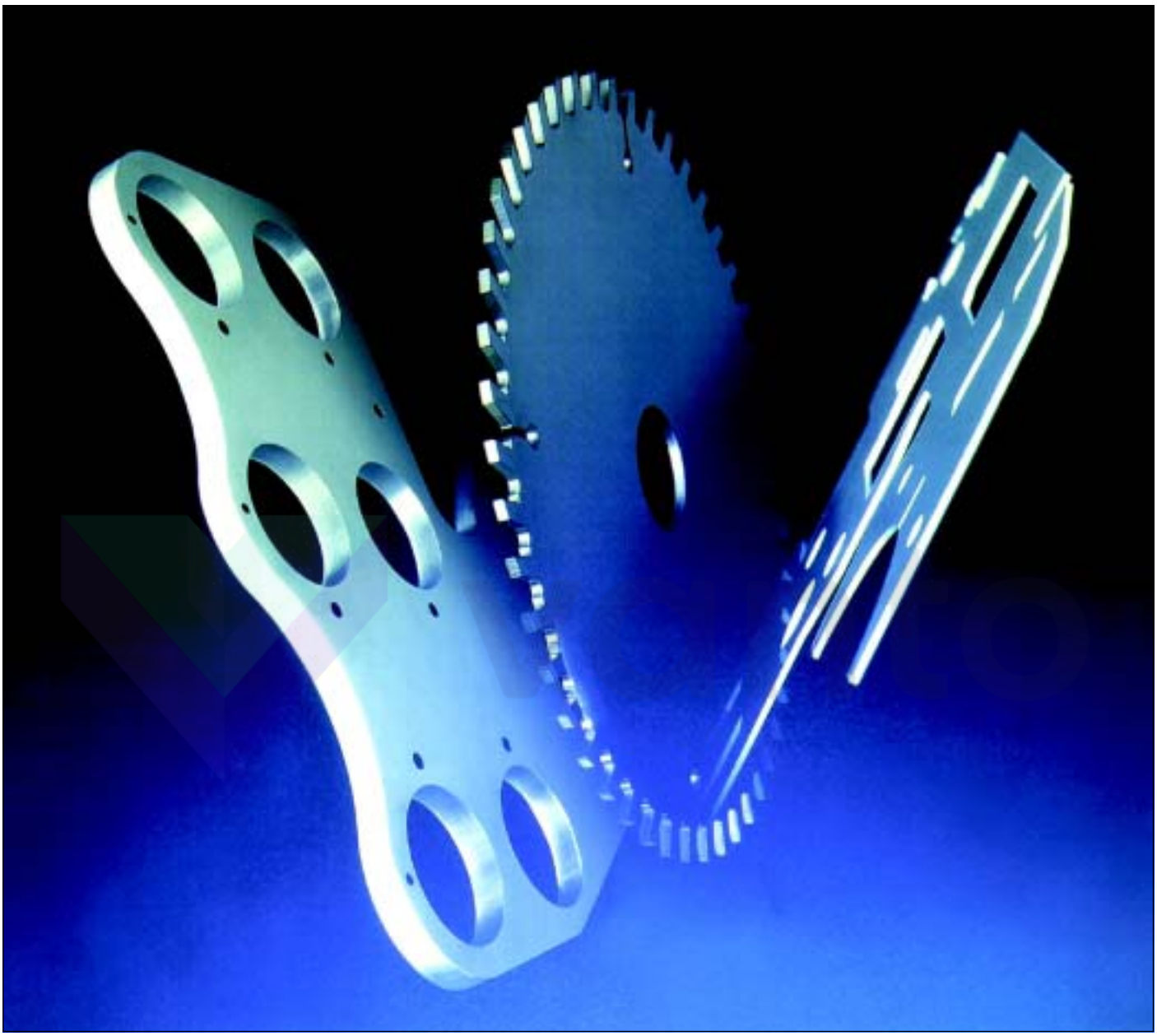
CO_2 Laser Cutting Centers



CO_2 Laser Technology
for Thin and Thick Sheet Metal Processing
with Modern Control Technology

TRUMATIC L 3030
TRUMATIC L 4030
TRUMATIC L 6030

TRUMPF

Your Partner for any Sheet Thickness

In 1987 TRUMPF presented the first ever flatbed laser cutting center with a TRUMPF TLF laser. Since that time these machines have revolutionized everyday production in sheet metal fabrication.

The machines from the TRUMATIC L 3030 - L 4030 - L 6030 series are the result of continual research and development, and incorporate all of our know-how. They are particularly distinctive for their combination of precision mechanical engineering and state-of-the-art laser and control technology.

The laser cutting installations from the TRUMATIC L 3030 - L 4030 - L 6030 series are all based on a uniform machine design. They all operate according to the "flying optics" principle, where the laser beam is moved over the working area. This allows high processing speeds to be achieved independent of material weight.

The machines differ from each other in size. All you need to do is choose the working area that best suits your workpiece dimensions.

All the machines can be equipped with lasers with varying outputs ranging from 2000 to 4000 watts. Here again, simply choose the laser that suits your parts spectrum.

Machine Design:

The machine frame is closed, with the laser and the operator panel integrated into it. Loading and removal of sheets takes place via the automatic pallet changer. With machine accessibility from three sides, material loading and parts unloading take place parallel to production.

