Directions of View

Rotascope: Availability Table

Diameter (mm)	0°	45°	70°	90°	110°
4.00	*210	*215	185	*185	
	*360	*360		*300	
	475	480		370	
5.00			185	185	
	210	215			
	315	320		305	305
	420	425		425	
	600	600		660	
5.5		215			
		310		305	305
	420			425	
6.00	*235	*235	185		
	*435		275	*340	270
	*635	*435	335	*540	335
	835	*635	440	935	440
		835	535		
			610		
			935		
8.00				*140	
			190	190	
	*235	*240	*275	*275	275
		*440	340	*340	340
	*435	*640	*445	*445	445
			540	*540	
	*635	840	615	615	
				840	
				940	
	835	1040	942	1340	
	1430	1440		1540	
10.00	(210) 245	150	200	205	355
		(215) 250	350	(322) 355	
	(407) 445	(415) 450		455	555
			550	(566) 555	
	(607) 645	(615) 650		605	
				700	
	(810) 845	850		805	
	1075	1075		(905) 960	
				1210	
	1575	1575		1460	

Working lengths in mm
*prefered stock scopes
(…) prefered stock scopes with integrated zoom

Specifications

Operating temperature: -40° C to 121° C

Pressure resistance: 3 bar

Fluid resistance: Insertion tube will withstand immersion in aviation fuel, kerosene, gasoline, diesel fuel, mineral and synthetic lubricating oils and hydraulic fluids, most industrial solvents and water.

Body length: Without zoom eyepiece: 95 mm
With zoom eyepiece: 160 mm

Zoom ocular option reduces working length by 35 mm (10 mm diameter) and 25 mm on all other diameters. Our policy of continued product improvement means specifications may vary from time to time from those shown in this brochure. Above working lengths are for 56° field of view only. Lengths may vary with other fields of view.

Also available:
Mini-rigid micro-borescopes: 1.7, 1.9 and 2.7 mm diameter
Swing prism zoom borescopes: 6, 8 and 10 mm diameter

Inspection Solutions

People buy our remote visual inspection products because, in the main, they either have a problem, or they think they have a problem, or they need to know that there isn't a problem. We try to provide the solution to these questions with images from deep inside structures, jet engines, aircraft, machines and products of all kinds. Seeing truly is believing! We try to offer the customer the most cost effective solution to his inspection problem.

In our core business of remote visual inspection we offer a very complete portfolio of equipment. As well as HSW rigid borescopes, we offer industrial fibrescopes, industrial videoprobes, CCD cameras and related products for video documentation and photography.

HSW

Henke-Sass, Wolf GmbH
Postfach 4259, Kronenstraße 16
D-78532 Tuttlingen, Germany
Telefon ++49 (0) 74 61 / 1 89 - 0
Telefax ++49 (0) 74 61 / 1 89 - 187
e-mail: hsw@henkesasswolf.de
www.henkesasswolf.de

Henke-Sass, Wolf Sp. z o.o. POLSKA
ul. Tysiaclecia 14
64-300 NOWY TOMYSL, Polen
Tel.: (0-666) 228 31
Fax: (0-666) 228 90 226 55
Tlx 01412411
e-mail: hsw@henkesasswolf.de
www.henkesasswolf.de

Henke-Sass, Wolf of America Inc.
Soroco Industrial Park, Route 131
Southbridge, MA 01550, USA
Telephone 508 - 764 - 32 00
Telefax 508 - 764 - 82 42
e-mail: hsw@henkesasswolf.de
www.henkesasswolf.de

Rotascope Rigid Borescopes

Henke-Sass,Wolf offers industrial borescopes that set the standard for image quality and durability in remote visual inspection equipment. The complete range includes rotascopes with rotable insertion tubes, swing-prism borescopes with variable directions of view, miniprobes, extendible borescopes and the low-cost econoscope.

Rotascope rigid borescopes types R and RZ are a versatile inspection tool for a wide range of demanding applications. Available in diameters 4, 5, 5.5, 6, 8, 10 and 16 mm and in lengths from 158 mm to 1450 mm.

Precision Optics

HSW rotascopes feature precision lenses, prisms and cover-glasses which deliver bright, clear images. The use of a special penta-prism at the tip ensures the image is upright and sideright without the need for a compensating dove-prism.

