H I S T O C O R E

Configuration Guide

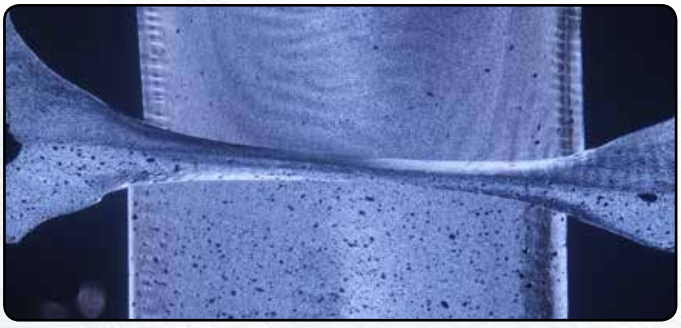
Original Validated HistoCore Microtome Accessories for Research and Industry Sectioning Applications

Leica BIOSYSTEMS

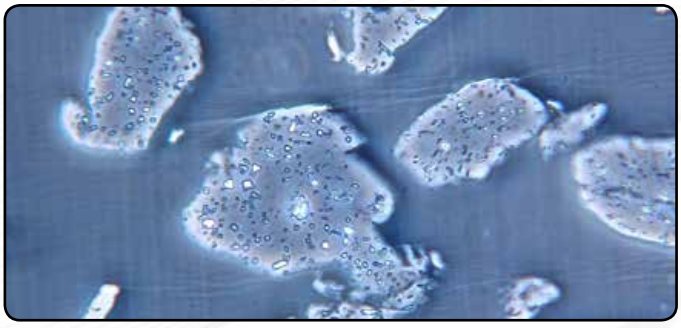
YOU WANT TO SECTION NON-HUMAN BIOLOGICAL SPECIMENS EMBEDDED IN PARAFFIN, UNDECALCIFIED BONE, AUTOMOTIVE OR PLASTIC PARTS?

Our reliable and precise microtomes, in combination with the original validated accessories, are designed to provide high quality sections and enhanced efficiency, while maintaining a safe and healthy workplace.

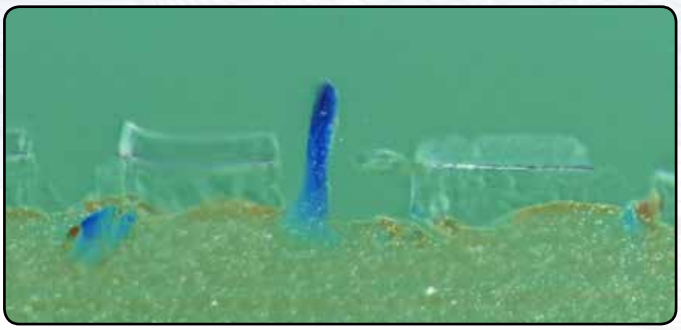
Choose the rotary microtome that lets you get the best possible section from every block and broaden your research with a wide selection of blade and specimen holders, enabling you to discover new breakthroughs in research for biomedical to industrial applications.



