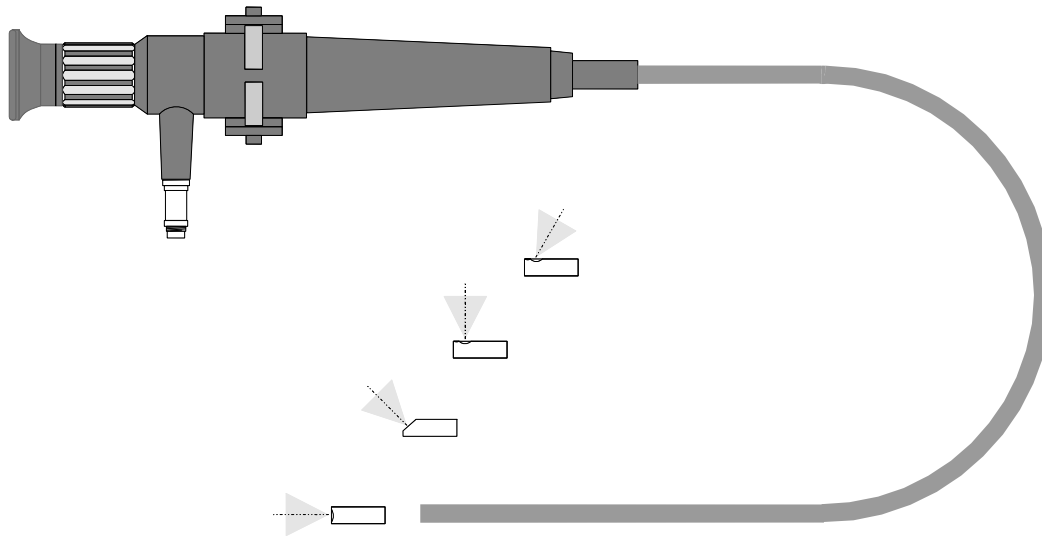


AVIASCOPE / FB

Flexible endoscopes
with end-tip-deflection



- Available outer diameters 2.9mm, 3.8mm, 5.5mm, 6.5mm, 8mm and 11mm
- Working lengths from 300mm to 6000mm
- Eyepiece with adjustable focus
- Remote controlled angulation of distal tip in two directions (up/down) for 2.9mm, 3.8mm and 5.5mm instruments and in four directions (up/down/right/left) for 6.5mm, 8mm and 11mm instruments
- Interchangeable objective tips with different viewing directions (0° direct standard; 0° direct wide-angle, 45° forward-oblique, 90° lateral and 110° retrograde) for all instruments from 6.5mm. 3.8mm and 5.5mm instruments have an integrated 0° wide angle objective
- High-resolution fibre optic image transmission system for high image quality
- Ergonomic design of eyepiece section; control of angulation, angulation locking system and focus through one hand for easy and safe operation even under difficult on-site conditions
- Rugged construction for daily reliable use in industrial environments

Features

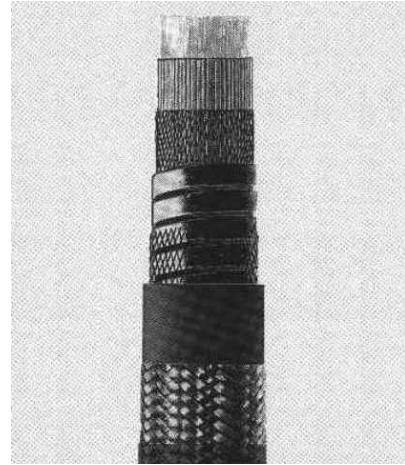
AVIASCOPE / FB flexible endoscopes are indispensable for many industrial inspection applications where no rigid instrument can be used and the alternative would be a cost and time intensive strip down. A robust

construction in combination with the latest image and light transmission system, 2- and 4-way end tip angulation and interchangeable objective tips provide a perfect tool for any difficult remote inspection problem.

