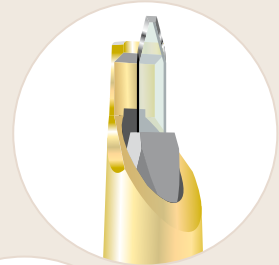
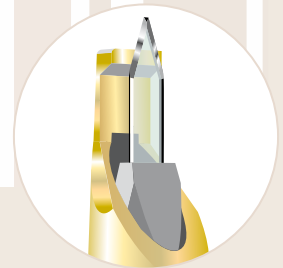




100 Surgeries with one Meyco diamond knife?
1.000 Surgeries with one Meyco diamond knife?

You will not believe it -
it can be 10.000 without
re-sharpening!



Swiss Diamond Technology
www.meyco.ch



It is the statement of Dr. A. Hennig, who built up the Lahan Eye Hospital in Nepal. They cannot afford expensive disposables – they work with valuable Meyco diamond knives.

You determine the life of your diamond knife. It never ever gets dull from cutting the cornea or sclera – just avoid any contact with other instruments.

Do you know of any cheaper knife?

Meyco diamond knives with the high precision, fully titanium handle, are a true investment for long-term use.

Meyco Diamond Knives since 1975

Offering decades of use

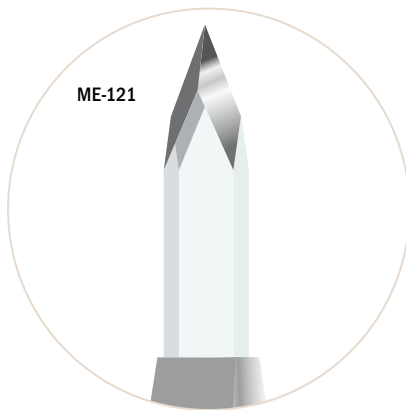
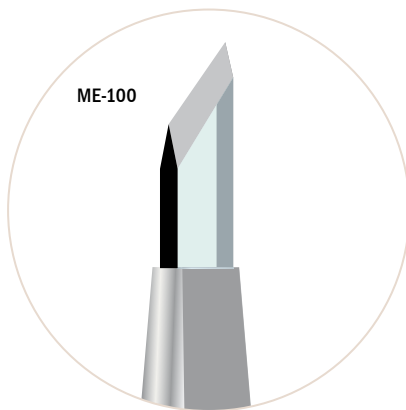
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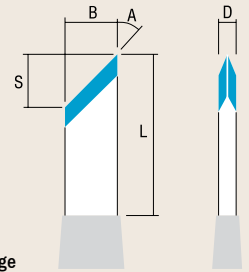
Free hand diamond knives with straight handle for cataract surgery



Lancet diamonds are the ideal blades for side port incisions.

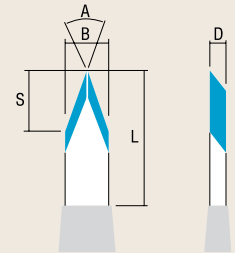


With the unique Meyco pressure mechanism.



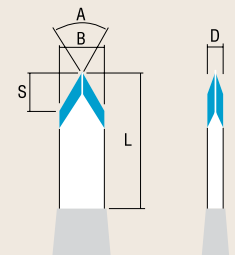
45° & 30° & 20° Single edge

B	L	D	A	S	order n°
1.50	3.50	0.20	45°	1.50	ME-100
1.50	3.50	0.20	30°	2.60	ME-102
1.00	3.50	0.20	45°	1.00	ME-105
1.00	3.50	0.20	30°	1.70	ME-106
1.00	3.50	0.20	20°	1.00	ME-107
0.80	3.50	0.20	45°	0.80	ME-109



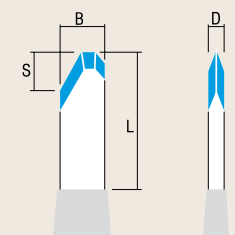
Single lancet

B	L	D	A	S	order n°
1.50	3.50	0.20	40°	2.00	ME-110
1.00	3.50	0.20	40°	1.30	ME-111
0.80	3.50	0.20	40°	1.00	ME-113



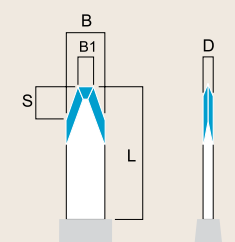
Double lancet

B	L	D	A	S	order n°
1.50	3.50	0.20	60°	1.30	ME-120
1.00	3.50	0.20	60°	0.80	ME-121
1.00	3.50	0.20	40°	0.80	ME-122
0.80	3.50	0.20	60°	0.60	ME-123



Tri-facet

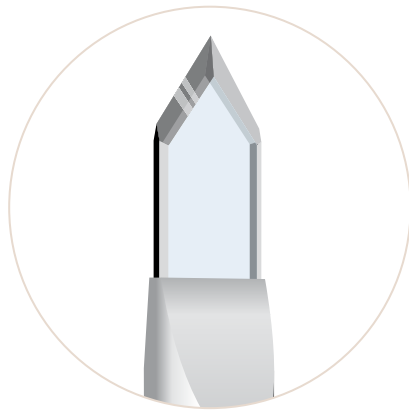
B	L	D	S	order n°
1.50	3.50	0.20	1.30	ME-130
1.00	3.50	0.20	0.80	ME-131



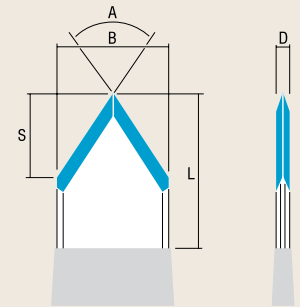
Tri-facet

B	B1	L	D	A	S	order n°
0.80	0.40	2.50	0.20	40°	0.50	ME-605

Free hand diamond knives with straight handle for cataract surgery

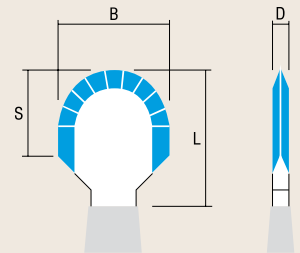


Phaco diamond blades with blunt sides and straight handle.



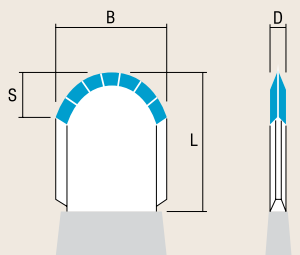
Double lancet with blunt sides

B	L	D	A	S	order n°
2.40	4.00	0.20	70°	1.70	ME-148
2.50	4.00	0.20	70°	1.75	ME-149
2.65	4.00	0.20	70°	1.85	ME-150
2.85	4.00	0.20	70°	2.00	ME-151
3.00	4.00	0.20	70°	2.10	ME-152
3.10	4.00	0.20	70°	2.20	ME-153
3.20	4.00	0.20	70°	2.25	ME-154



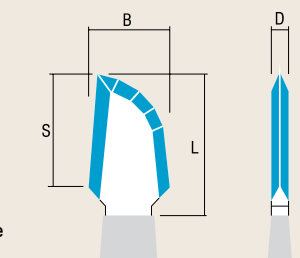
Round type blade with sharp sides

B	L	D	S	order n°
2.50	3.50	0.20	2.00	ME-140



Round type blade with blunt sides

B	L	D	S	order n°
2.50	3.50	0.20	1.00	ME-141



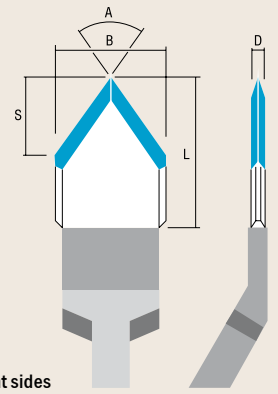
Half round type blade with sharp sides

B	L	D	S	order n°
1.80	3.50	0.20	2.5	ME-146

Phaco knives with angled handle for “clear cornea” technique

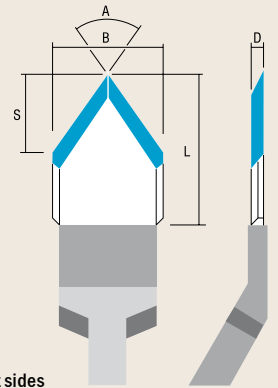


Diamond blades with 4 or 5 mm length with sharp or blunt side cutting edges in parallel or trapezoid execution.



