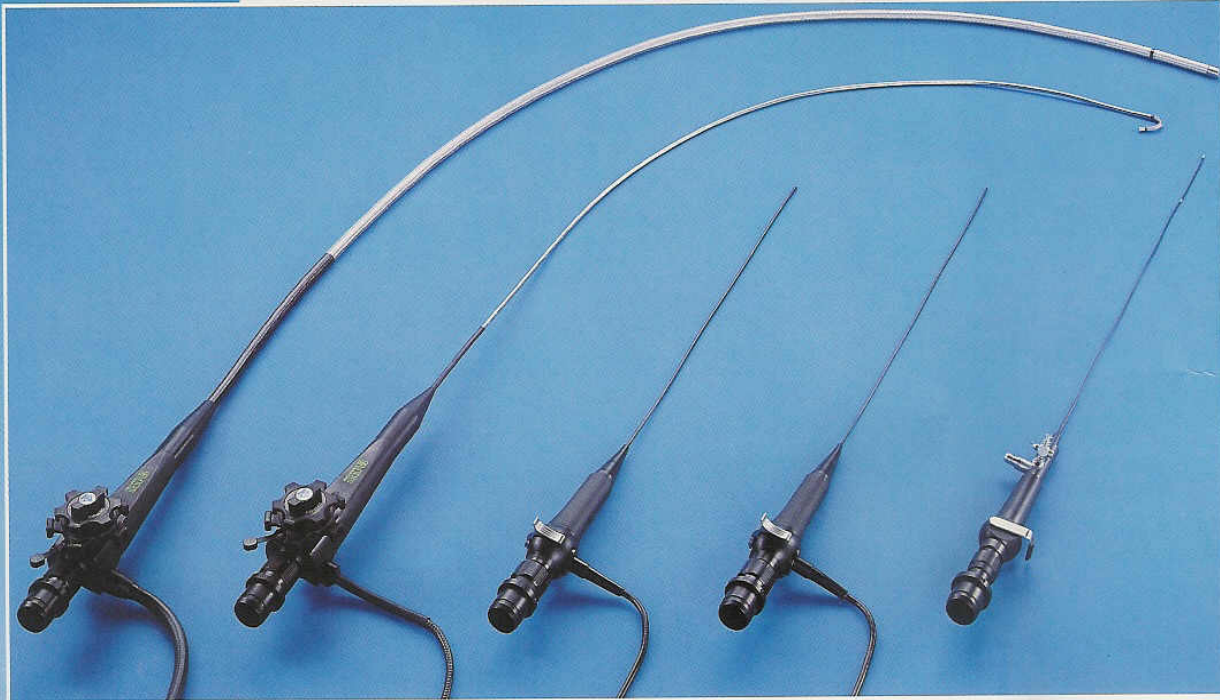




Flexible Technoscopes (Fiberscopes)

Flexible Technoscopes Concept



The oldest and safest method of checking for damage etc. remains visual inspection. Despite many other non-destructive test methods, there is nothing like having a look yourself.

