UAB "Linea libera"
(Uždaroji akcinė bendrovė, Akademijos g. 2, LT-08412 Vilnius, tel.: +370 5 2638748, faks.: , el. paštas: info@linealibera.lt, juridinio asmens kodas: 122145775, PVM kodas: LT221457716. Duomenys kaupiami ir saugomi Valstybinės įmonės Registrų centras registre)

VšĮ Klaipėdos universiteto ligoninė
(Adresatas (perkančioji organizacija))

PASIŪLYMAS
DĖL MINKŠTŲJŲ AUDINIŲ, KAULŲ IR HETEROGENINIŲ MĖGINIŲ (SU ĮVAIRIAIS IMPLANTAIS) PARUOŠIMO HISTOLOGINIAMS TYRIMAMS ĮRANGOS PIRKIMO

2024-04-16 Nr. 1-80899653
Vilnius

Tiekėjo pavadinimas	UAB "Linea libera"
Tiekėjo adresas	Akademijos g. 2, LT-08412 Vilnius
Juridinio asmens kodas	122145775
Už pasiūlymą atsakingo asmens pareigos, vardas, pavardė	Produktų specialistas Evaldas Burbulis
Telefono numeris	+370 5 2638748
El. pašto adresas	info@linealibera.lt

1. Šiuo pasiūlymu pažymime, kad sutinkame su visomis pirkimo sąlygomis, nustatytomis:
1.1. atviro (supaprastinto) pirkimo skelbime, paskelbtame Centrinėje viešųjų pirkimų informacinėje sistemoje;
1.2. pirkimo sąlygose;
1.3. kituose pirkimo dokumentuose (jų paaiškinimuose, papildymuose).

2. Teikdami šį pasiūlymą patvirtiname, kad esame tinkamai įsisteigę ir teisėtai veikiame pagal Lietuvos Respublikos įstatymus, taip pat esame atlikę visus teisinius veiksmus, būtinus, kad pirkimo sutartis būtų tinkamai sudaryta ir galiotų, ir turime visus teisės aktais numatytus leidimus, licencijas, darbuotojus, reikalingus prekėms tiekti

Linea libera
SPARNAI ATRADIMAMS

Mes siūlome šią medicinos įrangą:

Pirkimo dalies Nr.	Pavadinimas, specifikacija	Mato vnt.	Kiekis vnt.	Mato vnt. kaina Eur, be PVM	Suma Eur, be PVM
1	2	3	4	5	6
1	Minkštųjų audinių, kaulų ir heterogeninių mėginių (su įvairiais implantais) paruošimo histologiniams tyrimams įranga Modelis: 312 Gamintojas: EXAKT Advanced Technologies GmbH Kilmės šalis: Vokietija	vnt.	1	33.900,00	33.900,00
				Viso be PVM:	33.900,00
				PVM tarifo 21 % suma:	7.119,00
				Iš VISO su PVM:	41.019,00

Tais atvejais, kai pagal galiojančius teisės aktus tiekėjui nereikia mokėti PVM, tiekėjas atitinkamų skilčių nepildo ir nurodo priežastis, dėl kurių PVM nemoka.

Į šią sumą įeina visos išlaidos (įskaitant ir prekių pristatymo) ir visi mokesčiai.

Patvirtiname, kad mūsų siūlomos prekės atitinka visus šiose konkurso sąlygose nurodytus keliamus reikalavimus ir teikiame užpildytą Techninę specifikaciją (Konkurso sąlygų 2 priedas)

3. **Informacija apie visus ūkio subjektus, subtiekėjus ir subteikėjus,** kurie bus pasitelkiami vykdant pirkimo sutartį:

Eil. Nr.	Partnerio, subteikėjo, subtiekėjo pavadinimas	Numatomos teikti paslaugos	Perduodamos dalies vertė pasiūlymo kainoje, %
		Viso:	

Pastaba. Tiekėjo, tiekėjų grupės partnerių ir subtiekėjų bendra numatomų atlikti darbų paslaugų vertė turi atitikti bendrą pasiūlymo kainą Eur su PVM.

4. Tiekėjai pasiūlyme turi nurodyti, kokia pasiūlyme pateikta informacija yra konfidenciali.

Šiame pasiūlyme pateikta ir konfidenciali informacija* (Pildyti tuomet, jei bus pateikiama konfidenciali informacija):

Eil. Nr.	Pateikto dokumento pavadinimas	Dokumentas yra įkeltas pasiūlymo lango eilutėje „Prisegti dokumentai“
1.	Igaliojimas Evaldui Burbuliui_Konfidencialu	**„Prisegti dokumentai“**

*Konfidencialia informacija gali būti, įskaitant, bet ja neapsiribojant, komercinė (gamybinė) paslaptis ir konfidencialieji pasiūlymų aspektai. Konfidencialia negalima laikyti informacijos nurodytos VPĮ 20 str. 2 d. Tiekėjas neturi teisės nurodyti, kad visa pasiūlyme pateikta informacija yra konfidenciali. Tiekėjas turi aiškiai nurodyti, kokie su pasiūlymu pateikti dokumentai laikytini konfidencialiais. **Jei tiekėjas nenurodo konfidencialios informacijos, laikoma, kad tokios tiekėjo pasiūlyme nėra**.

5. Kartu su pasiūlymu pateikiami šie dokumentai:

Eil. Nr.	Pateiktų dokumentų pavadinimas	Bylos pavadinimas
1.	Įgaliojimas Evaldui Burbuliui_Konfidencialu	Igaliojimas Evaldui Burbuliui_Konfidencialu
2.	UAB Linea libera EBVPD	UAB Linea libera EBVPD
3.	Inžinieriaus sertifikatas	Gamintojo_igaliojimas_parduoti_ir_serviso_inzinieriaus patvirtinimas.pdf
4.	Techninė specifikacija	Techninė specifikacija_prie_pasiulymo_1-80899653.pdf
5.	Techniniai dokumentai	Technine_dokumentacija_Exakt-312.pdf

6. Pasiūlymas galioja iki termino, nurodyto pirkimo sąlygose.

Produktų specialistas	(pasirašyta saugiu elektroniniu parašu)	Evaldas Burbulis
(Tiekėjo arba jo įgalioto asmens pareigų pavadinimas)	*(Parašas)*	*(Vardas ir pavardė)*

2 priedas prie Atviro (supaprastinto) konkurso sąlygų

MINKŠTŲJŲ AUDINIŲ, KAULŲ IR HETEROGENINIŲ MĖGINIŲ (SU ĮVAIRIAIS IMPLANTAIS) PARUOŠIMO HISTOLOGINIAMS TYRIMAMS ĮRANGA

TECHNINĖ SPECIFIKACIJA (prie pasiūlymo 1-80899653)

Eil. Nr.	**Parametrai**	**Reikalaujamos parametrų reikšmės**	**Siūlomo parametro atitikimas, konkreti parametro reikšmė ir atitikimo patvirtinimas** (įkeltos bylos pavadinimas, psl. Nr., puslapyje pabraukta/ grafiškai/ spalviškai pažymėta kiekvienos pozicijos atitikimas, nurodant pozicijos numerį pagal specifikacijos Nr.)
1	**2**	**3**	**4**
1.	Minkštųjų audinių, kaulų ir heterogeninių mėginių (su įvairiais implantais) paruošimo histologiniams tyrimams įranga (1 vnt.)		Įkelta byla: *Technine_dokumentacija_Exakt-312.pdf*
1.1.	Paskirtis	tiksliam, saugiam ir greitam kaulinių, minkštųjų audinių bei heterogeninių mėginių pjaustymui, paruošimui patologiniams tyrimams	Tiksliam, saugiam ir greitam kaulinių, minkštųjų audinių bei heterogeninių mėginių pjaustymui, paruošimui patologiniams tyrimams 1psl
1.2.	Pjovimo juosta	skirtingų dydžių deimantinės juostos ne didesnio nei 0,3 mm storio	Skirtingų dydžių deimantinės juostos 0,3 mm storio 1, 47psl
1.3.	Maksimalus pjaunamo objekto aukštis	ne mažiau nei 210 mm	220 mm 2psl
1.4.	Maksimalus pjaunamo objekto plotis	ne mažiau nei 350 mm	360 mm 2psl
1.5.	Pjovimo juostos greitis	pasirenkamas ne mažesniame intervale nei nuo 200 iki 1200 m/min ± 50	Pasirenkamas intervale nuo 200 iki 1200 m/min 2psl
1.6.	Optinė lazerinė rodyklė pjovimo krypčiai nustatyti	Turi būti instaliuota	Yra instaliuota 12, 38psl
1.7.	Apsauga nuo taškymosi pjovimo metu	Būtina pateikti	Įskaičiuota į komplektaciją 12, 39psl
1.8.	Darbo zonos apšvietimas	Būtinas , LED tipo arba lygiavertis	Įskaičiuotas LED tipo darbo zonos apšvietimas į komplektaciją , 12 psl
1.9.	Pjovimo juostos aušinimo ir valymo vandeniu sistema pastoviai pjovimo temperatūrai ir švarai užtikrinti	Turi būti instaliuota	Yra instaliuota 52, 68psl
1.10.	Rėmas	Ne blogiau kaip nerūdijantis plienas	Nerūdijantis plienas 12psl
1.11.	Ratukų komplektas pjūklo mobilumui užtikrinti	Turi būti ne mažiau nei 4 ratukai .	4ių ratukų komplektas įskaičiuotas į komplektaciją. Ratukai su stabdžiais.

		Turi būti su stabdžiais ne mažiau nei dviems ratukams.	1, 2, 12, 38psl
1.12.	Kreipiančiosios	Su pjūklu turi būti pateiktos ne mažiau nei 2 skirtingo aukščio kreipiančiosios	Su pjūklu bus pateiktos 2 skirtingo aukščio kreipiančiosios 38psl
1.13.	Prietaiso priežiūra	Turi būti instaliuotas vandens pistoletas valymui	Yra instaliuotas vandens pistoletas valymui 38psl
1.14.	Garantija	Ne mažiau kaip 36 mėnesiai	36 mėnesiai
1.15.	Gamintojo techninis palaikymas, detalių tiekimas	Ne mažiau 8 metai nuo prietaiso įsigijimo	Patvirtiname, kad bent 8 metus nuo prietaiso įsigijimo techniškai palaikysime prietaisą ir galėsime tiekti detales.
1.16.	Naudojimo instrukcija ir/ar vartotojo vadovas	Būtina. Pateikti kartu su įranga originalo ir lietuvių kalbomis	Kartu su įranga pateiksime naudotojo vadovą originalo ir lietuvių kalbomis
1.17.	Darbuotojų mokymas po įrangos instaliavimo	Būtina. Personalo mokymas privalo būti valstybine kalba.	Suteiksime personalo mokymus valstybine kalba.
1.18.	CE ženklinimas	Būtinas . Siūlomos įrangos kokybė turi atitikti Europos Sąjungos direktyvų nuostatų reikalavimus medicinos prietaisams. Tiekėjas turi pateikti prietaiso CE ženklinimą liudijančio galiojančio dokumento (CE sertifikato arba EB atitikties deklaracijos) kopiją.	Siūlomos įrangos kokybė atitinka Europos Sąjungos direktyvų nuostatų reikalavimus medicinos prietaisams. Pateikiame prietaiso EB atitikties deklaracijos kopiją. 85psl
1.19.	Paslaugos	Instaliavimo ir funkcionalumo patikrinimas turi būti atliktas gamintojo sertifikuoto serviso inžinieriaus. Su pasiūlymu turi būti pateikiamas inžinieriaus sertifikatas.	Instaliavimo ir funkcionalumo patikrinimas bus atliktas gamintojo sertifikuoto serviso inžinieriaus. Su pasiūlymu pateikiame gamintojo patvirtinimą apie serviso inžinieriaus kvalifikaciją.

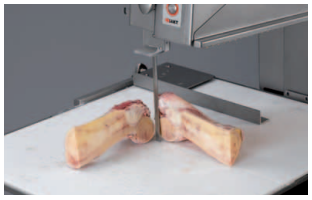
1.2 deimantinė juosta

DIAMOND BAND SAW EXAKT 312 PATHOLOGY

1.11

HIGHLIGHTS

- No risk of injury to the operator
- Very low cutting loss
- Complies with the latest standards for safety and hygiene in the medical field (EN ISO 13849-1)
- Outstanding surface quality of the cut surface
- Mobile and universal use
- very easy to operate
- Highly reliable but low operating cost



Precise – Safe – Fast – Hygienic: The EXAKT 312 Diamond Band Saw is especially developed for the requirements of pathology today (human and veterinary medicine). Even the smallest cuts down to 1–2 mm can be realized freehand – and this without risk of injury to the operator. Whether soft tissue, bones, or implants in bone-tissue structure, everything can be cut quickly and easily. The results are remarkable, too, with achievable surface qualities of the cut sections which no other cutting method is able to produce. A first examination of the cut can usually be carried out immediately without further processing.
Equipped with various options, the EXAKT 312 Diamond Band Saw can be specified according to different customer requirements.

1.1 Paskirtis

TECHNICAL SPECIFICATIONS

DIAMOND BAND SAW EXAKT 312 PATHOLOGY

Dimensions	
Installation area (W x D x H mm)	1000 x 800 x 1800
Hight (mm)	1550
Operating hight (mm)	920
approx. weight (kg)	ca. 150
Speed cutting band (m/min)	200–1200

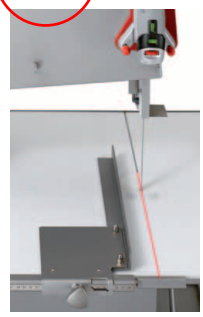
1.5 Pjovimo juostos greitis

Tempering	
Water connection – Inlet (Ø mm)	7,6
Water connection – Outlet (Ø mm)	28
max. ambiente temperature (°C)	40

Dimensions sample porcessing		
max. cutting hight (mm)	220	1.3 Maksimalus aukštis
max. cutting width (mm)	360	1.4 Maksimalus plotis
Working table (W x D mm)	685 x 600	

1.11 Ratukai su stabdžiais

Electrical connection	
Variant 1: Voltage (V)	1 x 220–240
Frequency (Hz)	50–60
Power (W)	1100



Variant 2: Voltage (V)	1 x 100
Frequency (Hz)	50–60
Power (W)	1100

Variant 3: Voltage (V)	1 x 110–115
Frequency (Hz)	60
Power (W)	1100

Version 2 · 12.2015

EXAKT Advanced Technologies GmbH
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EXAKT

CUTTING
GRINDING
THIN SECTION TECHNOLOGY

because precision matters.

WE SIMPLY LOVE TO BE PRECISE.

Precision, passion and consistency – this is what EXAKT stands for. Our Cutting, Grinding and Thin Section Technology products and Three Roll Mills guarantee our customers maximum precision, quality and reliability Made in Germany. More than 60 years of experience are reflected in their development. With an innovative pionieering spirit of research and passion for technology, we optimize and produce our high performance systems at the company headquarters in Norderstedt, Germany. This allows us to be one step ahead of the competition around the world.

Bernd Franke
Owner and CEO

FROM THE CONTENT

THE µ COUNTS.

EXAKT Cutting & Grinding Technology, arising from research and development, is an essential component for achieving trend-setting results. The current range of applications of our systems is as multifaceted as it is unique. It's tried and tested a hundred times over in daily use around the world: In medical research, industrial damage analysis, the pathology departments of hospitals and the quality assurance of industrial production. Let the wide variety of application possibilities and precision of our technologies inspire you. Make requirements a reality that have seemed unachievable until today.

- More than 30 years of experience and over 2,800 units in use around the world
- Largest variety and flexibility for sample preparation applications
- Consulting competency and expertise for your application
- Technological leadership developed and produced in Germany
- Always on site – Our network of certified dealers for sales and service are located around the world
- Open to innovation – Trusted development partner of research institutes, universities and industry

CUTTING, GRINDING AND THIN SECTION CUTTING TECHNOLOGY

REQUIREMENT

Gentle and extremely precise cutting of soft and hard material composites, the preparation of samples requiring optimum precision, and grinding which must be considerably more precise and thinner than allowed by conventional methods. These demands are very difficult to implement with conventional preparation methods. This was our motivation to implement a completely new idea in precision engineering: EXAKT Technologies for Cutting, Grinding and Thin Sectioning.

WHY EXAKT?

For basic requirements for cutting and grinding in the laboratory, there is a large selection of different equipment in the world. However, the use of microtomes and conventional abrasive grinding systems reaches its limits when requirements for versatility, precision and quality rise:

› Coplanar cuts with excellent surface quality
› Creation of burr-free cross-cuts of complex components
› Dimensionally and geometrically stable cutting of sophisticated thermal setting- and thermoplastic objects (e.g. seals, capillaries, etc.)
› Gentle cutting and structural retention on the cut surface of soft and hard tissues, bones and implants.
› Reduction in cutting loss to the absolute minimum (down to 190 µm, depending on the application)
› Coplanar grinding with a tolerance of up to 3 µm
› Consistent creation of thin sections from composites of very hard and very soft materials
› Thin sections for transmitted-light microscopy, light-filter use, staining and immunohistochemistry

Fulfilling extraordinary requirements consistently in the laboratory: That's what EXAKT stands for. Our precision-engineered equipment sets the standard when it comes to accuracy down to the µ.

SAMPLE PREPARATION

PREPARATION

› Dehydration, infiltration
› Embedding with light polymerization
› Precision adhesion on the specimen slide
› Precise sample measurement
› Processing of defective, embedded samples

EXAKT402

EXAKT 520

CUTTING / GRINDING

› Excellent surface quality starting with the first cut
› For all materials and composite materials, tissues, bones and implants
› Safe operation and minimal risk of the operator being cut
› Cutting bands for every application

EXAKT 300 CP

EXAKT 311

GRINDING & POLISHING

› Setting and measuring material removal in µ-increments
› High-precision coplanar surfaces
› Easy-to-set grinding parameters
› Abrasive paper of different grits

EXAKT 400 CS

APPLICATIONS

In medical research, the EXAKT Thin Section Cutting Technology has already been known for decades and is established around the world as a recognized process with its unique performance features. The use of ever more complex production processes in conjunction with new materials results in a wide variety of new industrial applications. For example, the advantages resulting from transmitted-light microscopic analysis of thin section samples have already been shown in the research and damage analysis of materials.