Control Technology:

A modern, open control guarantees operating comfort:

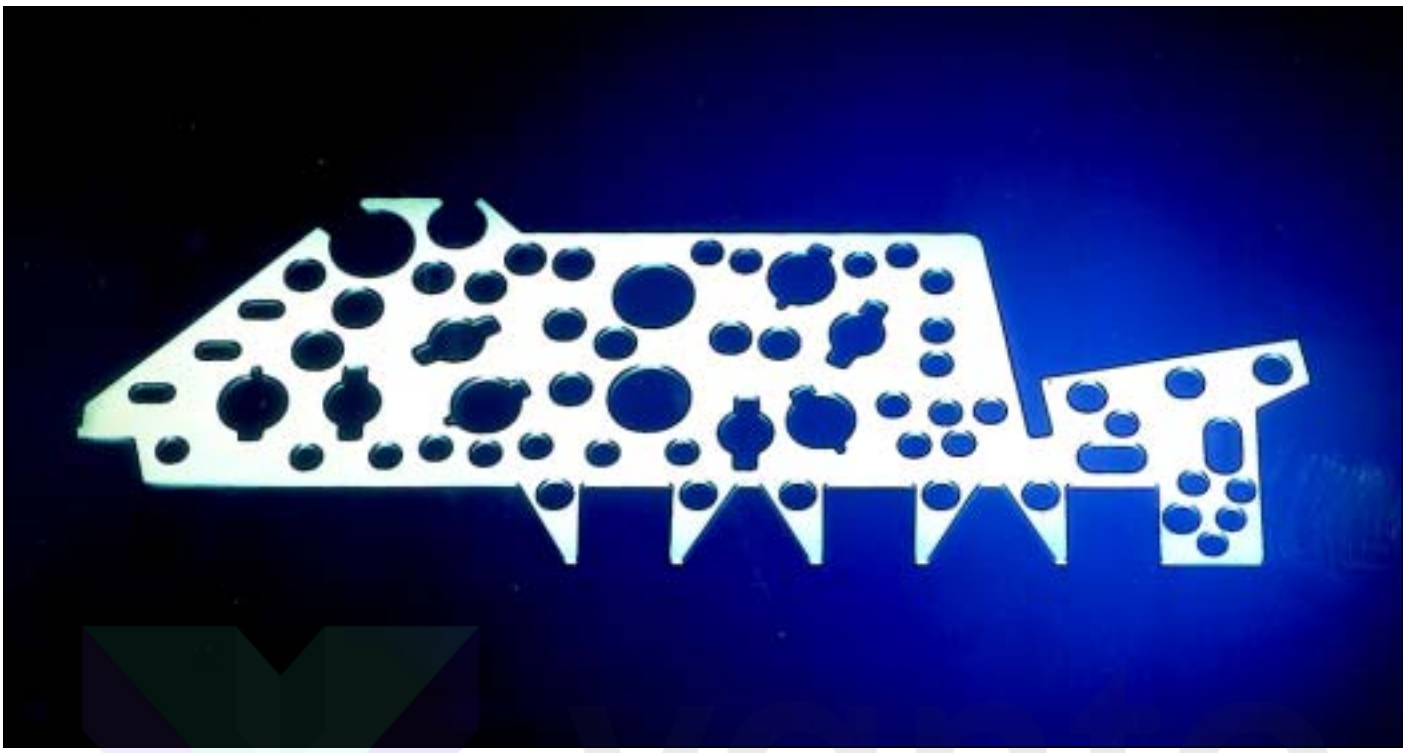
- integrated table technology makes handling of the laser tool extremely simple
- online help answers your questions right at the operator panel
- Teleservice gives you the security of direct assistance via telephone modem
- workshop programming is always important whenever a workpiece needs to be programmed quickly.

Safety:

TRUMATIC laser cutting centers conform to the most stringent of safety requirements. To guard against stray radiation, the working area is enclosed by a protective plexiglass cabin, which also provides a clear view of the cutting process. To protect the operator as well as the environment, fumes and cutting residue are removed efficiently via a multi-chamber extraction system and a compact dust removal facility.

The machines from the TRUMATIC L 3030 - L 4030 - L 6030 series are your partners in sheet metal fabrication. State of the art technology provides you with maximum fabrication latitude for the future, allowing you to react flexibly to changing production demands.