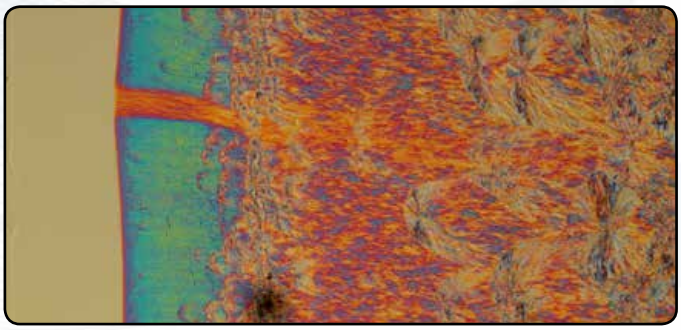
Welding Seam



Distribution of Active Particles in Absorber Material



Clear Coat Defect



Potential Rupture Point

TECHNICAL DATA	HistoCore BIOCUT R	HistoCore MULTICUT R	HistoCore AUTOCUT R	HistoCore NANOCUT R
Type of microtome	Mechanical	Semi Motorized	Fully Motorized	Fully Motorized
GENERAL				
Nominal supply voltages:	N/A	100/120/230/240 V AC	100/120/230/240 V AC	100/120/230/240 V AC
Nominal frequency:	N/A	50/60 Hz	50/60 Hz	50/60 Hz
DIMENSIONS AND WEIGHT				
Width (including handwheel and coarse feed wheel) Depth (including the section waste tray) Height (without top tray) W x D x H:	477 mm x 620 mm x 295 mm	477 mm x 620 mm x 295 mm	477 mm x 620 mm x 295 mm	415 mm x 620 mm x 295 mm
Weight (without accessories):	Approx. 31 kg	Approx. 31 kg	Approx. 40 kg	Approx. 40 kg
MICROTOME				
Section thickness setting range:	1 - 60 µm	0.5 - 100 µm	0.5 - 100 µm	0.25 - 50 µm
Trimming section thickness setting range:	10 µm, 30 µm	1 - 600 µm	1 - 600 µm	1 - 300 µm
Specimen feed:	Approx. 24 mm ±2 mm	Approx. 24 mm ±1 mm	Approx. 24 mm ±1 mm	Approx. 24 mm ±1 mm
Vertical stroke:	70 mm ±1 mm	70 mm ±1 mm	70 mm ±1 mm	70 mm ±1 mm
Maximum specimen size (H x W x D):	Large standard clamp: 55 x 50 x 30 mm Super Cassette clamp: 68 x 48 x 15 mm	Large standard clamp: 55 x 50 x 30 mm Super Cassette clamp: 68 x 48 x 15 mm	Large standard clamp: 55 x 50 x 30 mm Super Cassette clamp: 68 x 48 x 15 mm	Large Standard Clamp: 55 x 50 x 30 mm Super Cassette clamp: 68 x 48 x 15 mm
Unique force balance system	Yes	Yes	Yes	Yes
Specimen retraction:	Approx. 40 µm; can be turned off	5 - 100 µm in 5 µm increments; can be turned off	5 - 100 µm in 5 µm increments; can be turned off	5 - 50 µm (in 5 µm increments); can be turned off
COARSE FEED AND MOTORIZED SECTIONING SPEEDS				
Slow forward and backward speed Fast forward speed Fast backward speed (fast homing)	N/A	300 µm/s 800 µm/s 1800 µm/s	300 µm/s 800 µm/s 1800 µm/s	150 µm/s 400 µm/s 900 µm/s
Sectioning speed:	N/A (manual)	N/A (manual)	0 - 420 mm/s ±10 %	0 - 195 mm/s ±10%
Personalized coarse feed wheel	User selectable	User selectable	User selectable	N/A
Specimen orientation with zero postion horizontal / vertical rotation:	± 8°/ ± 8°	± 8°/ ± 8°	± 8°/ ± 8°	± 8°/ ± 8°
Waste tray	Standard	Standard	Standard	Standard

For Research Use Only. Not for use in diagnostic procedures.

CONFIGURE YOUR OWN RESEARCH MICROTOME

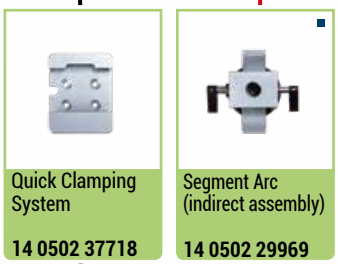
SELECT YOUR MICROTOME

BIOCUT R	MULTICUT R	AUTOCUT R	NANOCUT R
Mechanical, manual **14 0521 58201**	Semi-motorized, manual **14 0522 58221**	Motorized **14 0523 58241**	Motorized **14 0524 58261**

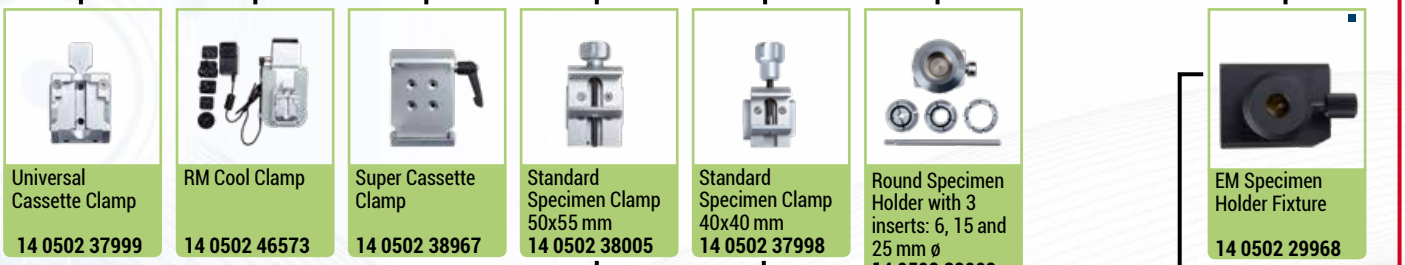
ORIENTING OR NON-ORIENTING FIXTURE FOR SPECIMEN CLAMPS

Rigid	Fine Directional	Directional	Segment Arc (direct assembly)
14 0502 38160	**14 0502 37717**	**14 0502 38949**	**14 0502 40314**

SPECIMEN HOLDERS AND CLAMPS



Quick Clamping System	Segment Arc (indirect assembly)
14 0502 37718	**14 0502 29969**