Processing thin sections – e.g. titanium acetabular cup

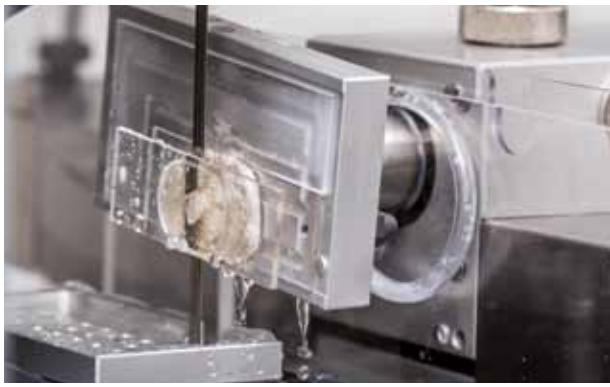
CROSS SECTION

Outstanding surface quality and the retention of structures are often required when a cross section is cut. When executed with EXAKT Diamond Band Saws of the 300, 310, 311 and 312 series, a single work step is all that's required to achieve a level of quality rarely obtainable using other processes. You can expect to achieve unique results through an efficient process.

Industry – cross section of a core

THIN CUTS

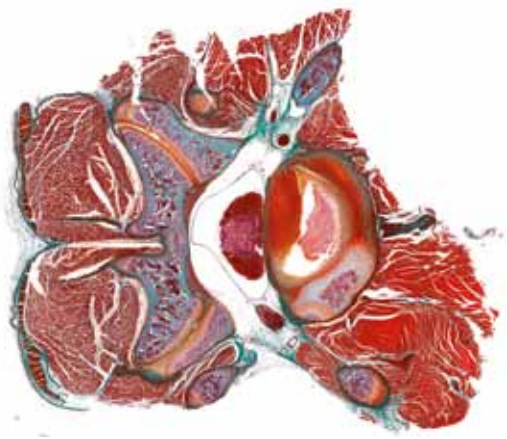
Objects for analysis are generally one-of-a-kind items. This is why the requirement for a reliable and gentle cutting process with minimal cutting loss is very important when creating serial thin section cuts. With EXAKT Diamond Band Saws of the 300 CP and 310 CP series, you achieve unique results with applications which were previously impossible.



Thin section cutting of an embedded specimen

THIN SECTION

The challenge: Creating razor-thin sections, taking the adhesive layer thickness into account and securing them precisely on the slide. Safe and consistent processing of hard and soft objects or material composites made of a wide variety of different materials. To meet this requirement, all the steps of the process for sample preparation must be perfectly matched to one another. From preparation to embedding, adhesion of the sample to cutting and subsequent grinding and polishing, the EXAKT thin section cutting system provides perfect control of every work step, year after year.



Thin section (spine, rat)
Masson Goldner Lightgreen

CUTTING

Gently cutting the uncuttable – Whenever conventional cutting processes reach their limits or the requirements on surface quality of the interface are very high, high-precision EXAKT Diamond Band Saws of the 300, 310 (CL & CP) and 311 series are the solution to your problem.
The cutting of sensitive hard-and-soft tissue combinations for histological analysis, complex components made of a wide variety of different materials from industrial production and sophisticated thermal setting plastic and thermoplastic structures, metals or other materials – These are just a few of the example applications from medicine and industry where our EXAKT Diamond Band Saws are used on a daily basis around the world.
Precision, consistency, versatility and safety are the main features of our technology and our promise of executing demanding cutting tasks in research, production, quality assurance and damage analysis in a practical way.

EXAKT 300 – compact laboratory device with splash guard

EXAKT 311 – Precision with large working table

µ-accurate sample positioning with digital micrometer

Parallel control system with precise feed control and automatic sample positioning

Diamond Band: Cutting & Grinding in one step

Various sample supports, ideal cutting with CP technology

EXAKT 300 CP

EXAKT 311

PERFORMANCE

The right solution for the most demanding requirements – The EXAKT 300, 310 (CL+CP) and 311 Diamond Band Saws fulfill all the demands for precise cutting.
A wide variety of sample supports and precise feeding of the sample via parallel guidance guarantee a controlled and gentle abrasive grinding process and especially a coplanar cut. Our specially manufactured diamond cutting bands also achieve optimum roughness values on the cutting surface with minimal cutting loss.
The gravimetrically adjustable feed and optional CP process, where the sample oscillates during cutting, also set our technology apart from others.

EXAKT – because precision matters.

HIGHLIGHTS

› Excellent cut surface and excellent roughness values
› Efficient – Up to 10 times faster cutting and reduced wear using the CP process
› Cutting bands – High quality, long lasting and available in different grits
› Minimal cutting loss as low as 190 µm*
› Cooling water connection with recirculation and precisely adjustable water supply.
› Gentle cutting – Minimal mechanical and thermal stress on the sample
› A variety of options for sample support

*Performance may vary depending on model, application and cutting band

CUTTING – INDUSTRY

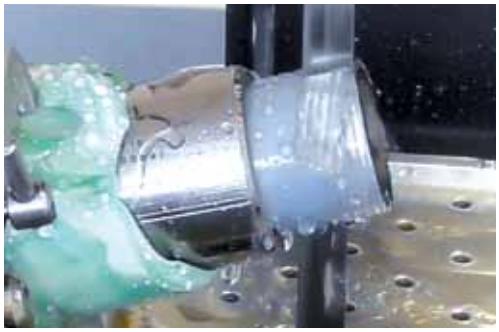
Whether it's for research, quality management of industrial production or damage analysis: Comprehensive and detailed knowledge of the materials and production processes being used, as well as their mutual interdependencies, are required for new materials and composites, complex production processes and ever-increasing quality and safety demands. Take advantage of the quality of our abrasive grinding units to get an immediate assessment of complex components and their structures without having to carry out additional grinding and polishing steps.
To meet this requirement, it is necessary to make informative cross cuts or thin sections for visual or reflected-light microscopic examination. Over time, the added requirement of additional transmitted-light microscopic examination of thin sections down to 10 µm in size is becoming more and more common.
EXAKT Cutting and Griding devices make it all possible. Versatile in use, all of these requirements can be met with just a few pieces of equipment in daily laboratory use.

EXAKT 311–Cutting of CFC sheet for tensile testing

Gentle cut of a seal profile to guarantee dimensional stability

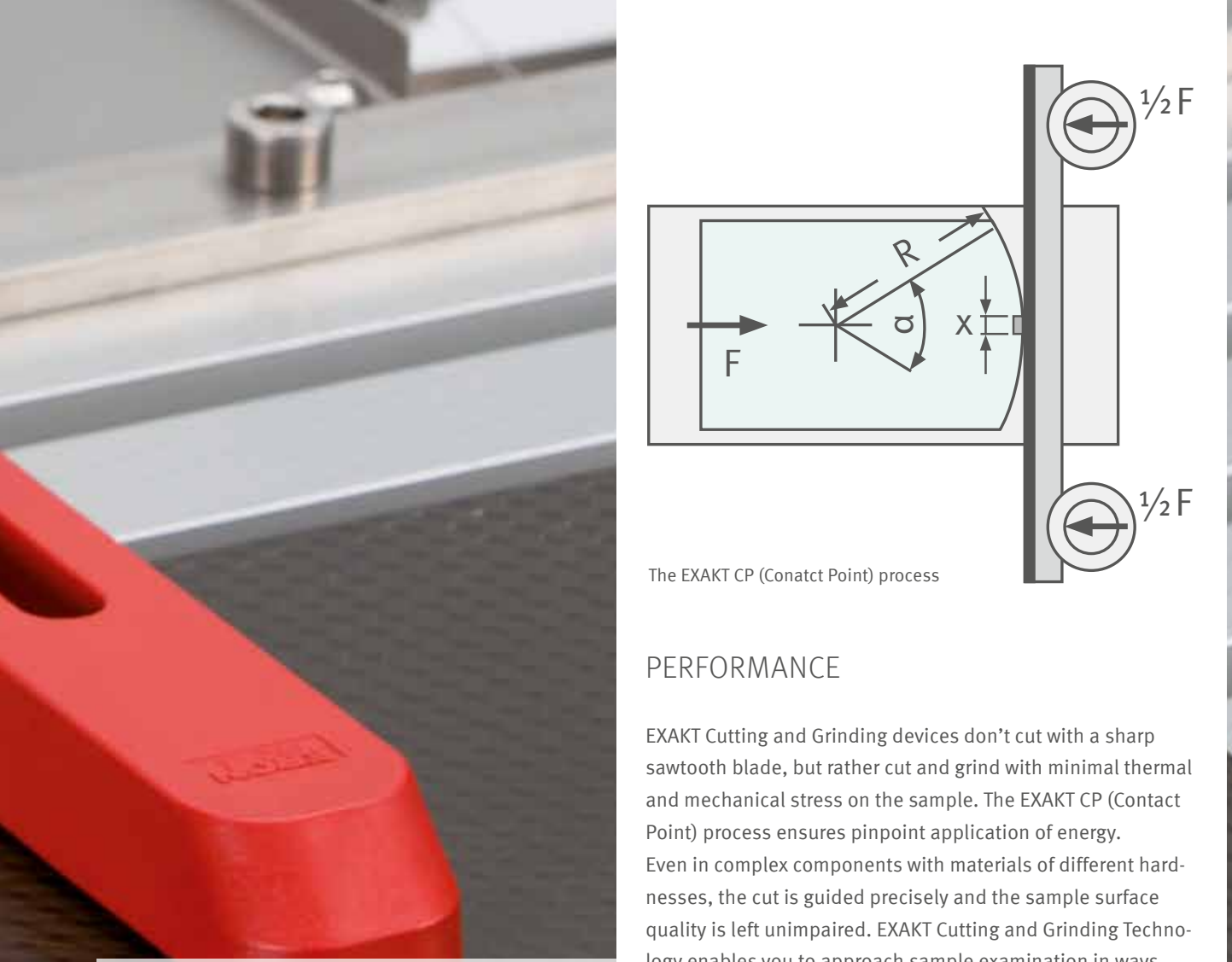
Motor cross-section

Gentle cut of a delicate shell structure



Hydraulic coupling cross-section

Cut of a camera lens

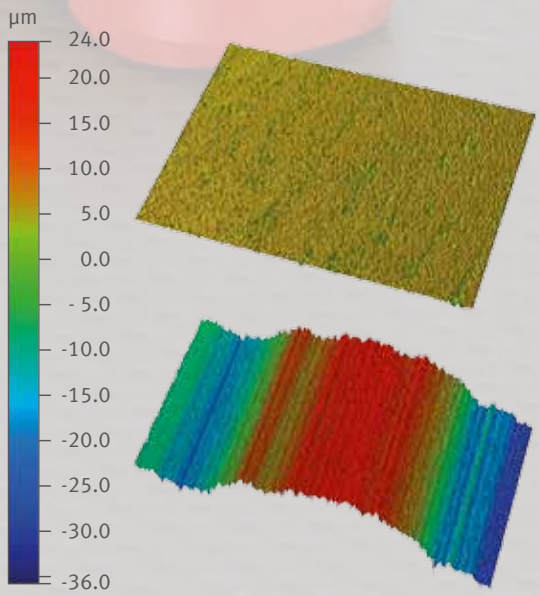


The EXAKT CP (Conatct Point) process

PERFORMANCE

EXAKT Cutting and Grinding devices don't cut with a sharp sawtooth blade, but rather cut and grind with minimal thermal and mechanical stress on the sample. The EXAKT CP (Contact Point) process ensures pinpoint application of energy.
Even in complex components with materials of different hardnesses, the cut is guided precisely and the sample surface quality is left unimpaired. EXAKT Cutting and Grinding Technology enables you to approach sample examination in ways which simply weren't possible for your application until now. Long service life, reliability and minimal service expenditure also contribute considerably to the economical use of our systems.

EXAKT – because precision matters.



Roughness value: Comparision of EXAKT Bandsaw (upper image) and wire saw (lower image)

HIGHLIGHTS

› Almost no burring, fraying or tearing out on the cut surface
› Safe operation – Minimal risk of the operator being cut
› Coplanar cuts with very tight tolerances
› Flexible and very precise alignment of the samples
› Cutting process for a wide variety of different materials, composites and components
› A variety of options for sample support

CUTTING
PATHOLOGY & ANATOMY

Precise – Safe – Ergonomic – Hygienic. Our EXAKT 312 Diamond Band Saw was developed to meet the special requirements of pathology and anatomy (human and veterinary) medicine. With the EXAKT 312, even the smallest cuts down to about 1 mm can be made freehand with almost no risk of cuts to the operator. Whether it's soft tissue, bones or implants in the bone-tissue composite, it can all be cut effortlessly and quickly. Not only this, but it does it with a cut surface quality surpassing every other process available. An initial assessment of the cut can generally be made right away. Outfitted with a variety of different options, the EXAKT 312 can be adapted to individual handling and operating comfort needs.

1.7

Large working table with splash guard and rip fence cutting guide

Simple change of diamond band

Water gun and mobility set

1.11 Ratukai

Easy to operate and clean

LASER aided sample orientation

1.6 Lazerinė rodyklė

LED illumination

1.8 LED tipo apšvietimas

The EXAKT 312 is very easy to operate and clean. Band changes can be made without tools or adjustment. The stainless-steel housing is consistently designed for good water and tissue drainage. For thorough cleaning and disinfection, modules can be quickly removed without the use of tools.

1.10 Rėmas n.pl

EXAKT 312

PERFORMANCE

The EXAKT 312 Diamond Band Saw doesn't cut, it grinds very precisely. This is the reason for the outstanding surface quality of the cut surface. Complete preservation of the sample with a surface free of artifacts, micro-fractures and breakouts enables immediate inspection and assessment of the sample. Even the cell information of very different tissue densities remains intact. Since the cutting band grinds rather than cuts, there is no immediate risk of injury to the operator in case of inadvertent contact, which is a first in work safety!
Tricky samples with implants, in particular, can be precisely and safely processed. Guiding the cut is easy and precise, and the process is clean and quiet. Water cooling also reduces dust development and ensures that the sample doesn't overheat.

EXAKT – because precision matters.

HIGHLIGHTS

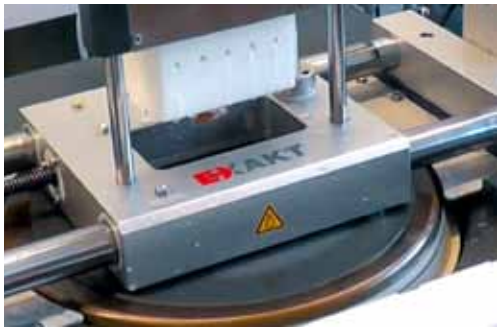
› Superior cut surface quality
› Maximum working safety enables cuts down to 1 mm
› Integrated water cooling prevents overheating of the sample, reduces dust development and keeps the cutting band cleaner
› Cutting band changed without tools or readjustment
› Fast and easy cleaning through the tool-less removal of contaminated modules
› Reliable and time-tested – Hundreds of systems are already in use around the world

GRINDING AND POLISHING

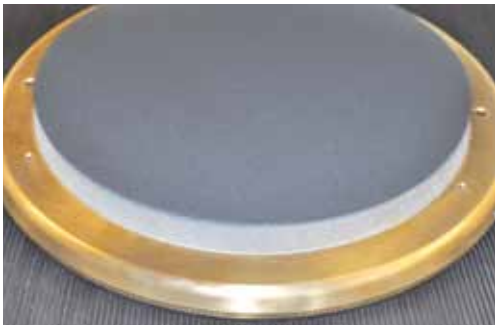
The final touch – The last step of sample preparation is decisive! Assuming the sample has been well prepared, it's the job of the grinding process to produce the final thickness and surface quality of the sample. Depending on the sample and target thickness, the sample is processed in several steps using increasingly finer abrasive papers. Maximum precision is required to prevent over-grinding and to avoid the destruction of the sample. The EXAKT 400CS Grinding Unit enables total control of the grinding process. Thanks to its unique design and operating philosophy, this unit is among the most precise and reliable systems for grinding and polishing applications in sample preparation.
The result is perfect grinding and a smooth and coplanar surface that has yet to meet its match.

Oscillation slide

µ-precise setting & control of sample removal



Vacuum head to fix specimen slide



Grinding plate: Diamond coated or with grinding paper

GFRP thin section
Polarization microscope

GFRP thin section

Titanium prothesis

Thin section of a rat-spine
Pikrosirius red

EXAKT 400 CS

PERFORMANCE

The EXAKT 400CS Grinding Unit is considerably different from conventional grinding units. Its especially solid construction guarantees tolerances of just a few micrometers with especially stable and vibration-free running of the grinding disk. The high-precision measuring system enables precise setting and measurement of ground material down to the micron. The unit stops automatically once the target for material removal has been reached. The precise and extremely stable EXAKT oscillation system guarantees material removal of the sample through a gravimetrically set grinding force.
In conjunction with uniform water rinsing, continuously adjustable speed of the grinding disk and the oscillation of the sample, the result is a perfect, coplanar grind with minimal mechanical and thermal loading of the sample. Precise control of all grinding parameters guarantees a reliable and reproducible grinding process.

EXAKT – because precision matters.