The Parts Spectrum:
Through Thick and Thin with the Laser Beam



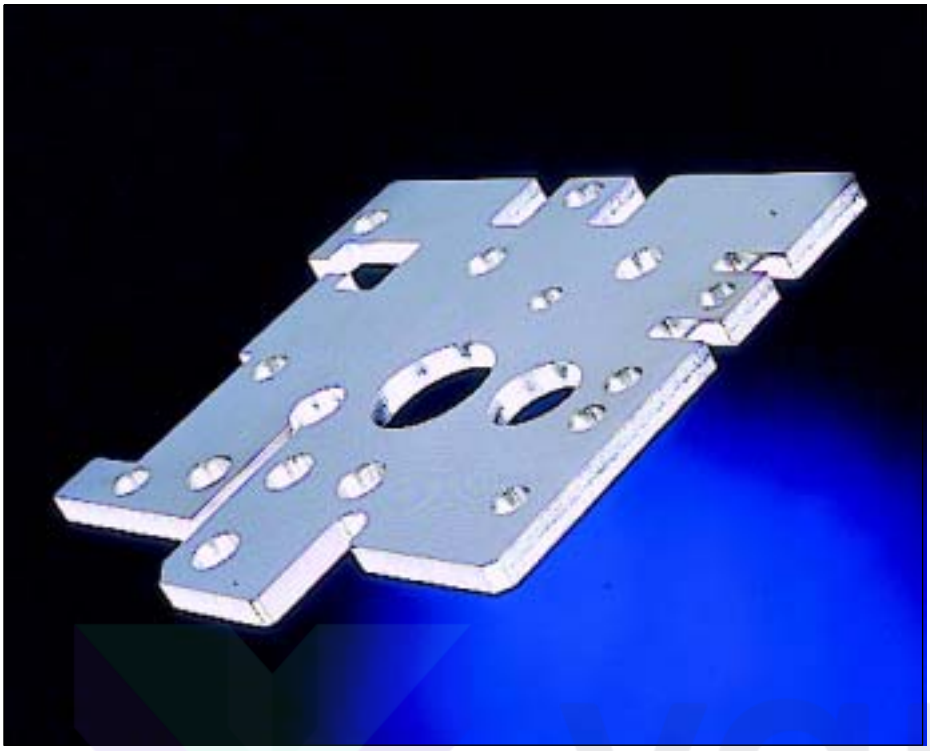
Fast cutting with SprintLas

The laser beam is a multifunctional tool. Its great advantage is its ability to cut through a wide variety of different materials, whether thick or thin. Part geometry can be simple or highly complex – the laser beam machines everything ready for assembly. The ToPs programming system provides you with additional support here, because ToPs "knows" how different materials have to be processed.

The TCL 3030, L 4030 and L 6030 are primarily utilized to handle cutting tasks, but the laser beam can do a lot more than just that:

- parts can be marked for identification purposes
- dot marks can be produced in the material
- coated sheets can also be processed.

Perfect processing of thin sheets and thick plate



HI-LAS: oxide-free cut edges in stainless steel

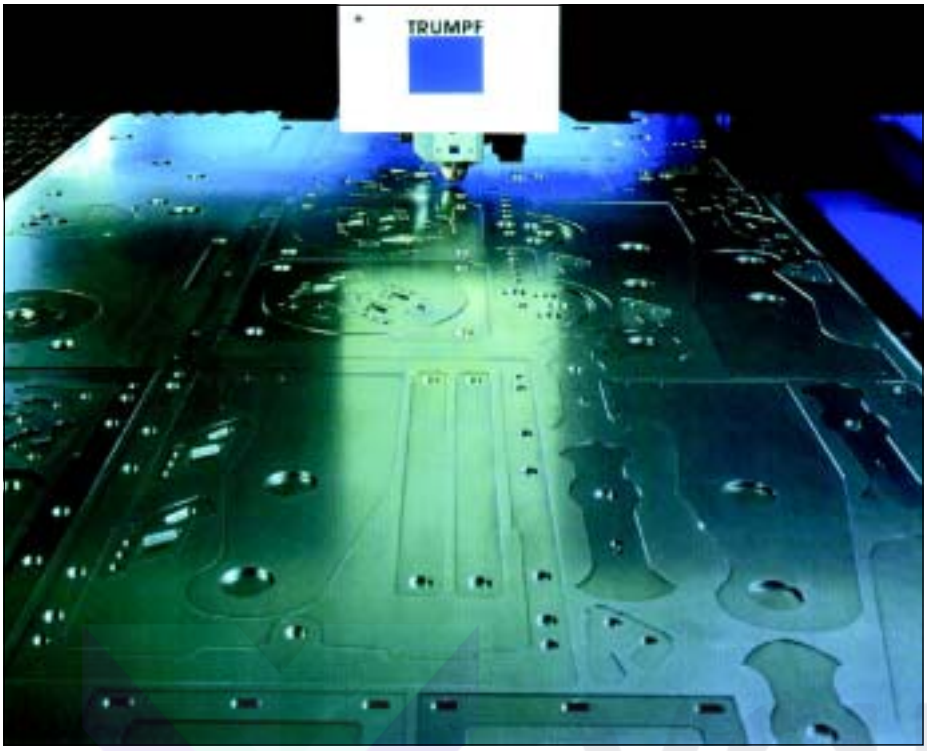
Flexible through thick and thin:
Laser cutting on the TRUMATIC L 3030 – L 4030 – L 6030

Cutting speed and cut quality make the difference.

Technologies specially developed for TRUMPF machines guarantee optimal laser processing results:

- SprintLas: increases cutting speeds by optimizing processing sequences.
- PMS (Plasma Monitoring System): monitors process safety during cutting of very thick stainless steel.
- HI-LAS: oxide and burr-free cut edges in stainless steel and aluminium alloys, accomplished through high-pressure cutting.
- HI-LAS*Plus*: Fast high-pressure cutting with nitrogen in thick aluminium and stainless steel.
- ContourLas: Thick plate machining: perfect machining means using special approach techniques for process-safe cutting as well as cutting small holes in thick sheets.
- Corner processing: loopings, curves or cooling in corner areas. You choose your process, based on the material and requirements.
- TwinLine: common cuts. In combination with TOPS 100, the machines feature a module that automatically defines any common cuts and then processes them to optimize time and material savings.
- Microweld: attachment of workpieces, even in thick materials, in the sheet via dot welds.