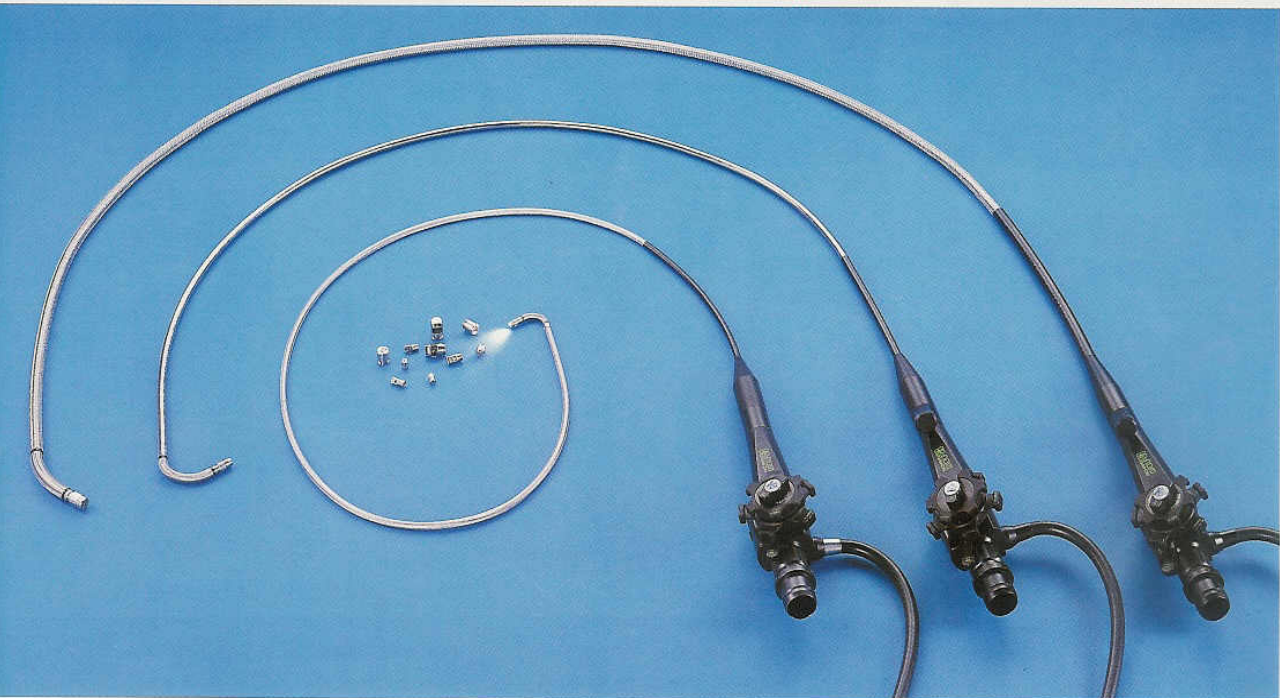
New TF series

With decades of practical experience, our engineers and technologists have incorporated countless innovations in this new technoscope generation known as the TF series. The basic concept behind every single flexible technoscope was thoroughly reviewed and improved. All the devices are compatible and supplement each other.

Transportation and storage

All flexible WOLF technoscopes are supplied in a strong, plastic case (see illustration bottom left):

- foam-rubber inlay recess to accommodate and protect the technoscope
- a small container for the exchangeable objective heads is supplied with the TF-6, TF-8 and TF-11
- special cases with additional space for accessories, light sources etc. on request



Service-friendly construction

During the construction of the new TF series, particular attention was paid to user-friendly servicing.

- ❑ robust and reliable
- ❑ simple repair of most components
- ❑ simple replacement of parts
- ❑ short repair times
- ❑ ideal service

Versatility

The new TF series with exchangeable objective heads (TF-6, TF-8 and TF-11) provides a high degree of versatility

- ❑ tip steerable in 2 or 4 directions depending on the model

- ❑ fixed light guide 2.3 meters long (most models) allowing great freedom of movement and optimum illumination
- ❑ objective heads for 0° straight view or 90° lateral view available as accessories
- ❑ different image angles for detailed or panoramic view
- ❑ exchangeable objective heads protected from loss by bayonet connector and screw sleeve

Designed for industry

- ❑ optimum protection of the optical components with multilayer, robust design
- ❑ highly resistant to kinking and torsion
- ❑ watertight over the full working length of the flexible section
- ❑ control handle is splash-proof

- ❑ outer jacket of black polyurethane or stainless steel braid



Flexible Technoscopes Optical Features

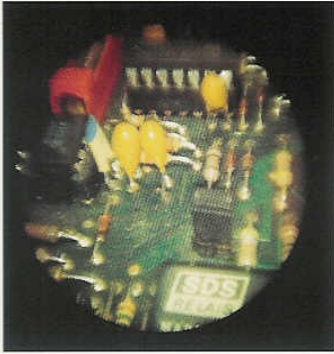


Image quality

By using even finer glass fibers, the already good resolution has been significantly increased.

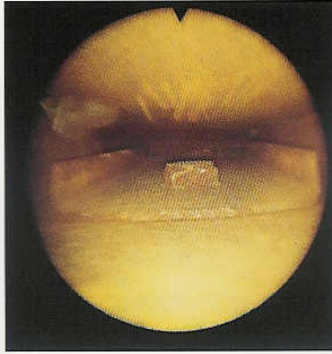
With new objective and eyepiece lenses, the brightness, the image size and the focus of the flexible technoscopes have also been further improved.

