DIAPART 7100
7200

THE BEST SEPARATING PRINCIPLE

For pre-scored circuit board!

Separating process without stress due to diamond disc! Components are no more damaged by the separating procedure!

Pre-scored Circuit Board Separating Machines

Mutronic®

CONTENTS

Note:

Brochures and other information publications sometimes need updating, supplementing and correction after only a very short time, thanks to constant advances in the pace of new and further developments of products and machine options.

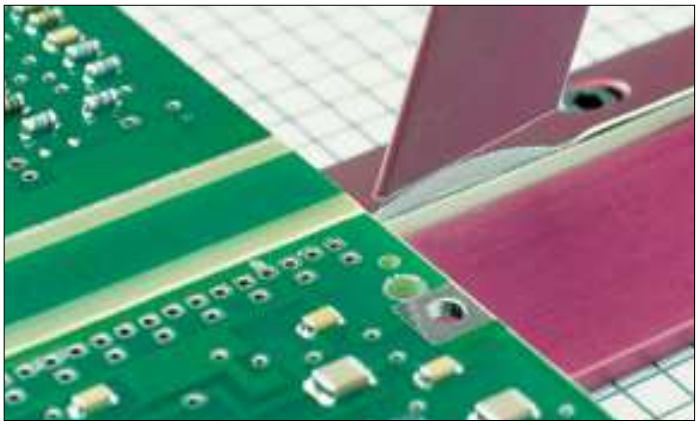
We have therefore decided to print most of our brochures ourselves. This enables us to provide speedy and constantly updated issues of requested information. We would, however, ask you to forgive the difference in printing quality when compared to high-gloss offset printing methods. You can also avail of information with high-resolution illustrations in the internet.

The machines illustrated in the pages of this brochure are mainly depicted with optional expansions. The price list contains further details relating to accessories and optional equipment. Please contact us if you feel you need further clarification. The illustrations of machines, options and accessories may deviate from the colour, shape and design, both technical and constructional, of the delivered goods.

You can find information on other *Mutronic* products (along with information on trade exhibitions) in the internet under: www.mutronic.de

DIAPART 7100/7200

Pre-scored Circuit Board's with scribed panels



PBC boards with scribed panels are divided by a thin diamond cutting disk.

The cutting procedure is smooth and free of unravelling. The cut edge is almost perfect. Components are not damaged by the stress-free procedure.

DIAPART 7100

The panel feed is manual. The respective scriber marking to be cut is laid on a special guide rail and centered automatically.

Subsequent sliding through of the panel permits the cutting operation to be completed in seconds. The residual dust is extracted.

DIAPART 7200

The panel feed is manual. The respective scriber marking to be cut is laid on a special guide rail and centered automatically.

Subsequent sliding through of the panel permits the cutting operation to be completed in seconds. The residual dust is extracted.

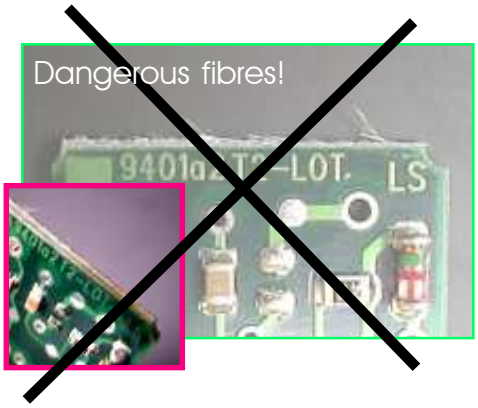
SEPARATING PROCEDURE FREE OF STRESS - THEREFORE, NO LONG-TERM FAILURE!

With the DIAPART 71OO/72OO, Pre-scored circuit boards are separated especially gentle by a diamond cutting-off wheel WITHOUT STRESS ON COMPONENTS!
Long-term failures of components do not occur, especially to chip capacitors, which are positioned immediately next to the separating line.