Universal Cassette Clamp	RM Cool Clamp	Super Cassette Clamp	Standard Specimen Clamp 50x55 mm	Standard Specimen Clamp 40x40 mm	Round Specimen Holder with 3 inserts: 6, 15 and 25 mm ø	EM Specimen Holder Fixture
14 0502 37999	**14 0502 46573**	**14 0502 38967**	**14 0502 38005**	**14 0502 37998**	**14 0502 38002**	**14 0502 29968**

Foil Clamp Type 1	V-Insert to clamp round specimens	EM Universal Specimen Holder	EM Flat Specimen Holder
14 0402 09307	**14 0502 38000**	**14 0356 10868**	**14 0355 10405**

Special Wrench
14 0356 10869

- BIOCUT R only
- MULTICUT R only
- AUTOCUT R only
- NANOCUT R only or recommended

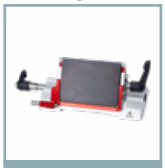
KNIFE AND BLADE HOLDERS

Blade Holder Base
14 0502 55546

Knife Holder Base
14 0502 37962

Backlighting
14 0502 38719

External Power Supply for Backlighting
14 0500 31244



2-in-1 Blade Holder for High and Low Profile Blades
14 0502 54497

Knife Holder E with trough for Low Profile Blades
14 0502 38961

www.LeicaBiosystems.com for complete disposable blade portfolio

Knife Holder N
14 0502 37993

Reusable Steel Knives
Profile c, 16 cm:
14 0216 07100
Profile d, 16 cm:
14 0216 07132

Knife Holder NZ
14 0502 37994

Reusable Tungsten Carbide Knives
Profile c, 16 cm:
14 0216 04206
Profile d, 16 cm:
14 0216 04813

Knife Holder E-TC
14 0502 37997

Disposable Tungsten Carbide Blades TC-65
14 0216 26379

Knife Holder GD
14 0502 39052

Diamond Knives Triangular Glass Knives

OTHER ACCESSORIES

Universal Microscope Carrier
14 0502 40580

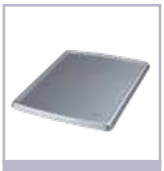
Magnifier 2 fold
14 0502 42790

Combined Carrier with Magnifier and Illumination
14 0502 29971
120/60Hz
14 0502 29972
230V/50Hz