Focus

To compensate for differences in eyesight, the eyepiece of the flexible technoscopes has a diopter adjustment.

The TF-8 and TF-11 series also have an objective focusing mechanism to achieve a sharp image even at extreme object distances.

The sharp focus is maintained even when the technoscope is bent.



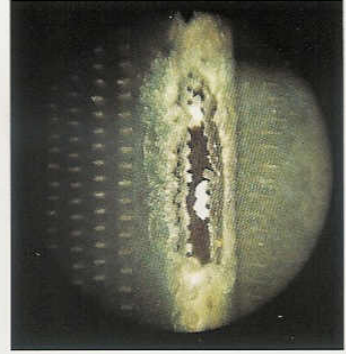
Field of view

The image angle of all the flexible technoscopes determines the field of view.

- ☐ 30° image angle – small field of view but strong magnification (detailed view)
- ☐ 60° image angle – normal field of view, medium magnification
- ☐ 80° and 100° image angle – large field of view, slight magnification (wide angle, panoramic view)
- ☐ 120° image angle – super wide angle for close proximity range

Documentation

All flexible WOLF technoscopes are suitable for photography and video. The eyepiece focusing mechanism of every flexible technoscope has a colour marker to indicate the position for photography or video.



By simply connecting a camera to the eyepiece with a lens between, pictures can be viewed or documented directly using:

- 35 mm camera
- monitor
- video recorder
- video printer
- video computer

Naturally, WOLF supplies state-of-the-art video and photographic documentation systems with the latest technology.

Illumination

Powerful light sources for optimum illumination of the viewing area belong to the basic equipment. Please refer to the special brochure.



Different magnifications at fields of view: f.e. 30°, 60°, 100°

Handling



Ergonomics

The control handles of all flexible technoscopes (fiberscopes) of the TF and TFA series are designed for optimal ergonomics and easy one-handed operation.

Covering

The flexible shaft of the Technoscopes is protected either with a resilient polyurethane jacket or with a stainless steel braid.

The polyurethane jacket is easy to clean and is recommended for applications where certain sliding properties are demanded. Also, polyurethane is preferred for thin fiberscopes because of its high elasticity.

Optimal protection against rough operating conditions (e.g. inspection of casting parts) and good sliding properties are achieved with a jacket made from fine mesh, breakage-proof stainless steel braid.

Orientation

A small marker superimposed on the visible

image of the eyepiece helps the user to coordinate the control directions.

Steering

The steering mechanism for the fiberscope tip is designed for extremely smooth control. There is an independent friction brake for each steering plane which allows the fiberscope tip to be locked at any angle.

Flexible Technoscopes with larger diameters can be controlled in two independent planes (4-way angulation). For small diameters, the fiberscope tip can be angulated in one plane either 1-way or 2-way.

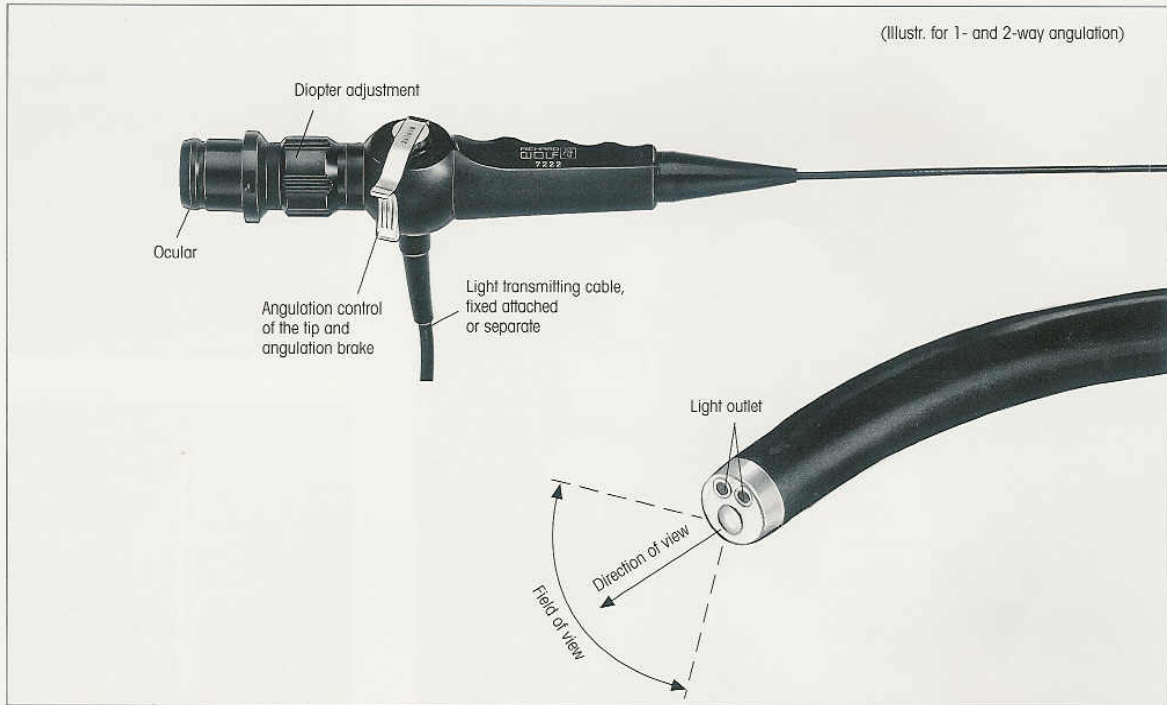
The fine mechanics of the fiberscope tips is extremely precise and, depending on the model, allows for angulation up to 180°!