Further advantages of the DIAPART cutting process:

High packing density, thanks to component mounting close to the edge:
A guarantee that components with a minimum mounting clearance of only 0.15 mm to the outer edge remain undamaged during cutting!

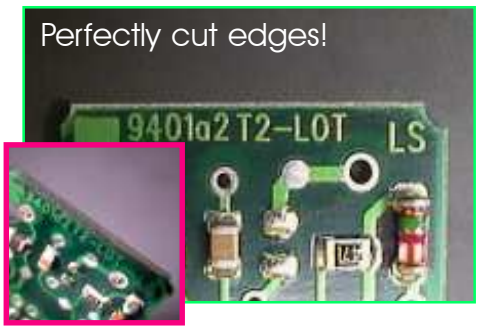
Panels with components projecting beyond the edge:
The diamond disk cuts the panels in the safe area below the components without coming into contact with these.



Unravelling:

Cutting with punch, roller or keyway systems is economical, but has

disadvantages:
- Functional breakdown due to fibres in mechanical components
- Hand injuries during insertion
- large dimensional tolerances



Smooth cut!

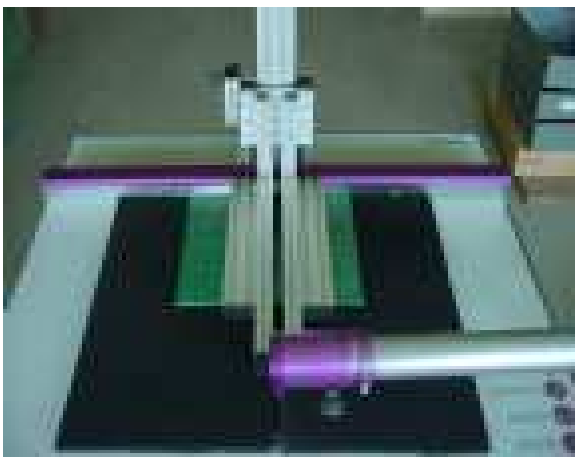
With the DIAPART 71OO/72OO Pre-scored board separating saw, boards are separated precisely. Without setting-up costs!

Result:
- Clean, smooth cutting edges without fibres emerging
- Absolute, reproducible accuracy
- No danger of injuries to hands on contact
- No long fibres

MANUAL CLAMPING for Cutting Circuit Boards with Cut Grooves

Clamping lever up

Clamping lever down



Clamping lever from the front

All formats of boards can be clamped from the top very quickly and securely by manual clamping.

The clamping lever can be locked automatically in the uppermost position.

The clamping lever is loosened with one hand and lowered onto the board.

On the bottom, the clamping lever is fitted with an 8 mm thick conductive foam material.

The suction cleaning from the top is not affected.

Advantages:

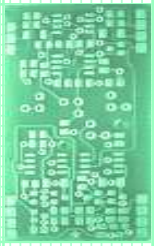
- Even pressure onto the components
- Fitted with an electrical table drive, the machine becomes semi-automatic

TECHNICAL DATA: DIAPART 71OO/72OO

Purpose of utilisation:

For pre-cut, pre-scored circuit boards, SMD or conventionally, one or both sides populated or without insertion

Advantages:



- High cutting performance up to 100 mm/sec.
- Absolutely accurate cutting edges with high dimensional accuracy, **without unravelling!**
- The scriber markings on the PBC panels can be produced cheaper and stronger:
  a) A scribing depth of ca. 0.3 mm is sufficient.
  b) Only one side need be scribed.
- The continuous height adjustment of the diamond cutter means that PBC's with projecting components can also be cut without damaging them.
- Dust is extracted efficiently by specially developed dust conveyer chambers.
- Conductor paths can extend to the furthest edge of the individual panels, and components can be fitted up to a distance of 0.3 mm from the edge of the PBC without any problem.
- No mechanical overloading occurs during cutting.
- The machine is earthed to protect touch-sensitive parts.
- The compact construction permits operation on every level working table.