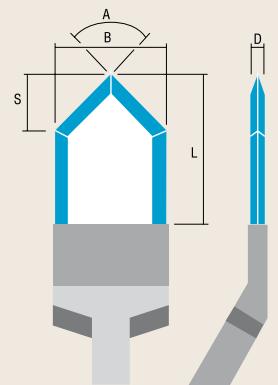
Double lancet with blunt sides

B	L	D	A	S	order n°
2.00	4.00	0.20	70°	1.50	ME-200
2.30	4.00	0.20	70°	1.60	ME-201
2.40	4.00	0.20	70°	1.70	ME-202
2.50	4.00	0.20	70°	1.75	ME-203
2.65	4.00	0.20	70°	1.85	ME-205
2.75	4.00	0.20	70°	1.90	ME-206
2.85	4.00	0.20	70°	2.00	ME-207
3.00	4.00	0.20	70°	2.10	ME-208
3.10	4.00	0.20	70°	2.20	ME-209
3.20	4.00	0.20	70°	2.25	ME-210
3.50	4.00	0.20	70°	2.50	ME-212



Single lancet with blunt sides

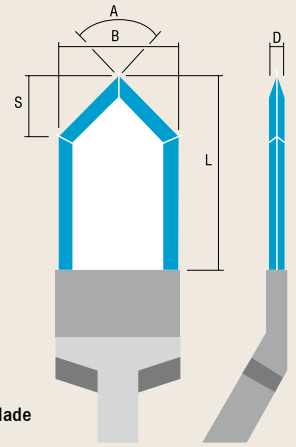
B	L	D	A	S	order n°
2.40	4.00	0.20	70°	1.70	ME-213
2.50	4.00	0.20	70°	1.75	ME-214
2.65	4.00	0.20	70°	1.85	ME-215
2.80	4.00	0.20	70°	2.00	ME-216
2.85	4.00	0.20	70°	2.00	ME-217
3.00	4.00	0.20	70°	2.20	ME-218
3.10	4.00	0.20	70°	2.20	ME-219
3.20	4.00	0.20	70°	2.30	ME-220



Double lancet 4 mm blade with sharp sides

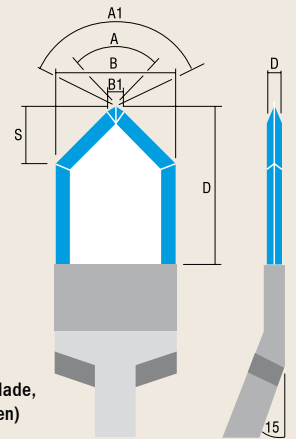
B	L	D	A	S	order n°
2.00	4.00	0.20	90°	1.00	ME-227
2.20	4.00	0.20	90°	1.10	ME-228
2.30	4.00	0.20	90°	1.15	ME-229
2.40	4.00	0.20	90°	1.20	ME-230
2.50	4.00	0.20	90°	1.25	ME-231
2.65	4.00	0.20	90°	1.30	ME-232
2.80	4.00	0.20	90°	1.40	ME-233
2.85	4.00	0.20	90°	1.40	ME-234
3.00	4.00	0.20	90°	1.50	ME-235
3.10	4.00	0.20	90°	1.55	ME-236
3.20	4.00	0.20	90°	1.60	ME-237

Phaco knives with angled handle for “clear cornea” technique



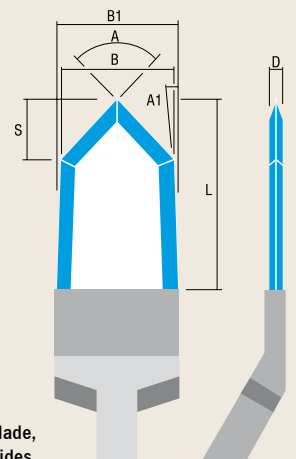
Double lancet 5 mm blade with sharp sides

B	L	D	A	S	order n°
2.40	5.00	0.20	90°	1.20	ME-240
2.50	5.00	0.20	90°	1.25	ME-241
2.65	5.00	0.20	90°	1.30	ME-242
2.80	5.00	0.20	90°	1.40	ME-243
2.85	5.00	0.20	90°	1.40	ME-244
3.00	5.00	0.20	90°	1.50	ME-245
3.10	5.00	0.20	90°	1.55	ME-246
3.20	5.00	0.20	90°	1.60	ME-247



Double lancet 4 mm blade, 90°/130° (to Dr. Annen) with sharp sides

B	B1	L	D	A	A1	S	order n°
2.40	0.30	4.00	0.20	90°	130°	1.10	ME-250
2.50	0.30	4.00	0.20	90°	130°	1.15	ME-251
2.65	0.30	4.00	0.20	90°	130°	1.25	ME-252
2.80	0.30	4.00	0.20	90°	130°	1.35	ME-254
3.00	0.30	4.00	0.20	90°	130°	1.45	ME-256
3.20	0.30	4.00	0.20	80°	130°	1.55	ME-258



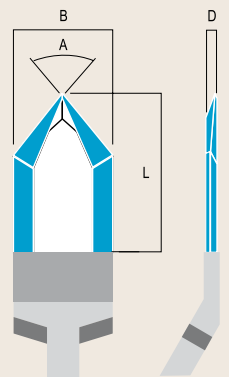
Double lancet 5 mm blade, trapezoid with sharp sides

B	B1	L	D	A	A1	S	order n°
2.80	3.10	5.00	0.20	83°	2°30'	1.60	ME-260
3.00	3.30	5.00	0.20	88°	2°30'	1.60	ME-261
3.20	3.50	5.00	0.20	92°	2°30'	1.60	ME-262

Navigator (3D knives)



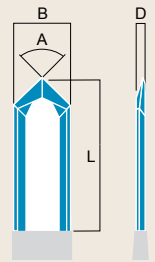
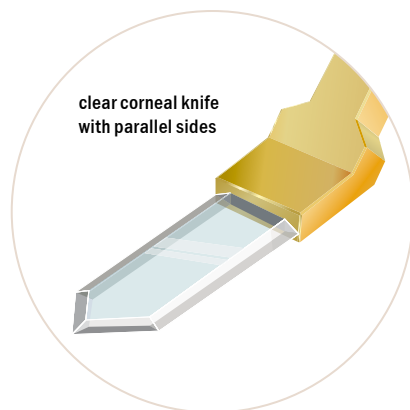
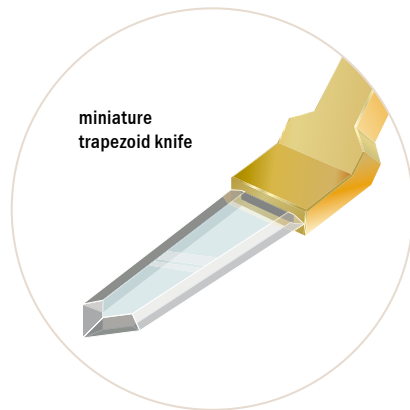
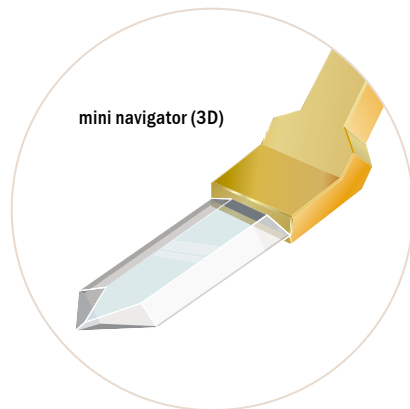
Specially designed for limbal cornea, scleral cornea and clear cornea incision.



Navigator

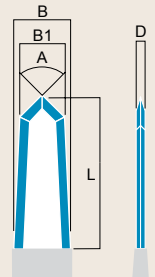
B	L	D	A	order n°
2.50	4.00	0.20	80°	ME-272
2.80	4.00	0.20	80°	ME-274
3.00	4.00	0.20	80°	ME-275

MICS the adequate diamond knives for micro incision coaxial surgery



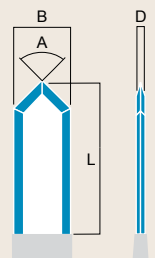
3D knives (navigator)

B	L	D	A	order n°
1.30	4.00	0.20	80°	ME-750
1.40	4.00	0.20	80°	ME-751
1.50	4.00	0.20	80°	ME-752
1.60	4.00	0.20	80°	ME-753
1.70	4.00	0.20	80°	ME-754
1.80	4.00	0.20	80°	ME-755
1.90	4.00	0.20	80°	ME-756
2.00	4.00	0.20	80°	ME-757
2.10	4.00	0.20	80°	ME-758
2.20	4.00	0.20	80°	ME-759
2.30	4.00	0.20	80°	ME-760
2.40	4.00	0.20	80°	ME-761



Clear corneal knives with trapez

B	B1	L	D	A	order n°
0.90	1.20	4.00	0.20	90°	ME-770
1.00	1.30	4.00	0.20	90°	ME-771
1.10	1.40	4.00	0.20	90°	ME-772
1.20	1.50	4.00	0.20	90°	ME-776
1.30	1.60	4.00	0.20	90°	ME-773
1.40	1.60	4.00	0.20	44°	ME-267
1.40	1.70	4.00	0.20	90°	ME-777
1.50	1.80	4.00	0.20	90°	ME-774
1.60	1.90	4.00	0.20	90°	ME-778
1.70	2.00	4.00	0.20	90°	ME-779
1.80	2.10	4.00	0.20	90°	ME-775
2.00	2.30	4.00	0.20	90°	ME-781
2.10	2.40	4.00	0.20	90°	ME-782