Microscope Carrier with LED Hi Power Spots and Microscope
14 0502 38463

In Standard Delivery of Basic Instruments

Standard Waste Tray
14 0518 56458



Top Tray
14 0517 56261

LED 1000 Hi-Power Spots, 2 Arms
14 6000 04826

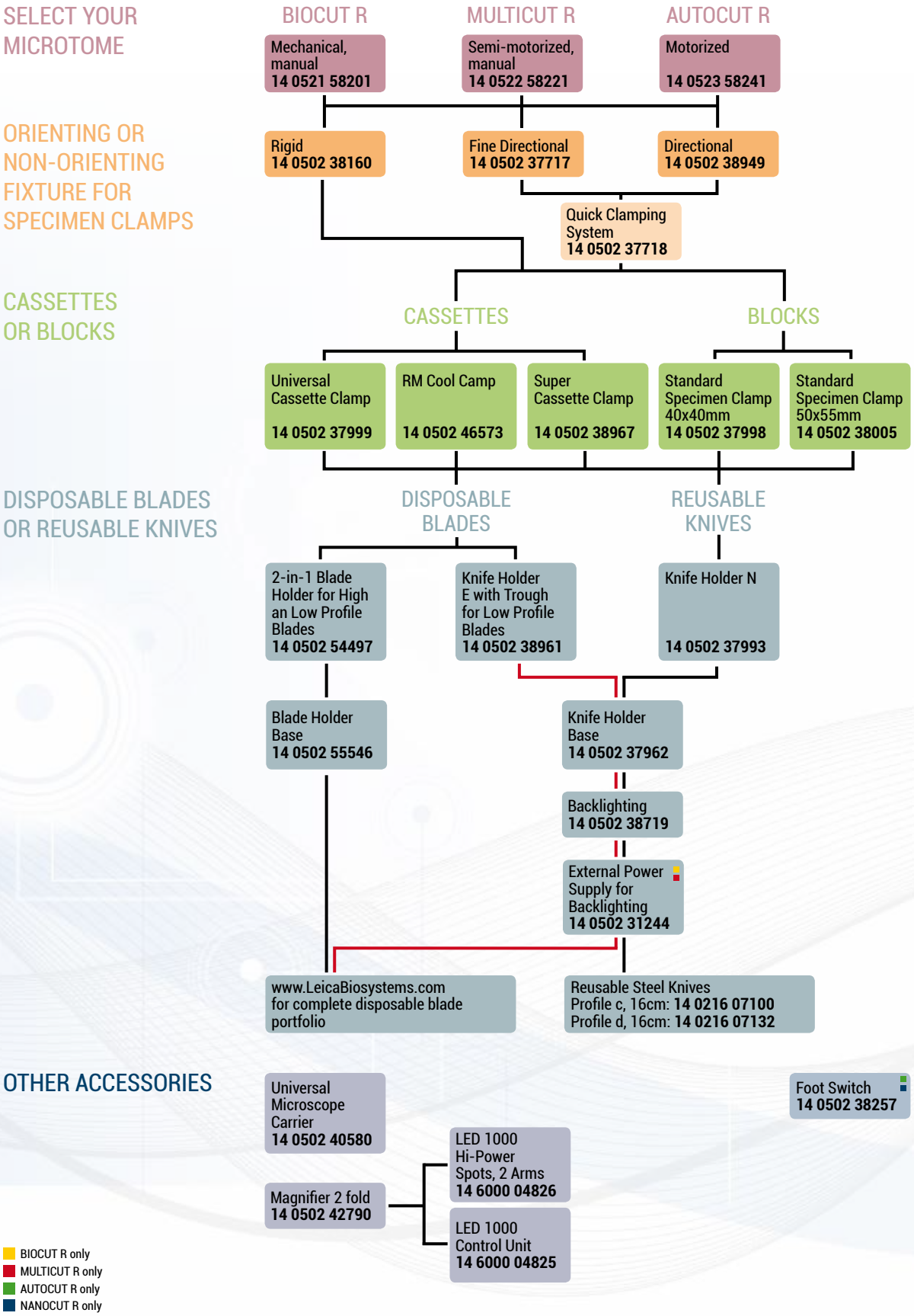
LED 1000 Control Unit
14 6000 04825

Foot Switch
14 0502 38257

HOW TO CONFIGURE YOUR MICROTOME:

- First select the microtome type you are looking for: You have the choice between 2 manual and 2 fully automated microtomes.
- Decide whether you would like to use a specimen orientation (fine directional, directional or via segment arc) or select a fixed rigid object head for extra stability.
- Are you sectioning cassettes (standard or super size), square or round specimen blocks, or EM (Semi-thin for Electron Microscope) specimens? Select the specimen holder which is ideal for your specimen.
- Depending on the type of blade or knife you will use, select the blade or knife holder.
- The knife holder base and Knife holder GD for glass and diamond knives can additionally be equipped with a backlighting system, which helps you to better align the specimen to the knife.
- The color codes (■ ■ ■ ■) indicate with which instrument the accessory can be used. Accessories without color codes can be used with all 4 microtomes.
- A large variety of disposable blades or reusable knives can be found in the consumable section of the www.LeicaBiosystems.com Website.

NON-HUMAN PARAFFIN SECTIONING APPLICATIONS



- Do you want to work manually or with an automated microtome? Select Your Microtome.
- To have both hands free for section collection, the AUTOCUT R can be equipped with a footswitch to easily start and stop the motorized sectioning.
- Is a specimen orientation required (e.g. for re-cuts) and how precise does it need to be? You have the choice of either the fine directional fixture for specimen clamps with zero indicators and click stops every 2° or the directional fixture for specimen clamps, with 8° XY orientation. Both orientation systems can be equipped with the quick clamping system, allowing rapid specimen clamp exchange or clamp removal for cleaning.
- If you prefer a fixed and stable object head, the rigid fixture (with the integrated quick clamping system) is the right choice for you.
- Are you going to section specimens embedded in standard or super size cassettes or paraffin blocks? Do you want to cool your standard cassettes while sectioning to keep the block colder longer, especially when sectioning serial sections? Find the appropriate clamp for your specimen in the cassettes or blocks section.
- Depending on whether you prefer disposable blades or reusable knives, select the blade or knife holder. The 2-in-1 Blade Holder (to be used with the blade holder base) can be used with either high or low profile blades.
- Knife holder E with a trough is used with the knife holder base and low profile blades. The trough can be filled with water and the sections will stretch on the water surface and can be collected with an object slide.
- When using reusable c or d profile knives, Knife Holder N is the best choice.
- The Knife Holder Base (for Knife Holder N and E with a trough) can be equipped with a backlighting system, which helps you to better align the specimen to the knife.
- A large variety of disposable blades or reusable knives can be found in the consumable section of the www.LeicaBiosystems.com Website.