Laser Processing:
Best Achieved with Distance



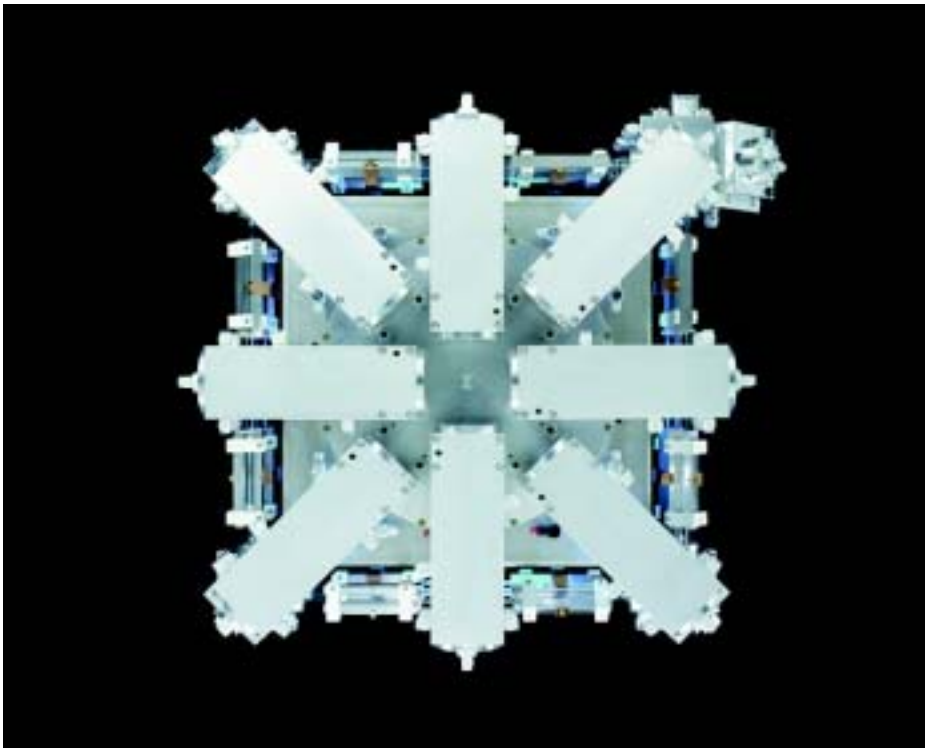
The best cutting results are achieved when the distance between the cutting head and the sheet surface is kept constant. The non-contact automatic height regulation DIAS calculates this stand off on a capacitive basis.

- optimal cutting results are guaranteed, even on bowed sheets
- DIAS calculates the position of the sheet, avoiding any further need to reposition, and scratches are also prevented.

The cutting head of the TRUMATIC L 3030, L 4030 and L 6030 is easy to use: the quick-change system allows the cutting head to be exchanged in a matter of seconds.

Cutting with the DIAS height regulation

The Laser:
Reliable and Economical



TRUMPF TLF lasers are RF-excited gas lasers. The resonator is folded into a square, providing for a compact design and high laser stability over a long period. A maintenance-free radial turbine blower with magnetic bearing is used to circulate the laser gas. TRUMPF lasers have proven themselves many times over in the rough industrial environment. Their distinctive features include best beam quality, infinitely variable laser output, and low gas consumption due to the radio-frequency technology.

The focus position is automatically adjusted, and the laser beam is guided to the cutting head along a fully encapsulated system. The AutoLas Plus regulating mechanism keeps the focus constant across the entire working area, and ensures it is adjusted automatically for different materials and thicknesses.

Compact and powerful: TRUMPF TLF lasers

Operation:
Laser Technology Made Easy

Modern controls ensure simple operation. The comfortable user interface is a TRUMPF development, and puts the operator's activities to the fore.