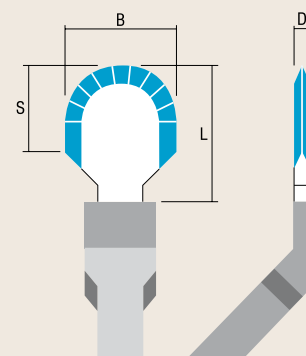
Clear corneal knives with parallel sides

B	L	D	A	order n°
1.30	4.00	0.20	90°	ME-730
1.40	4.00	0.20	90°	ME-731
1.50	4.00	0.20	90°	ME-732
1.60	4.00	0.20	90°	ME-733
1.70	4.00	0.20	90°	ME-734
1.80	4.00	0.20	90°	ME-735
1.90	4.00	0.20	90°	ME-736
2.00	4.00	0.20	90°	ME-737
2.10	4.00	0.20	90°	ME-738
2.20	4.00	0.20	90°	ME-228
2.30	4.00	0.20	80°	ME-229

Crescent and tunnel knives for scleral tunnel incision

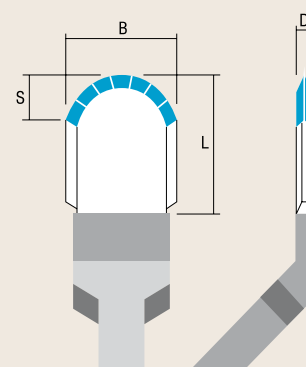


ME-285 is the ideal knife for constructing scleral flaps for trabeculectomy. The doublebevel blade maintains the plane of dissection without tending to cut too deep or too shallow and avoids leaks and suturs tearing out of a too thin flap.



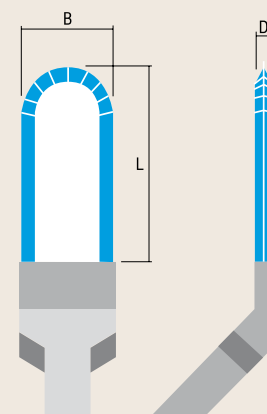
Crescent blade with sharp sides

B	L	D	S	order n°
2.50	3.50	0.20	2.00	ME-280



Crescent blade with blunt sides

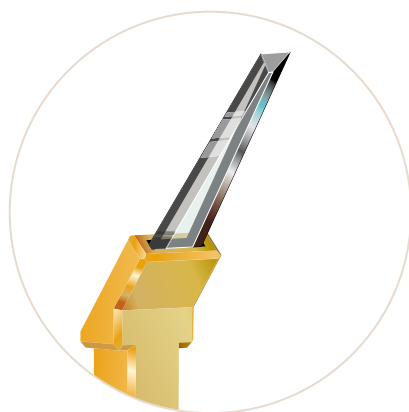
B	L	D	S	order n°
2.50	3.50	0.20	1.00	ME-281



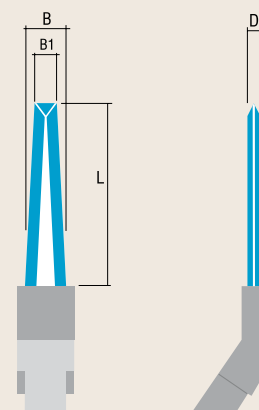
Tunnel blade with 4 mm sharp sides

B	L	D	order n°
1.50	4.00	0.20	ME-284
2.00	4.00	0.20	ME-285

Multi purpose diamond knife to Dr. Zaldivar



- Step cut
- Scleral tunnel incision
- Opening of the anterior chamber
- Wound widening for IOL implantation



B	B1	L	D	ordern°
1.00	0.55	4.50	0.15	ME-297

The limbal relaxing incision knives



ME-435

Micrometer knife with one side footplate for better control

- Micrometer of the highest precision, with easy legible, black scale
- Single sided footplate for better control
- Specially designed for LRI
- 6 faces 1.0 mm blade

ME-700, ME-701, ME-704, ME-709

Preset step knife

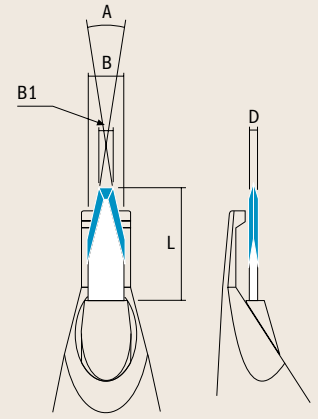
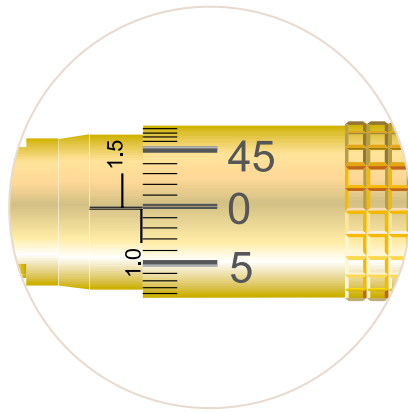
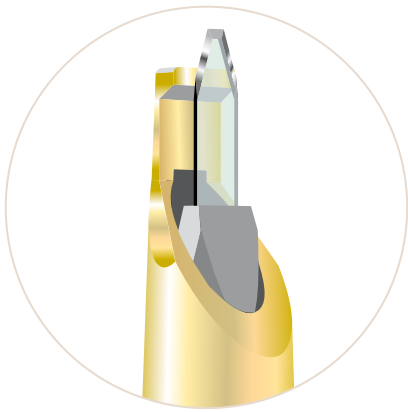
- 1 setting at 0.60 mm
- Single sided footplate for better control
- 6 faces 1.0 mm blade
- All titanium handle
- Also available with one setting at
ME-700: setting at 0.60 mm
ME-701: setting at 0.65 mm
ME-704: setting at 0.55 mm
ME-709: setting at 0.50 mm

ME-707

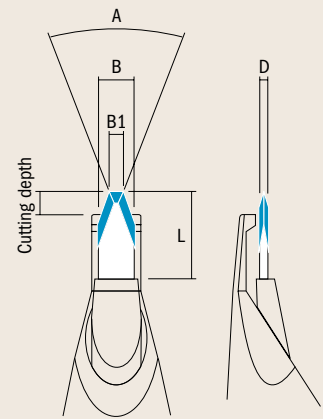
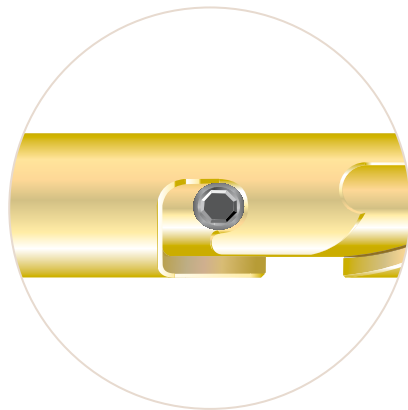
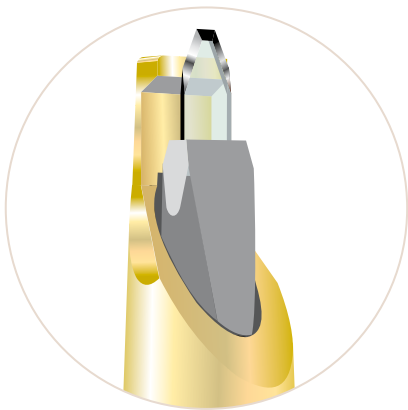
Preset step knife

- 3 settings at 0.50, 0.55 and 0.60 mm
- Single sided footplate for better control
- 6 faces 1.0 mm blade
- All titanium handle

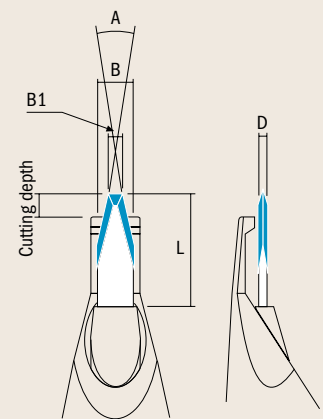
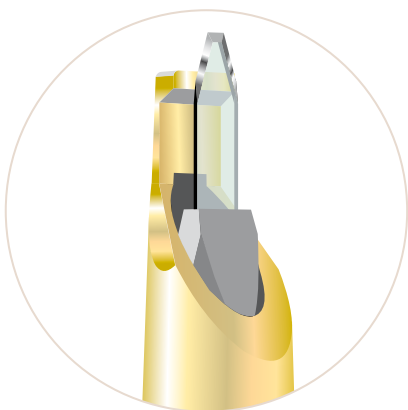
Settings at 0.50, 0.55 and 0.60 mm