HIGHLIGHTS

› Coplanar tolerance – Precise down to the µm
› Vacuum mounting for different specimen slide sizes
› High-precision measuring sensor for precise setting of the material removal through grinding in µ increments.
› Gentle and controlled material removal through gravimetric setting of the grinding force
› Uniform grind thanks to continuously adjustable oscillation of the sample and grinding disk speed
› Integrated water rinsing in the vacuum head
› A variety of abrasive and polishing papers (backing material and grit) suitable for your application

PREPARATION

In the most frequent cases, examination and assessment can only be carried out if samples have been removed and prepared beforehand in accordance with further analysis technologies. The entire preparation process is of tremendous importance. Improper sample preparation can distort results or even destroy the objects, which are often one-of-a-kind items. Process reliability and consistency are of extremely high importance throughout the entire sample preparation process. The proper and complete dehydration of histological samples, total and bubble-free embedding in plastic and precise adhesion technologies for thin sections to ensure knowledge of the adhesive layer thickness – every aspect of sample preparation is controlled with precision at all times with the EXAKT system for sample preparation.

Dehydration and Infiltration Device EXAKT 510

› Optimized for the low sample volume in research
› Fast penetration through agitation
› Six parallel steps in a single ascending dilution series
› Vacuum attachment for perfect infiltration

Light Polymerization Device EXAKT 520

› Reproducible polymerization process
› Timers for two different intensities
› Cooling unit for samples
› Embedding molds of various sizes

Block Drying and Post Infiltration Device EXAKT 530

› Repair of cracks, bubbles and artifacts
› Dehydration under vacuum heating plate at 40 °C
› Time-controlled light polymerization

TECHNOVIT – Resins and adhesives

› TECHNOVIT 7200 – light polymerizing embedding resin
› TECHNOVIT 7210 and 7230 light polymerizing adhesives
› TECHNOVIT 4000 – Shrink-free adhesion of the embedded sample
› TECHNOVIT 9100 Neu – Embedding plastic for hard tissue; cold-polymerizing and removable, for Immunohistochemistry

Adhesive Press EXAKT 401

› Easy handling for precise adhesion
› Vacuum unit for slides

Precision Adhesive Press EXAKT 402

› Bubble-free adhesion via Plexiglas block
› Vacuum unit for slides
› Adjustable contact pressure
› Light polymerization function

HIGHLIGHTS

› Dehydration and infiltration of samples
› Embedding process with light polymerization and controlled energy application
› Bubble-free adhesion and securing of the sample, coplanar and with a definable adhesive strength layer thinckness
› Adhesion without tension or shrinkage
› Draw residual moisture from samples
› Repair cracks, bubbles and defects afterwards

THIN SECTION CUTTING TECHNOLOGY – HISTOLOGY

The creation of histological thin sections from non-cuttable tissues and materials is a very important process in many sectors of medical research. The thin section cutting technology required here was especially developed for this and then influenced and advanced by Prof. Dr. Dr. Dr. Karl Donath (died 9/23/10) in Hamburg, Germany, in the 1980s. Creating thin sections from hard tissue preparations (tissue, cartilage, bone, teeth, implants etc.) requires maximum precision and process control over the entire process. In cooperation with Dr. Donath, EXAKT developed the equipment required for this. From dehydration and infiltration of the sample and embedding in plastic to precise cutting and grinding, precision down to the micron is guaranteed over the entire process.

Cell information remains intact, as the sample does not need to be decalcified. Precise assessment of the interface between the soft tissue, bone and implant is insured, as deformation-free processing of the sample is guaranteed over the entire preparation process.

Unique precision for excellent results – contact us to learn more about the possibilities and variety of applications of EXAKT Thin Section Cutting Technology.

Embedding of specimen

Gluing of specimen on slides

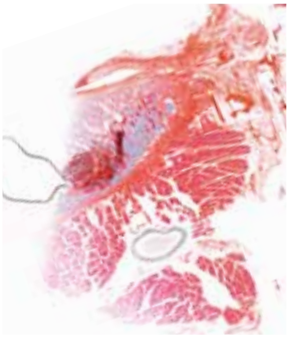
Cutting the specimen

Grinding of the thin section

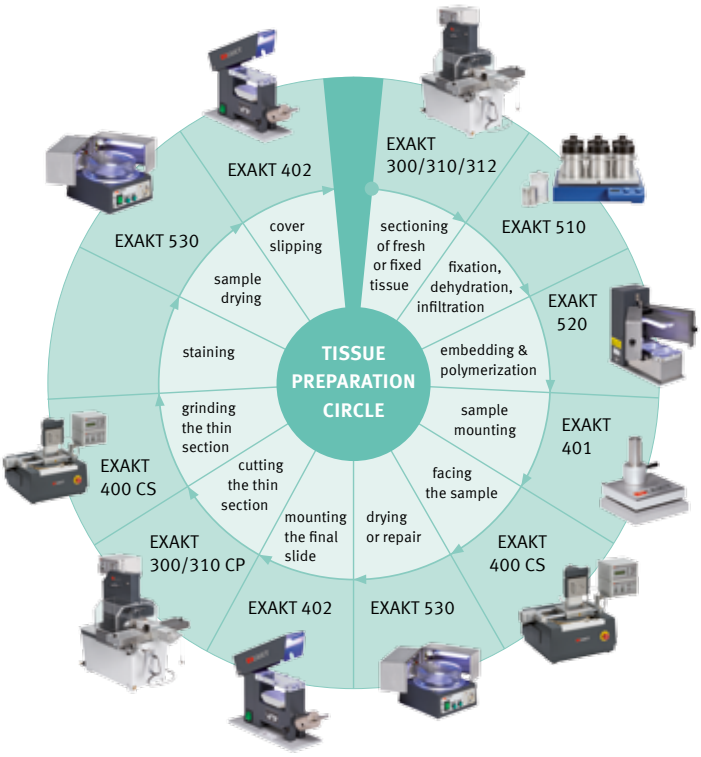
Ankle of a rat
van Gieson – Elastin

Spine of a rat
Toluidine blue

lower jaw of a rat
Masson Goldner Trichrome



lower jaw of a rat
Masson Goldner aniline blue



PERFORMANCE

Don't just play it safe when handling rare or unique samples. Trust the decades of experience and globally tried-and-tested thin section cutting technology from EXAKT. We guide you confidently through the sample preparation process, making our contribution to your unique research results.
Mistakes in the preparation process delay your work and can provide false results. That's a risk you shouldn't take!

EXAKT – because precision matters.

MORPHISTO

As an application specialist, our cooperative partner Morphisto handles technical questions, organizes training and establishes new staining technologies and processing steps, from hard tissues to materials to implantology. This highly professional contract laboratory is also the producer of common and special chemicals for histology and immunohistochemistry and thus has access to all the "set screws" of the establishment process for new thin section cutting technologies.

HIGHLIGHTS

› Creation of thin sections down to 10 µm*
› No decalcification of the sample necessary
› Immunohistochemistry of hard tissue
› Precise process control down to the micron over the entire preparation process
› Reliable and consistent
› Everything from one source and designed to your needs
› Decades of application expertise and individual training programs available

* Depending on the type of specimen

SERVICE

ENSURING LONG-TERM QUALITY AND PRODUCTIVITY

Precise, consistent results and reliability characterize EXAKT precision equipment. To make sure things stay this way over time as well, we recommend performing maintenance on your systems on a regular basis. Whether it's on site at your location, by our qualified specialist dealers or at our repair center in Norderstedt, Germany, EXAKT provides you with professional service to ensure quality results.

KNOWLEDGE IN DETAIL: APPLICATION WORKSHOPS AND INDIVIDUAL TRAINING COURSES

Our aim is to guarantee optimum results and quality over the years, starting from day one. At our training courses and workshops, we convey to you and your employees the required specialized knowledge and expertise for handling our systems in a practice-oriented and safe way. Contact us and learn about our individual custom-tailored training options.

ALL-AROUND EXPERTISE

› Training – Optimum results from the beginning
› Competent and on site support – Qualified service from EXAKT
› Reliable and precise – Guaranteed machine availability through regular maintenance
› Original EXAKT spare parts and consumable materials – Guaranteed quality and reliability

CONTACT

For further information or if you have any question, please do not hesitate to contact us or one of our experienced sales partners.

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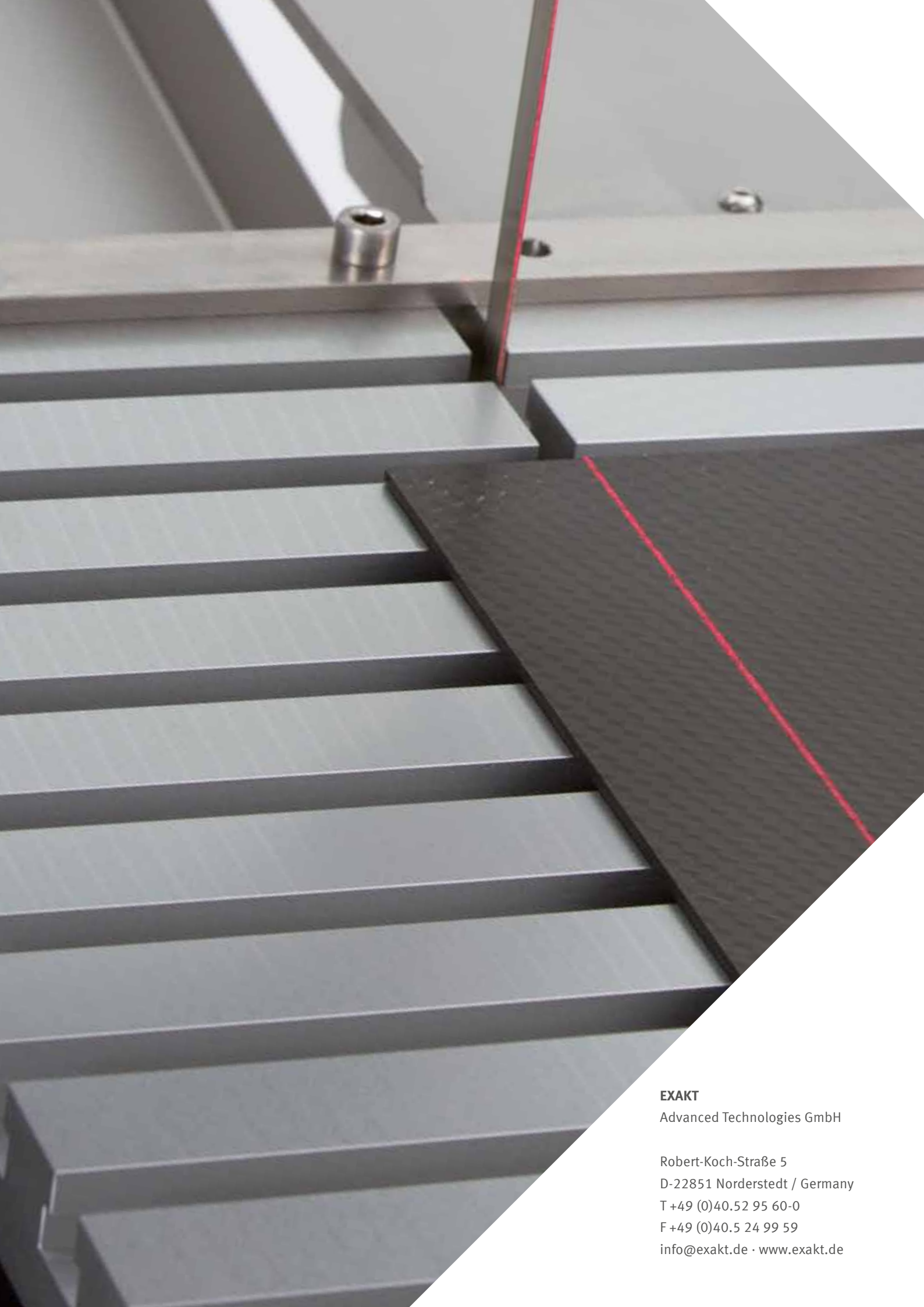
Version 1 · 09.2016



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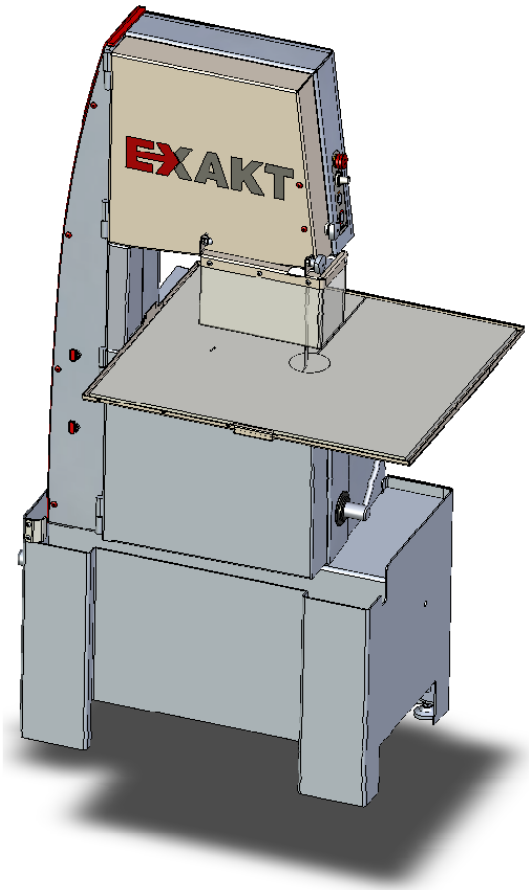
Operating instructions

Diamond Pathology Saw

EXAKT 312

Edition 04_2016 - 38891US-900-AD



It is imperative you read the operating instructions prior to placing the unit in operation for the first time! Follow safety instructions!
Translation of original operating instructions (for the end user)

EN English

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Imprint:
Operating instructions EXAKT 312

3rd issue April 2016

Layout: WBS/TR06
Text layout: WBS/TR06
Illustrations: EXAKT Advanced Technologies GmbH, WBS/TR06

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E-mail: info@exakt.de
http://www.exakt.de

Dealer's address and service address:

Note:
In case of enquires related to service and to order spare parts, please contact the dealer from whom you purchased the unit.

Table of contents

1 Safety

1.1 Important Safety Instructions

Every individual who is tasked with setting up, placing in operation, operation, maintenance and care of the EXAKT 312 and the related components must have read and understood these instructions, in particular the *Safety* chapter.
If necessary instruction must be provided taking into account the specific qualifications of the related individual.
It is imperative all safety instructions are followed for your safety.
Prior to placing the unit in operation, the operator must ensure all safety-related conditions are met.

Note *The applicable accident prevention regulations and generally applicable health and safety regulations are to be followed.*

Refrain from any action that:

- places the life and limb of the user or third parties at risk,
- causes degradation of the unit or other items,
- impairs the safety and the function of the unit or
- disregards the safety instructions stated.

The unit may only be maintained by individuals who are familiar with the unit and informed about the hazards, and who have the necessary qualifications.

a) Read all the instructions before using the appliance.
b) Do not contact moving parts.
c) Do not use outdoors.
d) For a cord-connected appliance, the following shall be included:

- To disconnect, turn all controls to the off (“O”) position, then remove plug from outlet.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Unplug from outlet when not in use and before servicing or cleaning.
- Do not operate any appliance with a damaged cord or plug, or after the appliance malfunctions or is dropped or damaged in any manner. Return appliance to the nearest authorized service facility for examination, repair, or electrical or mechanical adjustment.

e) For a grounded appliance – Connect to a properly grounded outlet only. See Grounding Instructions.
f) For all grounded, cord-connected appliances:

GROUNDING INSTRUCTIONS

- This appliance must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.
  This appliance is equipped with a cord having an equipment-grounding conductor and a grounding plug.
  The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- DANGER – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is
  green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.
- DANGER – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.
- For grounded, cord-connected appliances rated less than 15 A and intended for use on a nominal 115 V supply circuit:
  This appliance is for use on a nominal 115 V circuit, and has a grounding plug that looks like the plug illustrated in sketch A in Figure 1.

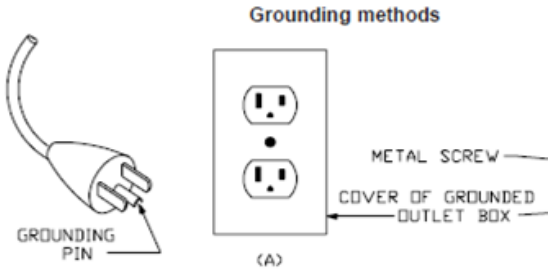


Fig 1: Grounding methods

Risk of electric shock!
Mains cable damage can result in serious injuries or death due to an electric shock and cause damage to the unit.
- ▶ Never place the EXAKT 312 in operation with a damaged mains cable.
- ▶ Always check mains cable for damage.
- ▶ Protect mains cable against heat, aggressive liquids and sharp edges.
- ▶ Lay mains cable so that it cannot be damaged.
- ▶ Keep mains cable away from water.
- ▶ Use a splash-proof, grounded mains socket.

Have a damaged mains cable replaced by a service engineer.

Danger – very powerful permanent magnets!
Mortal danger for individuals with heart pacemakers due to magnetic fields.
- ▶ Individuals with heart pacemakers must keep away from magnetic fields.

Danger – biological contamination!
Contaminated samples and contaminated water can cause infections.
- ▶ Always wear the stipulated protective clothing and safety glasses for work with the EXAKT 312.
- ▶ Use suitable disinfection methods in accordance with applicable statutory provisions and guidelines, and the hygiene regulations.
- ▶ Dispose of waste water, cleaning agents and used protective clothing in accordance with applicable statutory provisions and the hygiene regulations.

Risk of entanglement!
Hair and items of clothing can become entangled in the rotating cutting band.
- ▶ Wear tight-fitting clothing during all work.
- ▶ Protect long hair with headgear.

Warning – cuts!
Cuts may be caused on contact with the moving cutting band.
- ▶ Do not touch the cutting band in operation.
- ▶ Ensure you are standing firmly and the working area is clear.

Warning – risk of slipping!
Injuries due to slipping.
- ▶ Keep the floor around the EXAKT 312 as dry as possible.
- ▶ Wear non-slip shoes.

Warning – Hand injuries!
Risk of injury due to crushing.
- ▶ On opening and closing the doors, do not grasp the edge of the door.

