LASER CUTTING

HD
HDF

DURMA

TODAY TOMORROW FOREVER


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DURMA

Head Quarter & Ataevler

Durmazlar has aimed continous development since 1956

Owes one of the world's most contemporary production plants in the production technology business. 3 different plants oriented to different product families, 1000 dedicated employees and 150.000 m2 footprint.

In order to offer solution according to clients' needs and enriching the quantity and quality of its own patent rights; long experienced Engineering Department transformed to Durma Research & Develepment Center has opened in the year 2010. Designed and engineered with modern technics; its products are equipped with proven quality components to precisely fulfill your requirements. We serve " accuracy, speed, flexibility, durability, reliability and advanced technology" with high performance/price ratio. Worldwide Durma distributors and technical support network assures perfect support to our clients.

With its 57 years of experience, its product quality, innovative solutions Durma gives importance and cares you with proactive approach. We thank all our clients to hold us at the top segment of the world brands.

Laser Factory

Başköy Factory

Durma Laser Cutting Machines

A modular product family of state-of-the-art flying optics laser cutting machines where the cutting head moves accurately and with high dynamics over the work piece. There are solutions for different sheet sizes, with optimal laser technologies for every range of materials and thicknesses, and all are driven by high performance and maintenance free rack and pinion or linear motor motion systems.

HD Series

The HD series of CO2 laser machines allow high-quality cutting of both thin and thick material sections and offers top performances at minimal running costs.

HD-F Series

Machine with fiber laser source which offer very high quality cutting and performance on a wide variety of material types with low energy consumption.

DURMA LASER											
HD			HD-L			HDF			HDF-L		
HD 3015	HD 4020	HD 6020	HD-L 3015	HD-L 4020	HD-L 6020	HDF 3015	HDF 4020	HDF 6020	HDF-L 3015	HDF-L 4020	HDF-L 6020

CUTTING AXIS			
CUTTING AXIS	3015	4020	6020
X Axis (mm)	3000	4000	6000
Y Axis (mm)	1500	2000	2000
Z Axis (mm)	150	150	150
Max. Sheet Dimension (mm)	3000x1500	4000x2000	6000x2000

Rigid Frame & Gantry

The basis of all Durma laser machines is a rigid stress-relieved welded steel frame construction upon which a stiff gantry axis system moves the cutting head. The design guarantees accurate parts even when cut with the fastest cutting speeds and under the highest accelerations.

Shuttle Tables

Integrated shuttle tables are incorporated on the laser machine to maximize the productivity and minimize the material handling times. The shuttle table and pallet change system allows convenient loading of new sheets or unloading of finished parts while the machine is cutting another sheet inside the working area .

Conveyor System

The automatic scrap conveyor allows the removal of scrap pieces from the working area without the need to interrupt the cutting process.

CAD/CAM Software

The CAD/CAM software provided with the machine has all the tools to import or draw parts, prepare the geometries for the laser cutting process and make automatic and efficient nests.

Energy Saving Beam Guidance System

The laser beam is completely encapsulated through its travel from resonator exit to the laser head.

Cutting Head

Intelligent "Capacitance" Style Cutting Head

The cutting head is equipped with a capacitive distance sensor which automatically keeps the distance between the cutting head and the material constant. The system continuously regulates the distance between the nozzle and the workpiece, simultaneously adjusting the Z-axis according to material thickness.
Cartridge style replacement
Lens cartridge temperature sensors protect lenses
A piercing sensor detects the completion of piercing
ControlCut: the sheet is pre-measured for deviations in terms of sheet sizes, corners and angular positioning on the table.

Control Unit

Durma laser machines achieve the highest dynamics and the fastest laser processing cycle times thanks to the combination of rigid mechanics and a state-of-the-art numerical control and drive system.
The graphical user interface ensures an easy operation of the machine and the on-board libraries of reference cutting parameters for various materials and thicknesses allow the operator to achieve optimal cutting results in a minimum amount of time.
Programs can be loaded easily into the machine with a USB stick or over a fast Ethernet connection with the company network.