B	B1	L	D	A	order n°
1.00	0.40	3.00	0.10	20°	ME-435

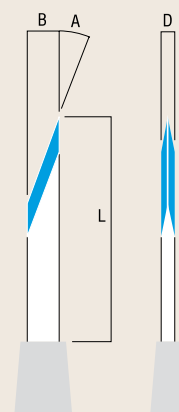
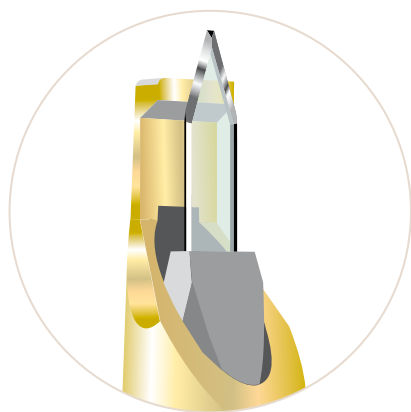
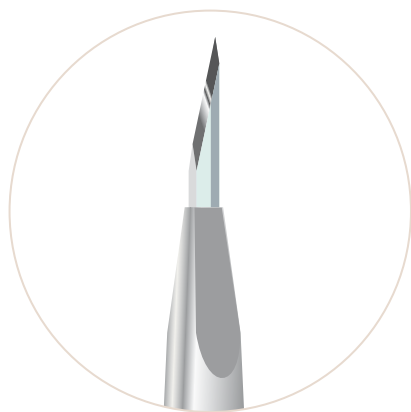


Cutting depth	B	B1	L	D	A	order n°
0.50 mm	1.00	0.40	2.00	0.20	40°	ME-709
0.55 mm	1.00	0.40	2.00	0.20	40°	ME-704
0.60 mm	1.00	0.40	2.00	0.20	40°	ME-700
0.65 mm	1.00	0.40	2.00	0.20	40°	ME-701



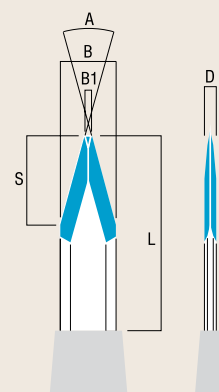
Cutting depth	B	B1	L	D	A	order n°
0.50, 0.55, 0.60 mm	1.00	0.40	3.00	0.10	20°	ME-707

Diamond knife for deep sclerectomy



Single edge

B	L	D	A	order n°
0.50	3.50	0.20	20°	ME-104DA

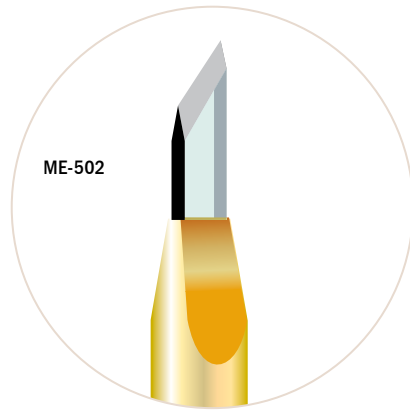


Step knife to Dr. Carassa

Cutting depth							order n°
0.15	0.20	0.25	0.30	0.37	0.50	4.00	ME-312

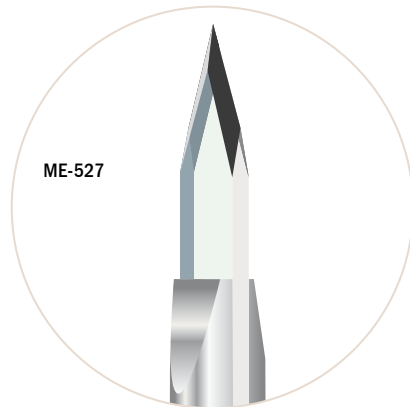
B	B1	L	D	S	A	order n°
1.0	0.30	3.50	0.20	1.60	25°	ME-312

Retina and Arumi diamond knives



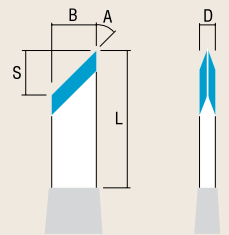
ME-502

Retina diamond knife to Dr. De Molfetta for cutting subretinal membranes.



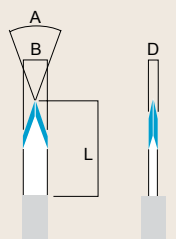
ME-527

The Arumi knife is specially designed for vitrectomy surgery to cut a vein.



45° Single edge

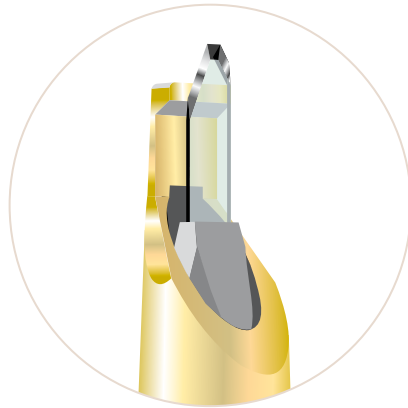
B	L	D	A	S	order n°
0.90	3.00	0.20	45°	0.90	ME-502



Double lancet

B	L	D	A	order n°
0.50	2.00	0.10	40°	ME-527

Step diamond knives



The diamond knife with preselectable cutting depths; a guarantee for optimum security with cutting.

The one sided footplate allows for optimum viewing of the diamond blade. The step diamond knife is a Meyco innovation which has been manufactured since 1987.

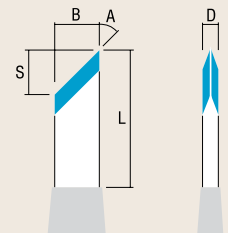
The standard actuation is for right hand execution; left handed is also available.

Preselectable cutting depths

0.15 / 0.20 / 0.25 / 0.30 / 0.37 / 0.50 / 4.00 mm

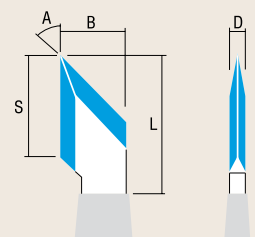
0.15 / 0.20 / 0.25 / 0.30 / 0.37 / 0.50 / 6.00 mm

Other depth settings are available.



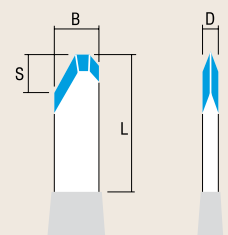
Type ST-M

B	L	D	A	S	order n°
1.00	3.50	0.20	45°	1.00	ME-300
1.00	3.50	0.20	30°	1.00	ME-302



Type ST-DK

B	L	D	A	S	order n°
1.40	3.50	0.20	45°	2.20	ME-305



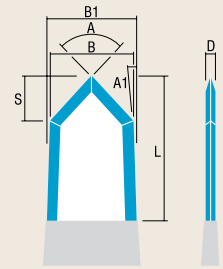
Type ST-M-DS

B	L	D	S	order n°
1.00	3.50	0.20	0.80	ME-310

Step diamond knives

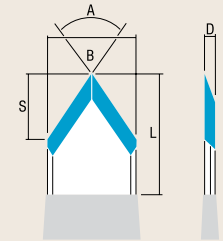


Thanks to its various cutting depths (0.15 to 6.00 mm) this knife can be used for step cutting as well as for penetration into the anterior chamber.



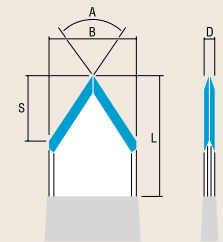
Double lancet 5 mm blade, trapezoid with sharp sides

B	B1	L	D	A	S	A1	order n°
2.80	3.10	5.00	0.20	83°	1.60	2°30'	ME-385
3.00	3.30	5.00	0.20	88°	1.60	2°30'	ME-386
3.20	3.50	5.00	0.20	92°	1.60	2°30'	ME-387



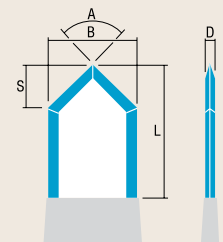
Single lancet with blunt sides

B	L	D	A	S	order n°
2.40	4.00	0.20	70°	1.70	ME-322
2.50	4.00	0.20	70°	1.75	ME-323
2.65	4.00	0.20	70°	1.85	ME-324
2.80	4.00	0.20	70°	1.95	ME-325
2.85	4.00	0.20	70°	2.00	ME-326
3.00	4.00	0.20	70°	2.10	ME-327
3.10	4.00	0.20	70°	2.20	ME-328
3.20	4.00	0.20	70°	2.25	ME-329



