

The Winning Force

**DURMA**

# FIBER LASER

## Technologies

HD-F / HD-FL  
HD-FS  
HDF-BH  
HD-TC



- Easy to Use
- High Quality Cutting
- Low Energy Consumption
- Faster
- Efficient
- Winning
- Ergonomic



# **DURMA** The Winning Force





As a total supplier for sheet metal manufacturing with almost 60 years of experience, Durma understands and recognizes the challenges, requirements and expectations of the industry. We strive to satisfy the ever higher demands of our customers by continuously improving our products and processes while researching and implementing the latest technologies.

In our three production plants with a total of 150.000 m<sup>2</sup>, we dedicate 1,000 employees to delivering high quality manufacturing solutions at the best performance-to-price ratio in the market.

From the innovations developed at our Research & Development Center to the technical support given by our worldwide distributors, we all have one common mission: to be your preferred partner.

Present Durmazlar machines with **DURMA** name to the world.



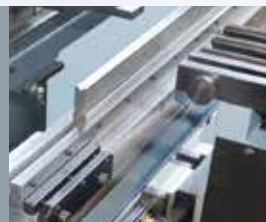
1

High technology,  
modern production  
lines



2

Top quality  
components



3

High quality  
machines designed  
in R&D Centre

# The Winning Force

Low operating cost and energy consumption

Globally recognized high performance components

Precise cuts and high durability

High profit margin





## Fiber Lasers provide innovative solutions

- Perfect results on variety of material
- Efficient and precise cuts on thick and thin material
- Low investment and operating costs
- Modern and compact desing
- Fast service with remote control



# Fiber Laser Technologies

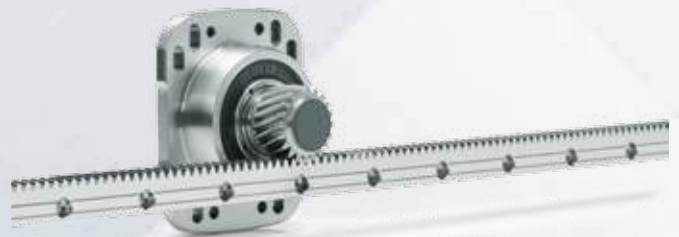
Fiber lasers outshine with its fast cutting and energy efficiency abilities when especially its compared to CO<sub>2</sub> lasers. Easy use, maintenance and service has been achieved by the high technology of Fiber Lasers. Globally recognized efficient components used in *DURMA* Fiber Lasers add value to your company.

Rack & Pinion and Linear Motor Motion technologies allows us achieve 3G acceleration. We always strive to serve quality, performance and efficiency to our clients.

*DURMA* Fiber Laser is unrivaled with its rigid body structure, perfect filtration system, compact design, efficiency and user friendliness.

## Rack and Pinion Motion System (HD-F Series)

Axes motionis achieved by rack and pinion design. There are not any intermediate load transmitting elements between the motor and the pinion which otherwise could cause precision losses. High precision two-day, hardened helical racks with low clearance make it possible to achieved very high acceleration (synchronized 28 m/ s<sup>2</sup>.), speed (synchronized 170 m/min.) and accuracy (0,05 mm) values.



## Linear Motor Motion System (HD-FL Series)

Moving axes are driven by high velocity and acceleration linear motors which are the latest deve-lopment in linear technology. These motors make it possible to achieve very high acceleration (synchronized 35 m/ s<sup>2</sup>.), speed (synchronized 226 m/min.) and accuracy (0,03 mm) values.



# Fiber Laser Power Source

Resonator	1.0 kW	2.0 kW	3.0 kW	4.0 kW	6.0 kW	8.0 kW
Product designation	YLS-1000	YLS-2000	YLS-3000	YLS-4000	YLS-6000	YLS-8000
Available operation modes	CW, QCW, SM					
Polarization	Random					
Available output power	100-1000 w	200-2000 w	300-3000 w	400-4000 w	600-6000 w	800-8000 w
Emission wavelength	1070 -1080nm					
Feed fiber diameter	Available in single mode, 50, 100, 200, 300µm					
Ancillary Options	Options Available: Internal coupler, Internal 1x2 beam switch, Internal 50:50 beam splitter, External 1x4 or 1x6 beam switch					
Interface	Standard: LaserNet, Digital I/O, Analog Control Additional Options: DeviceNet or Profibus					

Material (Cutting Capacity)	YLS 1000 (1kW)	YLS 2000 (2kW)	YLS 3000 (3kW)	YLS 4000 (4kW)	YLS 6000 (6kW)	YLS 8000 (8kW)
Mild Steel	8 mm	12 mm	16 mm	20 mm	25 mm	30 mm
Stainless Steel	4 mm	6 mm	8 mm	10 mm	12 mm	14 mm
Aluminium (AlMg3)	4 mm	6 mm	8 mm	12 mm	15 mm	18 mm

\*Standard cutting parameters.