Attention – incorrect mains voltage!
If the mains voltage is incorrect, the EXAKT 312 may be damaged.
- ▶ Only connect the EXAKT 312 to the mains voltage stated on the type plate.

Attention – damage due to very powerful permanent magnets

Hazard due to magnetic fields for

magnetic data carriers
electronic equipment

▶ Electronic equipment and magnetic data carriers are to be kept away from magnetic fields.

Attention – damage due to incorrect accessories and spare parts!

The usage of accessories and spare parts that have not been recommended by EXAKT can impair the safety and function of the EXAKT 312. Any warranty and/liability on the part of EXAKT for damage caused by accessories or spare parts that have not been recommended is excluded.

▶ Use only accessories and genuine spare parts recommended by EXAKT.

1.2 Safety devices

The safety devices on the EXAKT 312 comply with the statutory requirements and are aimed at preventing injury or damage.

Emergency-stop pushbutton

The emergency-stop pushbutton is used to stop the cutting band motor within approx. 4 seconds in case of danger.

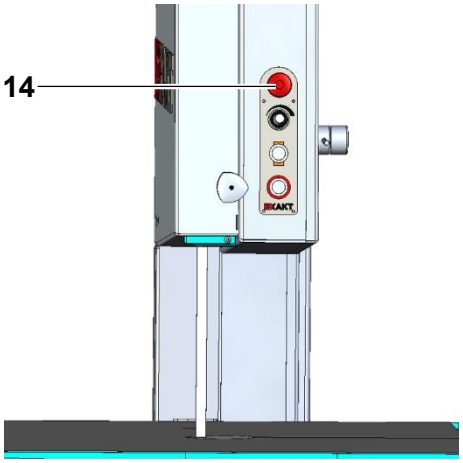


Abb. 2 Emergency-stop pushbutton

In case of danger:

▶ Press the emergency-stop pushbutton **14**.
▶ Rectify malfunction.
▶ Pull out the emergency-stop pushbutton **14** to unlock.
▶ Press the acknowledge button.

The interrupted circuit is closed again. However, the cutting band does not re-start automatically.

▶ To start the cutting band, press the start button.

Nip guard

The nip guards protect against unintentional entanglement in the rotating pulleys.

Acknowledge button

After any action that interrupts the safety circuit on the EXAKT 312, the acknowledge button must be pressed prior to restarting the EXAKT 312.

Door lock

An electronically controlled safety circuit ensures the pulleys stop automatically within 6 seconds on opening the doors.

Lockable main switch

By attaching a padlock the EXAKT 312 can be secured against unauthorised usage.

2 About these instructions

In these operating instructions graphic symbols help you to use all functions correctly and optimally.

2.1 Warning and danger symbols

The symbols listed below warn of a possible risk of injury as well as damage.

Symbol	Term	Significance
	**General safety notice**	Warns of risk of injury and damage due to improper operation.
	**Mains voltage**	Warns of injuries and damage due to electric shock.
	**Biological contamination**	Warns of harm to the health due to biological contamination.
	**Hand injuries**	Warns of hand injuries, e.g. crushing.
	**Powerful permanent magnets**	Warns of damage due to very powerful permanent magnets.
	**No entry for individuals with heart pacemakers**	Forbids individuals with heart pacemakers to enter the area around the permanent magnets.

2.2 Significance of signal words

The signal words listed here identify the severity of the possible source of a hazard.

Signal word	Significance
Danger!	Disregard will result in very serious injuries or death.
Warning!	Disregard can result in serious injuries and even death.
Caution!	Disregard can result in minor or moderate injuries.
Attention!	Disregard can result in damage.

2.3 Conventions

Symbol	Significance	
Note	**Important note**	This symbol identifies important additional information.
	**Tool**	This symbol indicates that a certain tool or consumable is required.
•	**Bullet-point list**	Properties of the unit or individual components are given as a list of points.
▶	**Instructions**	Instructions prompt you to do something in the sequence stated.
	**Disposal**	Information on the disposal of packaging material, wearing parts and faulty parts of the unit.

3 Description of function

The following subjects are described in this chapter:

- Correct use
- Application
- Special properties
- Features

3.1 Correct use

Permanently setup engine-powered band saws are used in medical pathology for quickly cutting tissue samples and artificial implants for histological studies.

The diamond pathology saw EXAKT 312 is designed as a cutting band system for cutting fresh animal and human tissue, bones and implants as per the safety instructions and in accordance with the relevant standards.

The EXAKT 312 is only of limited suitability for cutting implants made of ductile substances (e.g. soft aluminium, copper), as the chip clearance on the cutting band can quickly become clogged on cutting such materials.

The EXAKT 312 is only intended to be used in medical pathology. In this application only the original components supplied may be used. Any other usage beyond that stated is considered incorrect use. The manufacturer is not liable for resulting damage. The risk is borne solely by the user.

3.2 Application

The EXAKT 312 has been developed for use in medical pathology. Users are doctors, scientists and specialist medical personnel.

3.3 Special properties

Currently, band saws with toothed saw bands, as are used in the meat processing industry, are used in pathology. They involve a high risk of injury. The EXAKT 312 stands out compared to these band saws due to:

- a lower risk of injury in case of unintentional contact with the cutting band
- high cut quality, even on bones with implants
- a lower risk of infection due to water flushing/cooling of the cut
- easy cleaning and disinfection

3.4 Features

The EXAKT 312 is equipped with the following parts as standard:

- Integrated, adjustable water flushing/cooling
- Height-adjustable cutting band guide
- Cutting band speed control
- Splash guard
- Safety devices:
  Emergency-stop pushbutton
  Nip guard
  Acknowledge button
  Door lock
  Lockable main switch

4 Description of the unit

The following subjects are described in this chapter:

- Scope of delivery
- Optional accessories
- An overview of the EXAKT 312

4.1 Scope of delivery

The scope of delivery of the EXAKT 312 diamond pathology saw includes the following components:

- Saw base unit
- Cutting band (as required)
- Work plate (plastic)
- Work table tray with support
- Run-off plate
- Cutting band guide, work table
- Door, top
- Door, bottom
- Pulley, top, with yellow belt (pulley, bottom, is pre-assembled)
- Water supply hose incl. clips
- Water drain hose incl. clips
- Splash guard (1 x)
- Double open-end spanner AF 14/17
- Screwdriver size 4
- Hexagon key set
- Spirit level
- Operating instructions

4.2 Optional accessories

To make the work easier, the following accessories can be ordered for the EXAKT 312 (for order numbers see section ***13.3 Optional accessories***):

Accessory	Description
Rip fence 	1.12 Kreipiančiosios For straight and parallel cuts on tissue samples a rip fence can be installed on the work table. Available: 30mm, 100mm and 200mm height Rip Fences
Line laser 	1.6 Lazerinė rodyklė To align the cutting plane on the sample with the aid of the laser projection of the saw blade plane.
Cleaning gun 	1.13. Pistoletas paviršiams nuplauti For intermediate cleaning and rinsing of the work plate after use, we recommend a cleaning gun. The cleaning gun is connected to the water supply connection. When not in use it is placed in a holder on the base.
Castor set 	1.11 Ratukų komplektas A castor set eases the transport of the saw base unit to the installation location. The castors can be locked once the unit is setup.

1.7. Apsauga nuo taškymosi

Table illumination 	A LED-ledge gives permanent illumination of the work table. Optimum illumination of the sample during cutting with low energy consuption (approx. 5W)
Large splash guard 	Better cover of the sample especially for large samples or when working with high cooling flush. Very good protection against spraying water by a large plexiglass plate additionally with flexible plastic foils. Retrofit at each machine can easilly done by the operator.
Additional diamond cutting band for cutting implants	On cutting implants the cutting band will wear very quickly. It is recommended to use separate cutting bands for cutting implants and for cutting fresh samples.
Whetstone	With some samples the cutting band will clog very quickly. The cutting band can be cleaned quickly and conveniently using the whetstone.

4.3 An overview of the EXAKT 312

Front view

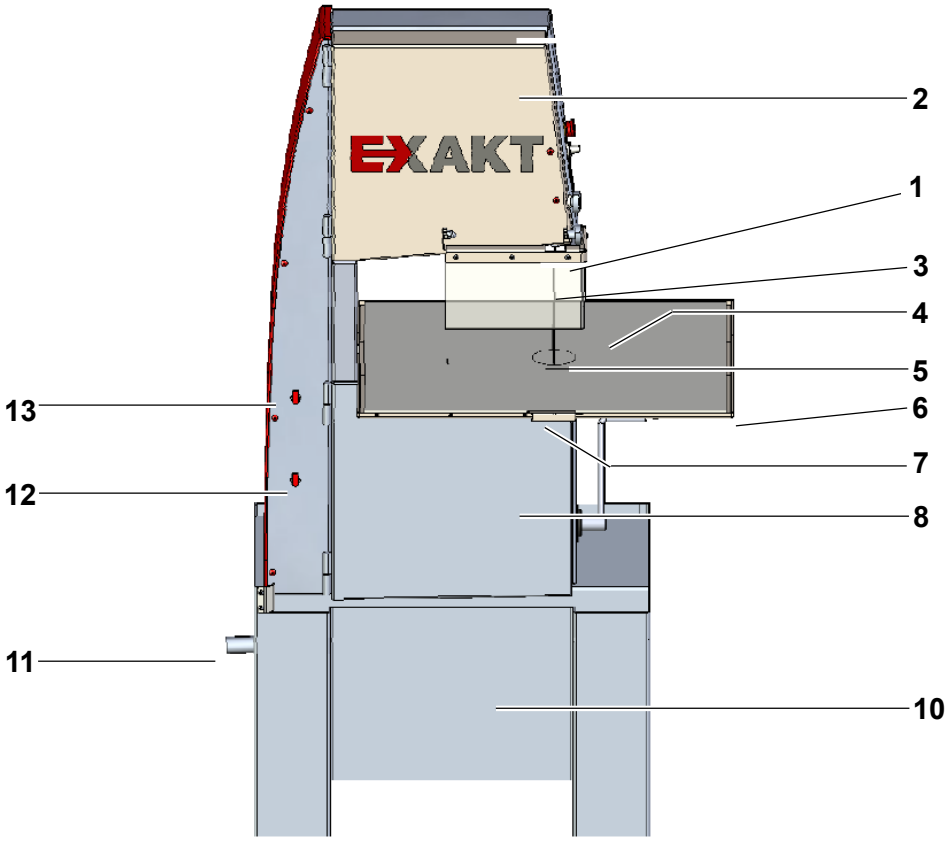


Abb. 3 Front side of unit

1	**Splash guard**	8	**Door, bottom**
2	**Door, top**		
3	**Cutting band**	10	**Drain pan** to drain off the waste water
4	**Work plate (plastic)**	11	**Drain nozzle** for the water drain hose
5	**Cutting band guide, work table**	12	**Flush water control** to control the amount of flush water
6	**Work table tray** to drain off the waste water	13	**Cooling water control** to control the cooling water flow rate
7	**Run-off plate**, connected under the work table tray		

Right side view

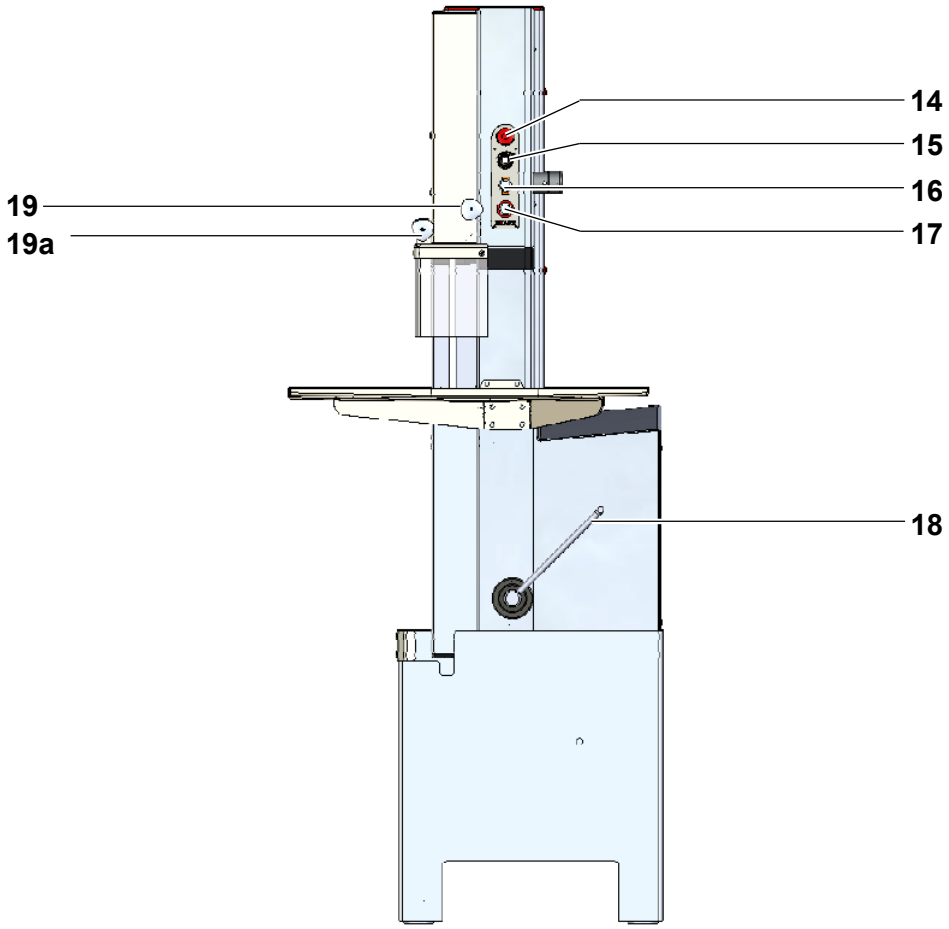


Abb. 4 Right side of unit

14 **Emergency-stop pushbutton** to stop the cutting band within approx. 4 seconds

15 **Cutting band speed control**

16 **Start button** to start the cutting band

17 **Stop button** to stop the cutting band after 6 seconds

18 **Tensioning lever** for tensioning and relieving the tension on the cutting band

19 **Clamping bolt** for the top cutting band guide

19a **Clamping bolt** for the splash guard

Rear and left side view

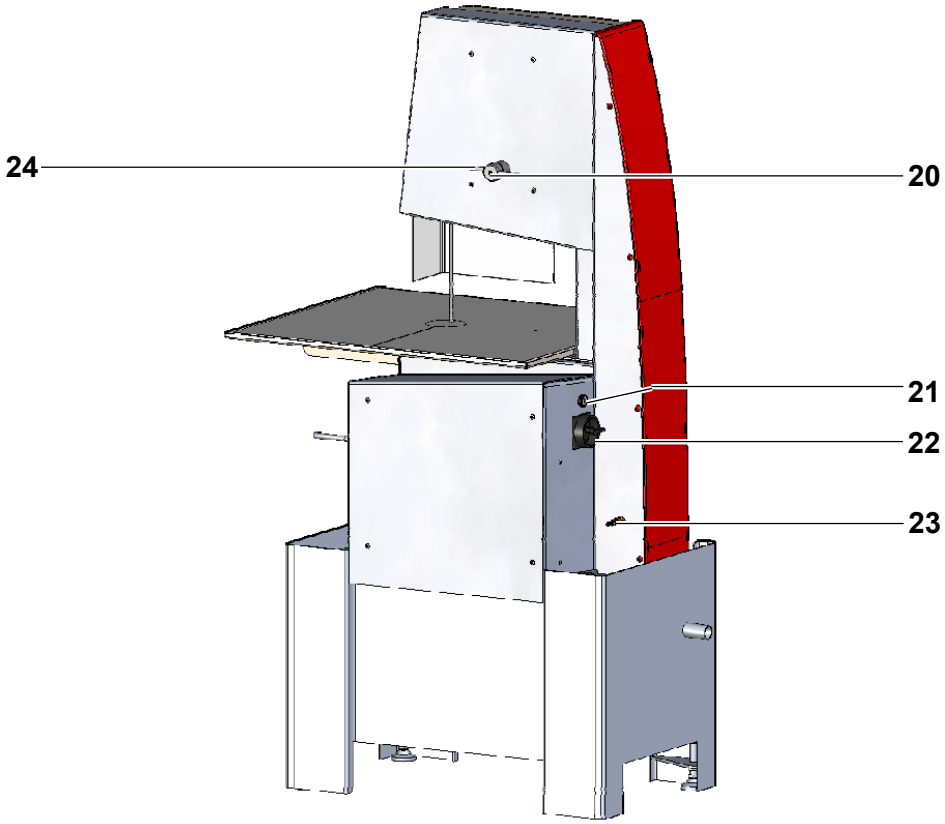


Abb. 5 Rear and left side of unit

20 **Adjusting lever (outer)** to adjust the pulley for cutting band centring

21 **Acknowledge button** to restart the unit after interruption

22 **Main switch** to switch on and off the mains voltage

23 **Water connection** for cooling and flushing

24 **Locking lever (inner)** to lock the pulley setting

Front view, doors removed

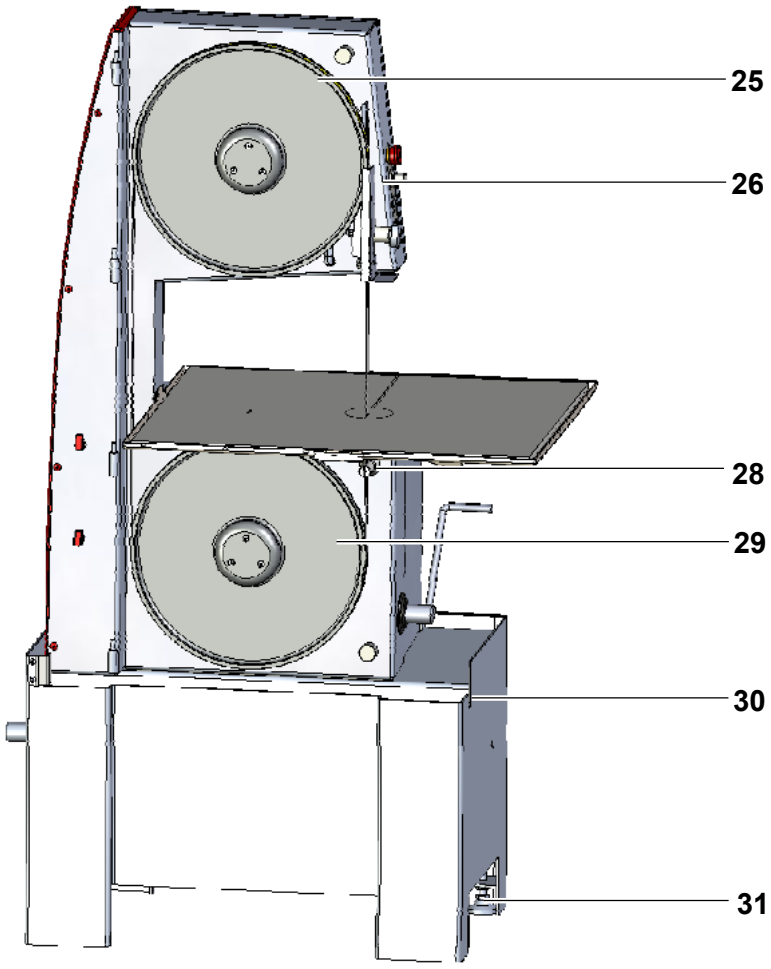


Abb. 6 Front of unit, open

25 **Pulley, top**

26 **Cutting band guide, top, with nip guard**

28 **Cutting band guide, bottom**

29 **Pulley, bottom**

30 **Holder for cleaning gun** (option)

31 **Adjustment foot** on each leg

5 Installation

The following subjects are described in this chapter:

- Transport
- Installation location
- Installing the EXAKT 312
- Assembly of the unit
- Connection to water and power supply

5.1 Transport

Danger!
Moving the saw base unit with its weight of 150 kg can cause crushes and back injuries.