Double lancet with blunt sides

B	L	D	A	S	order n°
2.40	4.00	0.20	70°	1.70	ME-332
2.50	4.00	0.20	70°	1.75	ME-333
2.65	4.00	0.20	70°	1.85	ME-334
2.80	4.00	0.20	70°	1.95	ME-335
2.85	4.00	0.20	70°	2.00	ME-336
3.00	4.00	0.20	70°	2.10	ME-337
3.10	4.00	0.20	70°	2.20	ME-328
3.20	4.00	0.20	70°	2.25	ME-329



Double lancet 4.5 mm blade with sharp sides

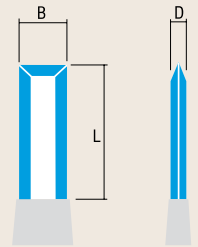
B	L	D	A	S	order n°
2.40	4.50	0.20	90°	1.20	ME-352
2.50	4.50	0.20	90°	1.25	ME-353
2.65	4.50	0.20	90°	1.30	ME-354
2.80	4.00	0.20	90°	1.40	ME-356
2.85	4.50	0.20	90°	1.42	ME-357
3.00	4.50	0.20	90°	1.50	ME-358
3.10	4.50	0.20	90°	1.55	ME-359
3.20	4.50	0.20	70°	1.60	ME-360

Diamond knives with micrometer for refractive surgery



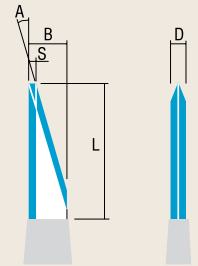
The high precision instrument that has proven itself thousands of times over the years with its unique advantages:

- a micrometer of the highest precision, with an easy legible, black scale
- a footplate that allows the best possible view on the diamond blade, with absolutely parallel footplates, which guarantee that the set cutting depth is precisely reached
- a coated surface which makes it very resistant
- a superfine polished right angle footplate which glides very smoothly over the cornea
- simple pressure mechanism



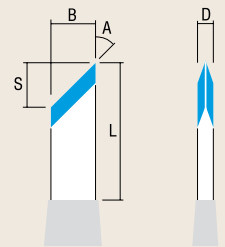
Type RK-T

B	L	D	order n°
1.00	3.50	0.20	ME-420



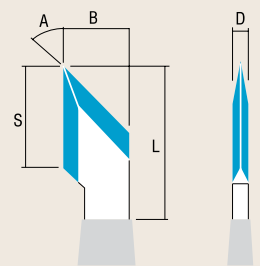
Type RK-TC (to Dr. S. P. Thornton)

B	L	D	A	S	order n°
0.80	3.50	0.10	15°	0.20	ME-425



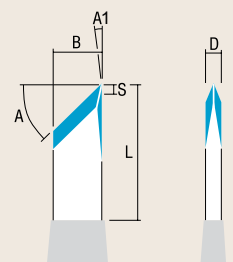
Type RK-M

B	L	D	A	S	order n°
1.00	3.50	0.20	45°	1.00	ME-450
1.00	3.50	0.10	45°	1.00	ME-451



Type RK-DK

B	L	D	A	S	order n°
1.40	3.50	0.20	45°	2.20	ME-400
1.40	3.50	0.10	45°	2.20	ME-401



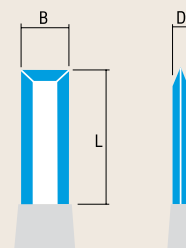
Type RK-E

B	L	D	A	S	order n°
1.00	3.50	0.10	4°	0.20	ME-410
1.00	3.50	0.20	4°	0.20	ME-411

Diamond knives for Kera Rings and Intacts implantation



Micrometer knives to perform a small incision in the surface of the cornea:
Specially designed to implant Kera Rings
and Intacs.



Type RK-E

B	L	D	order n°
0.80	3.50	0.10	ME-400-P3
1.00	3.50	0.20	ME-420 MA

Multifunctional diamond knife

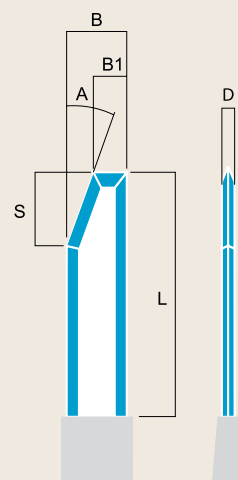


1 mm width,
8-facet blade
for side incision

The new diamond knife ME-310-P10 has been designed in order to simplify all steps in the phaco and deep-sclerectomy techniques.

This new knife enables you to set the right depth and width of the incision. In addition, the special shape and width of the blade makes it possible to perform precise sideports.

Preselectable cutting depths

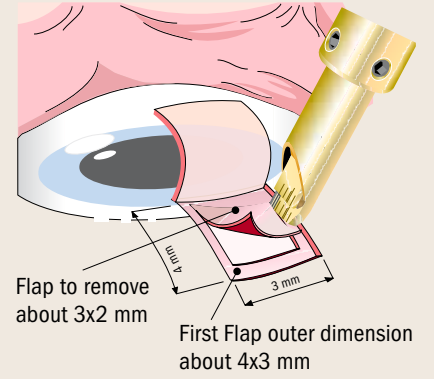
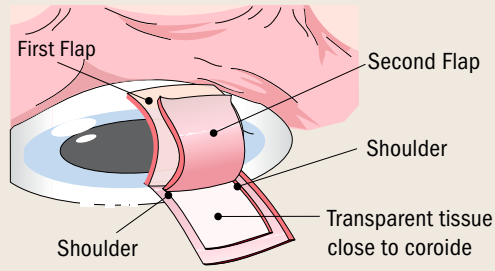


Type RK-E

B	B1	L	D	A	S	ordern°
1.00	0.55	4.00	0.20	20°	1.20	ME-310-P10

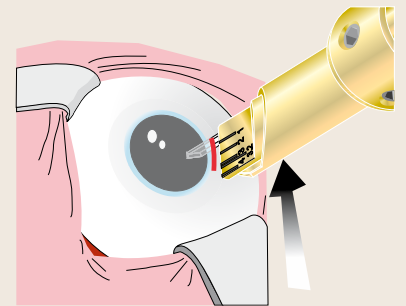
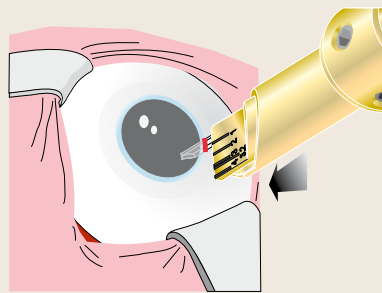
Glaucoma surgery

To perform the right dimension and depth of the sclera flaps

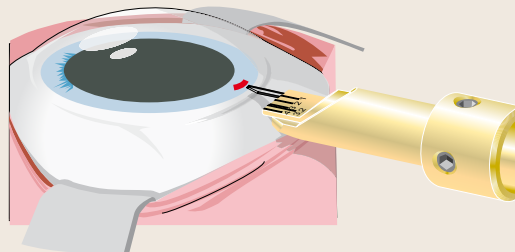


Cataract surgery

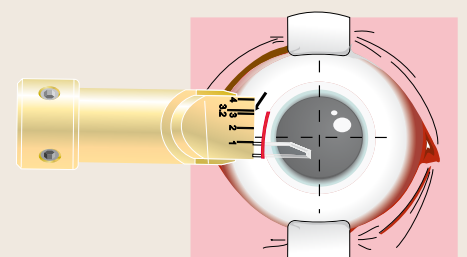
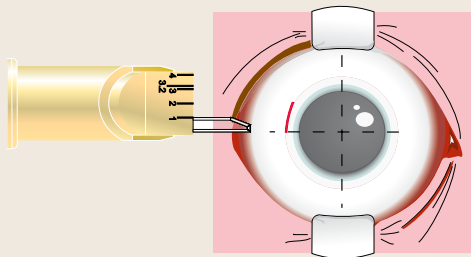
Pre-Incision vertical groove



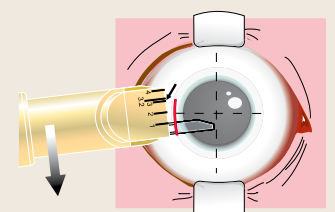
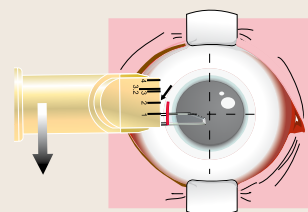
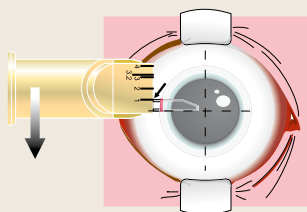
Sideport incision