Description

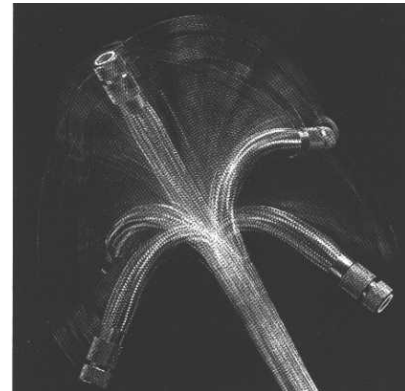
Basic instrument

Heart of each instrument is the flexible fibre optic image guide. With a single fibre diameter of only 3-4µm it provides a remarkable image resolution (practical no visible definition of the image). Instead of standard fibre optic light transmission systems the AVIASCOPE FB incorporate an PMMA light guide with app. 30% increased illumination intensity. Light outlet on distal end is situated around the objective lens (ring illumination) for intensive light supply to the inspection area. Both image and light transmission systems are protected by a 5-layer security sheathing; outer tube made of high flexible, teflonized stainless steel spiral (2.9mm and 3.8mm instruments: silicone sheeting). All instruments are water proofed and are suitable for use in temperature ranges from -10 to +80°C.



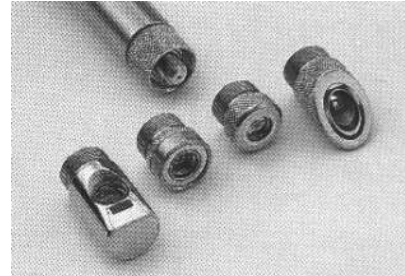
Angulation

2.9mm, 3.8mm and 5.5mm instruments are available with a two-way remote controlled end-tip angulation (up/down). All other instruments have a four way remote controlled end-tip angulation (up/down/left/right). The angulation angle can be fixed and released at any position by a locking system situated on the eyepiece section.



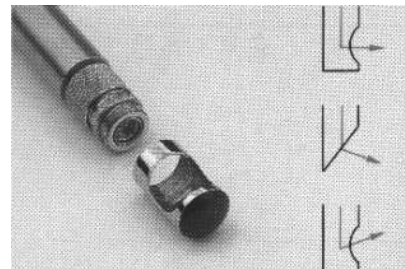
Interchangeable objectives

From 6.5mm dia. there are 5 pcs. interchangeable objectives for each instrument available (0° direct standard, 0° direct wide-angle, 45° forward-oblique, 90° lateral and 110° retrograde). The 2.9mm, 3.8mm and 5.5mm instruments are manufactured with a fixed objective 0° wide angle.



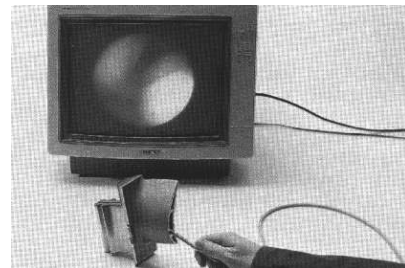
Mirror attachments

An additional economic possibility to have different vision directions are interchangeable mirror - attachments (70° forward-oblique, 90° lateral, 110° retrograde). Same are applicable with each 0° direct view objective with 40° field of view.



Documentation

Certainly all FB-AVIASCOPIES are best suitable for use with photographic or video-documentation systems. A large selection of different b/w and colour CCD-cameras as well as recording equipment is available to suit any individual application.



Scope of supply

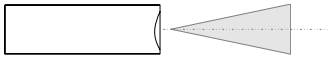
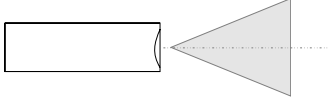
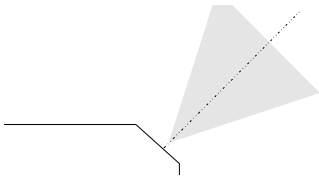
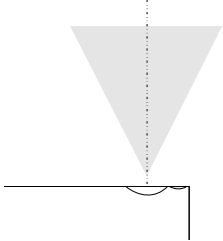
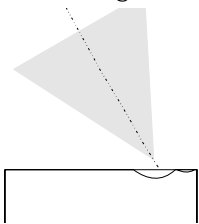
Each instrument comes in a rugged, impact-resistant, lockable case for transport and storage incl. light guide 1800mm long, cleaning material, instruction manual and individual end-control certificate.