Knife Holder E with Trough

#	Recommendation	Order No.
	BIOCUT R Basic Instrument	14 0521 58201
OR	MULTICUT R Basic Instrument	14 0522 58221
OR	AUTOCUT R Basic Instrument	14 0523 58241
1	Fine-Directional Fixture for Specimen Clamps	14 0502 37717
2	Quick Clamping System	14 0502 37718
3	Leica RM CoolClamp	14 0502 46573
4	Blade Holder Base	14 0502 55546
5	2-in-1 Blade Holder	14 0502 54497
6	Low profile disposable blades e.g.	14 0358 38382
	High profile disposable blades e.g.	14 0358 38383

CONFIGURE YOUR OWN MICROTOME FOR SEMI-THIN SECTIONING AND 3D APPLICATIONS

SELECT YOUR MICROTOME

NANOCUT R

ORIENTING OR NON-ORIENTING FIXTURE FOR SPECIMEN CLAMPS

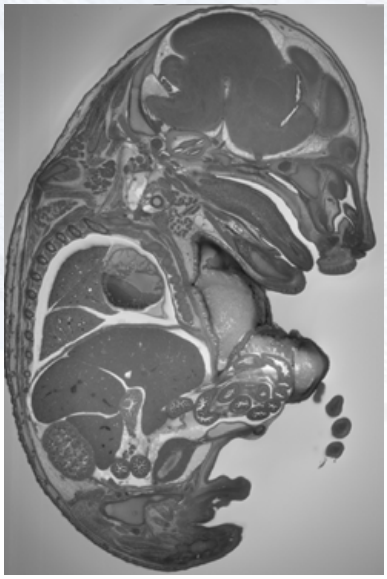
APPLICATION

3D

SEMI-THIN SECTIONING

OTHER ACCESSORIES

- Motorized **14 0524 58261**
- Rigid **14 0502 38160**
- Fine Directional **14 0502 37717**
- Directional **14 0502 38949**
- Segment Arc (direct assembly) **14 0502 40314**
- Quick Clamping System **14 0502 37718**
- Segment Arc (indirect assembly) **14 0502 29969**
- Round Specimen Holder with 3 inserts: 6, 15 and 25 mm ø **14 0502 38002**
- EM Specimen Holder Fixture **14 0502 29968**
- EM Flat Specimen Holder **14 0355 10405**
- EM Universal Specimen Holder **14 0356 10868**
- Knife Holder Base **14 0502 37962**
- Backlighting **14 0502 38719**
- Special Wrench **14 0356 10869**
- Knife Holder E-TC **14 0502 37997**
- Knife Holder GD **14 0502 39052**
- Disposable Tungsten Carbide Blades TC-65 **14 0216 26379**
- Diamond Knives Triangular Glass Knives
- Foot Switch **14 0502 38257**
- Microscope Carrier with LED Hi Power Spots and Microscope **14 0502 38463**
- Combined Carrier with Magnifier and Illumination **14 0502 29971** 120/60Hz **14 0502 29972** 230V/50Hz
- LED 1000 Hi-Power Spots, 2 Arms **14 6000 04826**
- LED 1000 Control Unit **14 6000 04825**



Raw data from a E15,5 stage mouse embryo

COURTESY OF igbmc phenomin

3D APPLICATION – FOLLOW THE MERLOT DECISION TREE

- The NANOCUT R is the instrument of choice for 3D reconstruction with its precise stop in the object head's optimal position for photo-capture of the cut sample surface when running 3-dimensional reconstruction programs.
- Choose whether you would like to use a specimen orientation (fine directional or directional) or prefer a fixed rigid object head for extra stability.
- The quick clamping system will allow you to quickly remove the specimen clamp.
- As most specimens are embedded using molds with round specimen clamp adapters, the use of a round specimen clamp is recommended.
- For 3-dimensional reconstruction programs, high qualiy surfaces of the cut block surface are required. This can be obtained by using disposable tungsten carbide TC-65 blades, which are clamped in the E-TC blade holder.