Special attention has been paid in the optical design to maximising transmission and hence image brightness. The on-axis resolution at the image centre is held as high as possible towards the edge of the field of view. This uniform, flat field enables the smallest defects to be seen anywhere in the field of view greatly reducing user eye-strain.

Superior Illumination Performance

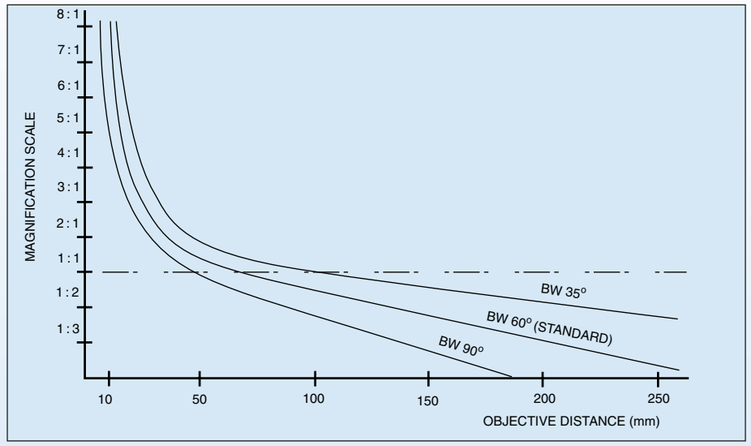
By bringing the illumination fibres into close proximity to the viewing window at the distal tip in a "wrap-around" arrangement, the parallax present between illumination and optical fields is virtually eliminated.

This reduces the closest illuminated viewing distance considerably. All HSW borescopes are designed to correctly illuminate the entire field of view, right down to their minimum focussing distance.

Rigid borescopes from HSW come in a variety of configurations to tackle a range of demanding inspection jobs.

All-metal three-tube construction guarantees durability.

A zoom option is available on all models.



Magnification
Relationship between magnification, field of view, objective distance and magnification.

Tip length and chisel-tip design
The “wrap-around” fibre arrangement also reduces the tip length of the oblique, lateral and retro-view instruments to an absolute minimum.

The distal tip of the 45° and 70° direction of view instruments is wedge-shaped like a chisel enabling the borescope to successfully view to the bottom of blind holes or, for example, to view the roots of turbine blades to greater effect.

Light condensator in light-guide post
On instruments of 6mm diameter and smaller, the light-guide post incorporates a condensor element which boosts illumination at the tip by 30%.

340° rotary scanning
The insertion tube of the rotascope can be rotated, allowing the viewing field to be scanned 340° without moving the body of the borescope. A positive stop is built into the body to prevent over-rotation of the lighting fibres.

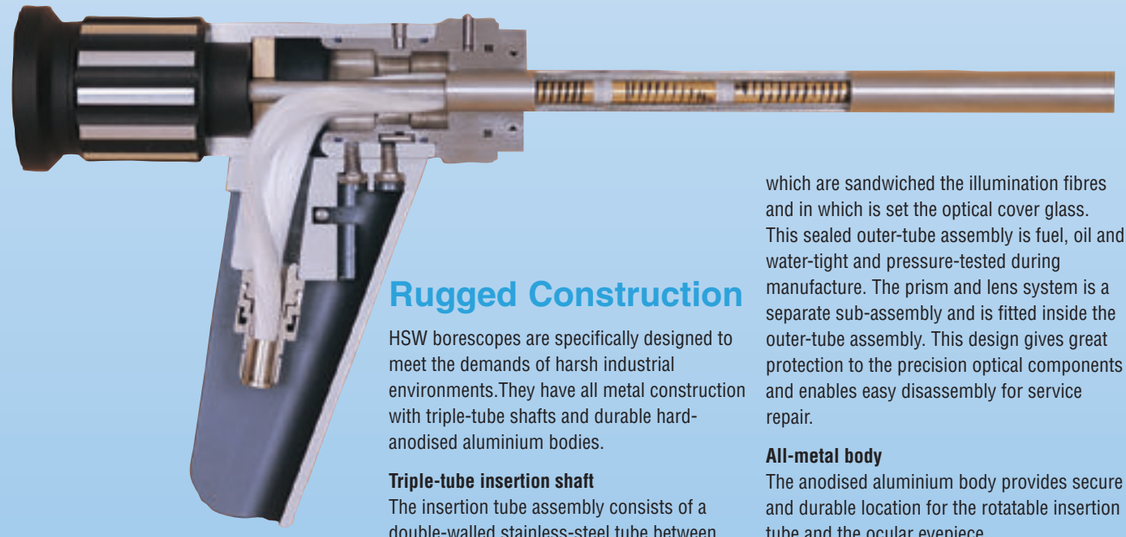
The larger the field of view, the lower the magnification.