Diameter [mm]	Length [mm]	Angulation [°]	Order No.
2.9	300	2 X 120	FB-029-0300-2
2.9	500	2 X 120	FB-029-0500-2
2.9	1000	2 X 100	FB-029-1000-2
3.8	300	2 X 150	FB-038-0300-2
3.8	750	2 X 150	FB-038-0750-2
3.8	1250	2 X 150	FB-038-1250-2
5.5	750	2 X 120	FB-055-0750-2
5.5	1000	2 X 120	FB-055-1000-2
5.5	1500	2 X 120	FB-055-1500-2
6.5	750	4 X 140	FB-065-0750-4
6.5	1000	4 X 140	FB-065-1000-4
6.5	1500	4 X 140	FB-065-1500-4
6.5	2000	4 X 120	FB-065-2000-4
6.5	3000	4 X 120	FB-065-3000-4
8.0	750	4 X 140	FB-080-0750-4
8.0	1000	4 X 140	FB-080-1000-4
8.0	1500	4 X 140	FB-080-1500-4
8.0	2000	4 X 120	FB-080-2000-4
8.0	3000	4 X 120	FB-080-3000-4
8.0	4000	4 X 120	FB-080-4000-4
8.0	5000	4 X 100	FB-080-5000-4
8.0	6000	4 X 100	FB-080-6000-4
11	1000	4 X 120	FB-110-1000-4
11	2000	4 X 120	FB-110-2000-4
11	3000	4 X 100	FB-110-3000-4
11	4000	4 X 100	FB-110-4000-4
11	6000	4 X 100	FB-110-6000-4

Special instruments regarding diameter, length or field-of-view on customers request!

Interchangeable objectives

Vision direction	Field of view	Application
0° direct 	40°	Recommended for use in connection with TV-camera; good magnification on close object distances, practical no image distortion. Furthermore for use with interchangeable mirrors 70°, 90° or 110°
0° direct 	100°	'Fish-eye' objective; ideal suitable for serial inspections and 360° panoramic inspections of curved tubes; very good depth of field
45° forward oblique 	50°	Special suitable for accurate inspection of side bores; good combination of detail and overall view; recommended for use in test objects with reflecting surfaces
90° lateral 	50°	General purpose application for inspection of areas which are located in a right angled position to the endoscope axis special suitable for dark, light absorbing test objects
110° retrograde 	50°	For inspection of areas which are in a slight backwards position to the endoscope axis

45°, 90° and 110° objective heads with larger or smaller field of views available on request!

Vision / F.o.v. [°]	for FB-065-X	for FB-080-X	for FB-110-X
0 / 40	O-06-000-040	O-08-000-040	O-11-000-040
0 / 100	O-06-000-100	O-08-000-100	O-11-000-100
45 / 50	O-06-045-050	O-08-045-050	O-11-045-050
90 / 50	O-06-090-050	O-08-090-050	O-11-090-050
110 / 50	O-06-110-050	O-08-110-050	O-11-110-050

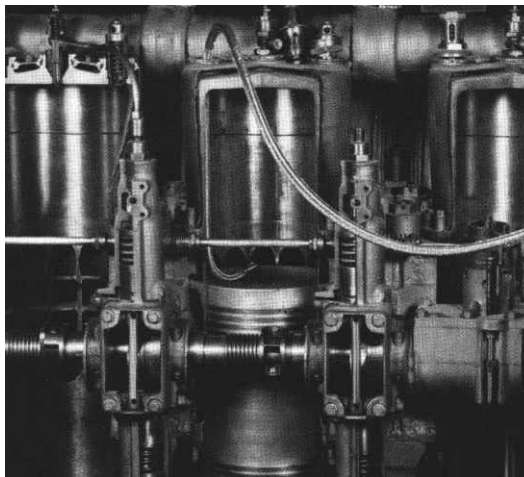
Mirror attachments

Vision direction [°]	for FB-065-X	for FB-080-X	for FB-110-X
70	SP-06-070	SP-08-070	SP-11-070
90	SP-06-090	SP-08-090	SP-11-090
110	SP-06-110	SP-08-110	SP-11-110