SEMI-THIN SECTIONING – FOLLOW THE GREEN DECISION TREE

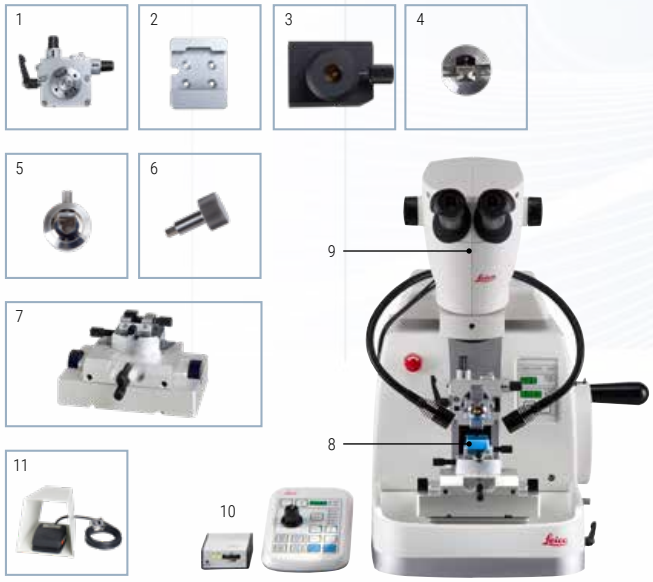
- The NANOCUT R is the instrument of choice for semi-thin sectioning with a minimum section thickness of 250 nm. The use of a footswitch is recommended allowing you to have both hands free for the section preparation.
- The specimen size for semi-thin sectioning is limited. Specimens are embedded in resin and will be clamped in either an EM flat or universal specimen holder. The specimens are clamped in the holders using the special wrench.
- Often a segment arc is used to clamp the EM holders – you have the choice to either select the segment arc, which is directly clamped onto the cylinder of the microtome, which gives you the most stability, or the segment arc with indirect assembly, which is clamped on either the fine directional or directional fixture for specimen clamps.
- Semi-thin sections can be produced using either glass or diamond knives, which are clamped in the Knife holder GD. Backlighting is recommended to help better align the specimen to the knife.
- LED illumination and the microscope will help you to prepare and collect the section ribbons.

RECOMMENDED SOLUTION FOR 3D RECONSTRUCTION

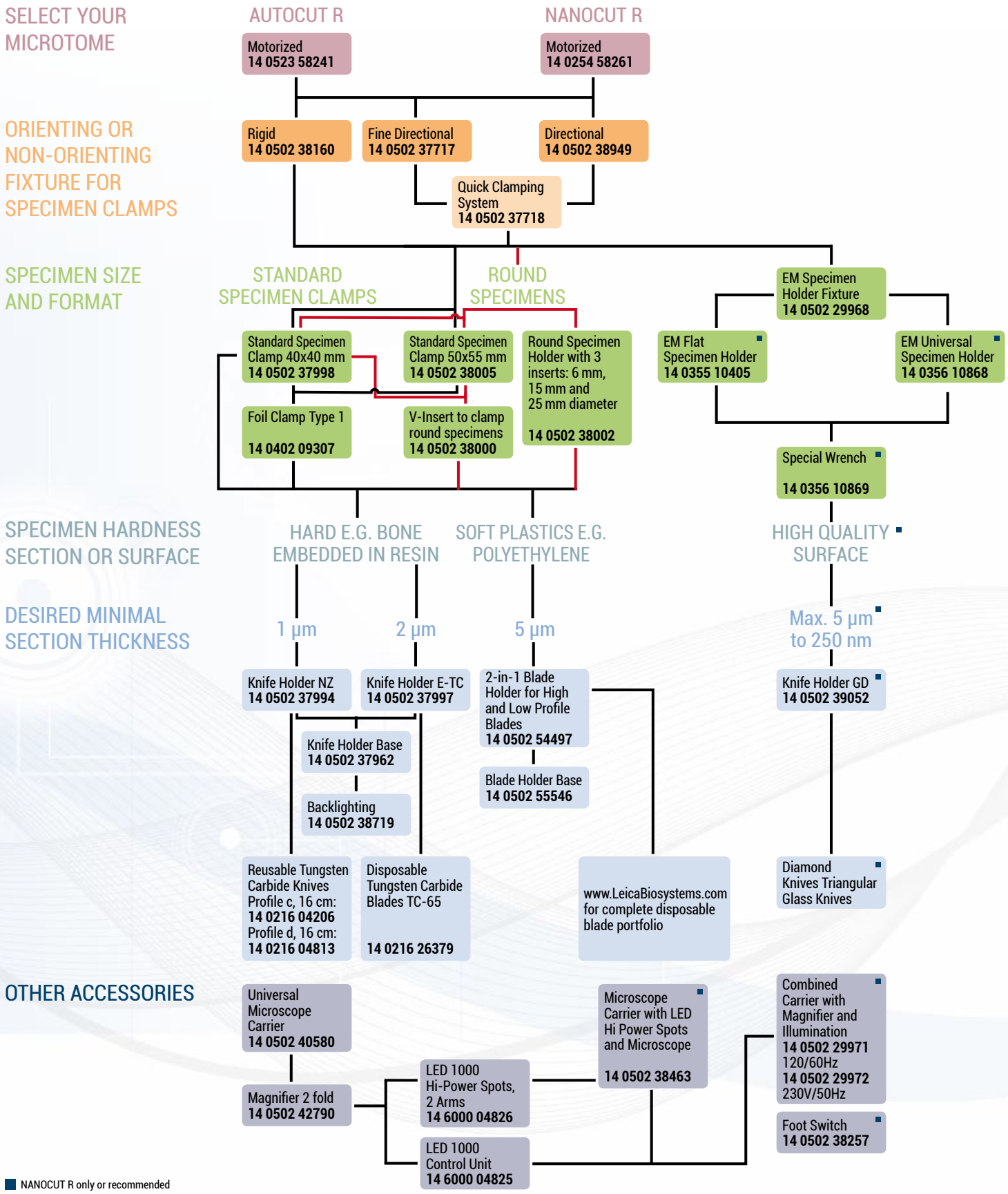
#	Recommendation	Order No.
	NANOCUT R Basic Instrument	14 0521 58261
1	Fine-Directional Fixture for Specimen Clamps	14 0502 37717
2	Quick Clamping System	14 0502 37718
3	Round specimen holder	14 0502 38002
4	Knife holder base	14 0502 37962
5	Backlighting	14 0502 38719
6	Knife holder E-TC for TC-65 disposable blades	14 0502 37997
7	TC-65 disposable blades	14 0216 26379
8	Foot switch	14 0502 38257