▶ Always use a sack barrow to transport the saw base unit and get the help of a colleague.

▶ Push the sack barrow under the saw base unit and tip back.
▶ Transport the saw base unit to the installation location using the sack barrow.

5.2 Installation location

On selecting the location ensure the EXAKT 312 diamond pathology saw is setup in a laboratory that meets the relevant hygiene and safety regulations.

Discuss the selection of the location for the EXAKT 312 with the laboratory safety officer.

For safe operation and cleaning of the EXAKT 312 the following points must be taken in account on selecting the location:

- Setup the EXAKT 312 on a flat, non-slip surface
- Do not setup in a place with a large number of people passing by
- Select location with sufficient space on all sides for operation and cleaning
- Ensure there is adequate lighting at the installation location – the EXAKT 312 does not have its own light source

The installation location must give access to a water connection, drain and power supply with splash-proof, grounded socket.

Note *The drain nozzle on the EXAKT 312 is at a height of 330 mm. To ensure waste water can flow away, there must be a continuous gradient to the drain.*

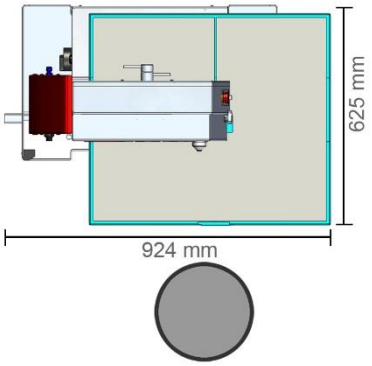


Abb. 7 Top view – dimensions and workplace EXAKT 312

5.3 Installing the EXAKT 312

You will need an open-end spanner AF 17 and the spirit level supplied to be able to undertake this step.

The EXAKT 312 diamond pathology saw is setup as follows:

- ▶ Place the EXAKT 312 on a flat surface.
- ▶ Adjust the adjustment feet using the open-end spanner AF 17 to level out any unevenness.
- ▶ Place the spirit level on the base plate longitudinally and cross-wise to check the EXAKT 312 is level.
- ▶ Re-adjust adjustment feet if necessary.

5.4 Assembly of the unit

The following subjects are described in this section:

- Assembly of the work table, 1st part
- Fitting the top pulley
- Fitting the cutting band
- Centring the cutting band
- Fitting the doors
- Assembly of the work table, 2nd part
- Mounting the splash guard

Assembly of the work table, 1st part

Fitting the work table tray

You need an open-end spanner AF 14 for the 6 collared nuts.

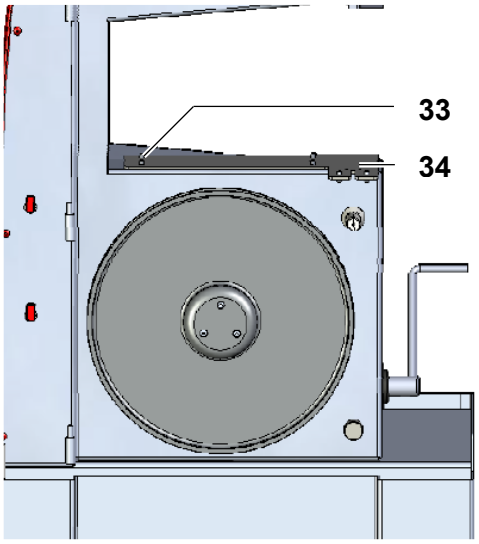


Abb. 8 Base unit with base plate

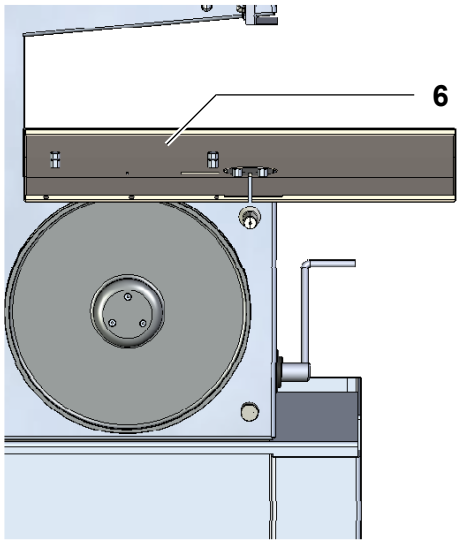


Abb. 9 Work table tray mounted on base plate

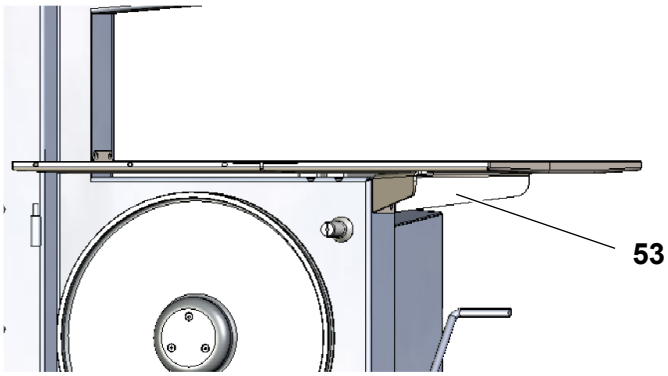


Abb. 10 Tray support fitted

- ▶ Place the work table tray **6** on the base plate **34** of the saw base unit so that the screw holes in the tray are over the studs **33** on the base plate.
- ▶ Fasten the work table tray using the collared nuts supplied.
- ▶ Fit the tray support **53** using the pre-assembled screws. After fitting the work plate, fix so that the work plate is in good contact at the edge.

Fitting the top pulley

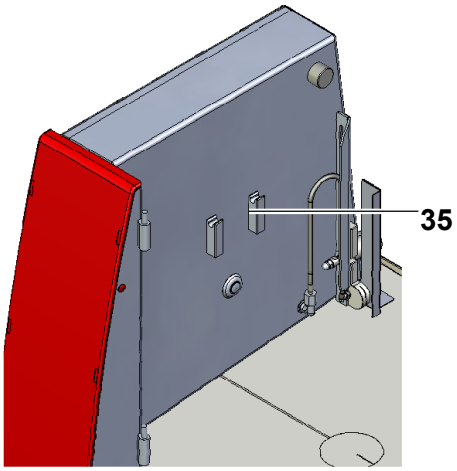


Abb. 11 Pulley mount

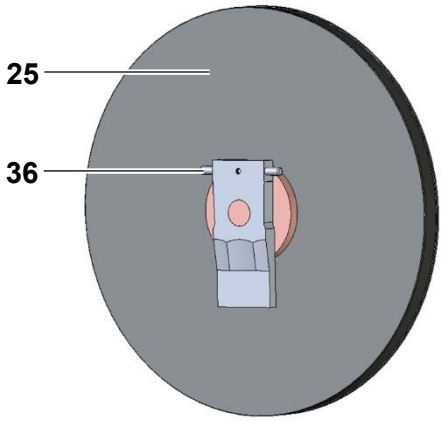


Abb. 12 Rear view of the pulley with cross-pin at top

- ▶ Hold the top pulley **25** with the cross-pin **36** at the top.
- ▶ Place the cross-pin **36** in the pulley mount **35** on the saw base unit.

Fitting the cutting band

Caution – injuries and damage due to untensioned cutting band!
An untensioned cutting band can jump off the pulleys when the EXAKT 312 starts and cause injuries or damage.

- ▶ It is imperative you conclude the *Fitting the cutting band* work step with the tensioning of the cutting band.
- ▶ Always check the position of the tensioning lever prior to starting the EXAKT 312.

Attention – damage due to incorrect cutting bands!
The use of cutting bands that have not been recommended by EXAKT can impair the safety and function of the EXAKT 312.

- ▶ Only fit the recommended original EXAKT diamond cutting bands.
- ▶ Never fit toothed cutting bands, as these are unsuitable for the EXAKT 312 and will jeopardise safety.

Attention – damage to the cutting band!
The cutting band can be rendered unusable.

- ▶ Do not kink the cutting band.
- ▶ Carefully hold up the folded cutting band to unfold it.
- ▶ Do not place objects on the cutting band.
- ▶ On fitting the cutting band, always ensure there is an intact yellow belt on the pulleys (see section ***9.4 Annual maintenance***).

Note *The following cutting bands are suitable for the EXAKT 312:*

Item number	Cutting band
34621	Cutting band 0.3/D151/E312

1.2. Juostos storis: 0.3mm

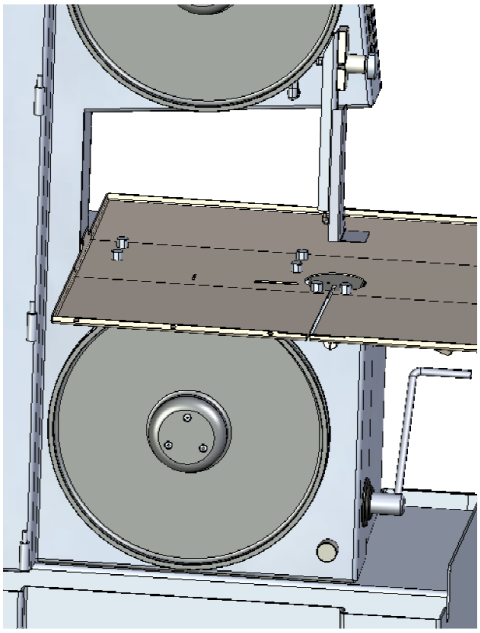


Abb. 13 Preparing to fit the cutting band

▶ Remove work plate (plastic), cutting band guide, work table and run-off plate.

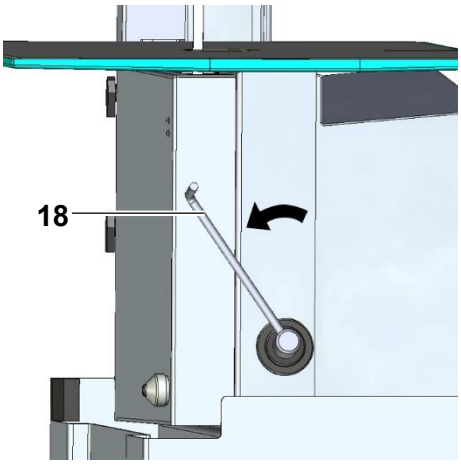


Abb. 14 Cutting band relieved

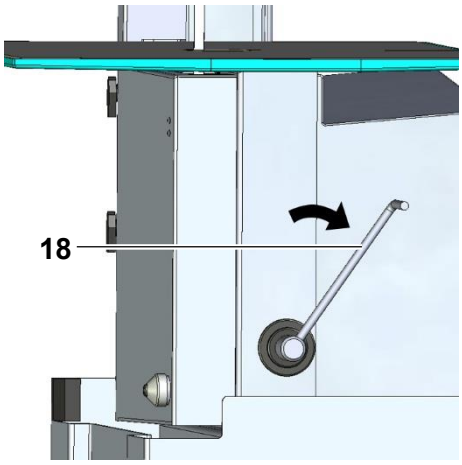


Abb. 15 Cutting band tensioned

- Pull tensioning lever **18** on the saw base unit forward (toward the user) so that the bottom pulley is moved upward.

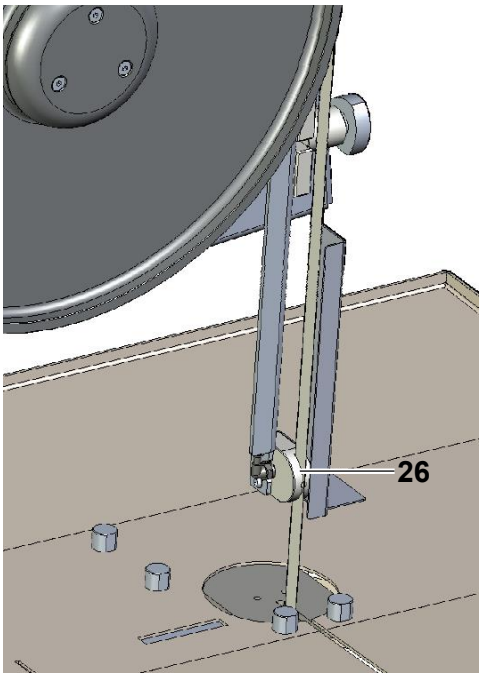


Abb. 16 Cutting band in top cutting band guide

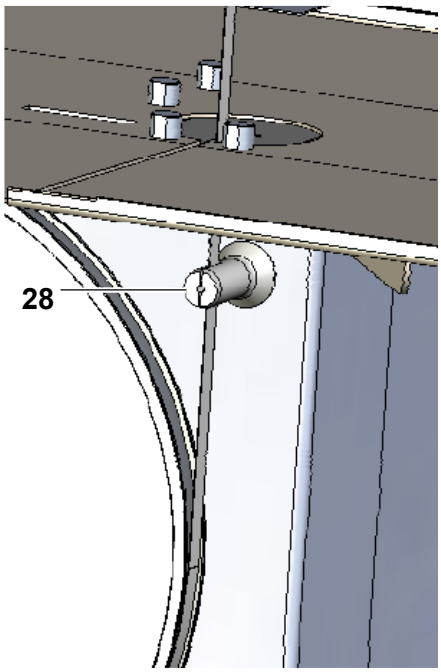


Abb. 17 Cutting band in (bottom) cutting band flushing (guide)

- Carefully unfold the folded cutting band.
- Guide the cutting band through the slot on the work table tray.
- Place the cutting band over the top pulley with the diamond-coated side to the front.
- Place the cutting band in the top cutting band guide **26**.
- Place the cutting band in the bottom cutting band guide **28**.
- Manually centre the position of the cutting band on the bottom pulley.
- Slowly push tensioning lever **18** to the rear to the stop to tension the cutting band.
- Manually turn the top pulley clockwise to pre-centre the cutting band on both pulleys.

Centring the cutting band

The cutting band centres itself on the pulleys. For exact centring of the band, there is an adjusting lever and a locking lever on the rear of the EXAKT 312 diamond pathology saw.

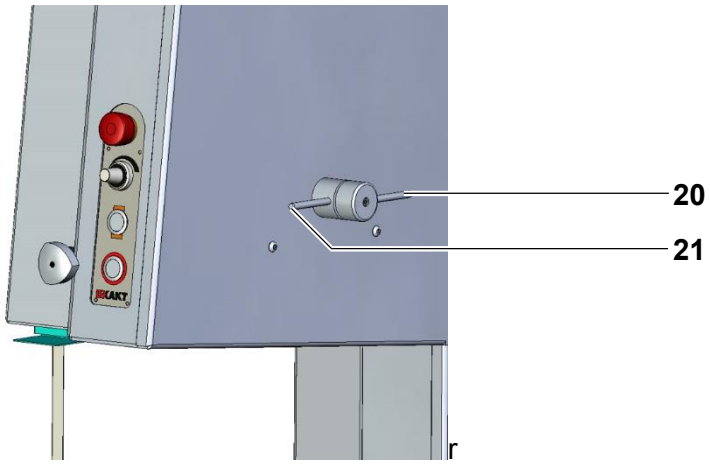


Abb. 18 Locking lever and adjusting lever for the top pulley

- ▶ Turn the locking lever **21** (inner lever) counter-clockwise and in this way unlock the setting.
- ▶ Manually turn pulley clockwise.
- ▶ At the same time adjust the adjusting lever **20** (outer lever).
  If you turn the adjusting lever clockwise, the pulley is tilted to the rear and the cutting band is positioned further forward on the yellow belt on the pulley.
  If you turn the adjusting lever counter-clockwise, the pulley is tilted to the front and the cutting band is positioned further back on the yellow belt.
- ▶ Check the centring on the bottom pulley.
- ▶ Adjust the centring of the cutting band on both pulleys at the top pulley as required.
- ▶ Tighten locking lever clockwise to secure the setting.

Fitting the doors

Warning – Hand injuries!

Risk of injury due to crushing.

▶ On opening and closing the doors, do not grasp the edge of the door.