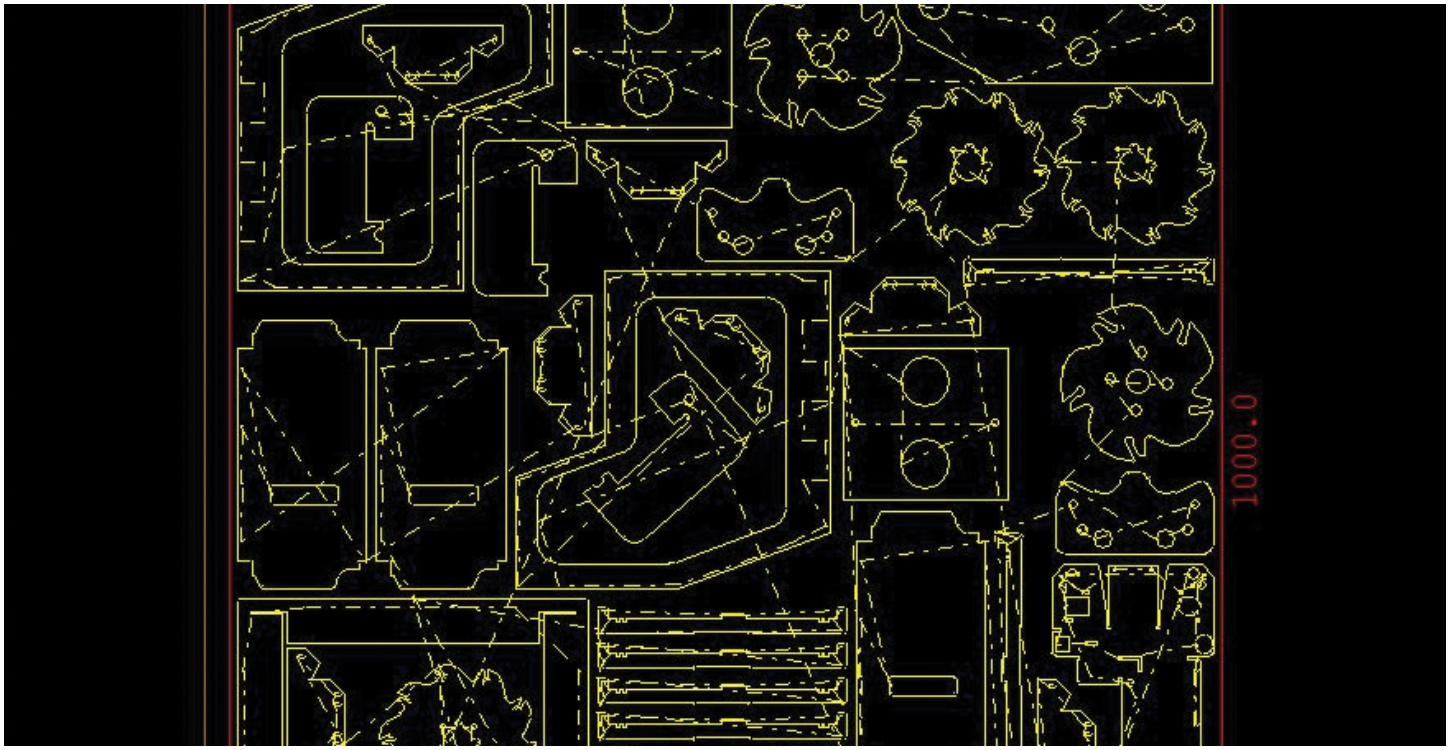
Chiller

The chiller to cool down the laser source and the optical elements is silent and energy-efficient.

Dust Collection / Filtration

Dust particles produced during the cutting operations are vacuumed by embedded filter channels located under the cutting table. A clean working environment results in reduced machine maintenance and cleaning.

- *Self Cleaning (system cleans itself and dust is trans ferred to the disposal bin)*
- *Easy Disposal Using Portable Scrap Container*
- *Free Contacts for External Controls (no electricity con sumed when not cutting)*
- *Siemens CPU and PTFE Membrane Filter Cartridges*



CAD / CAM Software

- *Full-automatic cutting.*
  (Any CAD drawings can be imported to create NC Codes which are loaded to the controller via network or memory stick)
- *Common Cut-common border of parts reduces cycle times and mate rial dispos als by cutting once.*
- *Sprint Cut- chooses the shortest path of head from one to an other contour.*
- *Fast Head Path Collision Protection.*
- *Advanced corner applications with power modulation provides per fect corners and soft cutting.*
- *Real font styles are supported to cut or mark.*
- *Pre-piercing finishes all piercings prior to contours.*