Incision enlargement



Clear corneal tunnel



Setting the micro-meter dial and handling instructions for the micrometer knives

To move out the blade

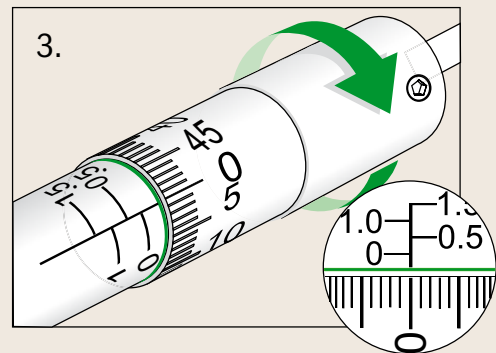
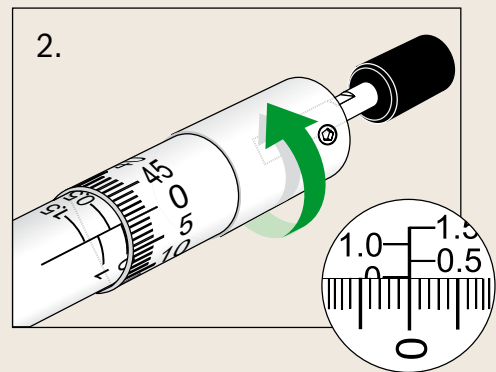
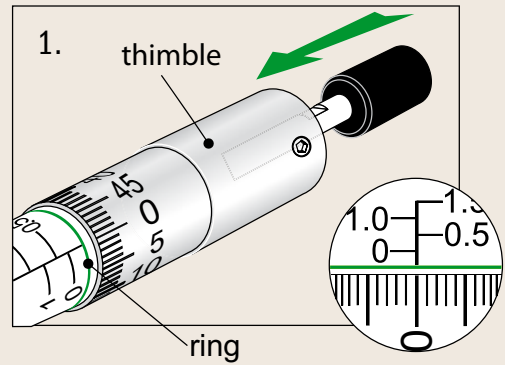
1. The micrometer thimble must be set behind the ring
2. Turn micrometer thimble as far as the zero setting - the tip of the diamond is now level with the guide shoe

Set the required cutting depth:

1 turn = 0.5mm

Retraction of the diamond blade

3. Turn back the micrometer thimble behind the ring and press the pressure mechanism

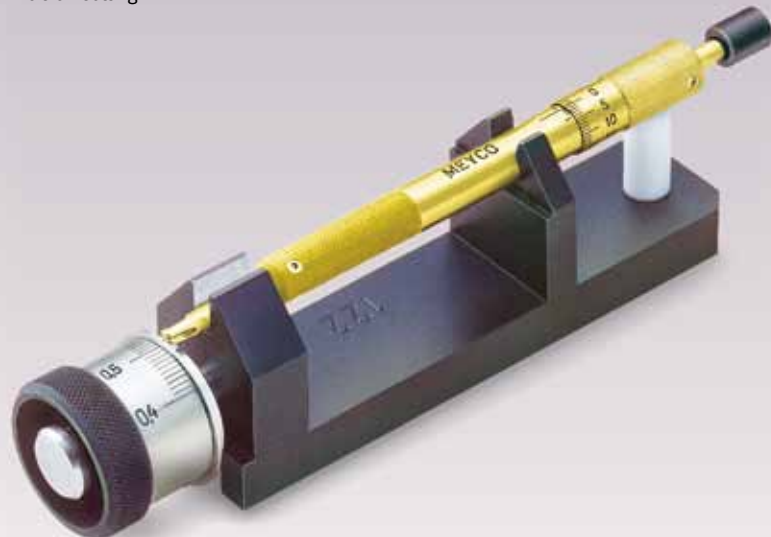


Setting the micrometer dial;

- Turn the micrometer dial to the 2nd marker ring
- Hold the blade upright and activate the pressure mechanism
- Turn the micrometer dial to zero - the tip of the diamond blade should be level with the guide shoe.
- Set the required cutting depth
1 turn = 0.50 mm

We recommend that the cutting depth should be checked. The cutting depth can be measured using an ME409 (for DK-Blades [double edged]) or ME459 (for M-Blades [single edged]) device.

Measuring gauge for checking the depth of incision setting



ISO-Certificates

SQS Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the normative bases specified below.

Anton Meyer & Co. LTD
CH-2560 Nidau

Certified area
Whole Company

Field of activity
Medical instruments, diamond tools




Normative bases
ISO 9001:2000 Quality Management System
ISO 13485:2003 Medical device manufacturers – Quality Management System

Swiss Association for Quality and Management Systems SQS
Bermstrasse 103, CH-3052 Zollikofen
Issue date: May 2, 2007

This SQS Certificate is valid up to and including May 1, 2010
Scope number 19
Registration number 14237

X. Edlermann
X. Edlermann, President SQS

T. Zahner
T. Zahner, Managing Director SQS

SQS EC-Certificate

SQS as a conformity assessment body identification number 1250 herewith certifies the company

Anton Meyer & Co. LTD
CH-2560 Nidau

the use of a quality assurance system in its design, manufacture, final inspection and distribution which fulfills the requirements set out below

ANNEX V.3 **EC-Directive 93/42/EEC**

This approval is based on the result of the audit documented in the report dated June 29, 2007.

The scope of validity covers the products
Diamond knives for ophthalmology (serial ME 300–ME 499),
Measuring gauges (serial ME 409 and ME 459)

The following CE label can be applied to these products
CE 1250

A condition for the validity of the certificate is a regular examination in accordance with Annex V4.

Swiss Association for Quality and Management Systems SQS
Bermstrasse 103, CH-3052 Zollikofen
Issue date: May 2, 2007

This SQS Certificate is valid up to and including May 1, 2010
Registration number 13791
Approved PM Medical: June 27, 2007

T. Zahner
T. Zahner, Managing Director SQS

K. Schucke
K. Schucke, Medical Responsible

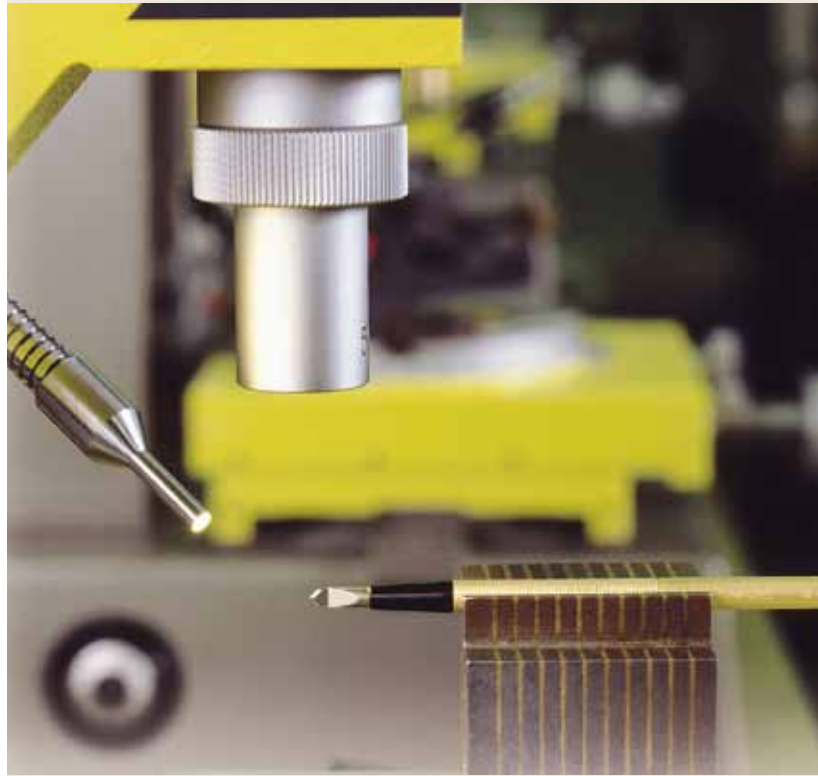
Swiss quality production



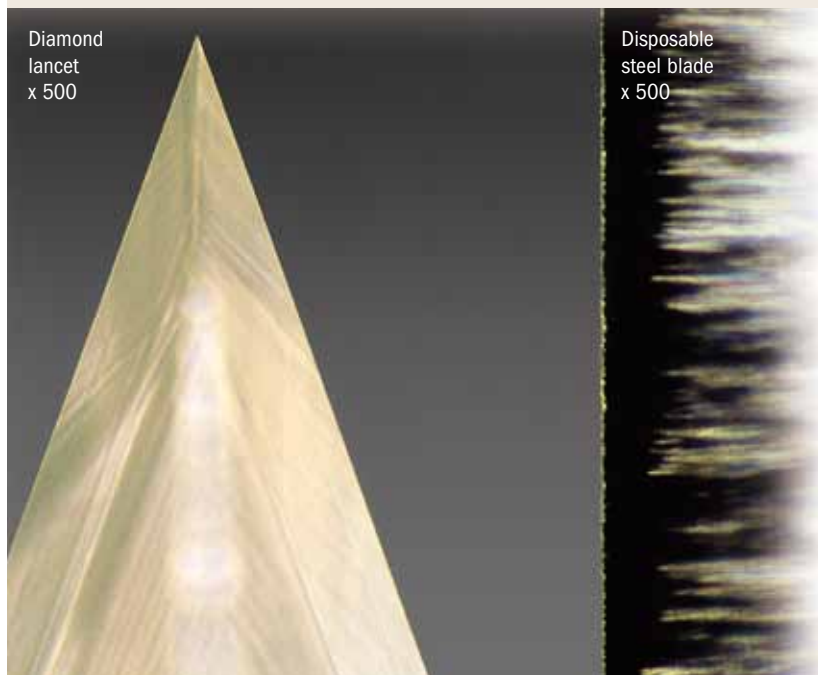
All mechanical parts are made from Titanium, manufactured on high precision CNC machines. Meyco diamond knives can therefore be sterilized by any conventional method.