The 90⁰ field of view shown at the far left produces the lowest magnification.

The 60⁰ field of view produces more magnification, and the 35⁰ field of view offers even greater magnification.

90⁰ 60⁰ 35⁰

Field of view



Rugged Construction

HSW borescopes are specifically designed to meet the demands of harsh industrial environments.They have all metal construction with triple-tube shafts and durable hard-anodised aluminium bodies.

Triple-tube insertion shaft
The insertion tube assembly consists of a double-walled stainless-steel tube between which are sandwiched the illumination fibres and in which is set the optical cover glass. This sealed outer-tube assembly is fuel, oil and water-tight and pressure-tested during manufacture. The prism and lens system is a separate sub-assembly and is fitted inside the outer-tube assembly. This design gives great protection to the precision optical components and enables easy disassembly for service repair.

All-metal body
The anodised aluminium body provides secure and durable location for the rotatable insertion tube and the ocular eyepiece.

Viewing direction indicator
When viewing inside a closed cavity or inspection area, the tip of the borescope may not be visible to the operator. In certain conditions, appreciating in which direction one is viewing may be difficult. On all rotascopes with oblique, lateral or retro directions of view, the rotary scanning control incorporates a raised indicator tip which enables the viewing direction to be monitored by feel alone without taking one´s eye from the eyepiece.

Fibre and bearing life tested and proven
In development testing, rotascopes were subjected to 20,000 operating cycles stop to stop. The bearing surfaces between the insertion tube assembly and the bore of the body showed no measurable wear, and there was no loss of lighting performance due to fibre breakage.

Greater versatility

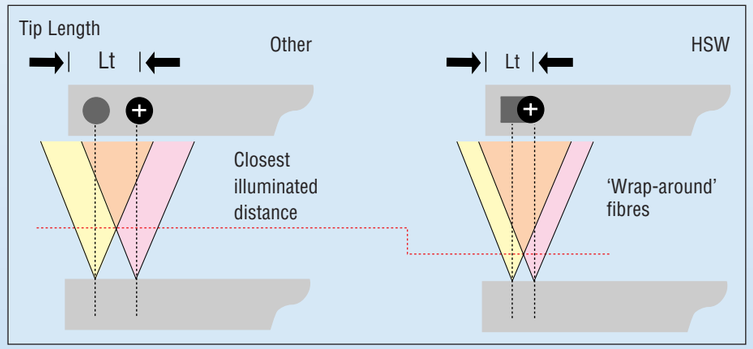
Fields of view
Fields of view: 35, 55, 70 and 90 degrees

Adaptable light-guide fitting
All rotascopes have detachable click-on, click-off pistol-grips to make them easy to handle and protect the light-guide. The ACM male light-guide post can be converted by the user to ACM female / Olympus, Wolf, Storz and other pattern fittings.

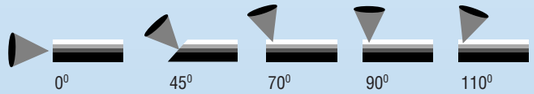
Option of zoom eyepiece on all sizes
All rotascopes can be specified with a variable magnification zoom eyepiece. This gives a steplessly adjustable magnification range of an additional 2:1 compared to a non-zoom instrument.

The zoom facility, when used on an instrument with a modestly narrow field of view of 35° gives similar magnification, at all viewing distances, to borescopes with very narrow fields of view without the loss of depth of focus associated with such instruments. This is particularly valuable when the image plane is not flat nor perpendicular to the axis of the instrument.

The super-large exit lens of the zoom ocular delivers images which are big, bright and very easy to view.



Unique tip design with shortest tip length and wrap-around fibres



Directions of view