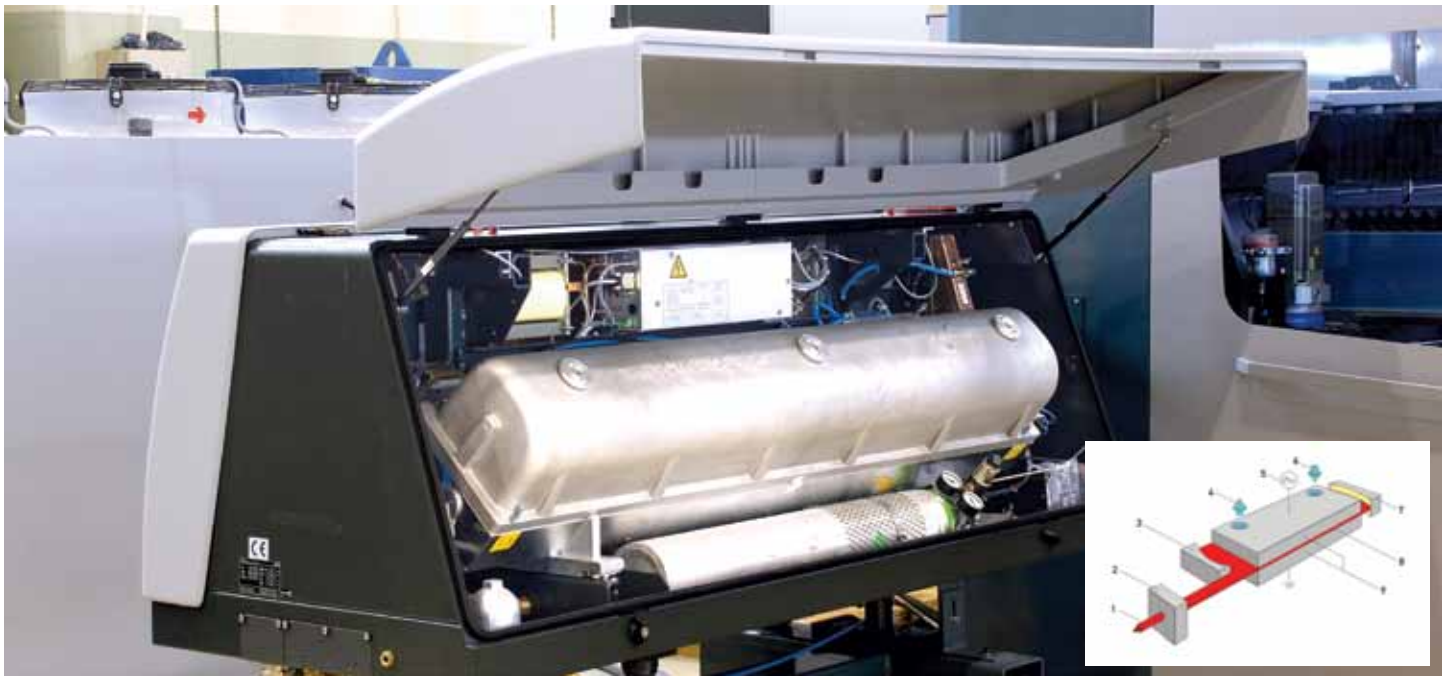
HD SERIES

The HD series of CO2 laser machines allow high-quality cutting of both thin and thick material sections and offers top performances at minimal running costs.

HD SERIES			
Type		HD	HDL
Speed (mm/dak)		90 000	200 000
Acceleration (m/s2)		10	30
Positioning		± 0,05	± 0,02
Repeatability		± 0,05	± 0,02
Power (KW)	2,5	3,5	4
MILD STEEL Max Thicness	15	20	25
STAINLESS STEEL Max Thicness	6	10	12
ALUMINUM Max Thicness	4	8	10
Electricity Consumption Of Resonator (Kw/Hour)	27	35	44

HD 3015 / 4020 / 6020

Slab Laser Source - Rofin



Laser Source

The diffusion cooled laser source provides a high beam quality at laser powers up to 4kW with a minimal running cost compared with other CO2 laser technologies. The laser is immediately ready for use when powering on the machine and consumes no energy when it is in stand-by.