The doors on the EXAKT 312 are simply hung in the angles on the saw base unit. A permanent magnet is used as a door catch.

Note *An electronically controlled safety circuit ensures the pulleys stop automatically within 6 seconds on opening the doors. Nevertheless, ensure the main switch is switched off during all maintenance and cleaning work!*

▶ Hang the bottom door in the bottom angles on the saw base unit.
▶ Hang the top door in the top angles on the saw base unit.
▶ Close doors carefully.

Assembly of the work table, 2nd part

Push in work plate
Fit the work table's cutting band guide
Fit run-off plate

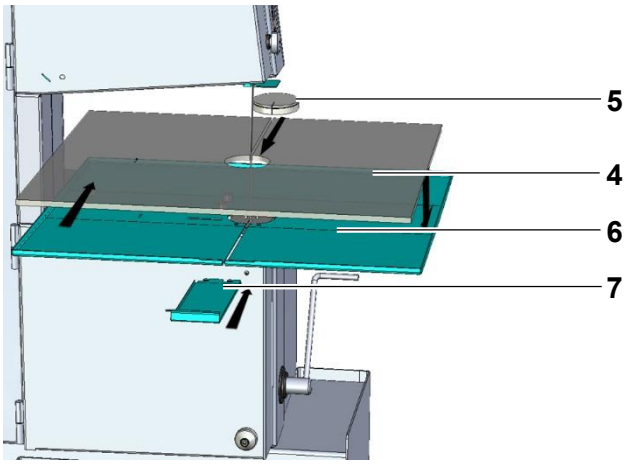


Abb. 19 Assembly of the work table

▶ Carefully push the work plate **4** from the front along the cutting band into the work table tray **6**. During this process the guide grooves on the work plate must slide over the collared nuts.

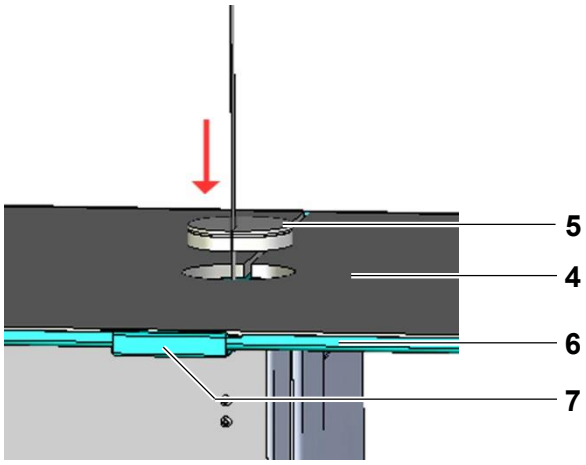


Abb. 20 Band guide, work table

▶ Insert the work table's cutting band guide **5** from above into the work plate – the slot opening points to the front.

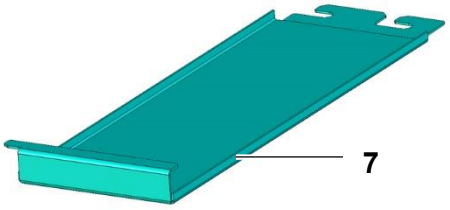


Abb. 21 Run-off plate

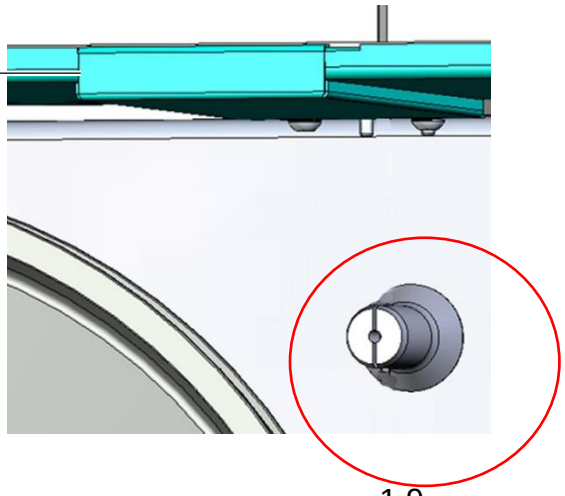


Abb. 22 Run-off plate fitted

1.9

▶ Attach the run-off plate **7** under the work table tray **6**. While doing so slide the run-off plate into the guide grooves provided.

Mounting the splash guard

Note *There are mounting lugs on the top door for the splash guard. A splash guard for the front is included in the scope of delivery. The splash guard comprises a stainless-steel bracket with a Makrolon screen:*

▶ Fit the splash guard to the mounting lugs. Fix using the locking knob on the splash guard.

5.5 Connection to water and power supply

Connecting the EXAKT 312 to the drainage system

The EXAKT 312 diamond pathology saw is supplied with loose water supply and drain hoses. The following section describes how to connect the EXAKT 312 to the water supply.

Note *If the internal laboratory hygiene regulations, for example for infectious material, stipulate special post-disinfection for the waste water, the water drain hose can discharge into a suitable container. Otherwise the water drain hose is connected directly to the drainage system.*

You need a screwdriver and two clips per hose.

- ▶ Push clips onto both ends of the water drain hose.
- ▶ Push the water drain hose onto the drain nozzle on the EXAKT 312.
- ▶ Push over the clip and tighten using a screwdriver.
- ▶ Push the other end of the water drain hose onto the drain.
  The drain nozzle on the EXAKT 312 is at a height of 330 mm. To ensure waste water can flow away, there must be a continuous gradient to the drain.
- ▶ Push over the clip and tighten using a screwdriver.

Connecting the EXAKT 312 to the water supply

- ▶ Push clips onto both ends of the water supply hose.
- ▶ Push the water supply hose onto the water connection on the EXAKT 312.
- ▶ Push over the clip and tighten using a screwdriver.
- ▶ Push the other end of the water supply hose onto the water supply.
- ▶ Push over the clip and tighten using a screwdriver.

The EXAKT 312 has been connected to the water supply.

Connecting the EXAKT 312 to the power supply

Risk of electric shock!
Mains cable damage can result in serious injuries or death due to an electric shock and cause damage to the unit.

- ▶ Never place the EXAKT 312 in operation with a damaged mains cable.
- ▶ Always check mains cable for damage.
- ▶ Protect mains cable against heat, aggressive liquids and sharp edges.
- ▶ Lay mains cable so that it cannot be damaged.
- ▶ Keep mains cable away from water.
- ▶ Use a splash-proof, grounded mains socket.

Have a damaged mains cable replaced by a service engineer.

Attention – incorrect mains voltage!
If the mains voltage is incorrect, the EXAKT 312 may be damaged.

- ▶ Only connect the EXAKT 312 to the mains voltage stated on the type plate.

- ▶ Connect the mains plug to a splash-proof, grounded socket.

The EXAKT 312 has been connected to the power supply.
The installation of the EXAKT 312 is now complete.

6 Placing in operation for the first time

The following subjects are described in this section:
- Undertaking a test run
- Ending a test run

To be able to place the EXAKT 312 diamond pathology saw in operation, the unit must be connected to the water and power supply, and the installation must be complete (see section *5 Installation*).

Before it is possible to start routine work, a test run must be undertaken to check the centring of the cutting band.

6.1 Undertaking a test run

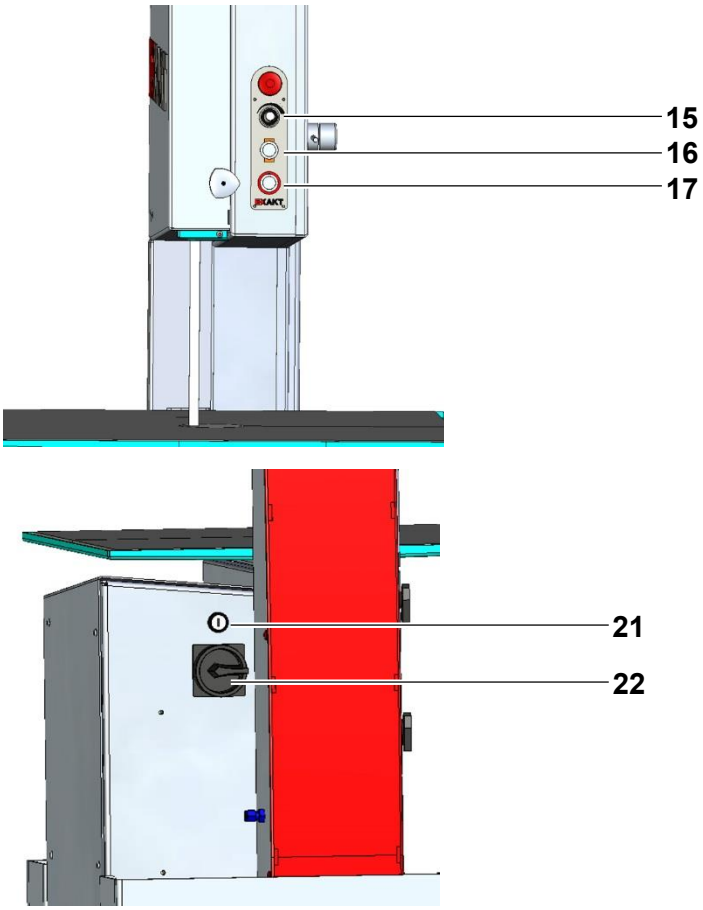


Abb. 23 Switches for placing in operation

- ▶ Set the cutting band speed control **15** to minimum speed (counter-clockwise stop).
- ▶ Switch on the main switch **22**.
- ▶ The cutting band must be fitted properly and both doors closed.
- ▶ Press the acknowledge button **21**.

The EXAKT 312 is ready for operation.

- ▶ Press the start button **16** and increase the cutting band speed to approx. 30%.

Leave the EXAKT 312 to run for around half a minute so that the cutting band can centre itself.

6.2 Ending a test run

▶ Press the stop button **17**.

6.3 Checking the cutting band centring

Note *Only open the top door once the cutting band has come to a complete stop.*

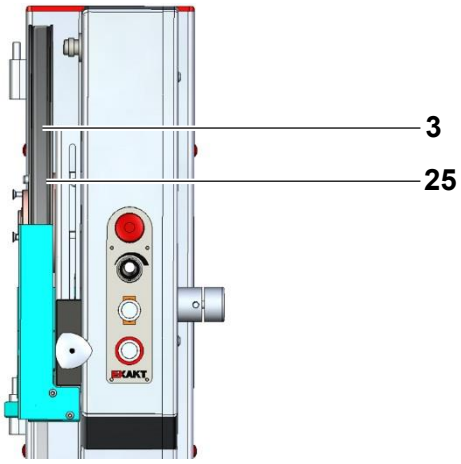


Abb. 24 Visual inspection of the cutting band centring

▶ Open top and bottom door.
▶ Make visual inspection.

The cutting band **3** must be centred on the top and bottom pulley **25**.

Note *Should the cutting band not be centred, see section Centring the cutting band in chapter 5 Installation.*

▶ Close doors.

7 Routine operation

The following subjects are described in this chapter:

- Preparing routine operation
- Undertaking routine operation
- Ending routine operation

7.1 Preparing routine operation

Warning – risk for the health due to biological contamination!
Contaminated samples and water can cause infections.

- ▶ Always wear the stipulated protective clothing and safety glasses for work with the EXAKT 312.
- ▶ Use suitable disinfection methods in accordance with applicable statutory provisions and guidelines, and the hygiene regulations.

Warning – injuries!

You may suffer injuries while working with the EXAKT 312.

- ▶ Do not touch the cutting band in operation.
- ▶ Wear safety glasses.
- ▶ Wear tight-fitting clothing during all work.
- ▶ Protect long hair with headgear.

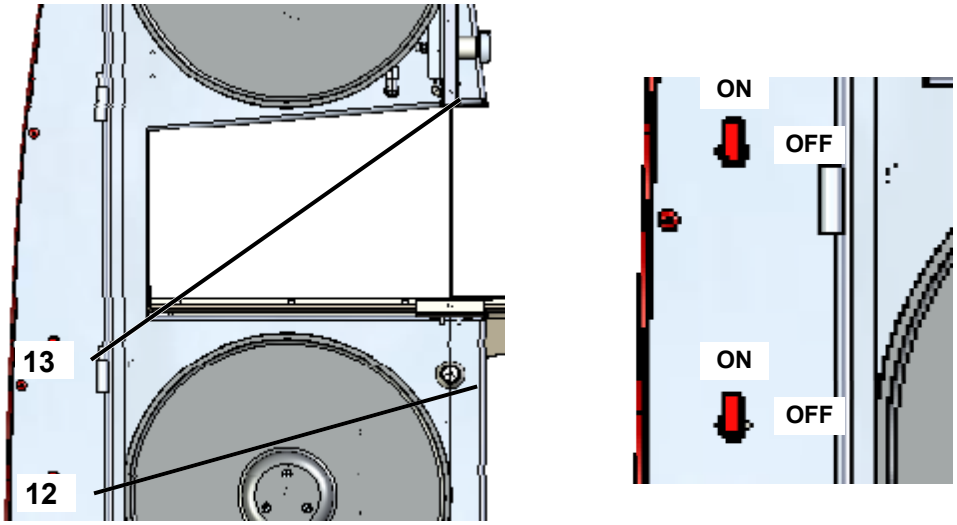


Abb. 25 Setting the water controls

For an optimum cutting result, the cooling and flushing of the cutting band is important. The cooling water should run along the cutting band.

- ▶ Open the water supply.
- ▶ Adjust the flush water flow rate at the flush water control 12. Note: It is recommended to fully open the flush water control and to adjust the flow rate at the water supply valve. This method will prevent excess water pressure in the system. Then control as necessary at the flush water control.
- ▶ Adjust the cooling water flow rate at the cooling water control **13**. Note: Just a minimum coolant flow rate is generally adequate. It is to some extent also possible to work without a supply of cooling water, as enough water is left on the cutting band by the bottom flush nozzle. A low cooling water flow rate will prevent heavy splashing during cutting.

Note *If due to statutory hygiene regulations you must collect the waste water in a separate container, only use the cooling water control. In this way the amount of waste water will be kept as low as possible.*

- ▶ Switch on the main switch **22**.
- ▶ Press the acknowledge button **21**.

7.2 Undertaking routine operation

Adjusting the height of the top cutting band guide

Danger – risk of injury!
You may suffer injuries if you adjust the top cutting band guide with the cutting band running.

- ▶ Switch off the EXAKT 312.
- ▶ Wait until the cutting band has come to a stop.

For an optimum cutting result, the top cutting band guide can be adjusted to the height of the sample.

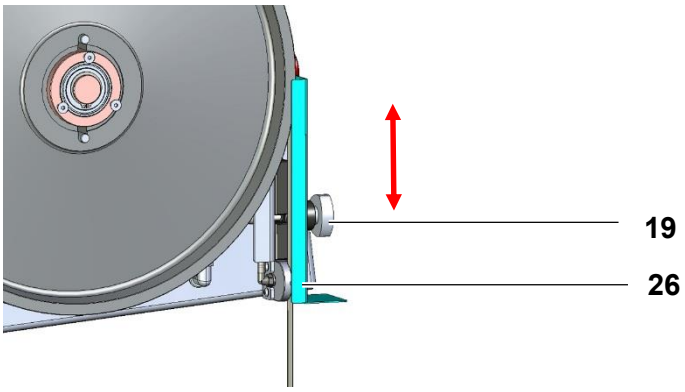


Abb. 26 Setting the top cutting band guide

- ▶ Place the sample on the work table in front of the cutting band.
- ▶ Undo the clamping bolt **19** of the top cutting band guide.
- ▶ Set the top band guide **26** to the height of the sample.
- ▶ Tighten the clamping bolt **19** of the top cutting band guide.

Adjusting the cutting band speed

To ensure an optimum cutting process and a clean cut, the cutting band speed can be adjusted as required.

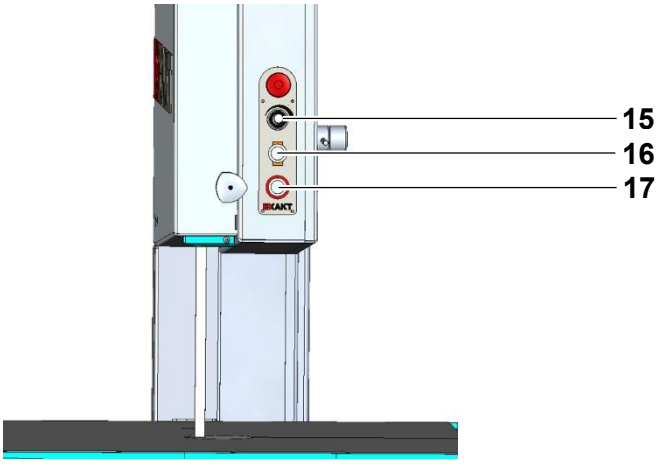


Abb. 27 Setting the cutting band speed

▶ Set the required cutting band speed at the cutting band speed control 15.

Cutting the sample

Danger!
If the EXAKT 312 is used improperly, injuries and damage may be caused.

- ▶ Always cut samples separately.
- ▶ Always press the sample onto the work plate during cutting.
- ▶ Do not tilt the sample.
- ▶ Do not slow down the cutting band by applying pressure to the side.
- ▶ Do not exert excessive feed force, as otherwise the cutting band may be damaged or could come off the pulleys. The cutting band guides and the bottom cutting band flushing could also be damaged as a result.

After setting the cooling and flush water flow rate, the cutting band speed and the top cutting band guide, you can start cutting the samples.

- ▶ Press the start button **16**.
- ▶ Cut the sample after the cutting band has started up.

If possible cut the sample in one pass.

Ending the cutting process

Once you have cut the sample, end the cutting process as follows:

- ▶ Press the stop button **17**.

7.3 Ending routine operation

On completion of all cutting tasks, undertake the following steps:

- ▶ Press the stop button **17**.
- ▶ Shut off the cooling water supply at the cooling water control **13**.
- ▶ Shut off the flush water supply at the flush water control **12**.
- ▶ Switch off the main switch **22**.
- ▶ Clean the EXAKT 312, see chapter *8 Cleaning*.
- ▶ Shut off the water supply.