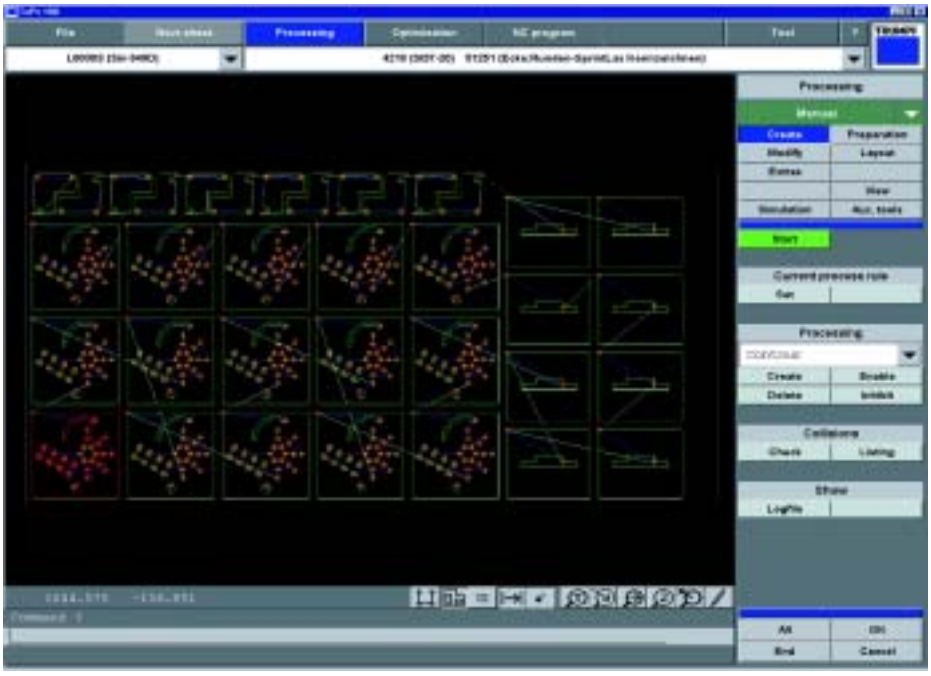
- The integrated online help function answers questions as and when they arise.
- A sophisticated diagnosis concept, plus Teleservice via modem, is naturally included.
- The technology tables lie at the heart of the system, allowing adjustments to different materials and sheet thicknesses to be made quickly and flexibly. For frequently used materials, all laser parameters are pre-set and automatically activated by calling up a table.
- Simple parts can be programmed directly at the machine. For this, the control can be equipped with the module ToPs 100 lite, the workshop version of ToPs 100.

Operator panel in the machine frame

The Programming System:
Tailored Precisely for the Machine

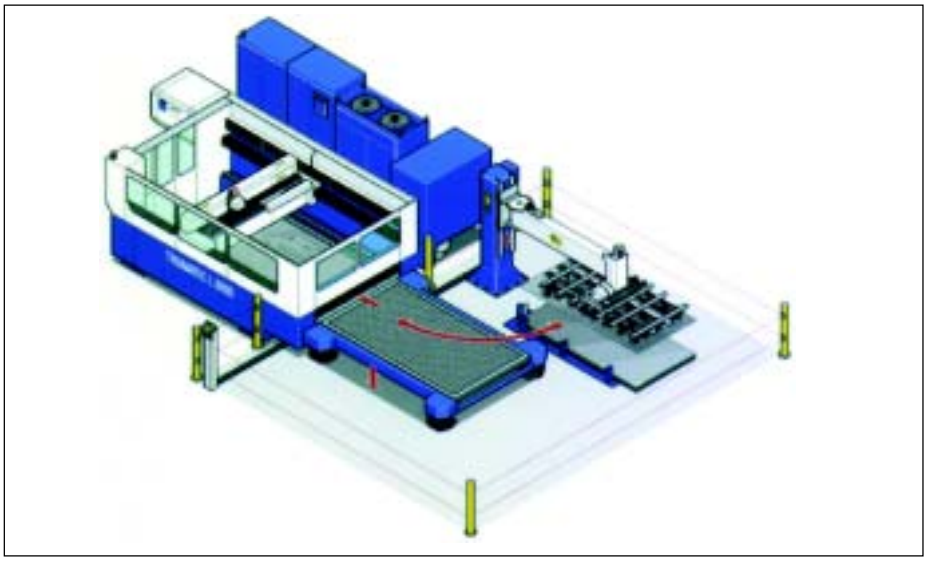
Mature machine technology also means uncomplicated programming. ToPs 100 is a CAD/CAM development from TRUMPF. Machine and programming system are optimally tailored for each other.

- Part drawings can be generated in ToPs, or imported from CAD/CAM systems or ToPs 600.
- Nesting is job-related.
- Nested sheets can be automatically machined at the touch of a button.
- Know-how included.
  ToPs contains all our technological know-how. all machining parameters and data are stored in the technology tables and rules. ToPs „knows" which cutting parameters are suited to your material, and how to achieve the very best cutting results.