Reduced Maintenance

There are no major parts in the laser that are subject to mechanical wear, there is no electrode erosion inside the vacuum chamber that could contaminate internal optics and there is an absence of brittle glass tubes to contain the laser medium. These unique features allow an extremely low routine maintenance: both in part cost and in down-time.
Reduced Gas Consumption

Since the electrodes that provide the power to the electrical discharge in the laser medium are not in contact with the laser gas, the gas does not get contaminated and allows the laser to operate three days without the need of refreshing it.
Beam Delivery System

The laser beam propagates through a completely closed beam delivery system over-pressurized by clean, dry air. The laser beam preserves its excellent quality and has constant characteristics all over the working area.

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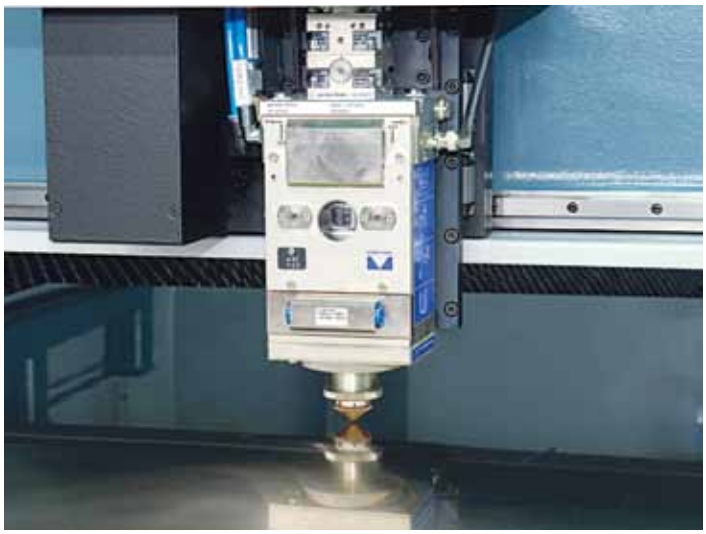
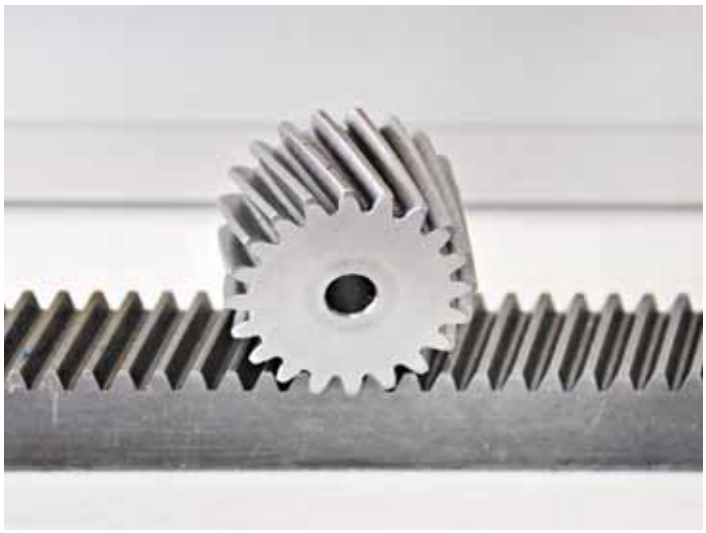


Cutting Head

The high-pressure auto-focus cutting head with inter-changeable lens cartridges (5" and 7.5" focal length) makes the laser machine the universal tool for cutting different materials and thicknesses with a minimum set-up time. The integrated capacitive distance sensor allows the head to follow the sheet-height at all times and at the highest cutting speeds.



Motion System

The HD series of laser cutting machines have a drive system of high accuracy rack and pinions powered by maintenance free AC servo motors.

HDL 3015 / 4020 / 6020

The HD-L series CO2 laser cutting machines offer all the advantages of the HD series with additional accuracy AND dynamics.