## Low Operating Costs

- Low energy consumption
- Low cost per component
- Optimised focal distance for all thickness values
- Maintenance free operation
- Compact design, fast installation
- Rigid body structure, high durability

# Laser Cutting Head

The ProCutter offers a complete solution for the laser-based fusion cutting of thin and medium material thickness in the wavelength range around 1µm. In flame cutting, greater material thicknesses can also be processed while maintaining high standards of quality. The potential of the cutting head is optimally converted into productivity, especially in the case of flatbed and pipe cutting machines, where innovative technologies are combined with proven concepts, providing the best possible performance, range of flexibility and degree of reliability.

The combination of proven technology and optimized design enables processing with up to 6 kW laser power in the near-infrared range - and gives you reduced installation space and weight at the same time. A robust and dustproof housing ensures a long service life and allows external linear drive accelerations up to 4.5 g, enabling an efficient cutting operation. High-quality optics and the highest standards of quality in manufacturing and assembly ensure optimum laser beam guidance and shaping with high focal position stability, even at high laser power.

## Efficient

- Lightweight and slim design created for fast acceleration and cutting speed
- Motorized focus position adjustment for automatic machine setup and piercing work
- Drift-free, fast-reacting distance measurement
- Permanent protective window monitoring
- Values displayed via bluetooth

## Flexible

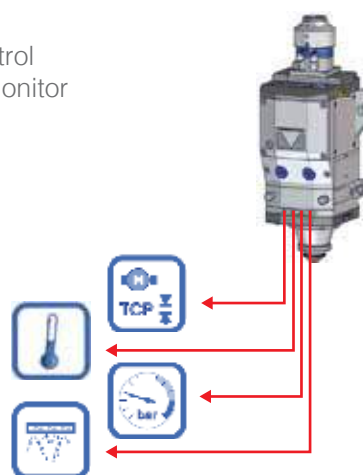
- Selectable optical configuration, optimized for the range of applications
- Straight and angled design versions adapted to the machine concept
- Zoom lens for automatically adjusting the focus diameter
- Motorized or manual focal position adjustment

## User Friendly

- Completely dustproof beam path with protective windows
- LED operating status display
- Display of operating parameters via Bluetooth and interface for machine control
- Monitoring of the piercing process and detection of cutting breaks with CutMonitor



Apps for iOS and Android gadgets





Dynamic laser cutting machines require smart cutting heads for its operations. ProCutter offers a fully-integrated sensor system that monitors the cutting process and provides the relevant information to the user. The ProCutter ensures that each component can be re-manufactured at a high standard of quality.



Focal Length Adjustment:  
Manual or motorized via machine control



Focusing Lens:  
High-quality optics | X/Y adjustment | no repositioning | additional protective glass below focusing lens



Protective Glass Cartridge: protecting the optics against dirt and fume | monitoring of attendance and contamination | tool free, easy change



LED Bar:  
For immediate display of the current system state (pressure, temperature, drive, contamination)



Distance Measurement:  
Fast, exact, drift-free distance measurement at any operating temperatures, even at high accelerations

External Interface: Output of all sensor data as an analog value, readout the values via Bluetooth®, set of thresholds

Protective Glass of Collimation Unit



CutMonitor: Monitoring of piercing process and detection of cut interruption



Mounting of the head:  
Easy accessibility from the front



### Higher Acceleration on Z-Axis

Lighter and strongly rigid bridge does not allow it to vibrate at high speed and obtain high accurate cutting geometry.