Automatic machining of entire sheets with ToPs 100

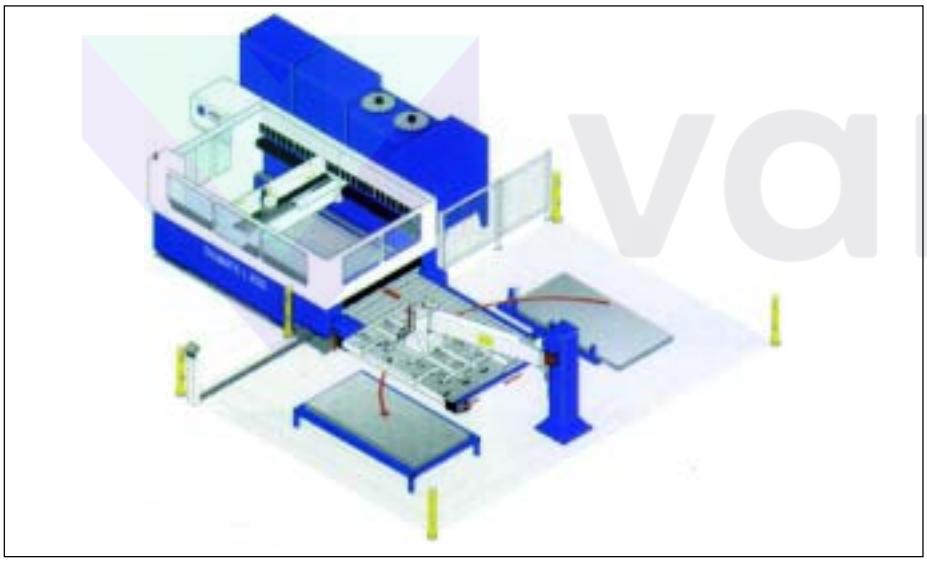
The Options:
Customized Automation



As part of the standard package the TRUMATIC L 3030 - L 4030 and L 6030 are supplied with an automatic pallet changer that enables loading and unloading of the machine parallel to production time. The automation concept has several expansion levels, and is highly flexible – so the degree of automation can be precisely adapted to suit your own particular needs.

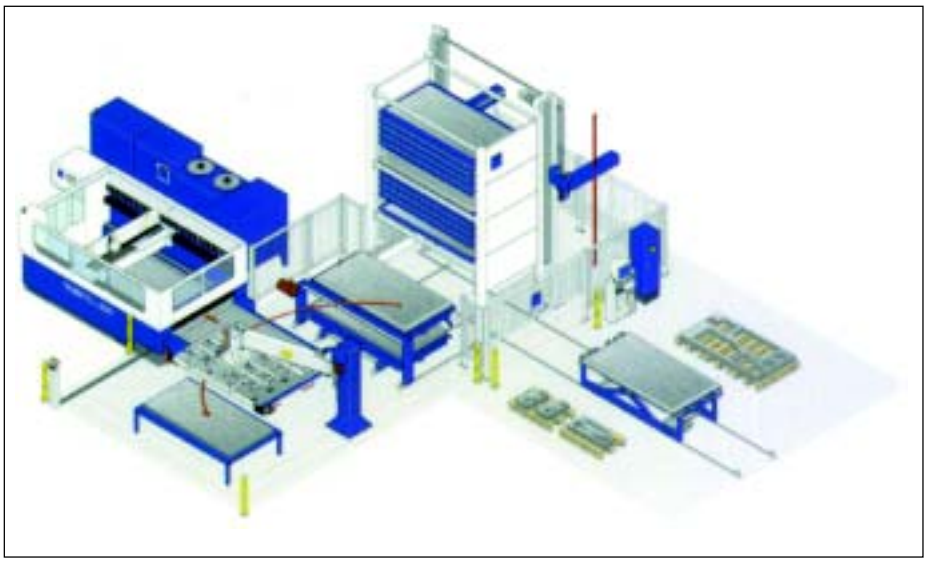
Automatic Loading:

The loading device enables fast loading and easy handling, even where heavy sheets are involved.



Automatic Production:

The entry-level solution for automation technology is the LiftMaster – it automates loading and unloading operations. The sheets are transported from the raw material stack to the pallet changer on the machine by means of suction cups. An unloading rake transports finished workpieces and scrap skeletons from the machine to the finished parts stack. The Liftmaster naturally enables unmanned production over several hours – e.g. in a second shift.



Storage Connection:

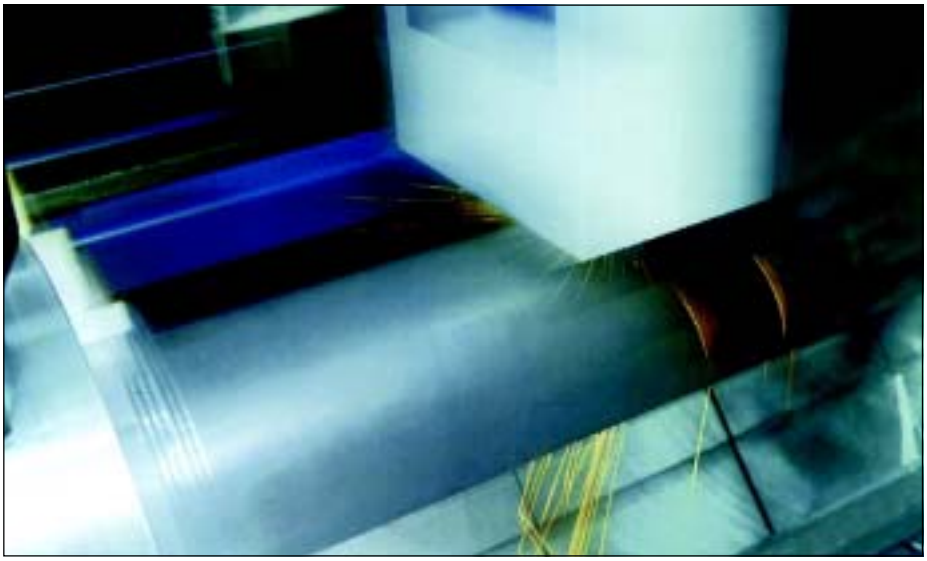
The large-scale solution is connection to a storage system – either a TRUMPF compact store or a system store. This means that fully automated production is guaranteed. Raw sheets are readied in the store, either on individual pallets or in a stack, and finished workpieces are replaced in the store in the same way.