Motion system

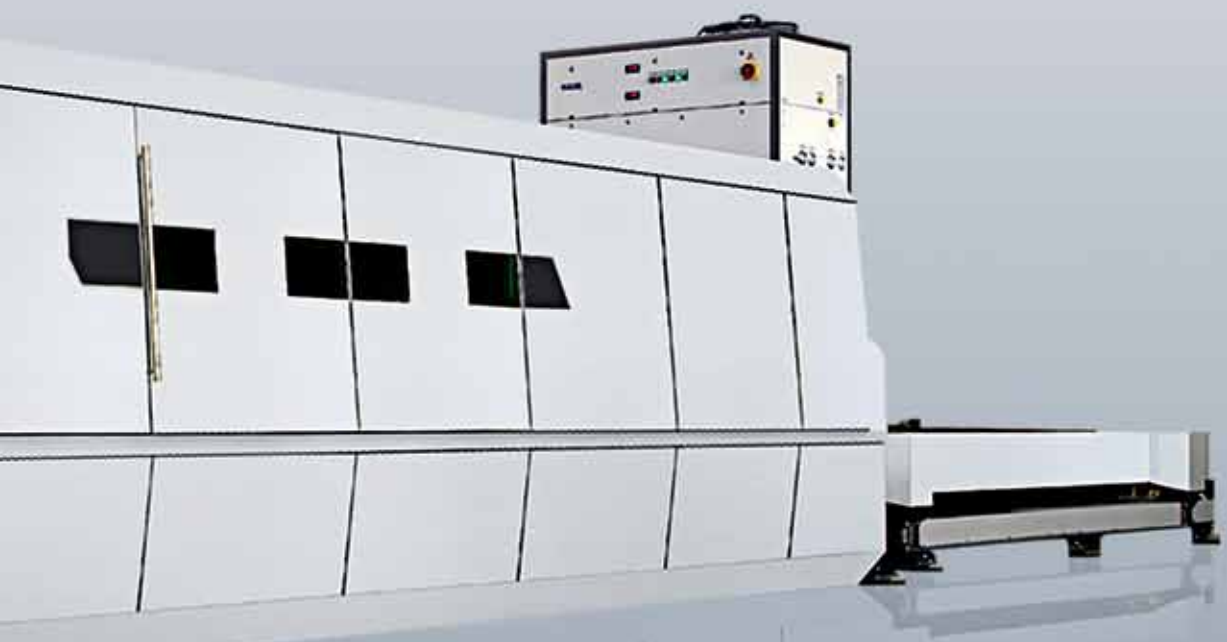
State-of-the-art linear motors narrow down further the accuracy of the machine and offer higher dynamics than the rack and pinion system. When the application demands high precision and/or require many positioning movements between complex shaped features, the HD-L will increase dramatically the effective CUTTING time and thus productivity.

HD-F SERIES

The laser power source of the HDF series is an all-solid-state fiber laser. This technology reduces further the maintenance requirements, and offers the lowest possible running cost with a wall-plug efficiency of 30% and without the need of any laser gas. When the application requires a broader spectrum of material types to be cut and the maximum thickness range is limited, the HDL is the ideal solution: it will cut faster at lower cost than any CO2 laser at the same laser power.

- *No need of gas to create laser beam*
- *Reflection of the laser beam is nearly zero brings along to cut nonferrous metals such as copper and brass by low power with high efficiency*
- *Very low electrical consumption by %30 wall plug efficiency*
- *No need of mirror adjustment and nearly zero maintenance requirement*
- *Consistant Beam divergence*

FIBER LASER				
	YLS2000	YLS3000	YLS4000	YLS5000
Power (KW)	2	3	4	5
MILD STEEL Max.	15	20	25	25
STAINLESS STEEL Max.	6	8	12	15
ALUMINUM Max.	4	6	10	12



HDF 3015 / 4020 / 6020

Laser Source - IPG

Laser Source

Fiber lasers emit light at a wavelength of 1µm which is better absorbed by most metals than the 10µm of CO2 lasers. This allows the HDF series machines to also cut highly reflective materials as copper, brass and pure aluminum.

Maintenance free

Fiber lasers are all solid state and have no mechanical parts that could suffer from wear or need adjustment. The laser source is therefore truly maintenance free and has an expected life time of > 100,000h.
No laser gas

Where CO2 lasers are excited by an electrical discharge in a laser gas medium, f iber lasers are powered by diode lasers and require no gas for their operation.
Reduced power consumption

Not only will fiber lasers cut faster than CO2 lasers with a similar output power, their wall-plug efficiency of 30% is more than double. There is no stand-by electrical consumption and also the cooling requirements are only a fraction of the ones for a CO2 laser.