RECOMMENDED SOLUTION FOR SEMI-THIN SECTIONING

#	Recommendation	Order No.
	NANOCUT R Basic Instrument	14 0521 58261
1	Fine-Directional Fixture for Specimen Clamps	14 0502 37717
2	Quick Clamping System	14 0502 37718
3	EM specimen holder fixture	14 0502 29968
4	EM holder flat **or**	14 0355 10405
5	EM holder universal	14 0356 10868
6	Special wrench	14 0356 10869
7	Knife holder GD	14 0502 39052
8	Diamond knife	N/A
9	Microscope carrier w/LED Hi-Power spots	14 0502 38463
10	LED 1000 control unit	14 6000 04825
11	Foot switch	14 0502 38257



CONFIGURE YOUR OWN MICROTOME FOR SPECIMENS OF DIFFERENT HARDNESS AND DESIRED SECTION THICKNESS OR SURFACE QUALITY



■ NANOCUT R only or recommended

To section resin embedded biological or plastic specimens of different hardness, an automated microtome is recommended.

- Select either the AUTOCUT R for larger blocks and section thicknesses down to 0.5 µm or the NANOCUT R for specimens requiring extreme slow cutting speeds, thinner sections down to 250 nm or high-quality surfaces of specimens.
- To have both hands free for section collection, select a footswitch to easily start and stop motorized sectioning.
- Is a specimen orientation required (e.g. for target preparation) and how precise does it need to be?
  - The fine directional fixture for specimen clamps with zero indicators and click stops every 2°.
  - The directional fixture for specimen clamps, with 8° XY orientation, with the opportunity to turn the clamp by 360° to reduce cutting force.
  - Both orientation systems are equipped with the quick clamping system, for rapid clamp exchange.
  - If you prefer a fixed and stable object head, the rigid fixture (with the integrated quick clamping system) is the right choice for you.
- In order to prevent chemical or thermal effects on the sample to be cut, many users do not embed the plastic sample in synthetic resin or paraffin and prefer direct clamping.
  - For square or angular specimens one of the standard specimen clamps is recommended.
  - To stabilize foils while sectioning, it is mounted like a sandwich in between two plastic parts. The sandwich is clamped in the foil clamp, which is mounted into the standard clamp.
  - For round specimens of 5, 18 or 25 mm diameter, the round specimen clamp can be used. For other diameters use one of the standard clamps with the V-insert.
  - For smaller flat or capsule size specimens, choose the EM flat or universal specimen holder. They are clamped into the EM holder fixture.
- What is the hardness of your specimen? Do you want to produce sections or are you going to investigate the cut surface of the remaining block? Which minimum section thickness are you looking for?
  - For soft plastics, such as polyethylene and a desired section thickness of approx. 5 µm, use disposable blades and the 2-in-1 blade holder.
  - For plastics, such as Glycol methacrylate (GMA e.g. HistoResin) or hard plastics, such as Methyl methacrylate (MMA) or Epoxy resin, the use of a tungsten carbide blade/knife is suitable.
  - Down to 2 µm: Disposable TC-65 blade mounted in the E-TC knife holder.
  - For thinner sections, a reusable tungsten carbide knife (with d profile) clamped in the NZ knife holder should be used.
  - For high quality surfaces, e.g for defect analysis, either the tungsten carbide blade/knife can be used, however, for highest possible surface quality, a Diamond knife with GD knife holder, is recommended.
- Magnifier or microscope with LED illumination will help you to prepare and collect the sections.