8 Cleaning

The following subjects are described in this chapter:

- General cleaning instructions
- Cleaning agents
- Cleaning schedule
- Cleaning in accordance with hygiene regulations
- Cleaning and pre-disinfecting
- Disinfecting
- Re-fitting removed components

8.1 General cleaning instructions

Regular thorough cleaning is necessary after cutting fresh tissue due to the high risk of infection.

Note *Read and follow the following safety instructions before starting the cleaning work. Cleaning work may only be carried out by appropriately instructed personnel.*

8.2 Cleaning in accordance with hygiene regulations

Danger – electric shock!
Death or serious injuries may be the consequence.

- ▶ Prior to all cleaning work, set the main switch to OFF and unplug the mains plug.
- ▶ Secure against unintentional placing back in operation by others.

Warning – risk of slipping!
Injuries due to slipping.

- ▶ Keep the floor around the EXAKT 312 as dry as possible.
- ▶ Wear non-slip shoes.

Danger – biological contamination!
Risk of infection.

- ▶ Dispose of waste water, cleaning agents and used protective clothing in accordance with applicable statutory provisions and the hygiene regulations.

During cleaning follow the related statutory provisions in your country.

Adapt the cleaning process to the hygiene regulations applicable in your laboratory.

The various tasks of the cleaning process are described in the following sections.

8.3 Cleaning schedule

Always keep the working area of the EXAKT 312 in a clean condition. The following table provides an overview of all cleaning tasks required with recommendations for the cleaning intervals.
Applicable guidelines and hygiene regulations are to be followed as a matter of priority.
Consumables used during cleaning and contaminated waste water are to be disposed of in accordance with the applicable hygiene plan of the laboratory in which the EXAKT 312 is setup.

Part	Cleaning interval	Components to be cleaned
Work table	After each use.	• Work plate • Work table tray • Run-off plate • Cutting band guide, work table
Cutting band	After each use.	• Cutting band • Cutting band guide, top/bottom
Pulley top/bottom	After each use.	• Pulley • Guide groove • Belt, yellow
Housing	After each use.	• Housing • Inside of doors • Outside of doors • Splash guards • Nip guards • Drain pan
Cutting band guide	After each use.	• Cutting band guide with its individual components
Hoses	At your discretion and based on level of soiling.	• Water drain hose • Water supply hose • Cooling water hose

8.4 Cleaning agents

Attention – damage!

Damage to the external surfaces due to cleaning agents containing chlorine and aggressive cleaning agents.

- ▶ Do not use disinfectants containing chlorine or aggressive disinfectants such as acetone or nitro thinner.
- ▶ Only use alcohol-based disinfectant.

You can use the disinfectants usually found in laboratories, provided they are alcohol-based, such as:

- disinfection spray
- instrument disinfectant

8.5 Cleaning and pre-disinfecting

Remove the soiling that has accumulated on all parts of the unit during use prior to disinfection.

Cleaning the work table and external housing

- ▶ Clean the top of the work plate with cellulose wipes.
- ▶ Clean all external surfaces.

Pre-disinfecting the external and internal housing

- ▶ Pre-disinfect all external surfaces.
- ▶ Open top and bottom door.
- ▶ Pre-disinfect all internal surfaces.

Pre-disinfecting the work table

Attention – damage!

The cutting band can get damaged.

- ▶ Carefully pull work plate out of the work table tray along the cutting band.

The work table comprises several components which have to be removed one after the other for cleaning.

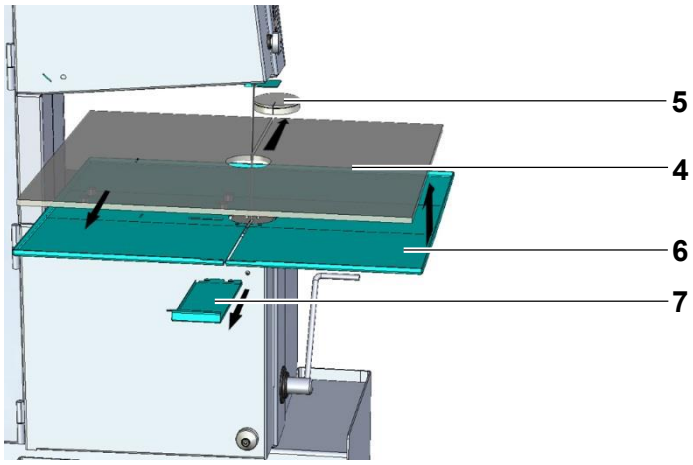


Abb. 28 Work table components

- ▶ Lift the work plate **4** and pull it out of the work table tray **6**.
- ▶ Clean the rear side.
- ▶ Pre-disinfect both sides of the work plate.
- ▶ Press the cutting band guide upwards **5** out of the work plate, clean and pre-disinfect.
- ▶ Clean the work table tray and pre-disinfect.
- ▶ Pull out the run-off plate **7** under the work plate tray.
- ▶ Clean the run-off plate and pre-disinfect.

8.6 Disinfecting

Disinfecting the cutting band

Attention – damage to the cutting band!
The cutting band can be rendered unusable.
- ▶ Do not kink the cutting band.
- ▶ Do not place any objects on the removed cutting band.

Once all components have been cleaned and pre-disinfected, they can be disinfected. Prior to disinfection the cutting band must be removed as follows:

- ▶ Pull the tensioning lever forward to relieve the cutting band tension.
- ▶ Carefully remove the cutting band.
- ▶ Fold the cutting band as follows:

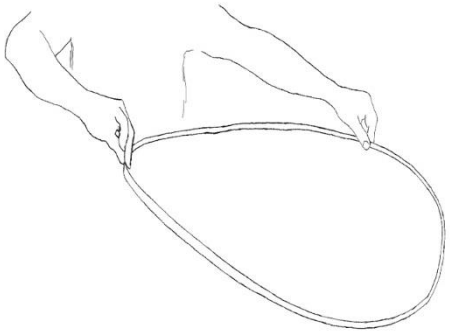


Abb. 29 How to hold

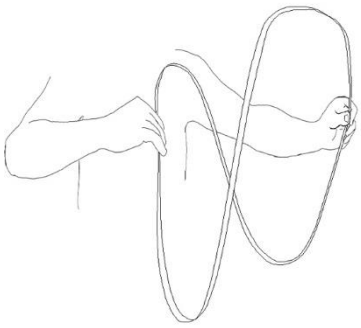


Abb. 30 Turn into a figure of eight

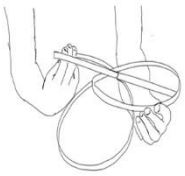


Abb. 31 Push together

Abb. 32 Cutting band folded

Hold the cutting band in a loose circle using both hands.
Left hand: thumb on the inside, index and middle finger on the outside.
Right hand: thumb on the outside, index and middle finger on the inside.
Turn the cutting band into a figure of eight.
Turn the finger tips together in the direction of the body.
With this movement the cutting band forms a triple ring.

- ▶ Place the folded cutting band in a disinfectant solution for disinfecting.
- ▶ Disinfect the top and bottom cutting band guide.

Disinfecting the top pulley

The top pulley comprises several components which have to be removed one after the other for disinfection.

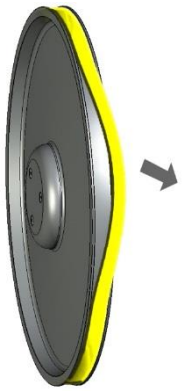


Abb. 33 Belt, yellow

- ▶ Lift the top pulley out of the mounting and disinfect the rear side.
- ▶ If necessary, change the yellow belt, see section *9.4 Annual maintenance*.
- ▶ Disinfect the guide groove and the yellow belt.

The top pulley has now been disinfected.

Disinfecting the bottom pulley

The yellow belt on the bottom pulley can also be cleaned with the work table fitted. The cleaning slot passes through all the components of the work table.

- ▶ If necessary, remove the yellow belt, see section *9.4 Annual maintenance*.
- ▶ Disinfect the guide groove and yellow belt.
- ▶ Fit the yellow belt.

The bottom pulley has now been disinfected.

Disinfecting the cutting band guide

The cutting band guide can be removed from its bracket for cleaning and disinfecting.

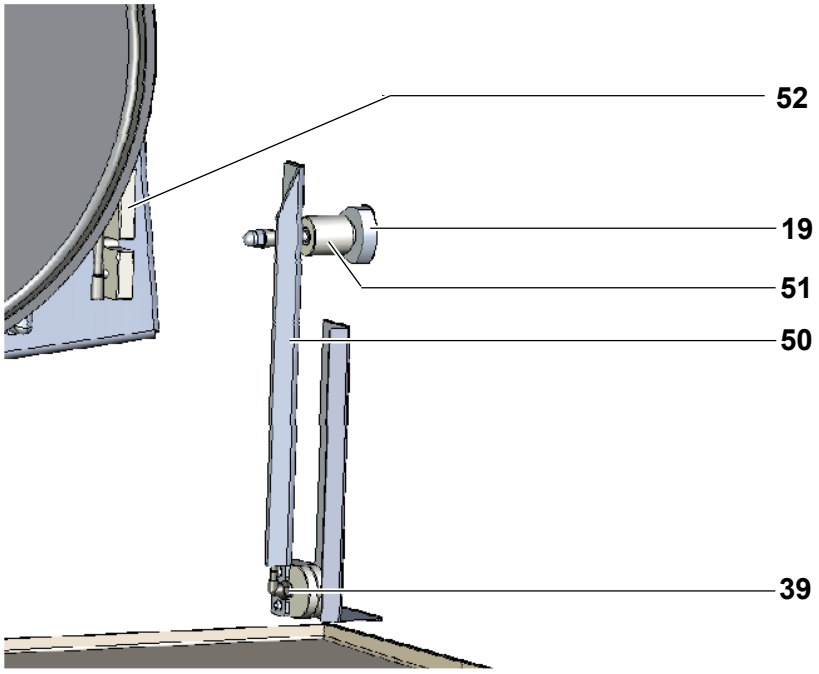


Abb. 34 Cutting band guide removed

- ▶ Completely undo the clamping bolt of the cutting band guide **19** (counter-clockwise).
- ▶ The slide **50** can now be removed from the bracket **52** to the left and then to the front. For this purpose the nut **51** (of the clamping bolt) must be moved slightly to the left to clear the bracket.
- ▶ If necessary pull the hose off the elbow fitting **39** to be able to better disinfect the cutting band guide.
- ▶ Re-fit in the reverse order of removal.

The cutting band guide has now been disinfected.

Disinfecting the internal and external housing

- ▶ Disinfect all internal and external surfaces.
- ▶ Remove the splash guard and soak in disinfectant solution.
- ▶ Then rub the splash guard dry.

8.7 Re-fitting removed components

Re-fit the components in the following order:

- Cutting band guide
- Pulley, top
- Cutting band
- Work plate
- Cutting band guide, work table
- Run-off plate
- Splash guard

For a detailed description, see chapter *5 Installation*.

9 Maintenance

Danger – electric shock!
Death or serious injuries may be the consequence.
- ▶ Prior to all maintenance work, set the main switch to OFF and unplug the mains plug.
- ▶ Secure against unintentional placing back in operation by others.

Danger – biological contamination!
Contaminated samples and contaminated water can cause infections.
- ▶ For work in the laboratory, wear stipulated protective clothing and safety glasses.

EXAKT units are, provided they are operated properly, reliable and low maintenance.

At regular intervals the components should be checked by visual inspection.

9.1 Maintenance after each use

Cutting band

A worn and/or soiled cutting band will result in messy and inaccurate cutting results. The results of the cutting are in general extremely smooth cut surfaces with very low surface roughness.

To be able to meet the different requirements, the cutting band must be checked for soiling and wear prior to each use and on each sample change.

1.9 pjovimo juostos ašinimo ir valymo vandeniu sistema

Cleaning a soiled cutting band

Cleaning a soiled cutting band using a whetstone

- ▶ Open the water supply.
- ▶ Open the cooling water control.
- ▶ Open the flush water control.
- ▶ Switch on the EXAKT 312.
- ▶ Make a cut into the whetstone using a low feed force.

The soiled cutting band will be cleaned by the cut into the whetstone.

Replacing a damaged cutting band

Removing the cutting band

- ▶ Lift the work plate and pull forward out of the work table tray.
- ▶ Remove the run-off plate
- ▶ Position the cutting band guide at the bottom
- ▶ Open the doors and remove.
- ▶ Pull the tensioning lever on the saw base unit forward (toward the user) so that the bottom pulley is moved upward.

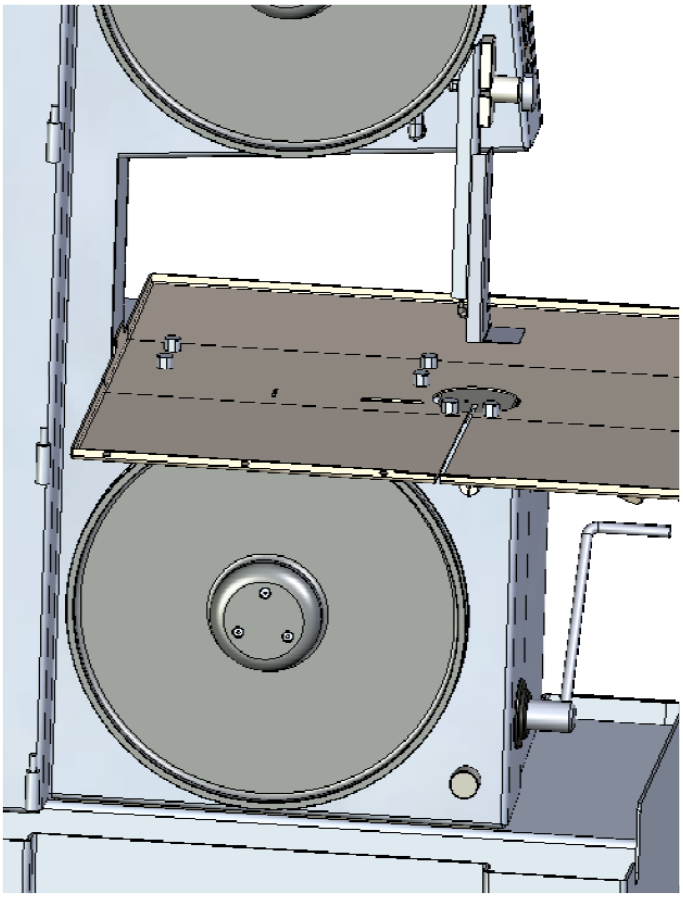


Abb. 35 Preparations for removing the cutting band

▶ Carefully remove the cutting band.

Fitting the cutting band

Attention – damage due to incorrect cutting bands!
The use of cutting bands that have not been recommended by EXAKT can impair the safety and function of the EXAKT 312.

▶ Only fit the recommended original EXAKT diamond cutting bands.
▶ Never fit toothed cutting bands, as these are unsuitable for the EXAKT 312 and will jeopardise safety.

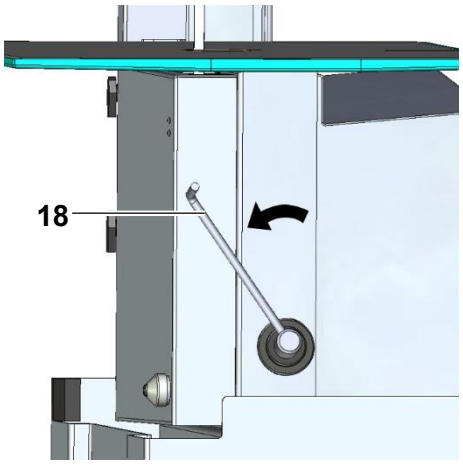


Abb. 36 Cutting band relieved

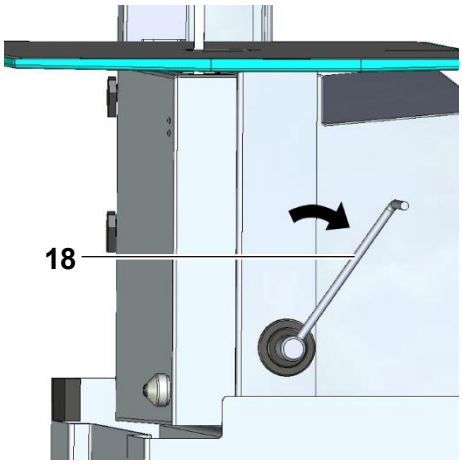


Abb. 37 Cutting band tensioned

- ▶ Pull the tensioning lever **18** on the saw base unit forward (toward the user) so that the bottom pulley is moved upward.