Beam Delivery System

The fiber laser light is brought from the laser source to the cutting head by a flexible glass fiber. There are no mirrors in the beam delivery that require maintenance and adjustment. The light does not travel through air, making a flushing or over-pressurizing with clean, dry air unnecessary.

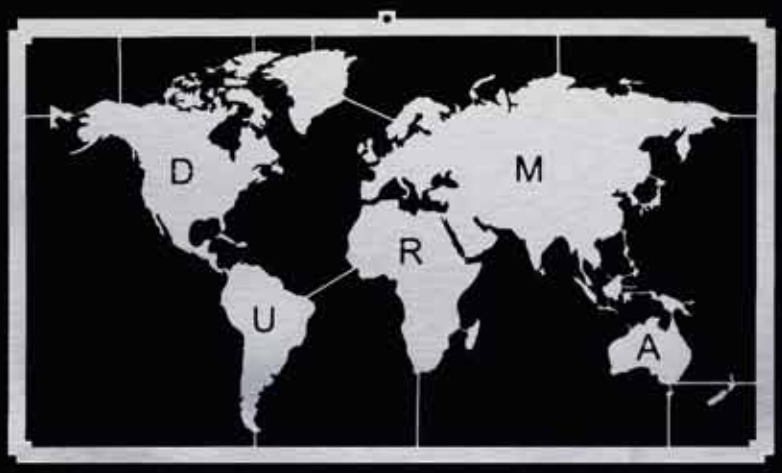
Cutting Head

İn the high-pressure auto-focus cutting head for fiber lasers the cutting lens (125mm or 200mm focal length) is shielded from the laser process by an exchangeable low-cost protection window. The 1µm wavelength light of fiber lasers is very sensitive to dust or other contamination, but when the well-sealed optical components of the cutting head are treated with care, their life-time will be of several thousands of working hours. The integrated capacitive distance sensor is capable of having the head follow height differences in the sheet even at the extreme high cutting speeds that can be achieved with the fiber laser technology.

Motion System

Also the HDF series of laser cutting machines have a drive system of high accuracy rack and pinions powered by maintenance free AC servo motors.

Laser Cutting Samples

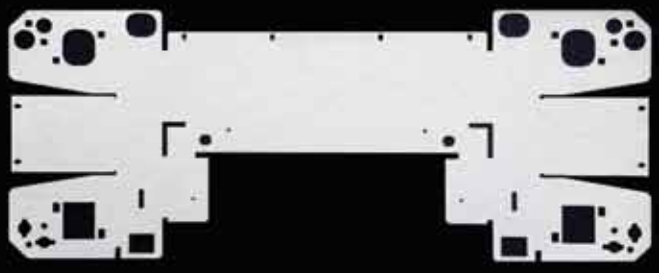


Correct dimension

Quality Cutting

Clean Cutting

Fast Cutting



Versatile Cutting

Reilable Cutting

FILTER						
FILTER: DONALDSON	HD3015	HDL-3015	HD-4020	HDL-4020	HD-6020	HDL-6020
Type	DFPRO4	DFPRO4	DFPRO6	DFPRO6	DFPRO8	DFPRO8
Capacity (m3/H)	3000	3000	4500	4500	6000	6000
Pressure (Pa)	5000	5000	5000	5000	5000	5000
Power (kW)	4	4	7.5	7.5	9	9
FILTER: DONALDSON	HDF-3015	HDFL-3015	HDF-4020	HDFL-4020	HDF-6020	HDFL-6020
Type	DFPRO4	DFPRO4	DFPRO6	DFPRO6	DFPRO8	DFPRO8
Capacity (m3/H)	3000	3000	4500	4500	6000	6000
Pressure (Pa)	5000	5000	5000	5000	5000	5000
Power (kW)	4	4	7.5	7.5	9	9

REZENATOR CONSUMPTION COST						
	HD3015	HDL-3015	HD-4020	HDL-4020	HD-6020	HDL-6020
Rezonator (2 - 5 KW) Power Cost	22-55	22-55	22-55	22-55	22-55	22-55
Stand-By (KW)	1.5	1.5	1.5	1.5	1.5	1.5
	HDF-3015	HDFL-3015	HDF-4020	HDFL-4020	HDF-6020	HDFL-6020
Rezonator (2 - 5 KW) Power Cost	6.40	6.40	6.40	6.40	6.40	6.40
Stand-By (KW)	2.5	2.5	2.5	2.5	2.5	2.5