Further details:

DIAPART 71OO:

- for small to middle sized pre-scored circuit boards.
- Component height up to 5 mm (see page 7, figure 4).
- Rigid table: the pre-scored circuit board is moved on the steel guide across the diamond milling disc and separated in this way (see page 7, figures 5 and 6).
- The milling disc can be lowered without steps; due to this, cutting can be carried out under overhanging components (connectors etc.) (See page 5).

DIAPART 72OO:

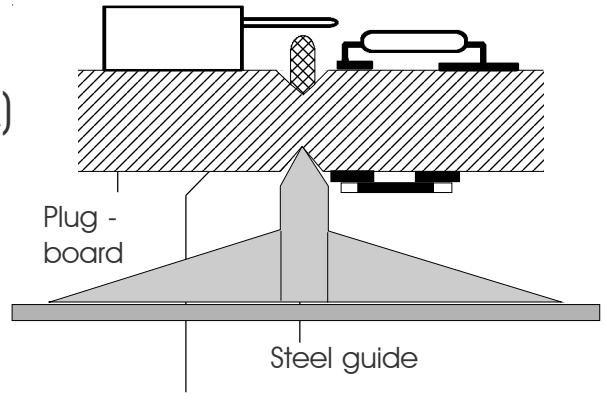
- Suitable for all sizes, which are known to us.
- Component height up to 18 mm (see page 7, figure10).
- Slide table: the pre-scored circuit board is positioned on the steel guide. It is moved by the slide table to the diamond milling disc and cut in this way.
- The steel guide with milling disc can be lowered without step; due to this cutting can be carried out under overhanging components (plugs, etc.) (See page 4).

Working procedure:

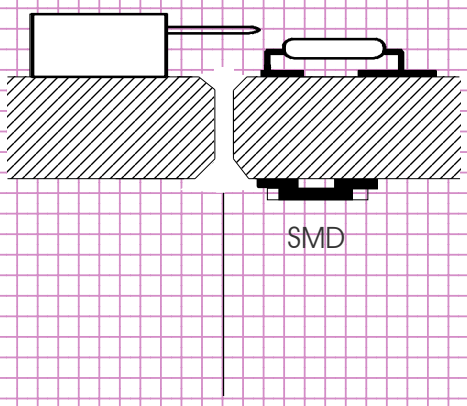
The pre-scored circuit board is placed with the scored groove onto the polished steel guide and moved forward. (71OO). Din this way, a 0.25 mm thick diamond disc cuts the pre-scored board directly in the scored groove.
The machine, type 72OO has, in addition, a slide table with prismatic guide and a larger usable height.

ADVANTAGES OF THE NEW PRE-SCORED BOARD SEPARATING SYSTEM *DIAPART 7100/7200:*

A)

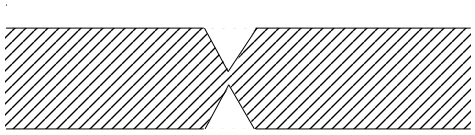


Separating disc 0.25 mm, Height-adjustable, due to which separating of pre-scored board with overhanging components is possible without problem!

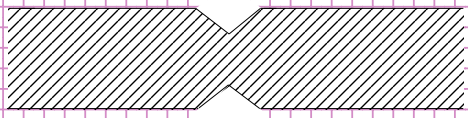


- No fraying
- cutting free of burr, therefore no after treatment necessary.

B)

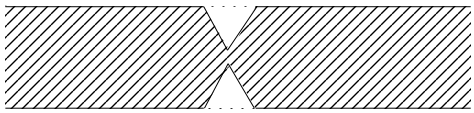


Until now: low stability, as a deep scoring depth is necessary for the breaking procedure.