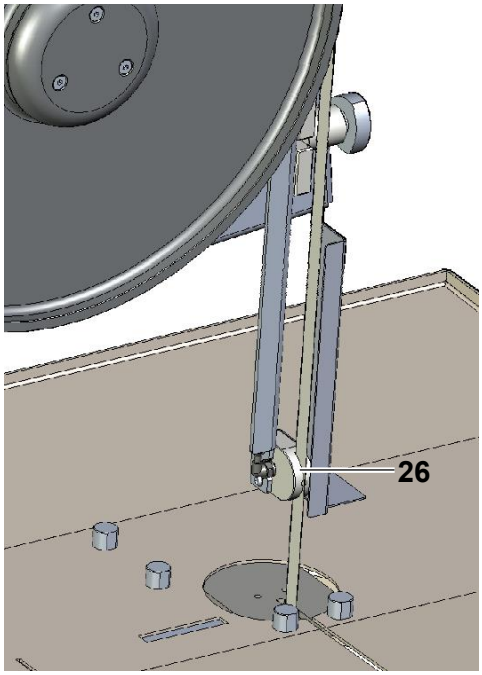


Abb. 38 Cutting band in top cutting band guide

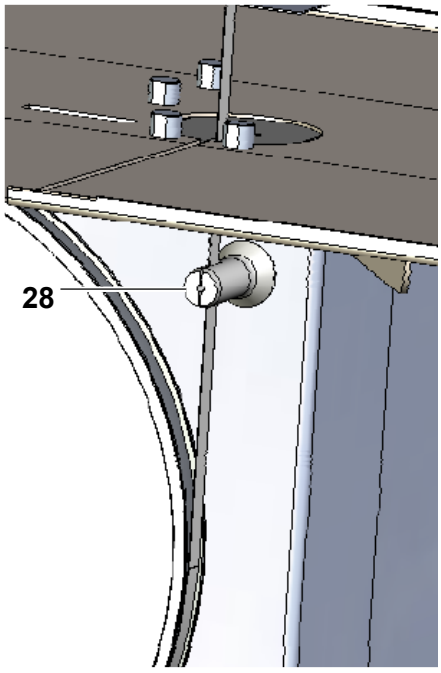


Abb. 39 Cutting band in bottom cutting band guide

- ▶ Carefully unfold the folded cutting band.
- ▶ Guide the cutting band through the slot on the work table tray.
- ▶ Place the cutting band over the top pulley with the diamond-coated side to the front.
- ▶ Place the cutting band in the top cutting band guide **26**.
- ▶ Place the cutting band in the bottom cutting band flushing (guide) **28**.
- ▶ Manually centre the position of the cutting band on the bottom pulley.
- ▶ Slowly push the tensioning lever **18** backward to the stop to tension the cutting band.

- ▶ Manually turn the top pulley clockwise approx. 5-10 x to centre the cutting band on both pulleys. During this process pay attention to correct running of the pulleys and the cutting band guides!
- ▶ Close the doors.
- ▶ Carefully move the work plate along the cutting band and place in the work table tray.

Checking cutting band guides

Band guide, top

- ▶ Open the top door.
- ▶ Check the top cutting band guide for damage.

Cutting band guide, work table

- ▶ Check the cutting band guide of the work table for damage.
- ▶ Check the cutting band guide of the work table for correct seating in the work table.

Cutting band flushing, bottom

- ▶ Open the bottom door.
- ▶ Check the bottom cutting band guide of the band flushing for damage.

Remove foreign bodies

Drain pan

- ▶ Open the bottom door.
- ▶ If necessary remove foreign bodies.

9.2 Weekly maintenance

Checking the cooling water flow

Cooling water system

- ▶ Open the top door.
- ▶ Open the water supply.
- ▶ Open the cooling water control.
- ▶ Check the cooling water flow rate at the top cutting band guide.

Checking the flush water flow

Flush water system

- ▶ Open the bottom door.

Attention! On opening the control, water will splash horizontally out of the saw!

- ▶ Open the water supply.
- ▶ Open the flush water control.
- ▶ Check the flush water flow rate at the bottom cutting band guide.

9.3 Maintenance every six months

Checking the cooling water hose

Cooling water hose

Regular replacement of the cooling water hose is recommended to prevent soiling.

- ▶ Open the top door.
- ▶ Check the cooling water hose for leaks.
- ▶ Replace if necessary.

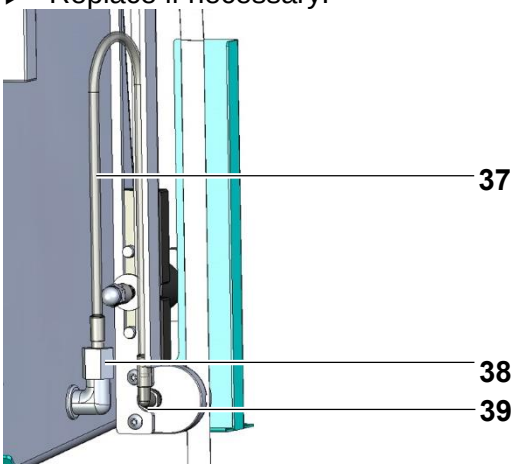


Abb. 40 Cooling water hose with connection

Replacing the cooling water hose

Replacing the cooling water hose

Preparation

- ▶ Open the top door.
- ▶ Remove the nip guard.
- ▶ Remove the cutting band.
- ▶ Remove the top pulley.

Replacing the cooling water hose

- ▶ Undo union nut on the bulkhead fitting **38**, pull off the cooling water hose **37** and remove the sleeve from old hose.
- ▶ Pull the cooling water hose off the elbow fitting **39**.
- ▶ Fit the union nut over the new cooling water hose.
- ▶ Fit the sleeve in the new hose
- ▶ Fit the cooling water hose to the bulkhead fitting and tighten the union nut.
- ▶ Fit the cooling water hose to the elbow fitting.

Checking the fitting for leaks

- ▶ Open the water supply.
- ▶ Open the cooling water control.
- ▶ Check the fitting for leaks and re-tighten if necessary.

Assembly

- ▶ Fit the top pulley, cutting band and nip guards.
- ▶ Close the top door.

The cooling water hose has been replaced.

Aligning the EXAKT 312

Checking the EXAKT 312 is level

- ▶ Adjust the adjustment feet using the open-end spanner AF 17 to level out any unevenness.
- ▶ Place the spirit level on the base plate longitudinally and cross-wise to check the EXAKT 312 is level.
- ▶ Re-adjust adjustment feet if necessary.

See section *5.3 Installing the EXAKT* 312.

Checking the mains cable

Mains cable

- ▶ Check the mains cable for damage.
- ▶ Have the mains cable replaced by a service engineer if necessary.

9.4 Annual maintenance

It is recommended to change the yellow belt at least once a year.

On changing the yellow belt, it is recommended to have a colleague help with the fitting, as the new yellow belt will be stronger.

Abb. 41 Lifting the yellow belt

Replacing the yellow belt

Replacing the yellow belt

- ▶ Remove the cutting band.
- ▶ Hold the pulley.
- ▶ Carefully lift the yellow belt using a screwdriver and pull off the pulley.
- ▶ Clean the guide groove of the yellow belt.
- ▶ Fit the new yellow belt at the bottom first, pull up over the pulley and press into the groove on the pulley.
- ▶ Fit the cutting band.

Checking the electrical system and safety circuit

Electrical system and safety circuit

Have the check undertaken by a service engineer.

9.5 Maintenance as required

Replacing a faulty fuse

Replacing a fuse

Danger – electric shock!
Death or serious injuries may be the consequence.
- ▶ Prior to replacing the fuse, set the main switch to OFF and unplug the mains plug.
- ▶ Secure against unintentional placing back in operation by others.
- ▶ Only use 10A/T fuse for F1, F2 and 16A/FF fuse for F3, F4.

You will need a 3 mm hexagon key

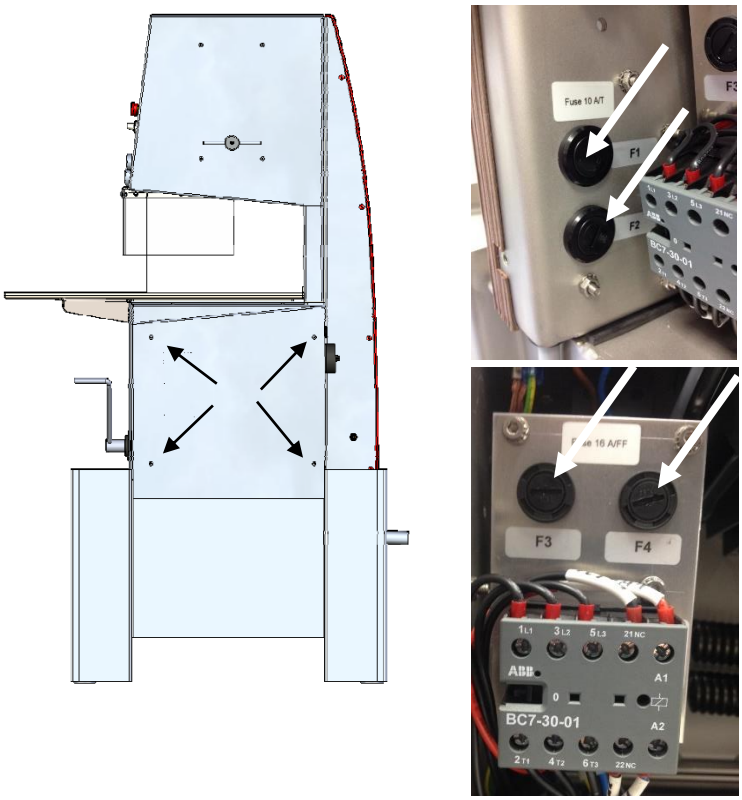


Abb. 42 Replacing a fuse

- ▶ Remove table and tray (to make it easier to subsequently fit the seal between the housing and motor cover).
- ▶ Remove the seal
- ▶ Unscrew the motor cover (4 screws M5) on the rear using the hexagon key.
- ▶ Replace the faulty fuse(s).
- ▶ Re-fit the motor cover.

Undertaking a function check
- ▶ Plug in the mains plug.
- ▶ Set the main switch to ON.
- ▶ Press the acknowledge button.
- ▶ Press the start button.

The cutting band should now start.

10 Faultfinding and troubleshooting

Fault description	Cause of fault	Fault rectification
The EXAKT 312 cannot be started.	The main switch is not switched on.	▶ Set the main switch to ON.
	The acknowledge button has not been pressed.	▶ Press the acknowledge button.
	The doors are not closed.	▶ Close the top and/or bottom door. ▶ Press the acknowledge button.
	The emergency-stop pushbutton is pressed.	▶ Pull out the emergency-stop pushbutton to unlock. ▶ Press the acknowledge button.
	The electronic speed control has a fault (e.g. overload).	▶ Press the stop button for approx. 3 sec. ▶ Start the motor again.
	The fuse is faulty.	▶ Check the fuse, replace if necessary (see section *9.5 Maintenance as required*).
	The mains cable is faulty.	▶ Check the mains cable and if necessary have it replaced by a service engineer.
	The mains plug is not plugged in.	▶ Plug in the mains plug. ▶ Set the main switch to ON. ▶ Press the acknowledge button.
	No power at socket.	▶ Check the socket.
	The building fuse is faulty.	▶ Check the building fuse.

Fault description	Cause of fault	Fault rectification
The cut quality is dropping.	The cutting band is soiled.	▶ Clean the cutting band. See section *Cleaning a soiled cutting band* using a whetstone in chapter *9 Maintenance*.
	The cutting band is worn.	▶ Replace the cutting band. See chapter *9 Maintenance*.
	The yellow belt is soiled.	▶ Clean the belt. See chapter *8 Cleaning*.
	The yellow belt is faulty.	▶ Replace the belt. See section *9.4 Annual maintenance*.
	Incorrect cutting band speed.	▶ Correct the cutting band speed. See chapter *7 Routine* operation.
The cutting band does not cut.	The cutting band has been installed the wrong way around.	▶ Fit the cutting band with the diamond-coated side to the front (toward the user).
No cooling/flush water.	The water supply is shut off.	▶ Open the water supply.
	The water supply is blocked.	▶ Clean the water supply.
	The cooling water control is shut off.	▶ Open the cooling water control. See chapter *7 Routine* operation.
	The flush water control is shut off.	▶ Open the flush water control. See chapter *7 Routine* operation.
Waste water does not drain away.	The drain is blocked.	▶ Clean the drain nozzle. ▶ Check/clean the work table tray. See chapter *8 Cleaning*.
	The drain is higher than the drain nozzle.	▶ Provide an adequate gradient.

11 Disposal

11.1 Disposing of packaging

The packaging of the EXAKT 312 comprises cardboard, polystyrene and plastic sheet. To dispose of the packaging, follow the regulations for your communal waste disposal system.

11.2 Disposing of unit

Within the EU this symbol indicates that this product is not allowed to be disposed of in household waste at the end of its service life. Old units contain valuable materials that should be sent for recycling to protect the environment and the health of the public against uncontrolled waste disposal. Please therefore dispose of old units via suitable collecting systems or send the unit for disposal to the dealer from whom you purchased it. The dealer will then send the unit for recycling.
Electrically operated equipment is disposed of in accordance with national rules, which are based on the EU directive 2002/96/EC on waste electronic and electrical equipment (WEEE).
In accordance with this directive, equipment in the business-to-business sector, to which this product belongs, supplied after 13.08.2005 is no longer allowed to be disposed of in communal waste disposal systems.
During disposal follow the related statutory provisions in your country.
As the regulations vary from country to country, we recommend you contact your dealer or supplier if disposal is necessary.
In Germany the marking obligation has been in force since 23.03.2006.
The manufacturer must offer an appropriate means of return for all equipment supplied from 13.08.2005.

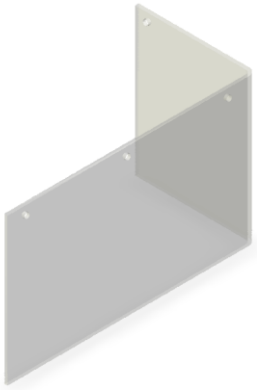
12 Technical data

Dimensions	EXAKT 312
Unit dimensions width x height x depth	924 x 1527 x 625 [mm]
Weight	150 kg
Working height	Approx. 900 mm
Cut height	Max. 210 mm
Cut width	Max. 350 mm
Pulley diameter	390 mm
Cutting band speed	Approx. 200-1200m/min
Connection voltage / frequency	1x 110 - 115 V / 60 Hz
Total power cosumption	1,5 kW
Maximum current consumption	11A
Electrical connection (connector type)	3 pole UL CSA Plug
Diameter of cooling water connection	7.6 mm
Height of cooling water connection	562 mm
Diameter of drain	28 mm
Height of drain	330 mm
Max. cooling water pressure	2 bar

13 Spare parts and consumables

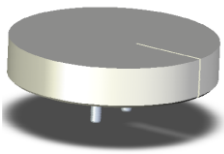
You can order all spare parts, consumables and accessories from your dealer.

13.1 Spare parts list, EXAKT 312 diamond pathology saw

Item number	Description
B3568	F1, F2 fuse 10A/T
B3569	F3, F4 fuse 16A/FF
38204	Cutting band guide for band flushing, bottom 
38205	Flushing sleeve, band flushing incl. 2 screws 
38206	Hose, water cooling incl. sleeve 
38208	Screen, splash guard 

2. Pjovimo juostų storiai

13.2 Consumables

Item number	Description
34621	Cutting band 0.3 mm D151/E312
34460	Cutting band 0.2 mm D151/E312
38200	Cutting band guide, top 
38202	Cutting band guide, work table for white plastic workplate (SN<0315) 
38214	Cutting band guide, work table for stainless steel workplate (SN>0316) 
34950	Whetstone

13.3 Optional accessories

Item number	Description
38070	Cleaning gun
38072	Rip fence
38074	Laser-optical cut orientation E312
38078	Castor set
38080	Table illumination
38082	Large splash guard

14 Glossary

Term	Description of function
Run-off plate	Connected under the work table to guide the waste water.
Whetstone	Tool made of ceramic; the cutting band is cleaned by cutting into the whetstone.
Cutting band guide	Device to ensure the cutting band runs quietly and also to ensure a clean cut.
Nip guard	Device to protect against unintentional reaching into the rotating pulleys.
Adjusting lever	Lever for adjusting the cutting band centring on the top pulley.
Locking lever	Lever for securing the position of the adjusting lever.
Belt, yellow	Tape to protect the pulleys and the cutting band against damage.
Cooling water control	Control to set the cooling water flow rate.
Emergency-stop pushbutton	Button for switching off the EXAKT 312 within approx. 4 seconds in case of emergency.
Cross-pin	Pin on the top pulley for mounting on the saw base unit.
Acknowledge button	Button for activating the circuit on the start of operation and after interruptions.
Cleaning slot	Cut-out in the work table for cleaning the bottom yellow belt using the cleaning tool.
Cleaning tool	Tool for cleaning the yellow belt.
Saw base unit	The EXAKT 312 without any of the components supplied with it.
Visual inspection	Direct visual inspection of individual parts and settings without tools.
Tensioning lever	Lever for tensioning and relieving the cutting band.
Splash guard	Device to protect the user against water splashes.
Flush water control	Control to set the flush water flow rate.
Cutting band	Stainless-steel band with diamond coating for cutting samples.

15 Index

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EC declaration of conformity

in accordance with the:
EC Machinery directive (2006/42/EC)
Herewith we:

EXAKT Advanced Technologies GmbH
Robert-Koch-Str. 5
D-22851 Norderstedt
Telephone: +49(0)40 529 560-0

declare that, due to its design and type of construction and in the version placed on the market by us, the machine identified below complies with the applicable essential health an safety requirements of the EC directives.

This declaration will be rendered void in case of modification of the machine without our agreement.

Name of the machine:

EXAKT 312 diamond pathology saw

Serial number: from 312-00413 Year of manufacture: from 2015

The machine also complies with all the provisions of the EMC directive (2004/108/EC) and Low voltage directive (2005/95/EC).

Harmonised standards applied:

DIN EN ISO 14121-1:(2007), EN ISO 12100-2:2003, EN ISO 12100-2:2003

EN 13849-1:2006, EN 954-1

EN 12268:2003

DIN EN 55014-1:05.2012, FCC 15:09.2001, DIN EN 55014-2:06.2009, DIN EN 61000-3-2:03.2010, EN 61000-3-3:03.2014, DIN EN 61000-4-2:12.2009, DIN EN 61000-4-3:04.2011, DIN EN 61000-4-4:04.2013, DIN EN 61000-4-5:07.2013, DIN EN 61000-4-6:08.2014, DIN EN 61000-4-11:02.2005, DIN EN 61000-6-3: 09.2011

EN 60 335-1, EN 60 204-1
VDE 0701

The product complies with the requirements of the German Gerätesicherheitsgesetz (law on product safety)

Person authorised to compile documentation: Ulf Köpke

Address of the person authorised to compile documentation: see above

Norderstedt,
27.07.2015 Ulf Köpke, Head of Development
Date Signatory and position Signature