CUTTING HEAD						
	HD3015	HDL-3015	HD-4020	HDL-4020	HD-6020	HDL-6020
Lens	1.5”	1.5”	1.5”	1.5”	2”	2”
Odak Uzunluğu (mm)	127-190	127-190	127-190	127-190	127-190	127-190
	HDF-3015	HDFL-3015	HDF-4020	HDFL-4020	HDF-6020	HDFL-6020
Lens Çapı	1.18”	1.18”	1.18”	1.18”	1.18”	1.18”
Odak Uzunluğu (mm)	125	125	125	125	125	125

CHILLER						
	HD3015	HDL-3015	HD-4020	HDL-4020	HD-6020	HDL-6020
BRAND	LAUDA	LAUDA	LAUDA	LAUDA	LAUDA	LAUDA
TYPE	UC500	UC650	UC500	UC650	UC500	UC650
	HDF-3015	HDFL-3015	HDF-4020	HDFL-4020	HDF-6020	HDFL-6020
BRAND	RIEDEL	LAUDA + RIEDEL	RIEDEL	LAUDA+RIEDEL	RIEDEL	LAUDA + RIEDEL
TYPE	PC63	UC500 PC63	PC63	UC500 PC63	PC63	UC500 PC63

POSITIONAL ACCURACY						
	HD3015	HDL-3015	HD-4020	HDL-4020	HD-6020	HDL-6020
Positional Accuracy (mm)	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05
Repeatability (mm)	± 0,05	± 0,02	± 0,05	± 0,02	± 0,05	± 0,02
	HDF-3015	HDFL-3015	HDF-4020	HDFL-4020	HDF-6020	HDFL-6020
Positional Accuracy (mm)	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05	± 0,05
Repeatability (mm)	± 0,05	± 0,02	± 0,05	± 0,02	± 0,05	± 0,02

WAVE DIMENSION		
	HD SERIES	HD-F SERIES
Wavelength (nm)	1060	1070 - 1080

EQUIPMENTS				
ITEM	HD	HD-L	HDF	HDF-L
Control unit SINUMERIK 840D / 500 MB	s	s	s	s
USB 2.0	s	s	s	s
TFT colour screen	s	s	s	s
RJ45 network connection	s	s	s	s
Network connection incl. installation	s	s	s	s
"Cutting head with Full diagnostic,	s	s	s	s
5" lens cartidge	s	s	s	s
7.5" lens cartridge	s	s	o	o
FlyCut	s	s	s	s
Shuttle table (Automatic palette change system)	s	s	s	s
Sheet-Check (Autom.sheet position and dimension sensing system)	s	s	s	s
Positioning laser diode	s	s	s	s
Central lubrication	s	s	s	s
Conveyor for small parts / slug	s	s	s	s
Slag car under pallet changer	o	o	o	o
External Cad/Cam Software with Autonesting	s	s	s	s
Machine up to 43°C ambient temperature	s	s	s	s
Illumination for working area	s	s	s	s
Safety devices	s	s	s	s
Beam tube ventilation with Air	s	s	-	-
Air cutting	s	s	s	s
Premix laser gas	s	s	-	-
Exhaust air fitting at compact dust extractor	s	s	s	s
Training support for Cad/Cam programming	s	s	s	s
Operation training	s	s	s	s
Air conditon for electrical panel	s	s	s	s
Web cam for service	s	s	s	s
CE Light barriers for shuttle table	o	o	o	o
Motorized lens control unit, (Autofocus)	o	o	o	o
Tank heating cooling device Laser (if ambient temp ≤ 17°C)	x	x	x	x
Add.Laser cutting head	o	o	o	o
Add. External Software Dongle	o	o	o	o
Clamps (5 pcs.) (not with auxiliary pallets)	o	o	o	o
Transformer 220,440,575V	o	o	o	o
Spray device	o	o	o	o
Special paint for machine	o	o	o	o
Laser Service Set	x	x	x	x
Nozzle cleaning brush	o	x	o	x
Auxiliary pallet slats in MS or SS	o	o	o	o

s : Standart
o : Optional
- : Not available