The shape of the blades is cut with a Yag laser.



Only diamond, as the hardest known material, can be ground so smoothly that its cutting edge is still perfect under 500x magnification. Each Meyco diamond blade is checked under this magnification after the final grinding.



Diamond lancet x 500

Disposable steel blade x 500

According to the Rosiwal scale, a diamond has an abrasive hardness of 140 times that of sapphire and ruby (corundum). This explains why the cornea can be cut so smoothly with a perfect ground diamond.

Operating instruction for Meyco diamond scalpels

Description

Diamond scalpels are reusable instruments, consisting of a handle and a diamond blade. The blades are made from natural diamond and measure between 100µm and 200µm thick; the handles are made from titanium.

Applications

Diamond scalpels are designed for various eye operations.

Precautions

- Read instructions before use
- Diamond scalpels are not sterile and must be sterilised.
- Diamond scalpels must be handed to surgeons with the blade retracted and handed back by them with the blade in the same position. They must not be placed opened on the instrument tray.

Instructions for use

- Diamond scalpels must be thoroughly cleaned and sterilised before use. Diamond scalpels must also be cleaned and then sterilised after every subsequent use. For instructions on how to clean and sterilise diamond scalpels please refer to the section entitled Cleaning and Sterilisation.
- The diamond blades must never come into contact with other instruments. Special care must therefore be taken during surgical operations, to ensure that the blades do not come into contact with instruments such as forceps/tweezers or sharp surgical instruments.
- Ensure that diamond blades are not damaged before use. Damaged diamond scalpels should not be used. The blades can be re-sharpened.
- After every use of a diamond scalpel, care must be taken to ensure that the blade is pulled back into the handle, using the pressure or bayonet mechanism.

Cleaning

Immediately after using a diamond scalpel, the blade must be rinsed with water using a 20ml spray, preventing cell particles or visco-elastic materials from sticking to the blade.

Dirt on the titanium handle can be removed using a small soft brush. Care must be taken to ensure that the blade has been retracted into the handle.

Manual cleaning

The following cleaning process has been approved in accordance with the ASTM standard test method E 2314-03 (with a germ reduction rate of up to 4_{10}). The manufacturer recommends manual cleaning.

- Immediately after use, the blade must be rinsed with water using a 20ml syringe
- The diamond scalpel must be placed in an alkaline cleaning solution (pH \geq 10) for at least 12 minutes at 55°C
- The diamond scalpel must then be neutralised for 2 minutes in citric acid and then washed for at least 2 minutes in running water (3l/min).

Machine cleaning

In accordance with the recommendations of RKI, diamond scalpels must be cleaned in a washing machine designed for micro-surgical instruments. The manufacturer's instructions should be followed. This is not a procedure validated by the diamond scalpel manufacturer.

Note:

The diamond blades must never come into contact with other instruments; otherwise there is a risk that the blades will be damaged. Great care must therefore be taken when loading washing machines.

After cleaning, the condition of the instrument must be checked. Following this, the diamond scalpel must be immediately placed in the sterilisation box or in another suitable container.

Diamond scalpels can also be cleaned using ultra-sound cleaning systems.

Sterilisation

- Diamond scalpels must be sterilised before each use.
- Diamond scalpels must be sterilised with the diamond blades retracted. Please therefore ensure that the blade has been pushed back into the titanium handle.
- Sterilisation filters must be fitted with protective materials (cushioned mats).

Sterilisation method	Type of sterilisation	Item loaded	Temperature	Sterilisation time in minutes
Steam	Centrifugal cycle	packaged	134°C (270°F)	18.0
Flash process	Centrifugal cycle	not packaged	134°C (270°F)	18.0
Steam	Flash cycle	packaged	134°C (270°F)	18.0
Flash process	Flash cycle	not packaged	134°C (270°F)	18.0

The above specifications meet the industry standards for steam sterilisation cycles.

Since there are variations in different steam sterilisation systems and the levels of germs on instruments in clinical use vary greatly, ANTON MEYER & CO LTD cannot provide any specific data to guarantee an appropriate level of sterilisation. Every hospital must check the correct procedures for guaranteeing a proper level of sterilisation. Please refer to the current ANSI/AAMI standards on hospital procedures for steam sterilisation and sterilisation guarantees or the hospital's own procedures for the most suitable specifications.

For steam sterilisation, please refer to ANSI/AAMI standards and recommended practice volume 1: Sterilisation, ST46-1993, Section 5.8.

For flash processes, please refer to ANSI/AAMI standards for "Good Hospital Practice": Flash Sterilization – Steam sterilisation for "Patient care items for immediate use". ST37-1996, Section 5.4

We recommend that packaged diamond scalpels should be steam sterilised at 270°F (134°) either in a centrifugal cycle for 18 minutes or in a flash cycle for 18 minutes.

Note:

- Diamond blades are made from an extremely hard but sensitive material. Handle these ultra-sharp blades carefully to avoid damage.
- Mechanical contact must be prevented.
- Diamond scalpels must be cleaned and sterilised before each use.
- After use the blade must be immediately retracted into the titanium handle.
- When used correctly, diamond scalpels can withstand several hundred cleaning and sterilisation cycles.
- Diamond scalpels must never be stored un-cleaned.

Diamond scalpels (RK-Blades) with a micrometer (ME400 – ME499)

Setting the micrometer dial;

1. Turn the micrometer dial to the 2nd marker ring
2. Hold the blade upright and activate the pressure mechanism
3. Turn the micrometer dial to zero – the tip of the diamond blade should be level with the slide shoe.
4. Set the required cutting depth – 1 turn = 0.50 mm

We recommend that the cutting depth should be checked. The cutting depth can be measured using an ME409 (for DK-Blades [double edged]) or ME459 (for M-Blades [single edged]) device.

Guarantee

ANTON MEYER & CO LTD provides a 3-year guarantee for all mechanical components, on condition that the scalpels are used correctly with the titanium handle.

Manufacturer

ANTON MEYER & CO LTD, Helmstrasse 1, CH-2560 Nidau, Tel.: +41 32 332 91 11, Fax: +41 32 331 52 57

Diamond Knives

Are they the clear choice for clear corneal cataract surgery?

BY CHARLES H. WILLIAMSON, MD

When I converted my cataract surgery practice entirely to the use of the clear corneal technique under topical anesthesia in early 1992, I did so because I quickly embraced its advantages. The technique eliminated a number of steps in scleral surgery such as traction sutures, conjunctival incisions, scleral cautery, and conjunctival closure. I performed all surgery from a temporal incision. Because I was already creating 3-mm sutureless incisions for foldable IOLs, the transition was easy for me.

When it was first introduced, clear corneal surgery excited the ophthalmic community and gained widespread popularity. There were also early reports of wound leaks, endophthalmitis, and other surgical complications, however. This news was contrary to my own experience of fewer complications and zero cases of endophthalmitis in 15 years of clear corneal surgery. In recent years, new reports of leaking wounds, hypotonous eyes,¹ and increased rates of endophthalmitis² have surfaced and fueled a re-examination of clear corneal techniques.

This article discusses some of the issues ophthalmologists need to consider when performing clear corneal surgery, such as the materi-

als currently used to produce ophthalmic blades, their effect on the incisions made, and the related surgical outcomes.

MOVING TO CLEAR CORNEAL INCISIONS

To successfully transition to clear corneal incisions, the surgeon must closely examine the wound's placement, architecture, sealing, and healing. Regarding the creation of the corneal tunnel, temporal incisions of 3 mm or less that are square (or nearly square) are the most stable and refractively neutral^{3,4} (Figure 1).

WHY USE DIAMOND KNIVES?