TF-5 (original size)

Flexible Technoscopes with fixed direction of view

Technical Data

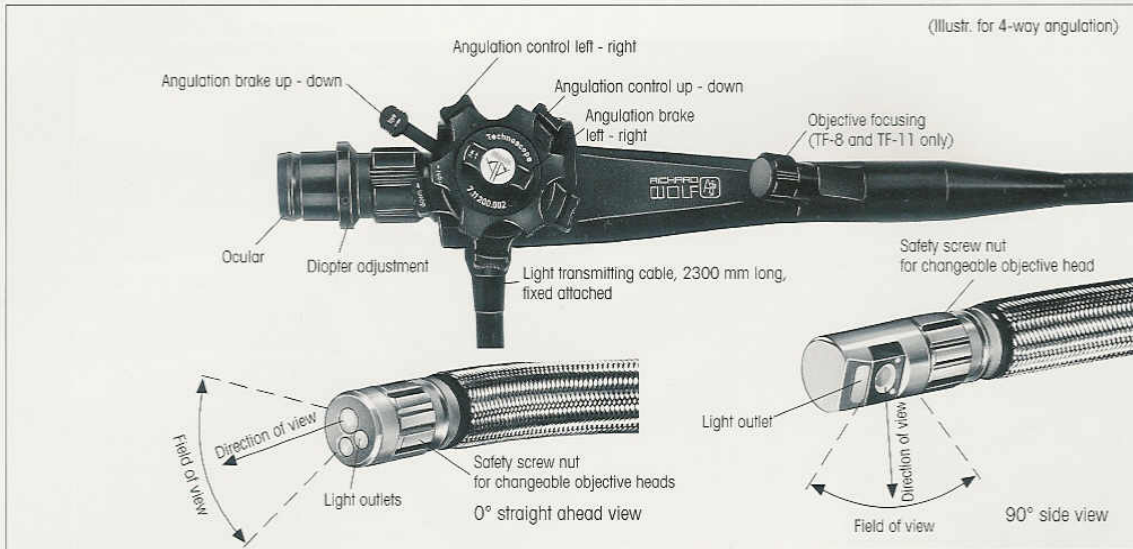


Fiber-scope-series	Ø (mm)	Working length (mm)	Total length (mm)	Tip-bending radius (mm)	Direction of view	Field of view	Depth of field (mm)	Tip angulation	Light guide (length)	Outer jacket of the flexible shaft	Order no.
TFS-2.4	2.2	400	650	12	0°	60°	3 - 10	2-way	integrated (2300 mm)	PU Polyurethane	7.24040.001
		700	950	12	0°	60°		150° / 90°			7.24070.001
		1100	1350	12	0°	60°		7.24110.001			
	2.4	400	650	12	0°	60°	3 - 10	2-way	integrated (2300 mm)	Tungsten	7.24040.002
		700	950	12	0°	60°		120° / 90°			7.24070.002
		1100	1350	12	0°	60°		7.24110.002			
TFS-2.5	2.5	700	950	12	0°	60°	2 - 50	2-way 160° / 120°	without ①	PU Polyurethane	7.73250.172
TF-3	3.2	450	650	9	0°	90°	3 - 50	2-way	integrated (2300 mm)	PU Polyurethane	7.35041.001
		700	950	11	0°	90°		180 / 90°			7.35071.001
		1100	1350	11	0°	90°		2-way			7.35111.001
		1400	1650	11	0°	90°		160° / 90°			7.35141.001
		1900	2150	11	0°	90°		7.35191.001			
	3.5	450	650	9	0°	90°	3 - 50	2-way	integrated (2300 mm)	Tungsten braid	7.35041.002
		700	950	11	0°	90°		170° / 90°			7.35071.002
		1100	1350	11	0°	90°		2-way			7.35111.002
		1400	1650	11	0°	90°		160° / 90°			7.35141.002
		1900	2150	11	0°	90°		140° / 90°			7.35191.002
TFA-5	5.0	690	950	13	0°	90°	1 - ∞	2-way	without ①	PU	7.05065.001
	5.6	690	950	13	0°	90°		180° / 90°			Tungsten braid
lengths 1100 mm, 1400 mm and 1900 mm on request											
TF-5	5.0	1040	1370	8	0°	80°	1 - ∞	4-way	integrated (2300 mm)	Tungsten braid ②	7.05104.002
		1300	1620					180° / 140°			180° / 140°

① with connector for separate WOLF light guides

② covering with PU Polyurethane on request

Flexible Technoscopes with exchangeable objective heads