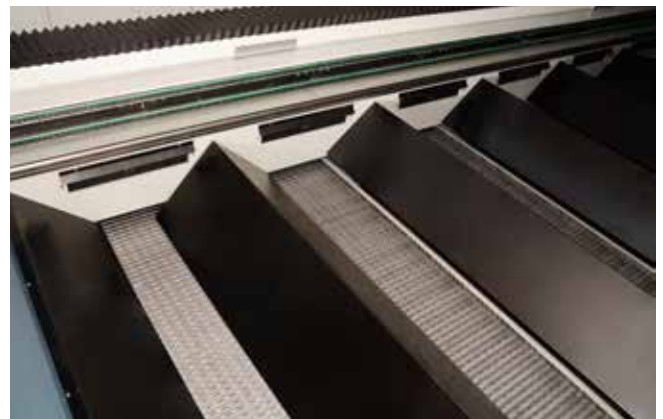
Equipped with world's favorite head "Precitec".

During the construction of the bridge all kind of deformations analyzed and prevented.



### Multi Chambers High Efficient Suction System

With the multi chambers high efficient system offers the ability to make an equal amount of suction during the cutting operation of the whole machine cutting area.



### Shuttle Table

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.

The available shuttle tables on all machine models are fully electric and maintenance free: there are no hydraulic oils to handle and the table changes take place fast, smooth and energy-efficient.



### Easy Access Side Door

There is standart side door to access the back part of the cutting sheet and correct the cutting parts positions during the operation. This side door also used by the service team of the laser machine when the maintenance will be done.



### Scrap Conveyor

The optional lateral automatic scrap conveyors allow the removal of scrap pieces from the working area without the need to interrupt the cutting process. The sideways operation of the short conveyors allow for easy maintenance and trouble-free running.



# Control Panel

The Sinumerik 840DSL CNC controller is an efficient 64-bit microprocessor system with an integrated PC. The controller has a Durma operator interface and a complete cutting database for all standard cutting applications. The database includes the cutting parameters for standard materials (steel, stainless steel, aluminium) for common thickness ranges. Based on these reference values the operator can easily improve the cutting quality for different types of materials.

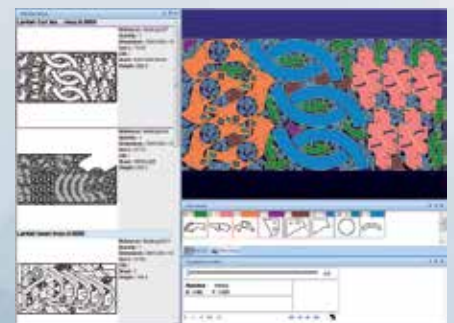
- The laser power is controlled as a function of the path, velocity, time and travel
- 6 MB expanded user memory
- External memory option



## CAD/CAM Software

Lantek - Metalix

- Advanced optimisation: tools optimisation
- Fast tool way collision protection. Toolway optimisation to prevent damage from possible deformed material
- Writings supported by your operating system can be applied directly on the material to be cut
- Cutting direction, clockwise or opposite is supported
- Advanced corner applications provide perfect corners and soft cutting. Fillets, cooling, slowing down, circulation
- Shared Cuttings: This function is especially useful for thick plates and reduces the need of marking holes during cutting
- Automatic entry point
- Fully automatic cutting
- Z-Axis control





# "Experience The Difference of DURMA HD-FL"

## Chiller

*DURMA* Laser power source and cutting head is chilled with specially designed, low energy consuming, high efficient chiller unit.

## Filter

Used to eliminate dust, particles and harmful fumes, generated during cutting. It is fully automatic dust collecting shake filter.

Shuttle Table

Rigid Body



Scrap Conveyor

Operator

Multi Chamber Suction System

Control Unit

Ergonomic Work Space For Operator

Protective Measures



# HD-F / HD-FL

## FIBER LAZER

	3015	4020	6020	8020	12020	
X Axis	3060	4100	6150	8200	12200	mm
Y Axis	1530	2100	2100	2100	2100	mm
Z Axis	160	185	185	185	185	mm
Max. Sheet Size	3048 x 1524	4064x2032	6096x2032	8128x2032	12192x2032	mm
Max. Sheet Weight	200	200	200	200	200	Kg/m <sup>2</sup>

	Rack&Pinion HD-F	Linear System HD-FL	
X Axis	120	160	m/min.
Y Axis	120	160	m/min.
Synchronous	170	226	m/min.
Acceleration	20	25	m/s <sup>2</sup>
Positional Accuracy	±0,05	±0,03	mm
Repeatability	±0,05	±0,03	mm