I had extensive experience with RK surgery with corneal wounds and subsequent healing. History is often our best teacher, and it made sense to me to look at my RK experience when moving my cataract surgery incisions from the sclera into the clear cornea. I could easily apply the lessons I learned from my days of RK. Accuracy, reproducibility, and wound healing are paramount in generating successful results with corneal incisions. All three of these areas showed significant improvement when the incisions were made using dia-

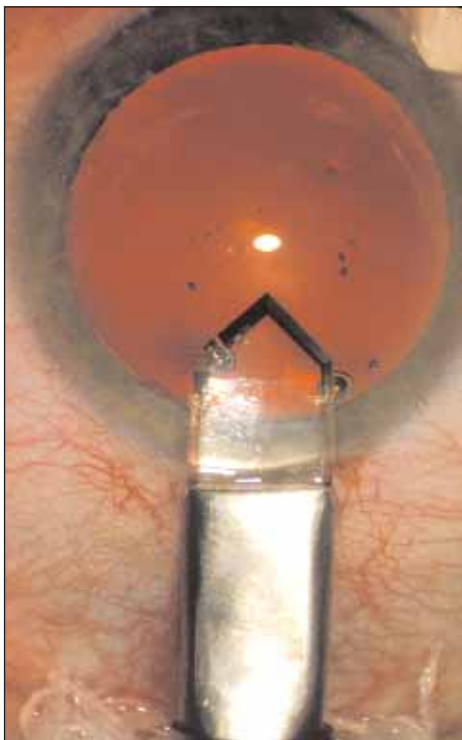


Figure 1. The author constructed a square clear corneal wound.

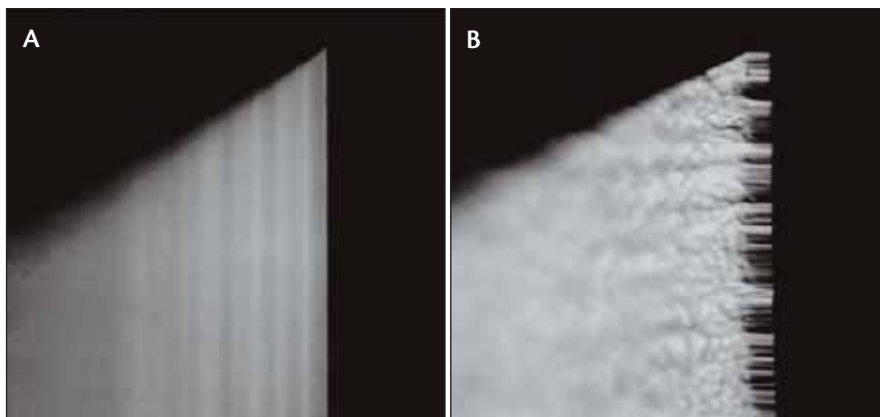


Figure 2. A diamond blade (A) has a much smoother edge than the deposition of chemical vapor of a black diamond blade (B).

mond versus steel blades. For these reasons, I transitioned directly to diamond knives when I started doing clear corneal cataract surgery. I collaborated with Ron Dykes of Diamatrix in The Woodlands, Texas, to create the first trapezoidal blade to reduce the stretching of the wound. I believe that the diamond blade and the new knife designs of knives are significant factors in the excellent surgical results I have achieved. Because the type of blade surgeons use to create clear corneal incisions is important for surgical outcomes, they should consider comparing blade materials, manufacturing techniques, and their effects upon the wound's creation before choosing a knife.

BLADES FOR MICROSURGERY

Materials and Manufacturing Techniques

During the past several decades, manufacturers have used a variety of materials, including diamond, sapphire, black diamond, ceramic composites, and stainless steel, and techniques to produce microsurgical blades. Here are some observations that I have made.

Sharpness

When diamonds or other crystals (sapphire, ruby, etc.) are used for surgical blades, two manufacturing techniques are employed. The first is honing or lapping technology that was developed and is primarily used in the US and Europe. With this technology, the harder the material, the sharper the blade. Diamond is the hardest material known to man and therefore produces the sharpest edge (Table 1). Diamond blades also are produced using lasers and acid to etch the edges. This process was

developed in Russia and is more economical than the lapping technology. The major drawback with the cheaper technique is that surgeons cannot maintain the blades themselves and must replace them if they become damaged. Both techniques produce an exquisitely sharp edge. The blade's sharpness, in my experience, has obvious benefits; a sharper blade gives the surgeon more control, reduces trauma to the tissue, and creates more reproducible incisions.

Black diamond blades are not made of true diamonds or a synthetic diamond-like material. They are the product of the deposition of chemical vapor. This technique, along with the material used in the manufacturing process, produces a jagged versus a honed edge (Figure 2) that incises the cornea with a sawing action rather than the cleaving action of diamond blades.

The quality of the materials and the techniques used to produce stainless steel microsurgical blades have improved the design and sharpness of these devices, but there is still some variation among models and manufacturers. These variations can be troublesome and potentially hazardous in surgery. As demonstrated by the Mohs Scale of Hardness (Table 1),⁵ stainless steel lacks the primary attribute that enables a blade to have a superior edge. There is no doubt that the latest technology, coining and chemical etching, produces a far superior blade than grinding. Most of the blades on the market today are produced using this process. Regardless of the grade of stainless steel or

TABLE 1. THE MOHS SCALE OF HARDNESS CONSISTS OF 10 CLASSIFICATIONS

Hardness†	Mineral or Substance	Absolute Hardness
6	Stainless steel	72
8	Hardened steel	200
9	Corundum (sapphire, ruby, etc.)	400
10	Diamond	1,500

†1 is the softest, and 10 is the hardest.



Figure 3. The Williamson trapezoid diamond keratome.

the manufacturing technique, stainless steel will not produce a blade as sharp as a diamond keratome.

Currently, manufacturers are developing ceramics and ceramic composites that may or may not equal the sharpness of a diamond blade's edge. In the past, these materials were limited because they could not be easily formed into blades for microsurgery.

Penetration

The hardness or rigidity of the material used in a microsurgical blade can affect the knife's mass, which in turn can affect its penetration. As the hardest material, diamond lends itself to producing thin blades (less mass) while retaining rigidity. A diamond blade is limited, however, because it requires wider facets to produce an edge than coined metal does. Diamond blades are between 150 and 200 μm thick. Because coined metal blades are relatively soft, their minimum thickness is approximately 150 μm . Until a new material is developed, the 150- μm threshold applies to most blades. We must rely upon geometry to create a better penetrating blade. Here again, diamond has an advantage over other materials. Because of a diamond blade's sharper edge, the angle of attack need not be as acute. Metal blades compensate for being less sharp by producing a more acute angle, which requires a longer blade. In other words, the shorter diamond blade does not enter the anterior chamber as far as a metal knife. The former therefore has a lesser chance of damaging adjacent ocular structures and has a greater margin of safety.

A blade's geometry not only affects the knife's penetration but also the incision's geometry. While working with Mr. Dykes to design a blade that met my requirements, I developed the 2.7- X 3.2-mm trapezoidal large-bevel-up-small-bevel-down design (Figure 3). This blade's geometry creates a smaller internal and a larger external incision. With

this design, the wider external incision produces an oarlock effect that reduces striae during cataract removal and facilitates the introduction of instruments into the anterior chamber. The smaller internal incision promotes a more secure wound and a stable anterior chamber. The beveled design creates a self-planning and self-sealing incision. I continue to use this design today, although I have reduced the blades' dimensions to 1.9 X 2.5 mm.

Cost Effectiveness of Different Materials

In today's climate of reduced reimbursements, the cost per case becomes a paramount issue for a practice's profitability. If the features and benefits of all blades were equal (which they are not), surgeons' choice of tools could be based solely on their cost per case. Using this premise and making some assumptions, one can look at the numbers for a keratome. The cost of a diamond keratome $\$2,800 \times 3 = \$8,400$. An average yearly repair costs \$1,200. The total cost for the first year is \$9,600. An average of 2,000 cataract surgeries per year brings the cost per case for the first year to \$4.80 and \$0.60 per case for the following years. A premium single-use metal keratome prices at \$28. If one can use this type of blade three times, the average cost per case is \$9.30. A metal blade's performance is usually impaired if it is used more than three times.

A surgeon who uses metal blades can potentially lose \$9,000 in the first year and \$17,400 for each year thereafter. This same case can be made for blades made of other materials, which would yield similar results. The fact remains that "diamonds are forever."

CONCLUSION

In the final analysis, it is the musician, not the music, that determines the level of excellence. Surgeons should choose a blade design or material that works best for you and your patient. For me, it is still diamond. ■

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Meyco customer service



Most of our diamond blades can be resharpened several times (except ME-425) if they are not too badly damaged.

For each repair, the handle is totally dismantled, and all of the mechanical parts are cleaned, checked and replaced if necessary. Micrometer and step knives are recalibrated.

After grinding, the diamond blade is checked to the same standard as new knives.

We accept other knives for repair except the micrometer knives. However, we cannot accept responsibility for the breakage of blades other than Meyco.

We always do our best in order to return your repairs as soon as possible.

However, the lead time may be variable due to the many different kind of blade types we receive for resharpening.

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