RotoLas:
Flexible Tube and Profile Cutting

RotoLas is an additional facility for the machining of pipes and profiles.

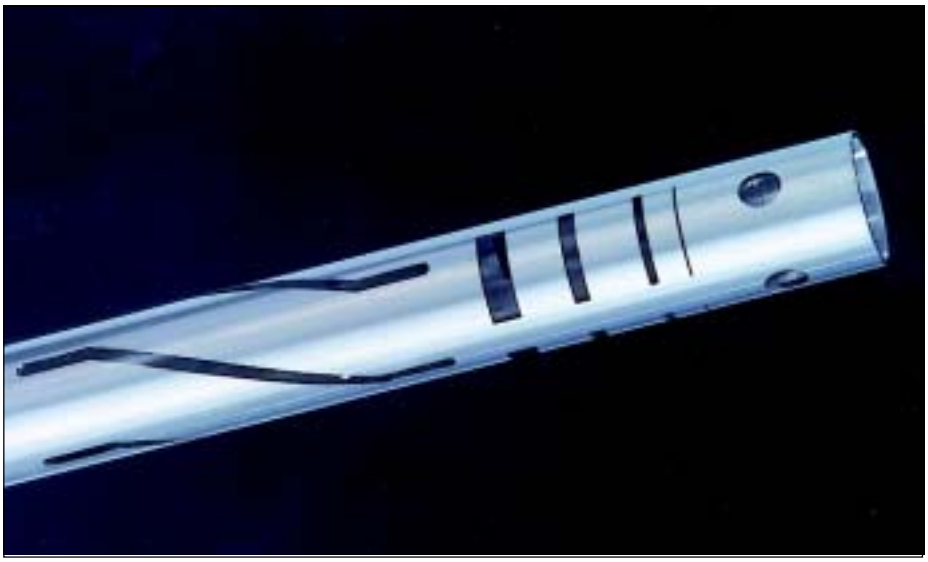
The changeover from flat sheet to pipe cutting takes place very quickly. The NC rotary axis is rigidly fixed to the machine frame. A flexible support system guarantees that the most varied kinds of pipes are all securely guided.

One example of many steadily growing areas of application for pipe machining is the steel industry, where an increasing number of complex three-dimensional structures are being constructed out of cut sections of pipe.



Machining corners on square pipes always poses a particular challenge. Cutting speed needs to be calculated precisely here, while Z-axis travel also has to be taken into account. Here, the TOPS 400 programming system gives you all the support you need. Developed specifically for pipe machining, this system has the correct data and also changes technology tables at the right time.

Designing complex penetrations and cuts is just as simple. All you have to do is input a few key data, and TOPS takes care of everything else automatically.

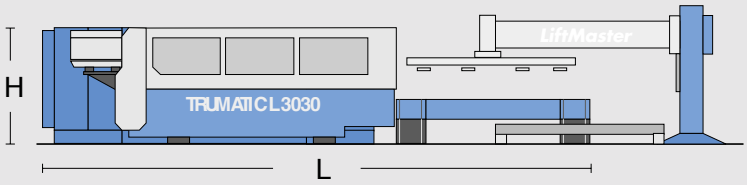


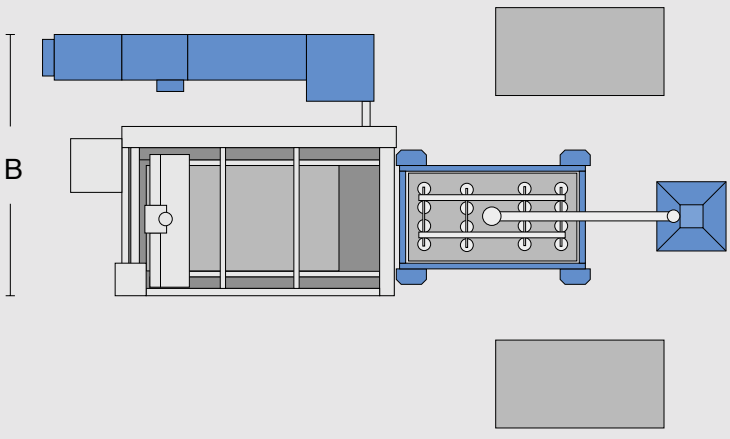
Technical Data

Machine		TRUMATIC L 3030	TRUMATIC L 4030	TRUMATIC L 6030
Working Area	X-axis	3000 mm	4000 mm	6000 mm
	Y-axis	1500 mm	2000 mm	2000 mm
	Z-axis	115 mm	115 mm	115 mm
Max. Workpiece Weight		710 kg	1250 kg	1900 kg
Max. Positioning Speed	axis parallel	60 m/ min	60 m/ min	60 m/ min
	simultaneous	85 m/ min	85 m/ min	85 m/ min
Accuracy[1]				
Smallest programmable increment		0,01 mm	0,01 mm	0,01 mm
Positioning accuracy Pa		± 0,10 mm	± 0,10 mm	± 0,10 mm
Repeatability Ps		± 0,03 mm	± 0,03 mm	± 0,03 mm
Control				
TRUMPF CNC path control		based on Sinumerik 840D	based on Sinumerik 840D	based on Sinumerik 840D
Dimensions and weights[2]	Length (L)	9300 mm	11600 mm	16100 mm
	Width (B)	4600 mm	5200 mm	5200 mm
	Height (H)	2000 mm	2000 mm	2000 mm
	Weight	11500 kg	16000 kg	21500 kg

[1] According to German standard number VDI/ DGQ 3441. Measured length is 1 m
Workpiece tolerances depend (among other things) on the workpiece type, pre-treatment, sheet size, and location in the working area.
[2] Approximate values. Precise data is provided in the respective setup plan.