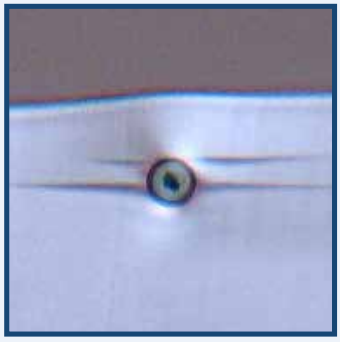
RECOMMENDED SOLUTION FOR RESIN SECTIONING E.G. BONE OR HARDER INDUSTRIAL SAMPLES

#	Recommendation	Order No.
	AUTOCUT R Basic Instrument	14 0523 58241
1	Fine-Directional Fixture for Specimen Clamps	14 0502 37717
2	Quick Clamping System	14 0502 37718
3	Round specimen holder or	14 0502 38002
4	Standard clamp 40 x 40 mm	14 0502 37998
5	Knife holder base	14 0502 37962
6	Backlighting	14 0502 38719
7	Knife holder NZ for reusable tungsten carbide (TC) knives	14 0502 39052
8	16 cm TC knife d profile	14 0216 04813
or 9	Knife holder E-TC for disposable TC blades	14 0502 37997
10	TC-65 disposable blades	14 0216 26379
11	Foot switch	14 0502 38257

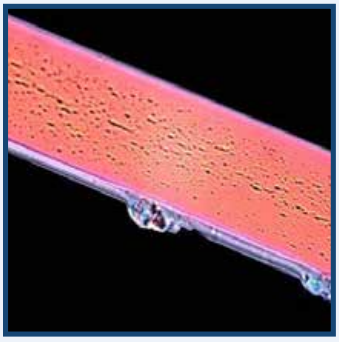
RECOMMENDED SOLUTION FOR SOFT PLASTIC PART SECTIONING (INDUSTRY)

#	Recommendation	Order No.
	AUTOCUT R Basic Instrument	14 0523 58241
1	Fine-Directional Fixture for Specimen Clamps or	14 0502 37717
2	Directional fixture for Specimen Clamps	14 0502 38949
3	Quick Clamping System	14 0502 37718
4	Standard clamp 50 x 55 mm	14 0502 38005
5	Foil Clamp	14 0402 09307
6	V-Insert	14 0502 38000
7	Blade Holder Base	14 0502 55546
8	2-in-1 Blade Holder	14 0502 54497
9	Low profile disposable blades e.g. 819	14 0358 38382
	High profile disposable blades e.g. 819	14 0358 38383
10	Foot switch	14 0502 38257

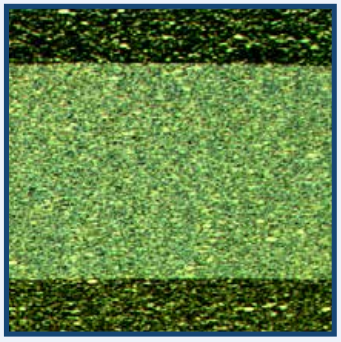
RESEARCH MICROTOMES



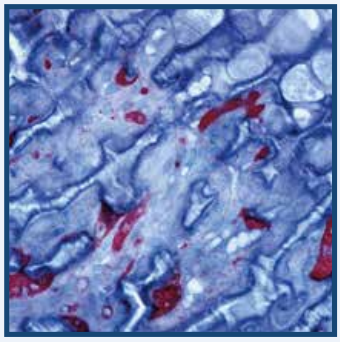
Impurities in a foil 50 µm



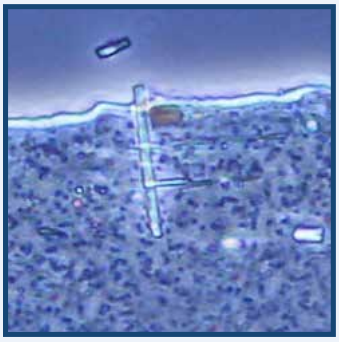
Clearcoat inhomogeneities 20 µm



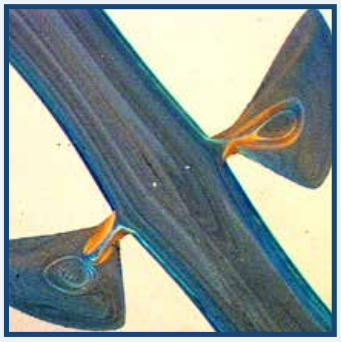
Sandwich foil 5 µm



Proximal tibia of a rat 5 µm



Huge glass fiber perforates the topcoat 20 µm



Plastic form 20 µm

CONFIGURED HISTOCORE ROTARY MICROTOMES FOR YOUR NON-HUMAN PARAFFIN SECTIONING RESEARCH APPLICATION

	ORDER NUMBER	ORDER NUMBER	ORDER NUMBER
Standard delivery includes	149BIOR00C1	149MULTIRC1	149AUTOR0C1
Precision orientation: Fine directional fixture for specimen clamps	✓	✓	✓
Quick clamping system	✓	✓	✓
Universal cassette clamp	✓	✓	✓
Blade holder base	✓	✓	✓
2-in-1 blade holder	✓	✓	✓
Standard waste tray	✓	✓	✓
Top tray	✓	✓	✓

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