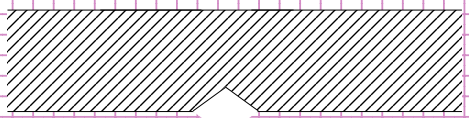


Now: high stability, as the scoring for the separating procedure has to be carried out less deep.

C)



Until now: scoring on both sides necessary to be able to carry out the breaking procedure.



Now: scoring on one side is sufficient for centring; due to this, lower manufacturing costs.

TECHNICAL DATA:

	DIAPART 7100	DIAPART 7200
Area of application:	For smaller format panels (up to 150 mm edge length)	For panel dimensions up to 320 mm and more
Speed:	3000 -12000 min^{-1}	2000 - 10000 min^{-1}
Input-Power:	600 Watts	1000 Watts
Output-Power:	180 Watts	310 Watts
Switching-on time:	100% (cont. operation)	100% (cont. operation)
Cutting height:	0 - 2 mm	0 - 3 mm
Panel height:	max. 5 mm[1)]	max. 18 mm [1)]
Traversing path:	-	310 mm slide table path (450)
Tool:	Ø 63 mm x 0,25 mm[2)]	Ø 100 mm x 0,2, 0,3, 0,4 mm[2)]
Dimensions:	see dimensional drawing	see dimensional drawing
Weight:	ca. 14 kg	ca. 26 kg
Connected load:	230 V/ 50 Hz	230 V/ 50 Hz / 16 A
Noise level:	idling ca. 72 dbA cutting ca. 78 dbA	idling ca. 71 dbA cutting ca. 78 dbA
ESD-Protection:	earth connection for wrist joint band	earth connection for wrist joint band
Working temperature:	+15° to 25° C	+15° to 25° C
Area-humidity:	30% to 50%	30% to 50%
Special characteristics:	overheating cutoff, electronic torque cutoff, load-dependent tacho-control motor speed, double-V-belt	overheating cutoff, electronic torque cutoff, load-dependent tacho-control motor speed, special-V-belt

[1)] See dimensional drawing page 9

[2)] DIAPART-pre-scored board separating devices, for safety reasons, are designed for exclusive use of DIATOOL saw blades and separating discs. See price list.

DIMENSIONS DIAPART 7100:

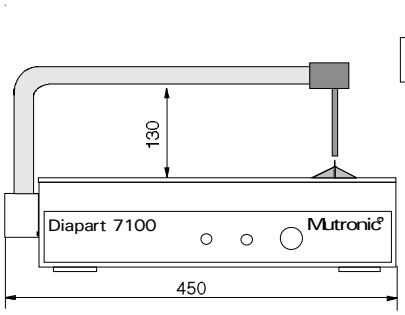


Figure 1

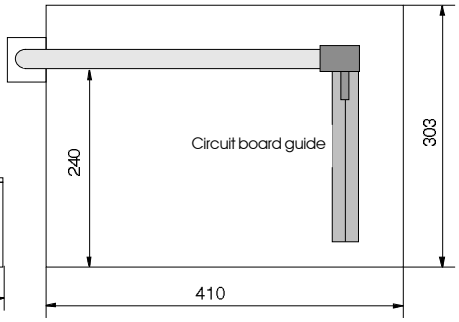


Figure 2

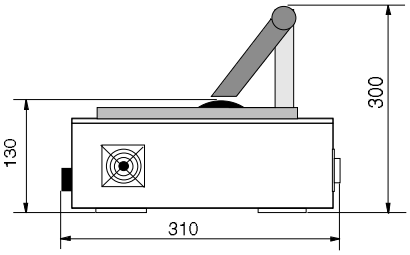


Figure 3

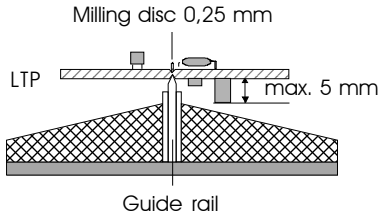


Figure 4

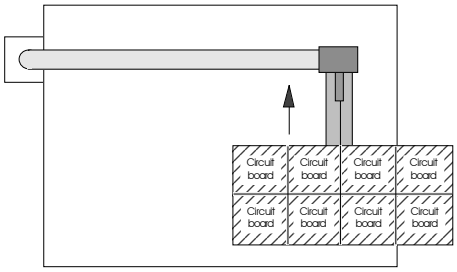


Figure 5

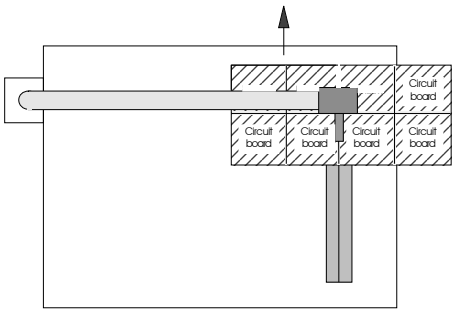


Figure 6

DIMENSIONS DIAPART 7200:

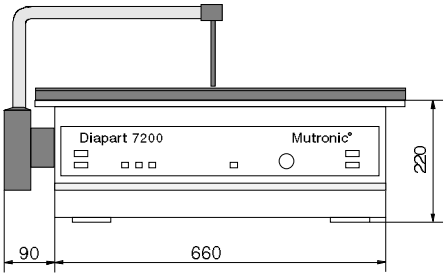


Figure 7

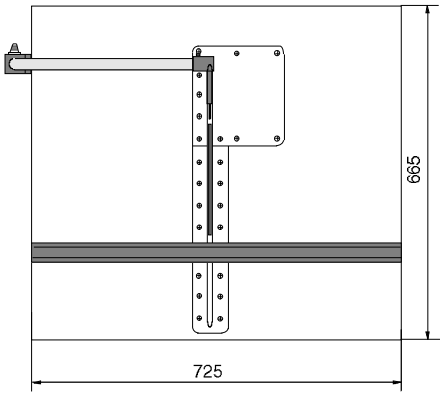


Figure 8

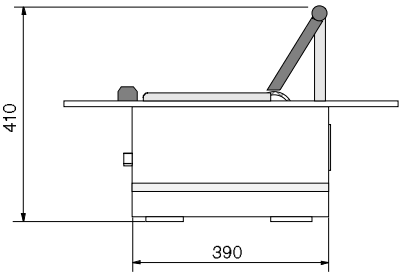


Figure 9

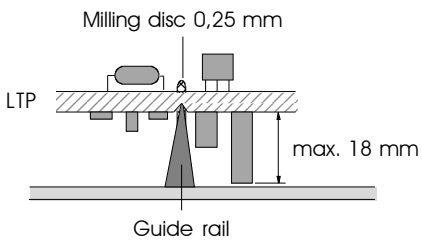


Figure 10

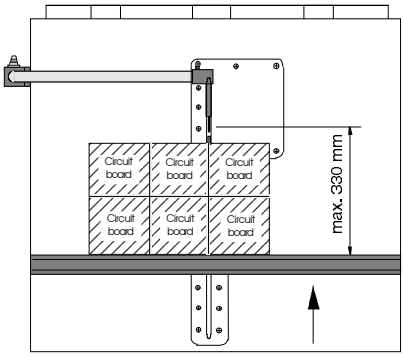


Figure 11

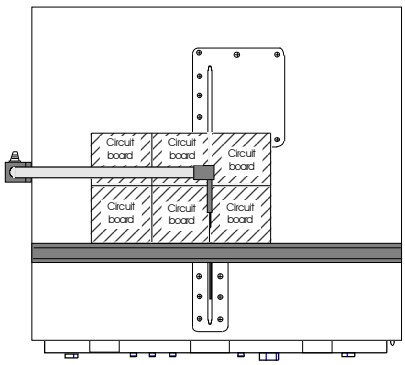


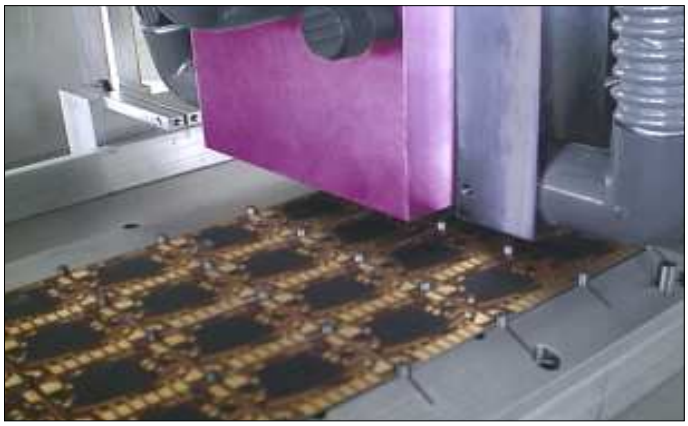
Figure 12

DIAPART 7400

Circuit board sepa-ration automatic device

For the manufacture of medium and large series in one ore more shift operation, we supply CNC-controlled automatic devices with manual or automatic feed and removal.

The *DIAPART 7400,* based on a specially designed modular system, is manufactured to customer specification.



Cutting quality

The cutting edge is perfect:
Smooth and without fraying out

The precision of the cut is 0.05 mm.

The pre-scored circuit boards are separated by a thin diamond disc (Picture). The separating procedure is carried out smooth and without stress. Dust is sucked off at the same time.

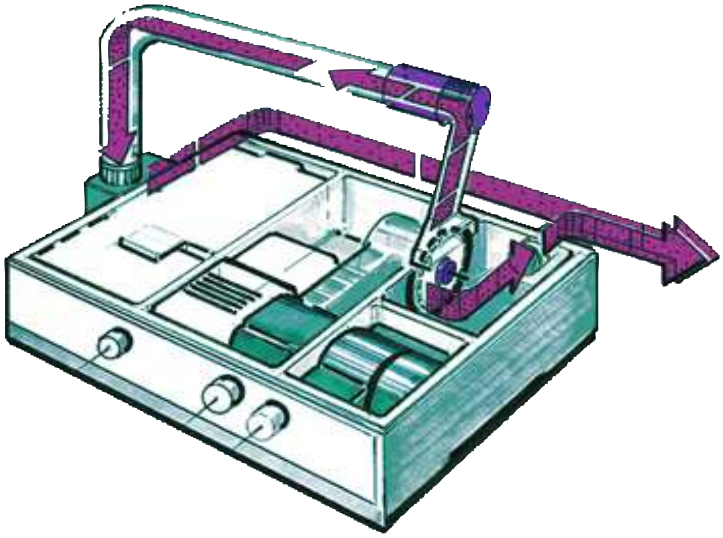
Clamping systems

Holding of the separated pre-scored board is carried out by vacuum (figure) or by mechanical devices for nutzen fitted on one or both sides.

Removing devices, automatic handling systems and pallet devices are designed to customer requirements.

DIAVAC-VACUUMING SYSTEM

Benefits both your health and the environment

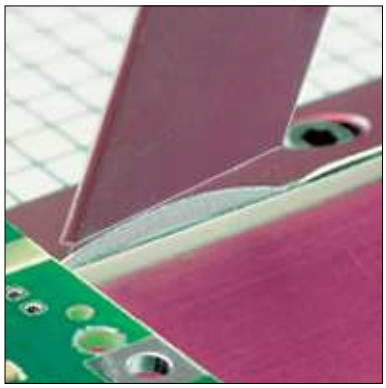


Materials which produce fine or health-endangering dust should always be machined in conjunction with the use of an extraction unit. This particularly applies to machining of fibre-strengthened materials (PCB's, fibre-strengthened plastics etc.)