Mirrors suitable for 0° / 40° objective head

FB-038-X and FB-055-X-endoscopes with 40° objective and mirror attachments on request

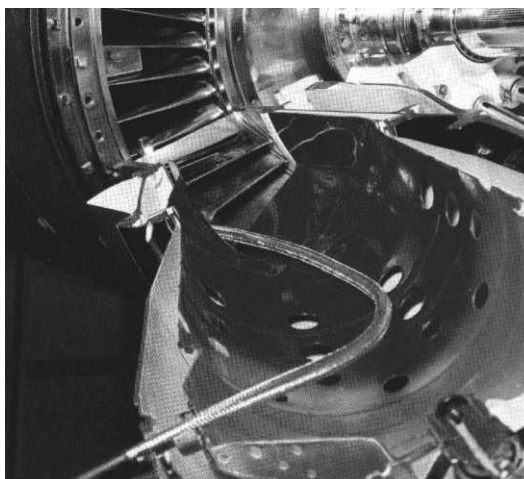
Inspection of cylinder and pistons in a marine diesel as an example of internal combustion engine construction. Inspection of valve seatings in four stroke engines is also possible.



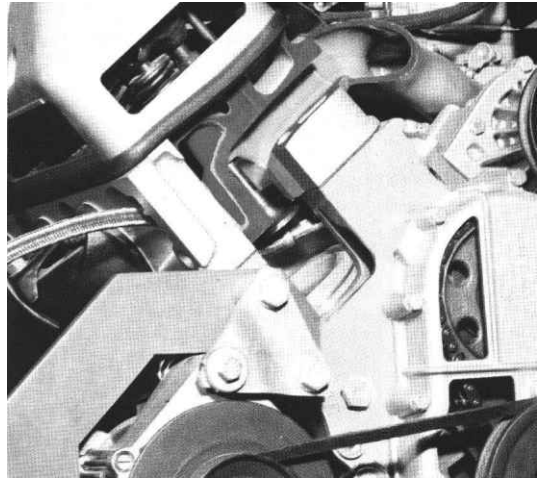
Inspection of aircraft wing ribs and linkages. Similar applications exist in the construction and automobile industries for the inspection of hollow beams and many other concealed spaces.



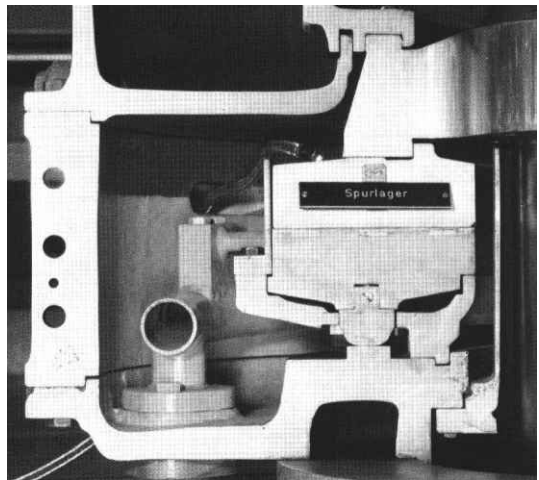
Inspection of nozzle guide vane trailing edges in a jet engine as an example for turbine and gas turbine construction.



Inspection of valve seatings in a four stroke engine as an example for the automobile industry.



Bearing surface inspection in a turbine as an example for heavy machine construction and equipment maintenance. Similar inspection application exist for turbine compressor blades, power turbine blades, transmissions etc.



Gear wheels inspection in a standard differential assembly as an example for machine and constructions as well as power transmission users.