User  
Friendly

Ergonomic

Efficient

Fast

Reliable  
Brand

**DURMA**

HDFL3015

**DURMA**



# HD-FS FIBER LASER

	HDFS 3015		
X Axis	3100		mm
Y Axis	1550		mm
Z Axis	125		mm
Max. Sheet Size	3048x1524		mm
Max. Sheet Weight	200		Kg/m <sup>2</sup>
	Rack&Pinion		
X Axis	90		m/min.
Y Axis	90		m/min.
Synchronous	127		m/min.
Acceleration	10		m/s <sup>2</sup>
Positional Accuracy	±0,05		mm
Repeatability	±0,05		mm



## Why HD-FS Smart?

HD-FS Smart lasers are designed like HD-F series using same components. It is specifically designed for businesses that care about floor space. Loading and Unloading requires less effort in situations where shuttle table is not necessary.

HD-FS Smart Fiber Lasers make differences with speed, high quality components, efficiency and industrial design.

**User  
Friendly**

**Ergonomic**

**Efficient**

**Fast**

**Reliable  
Brand**



# HD-F / HD-FL BH

Pipe and Profile Cutting



Pipe and tube profile rotation system  
Pipe diameter capacity of  $\text{Ø}30$  up to  $\text{Ø}400$   
Square profile capacity of  $250 \times 250$   
Fume extraction connection  
Adjustable support units for pipe and tube profile

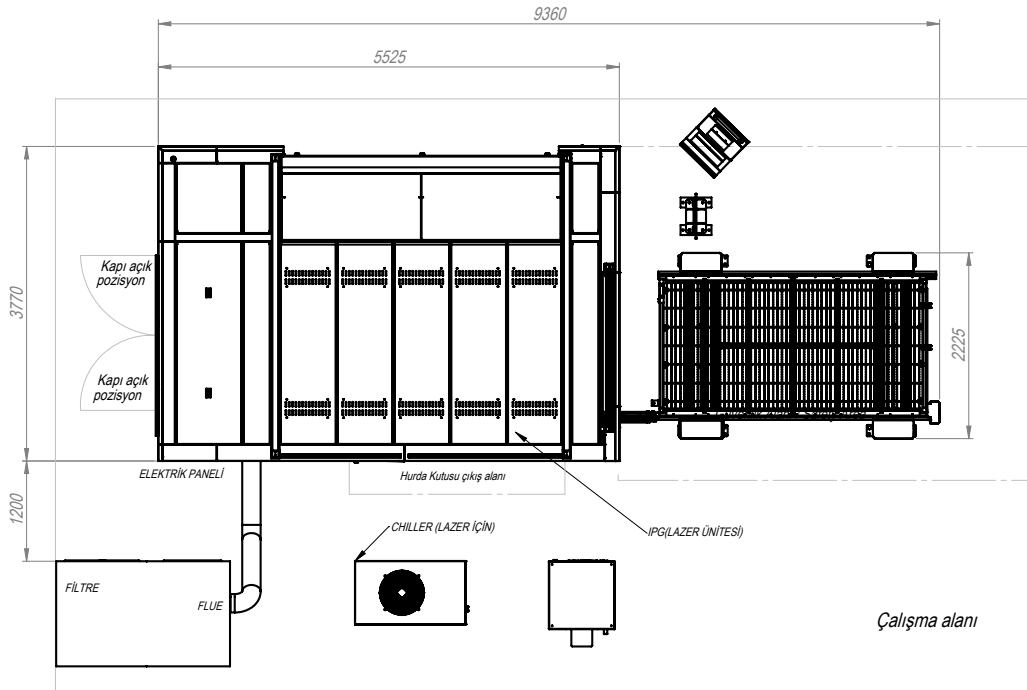


Shapely pipe cutting  
Shapely cutting on all faces of tube profile.