Layout with LiftMaster

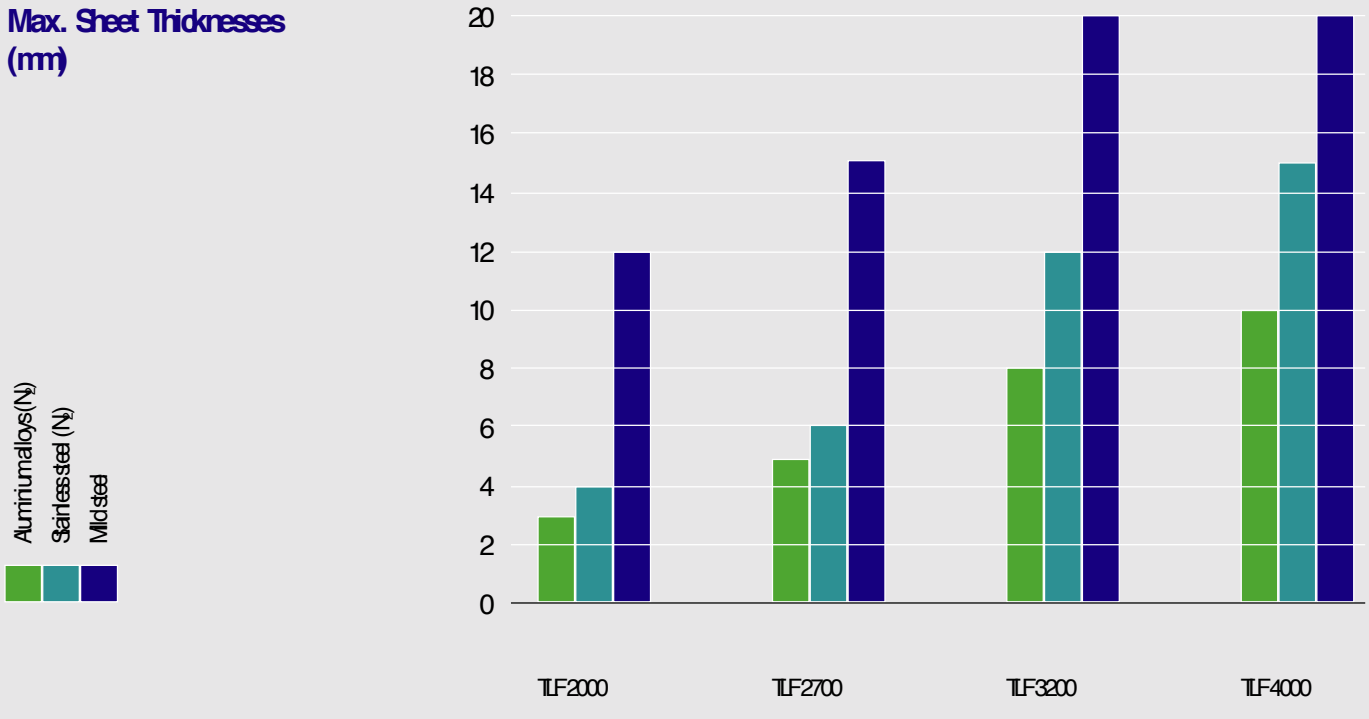




TRUMPF TLF CO_2 Lasers RF-excited		TLF 2000	TLF 2700	TLF 3200	TLF 4000
Guaranteed max. output (Programmable in 1% increments)		2000 W	2700 W	3200 W	4000 W
Wavelength		10,6 µm	10,6 µm	10,6 µm	10,6 µm
Beam mode		TEM_{00}	TEM_{00}	TEM_{00}	TEM_{0n}*
Gating frequency		100 Hz – 10 kHz	100 Hz – 10 kHz	100 Hz – 10 kHz	100 Hz – 10 kHz
Consumption values					
Laser gas	CO_2	1 l/h	1 l/h	1 l/h	1 l/h
	N_2	6 l/h	6 l/h	6 l/h	6 l/h
	He	13 l/h	13 l/h	13 l/h	13 l/h
Cutting gas[1]	O_2	500 – 2000 l/h	500 – 2000 l/h	500 – 2000 l/h	500 – 2000 l/h
Laser cooling system		Closed circulation	Closed circulation	Closed circulation	Closed circulation
Electrical consumption values of entire unit[2]		23 – 45 kW	25 – 54 kW	27 – 56 kW	33 – 67 kW

[1] Contingent on respective application.
[2] Includes suction, control, RF-generator and cooling unit.

Max. Sheet Thicknesses (mm)



TRUMPF is certified in accordance with DIN ISO 9001

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