Using *DIAVAC* extraction units prevents fine dust particles being blown out into the atmosphere. Not every extraction unit is suited to this task. The *DIAVAC* extraction units are equipped with a special fine dust filter and thus guarantee optimum results. A socket is provided for connecting the unit.

Chips and dust particles are picked up and removed by the air flow of the vacuuming facility. This is possible, because the suction arm is equipped with an efficient air ducting system with an extremely narrow nozzle head.

Simultaneously, also the dust from underneath the table plate is also sucked off via a Y-branch.

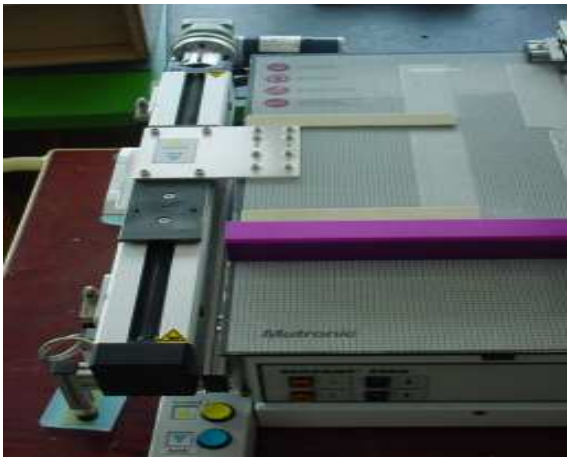


Price information on separate list

ACCESSORIES DIAPART 72OO

Machine cabinet (Item No.: 10.12070)
is used to include the two
Diavac 800 suction systems.

Parallel catch for DIAPART 72OO
for separating unetched printed circuit
boards.



Electrical table feed
(Item No.: 10.11900)

Price information on separate list

TECHNICAL QUALITIES

Drive mechanism and safety

DIADISC precision machines are equipped with special high-speed balanced motors to maintain an universal and broad speed range as possible. An electronic speed regulator controls the motor spindle.
The respective load is determined and additional output is readied automatically if necessary.
The speed can be steplessly adjusted throughout the entire range. It is character-istic of the speed that it does not remain entirely constant when the motor is under load, but rather adapts itself accordingly in critical situations.
The tendency of drills and milling hobs to block (along with the possibility of tool fracture as a result) is thus considerably reduced.

Material and quality

The construction and assembly elements used (milled and turned parts, ball bearings, etc.) are made exclusively of high-quality materials, such as non-corrosive stainless steel, special anodised aluminium or brass.
Particularly important construction parts, such as chassis, bearing seats, pulleys and drive shafts are made of solid raw material turned, milled and ground on precision CNC machines.

Punched and bent parts are not used, due to their tolerance and stability characteristics.
Parts from other suppliers, such as motors, control electronics, are pro-duced exclusively in Germany, Austria and Switzerland in accordance with our pro-duction and quality stipulations.
This ensures a long-term guarantee of both precision and the supply of spare parts.

Development and production

All *DIADISC* machines are developed in our production facilities and brought to their final technical maturity under the direction of engineers and experienced technicians.
The machines are designed for lengthy periods of application, constructed with suitable stability and comply with currently valid standards.
Newly developed options are so designed as to be also suitable in most cases for retrofit-ting older serial models.
Machines and options are thus useful long-term investments.

The entire final production and quality control is carried out at our works in Rieden.

Further options and detailed information are contained in the separate price list. Please make enquiries in advance with regard to prices in the event of placing an order, as these can be subject to change.

Mutronic®

Precision for laboratory and production

Mutronic Präzisionsgerätebau GmbH & Co. KG St. Urban Straße 20
D - 87669 RIEDEN bei Füssen Telefon: 0049/8362/930 90-0 Telefax: 0049/8362/930 90-49
e-mail: info@mutronic.de Internet: www.mutronic.de