Series	Ø (mm)	Working length (mm)	Total length (mm)	Tip bending radius (mm)	Direction of view	Field of view	Depth of field (mm) with field of view:	Tip angulation	Light cable	Outer jacket of the flexible part	Type and order no.
TF-6	6,3	1320	1650	13	standard 0° (with optional objective heads: 65°/100°)	30° (with optional objective heads: 65°/100°)	30°:15-50 65°: 5-500 100°:3-∞	4-way: +120°/-120° +120°/-120°	fixed 2300 mm	PU*	7.63140.001
		1820	2150	13		30°	30°:10-∞ 60°: 3-∞ 100°:1-∞			stainless steel	7.63140.002
		1820	2150	13		30°	30°:10-∞ 60°: 3-∞ 100°:1-∞			PU*	7.63200.001
TF-8	8,3	1320	1650	20	heads: 90°)	30° (with optional objective heads: 60°/100°)	30°:10-∞ 60°: 3-∞ 100°:1-∞			stainless steel	7.83140.001
		1820	2150	20		30°	30°:10-∞ 60°: 3-∞ 100°:1-∞			PU*	7.83140.002
		1820	2150	20		30°	30°:10-∞ 60°: 3-∞ 100°:1-∞			stainless steel	7.83200.001
TF-11	11,3	1320	1650	35		30° (with optional objective heads: 80°/120°)	30°:10-∞ 80°: 3-∞ 120°:1-∞			stainless steel	7.83200.002
		1820	2150	35		30°	30°:10-∞ 80°: 3-∞ 120°:1-∞			PU*	7.11140.001
		2820	3150	35		30°	30°:10-∞ 80°: 3-∞ 120°:1-∞			stainless steel	7.11140.002
		1820	2150	35						PU*	7.11200.001
		2820	3150	35						stainless steel	7.11200.002
										PU*	7.11300.001
										stainless steel	7.11300.002

* PU = polyurethane

Changeable objective heads for series TF-6

Direction of view	Field of view	Order-No.
0°	65°	7.00063.60
	100°	7.00063.10
90°	30°	7.00063.39
	65°	7.00063.69
	100°	7.00063.109

Changeable objective heads for series TF-8

Direction of view	Field of view	Order-No.
0°	60°	7.00083.60
	100°	7.00083.10
90°	30°	7.00083.39
	60°	7.00083.69
	100°	7.00083.109

Changeable objective heads for series TF-11

Direction of view	Field of view	Order-No.
0°	80°	7.00011.80
	120°	7.00011.12
90°	30°	7.00011.39
	80°	7.00011.89
	120°	7.00011.129