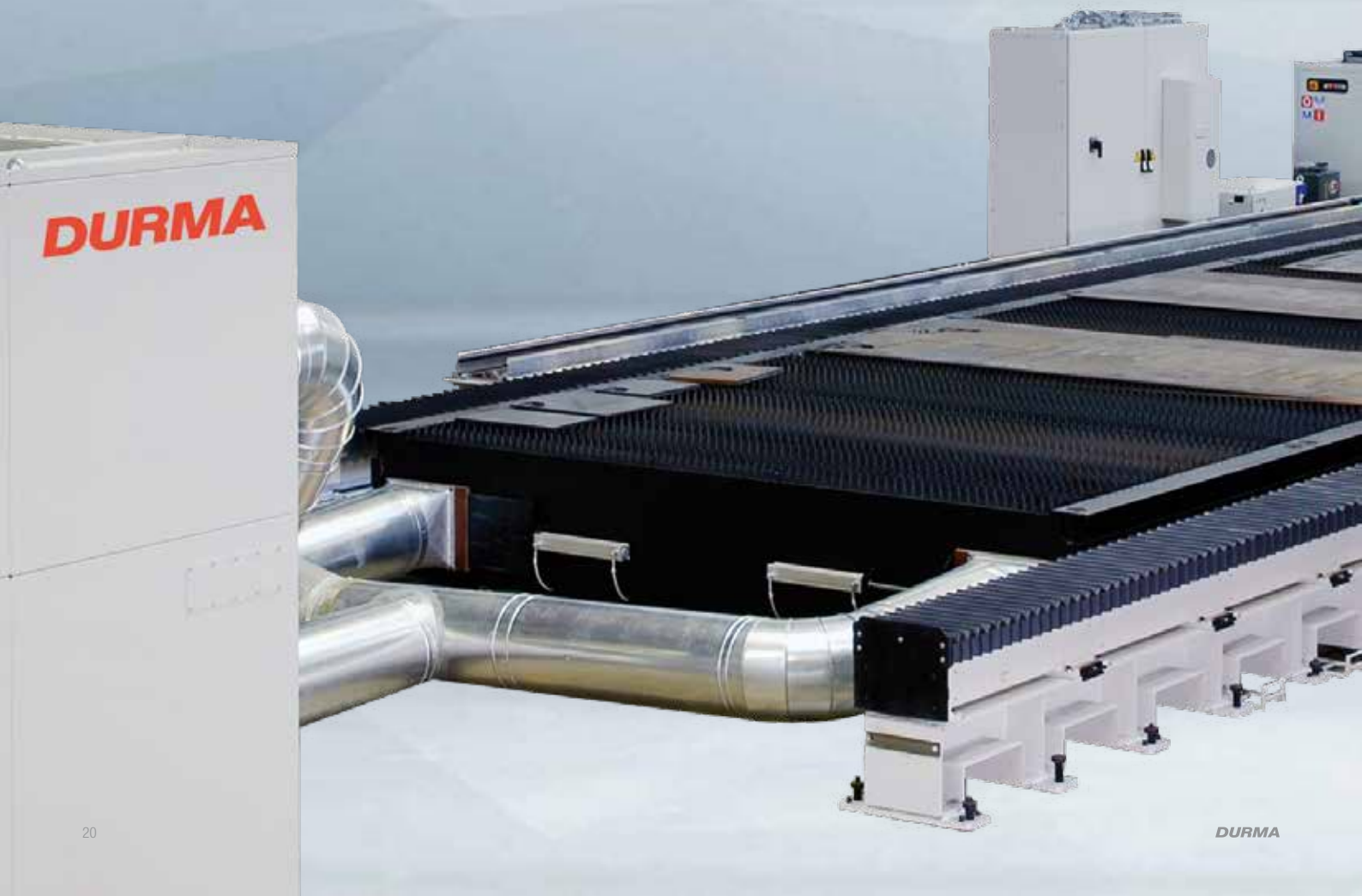
### Laser Pipe Cutting Technical Specifications

Cutting length	mm	3000mm ( through chuck 6.000 mm )
Max pipe loading	Kg/m	120
Laser power source	IPG	1-8 kW
Working diameter	Min/Max	Ø30 / Ø400
Max pipe thickness	mm	Up to 12 mm depending on material and laser power
Square profile cutting	Max	250x250 mm
Maximum positioning speed X/Y	m/min	100
Positioning accuracy	mm	+/-0.2
Repeatability	mm	0.1
Materials		Mild steel/Stainless steel/Aluminum/Copper/Brass
Cutting head	-	Precitec
Dust evacuation and filter	-	Available
Axis motors	-	Siemens
Electrical equipments	-	Siemens or Telemecanique
CNC control	-	Siemens
Software	-	Lantek Flex3D Tube
Network Card	-	Optional



# SPECIAL APPLICATIONS

## Turkey's Biggest and Fastest Laser



# HDF 20030

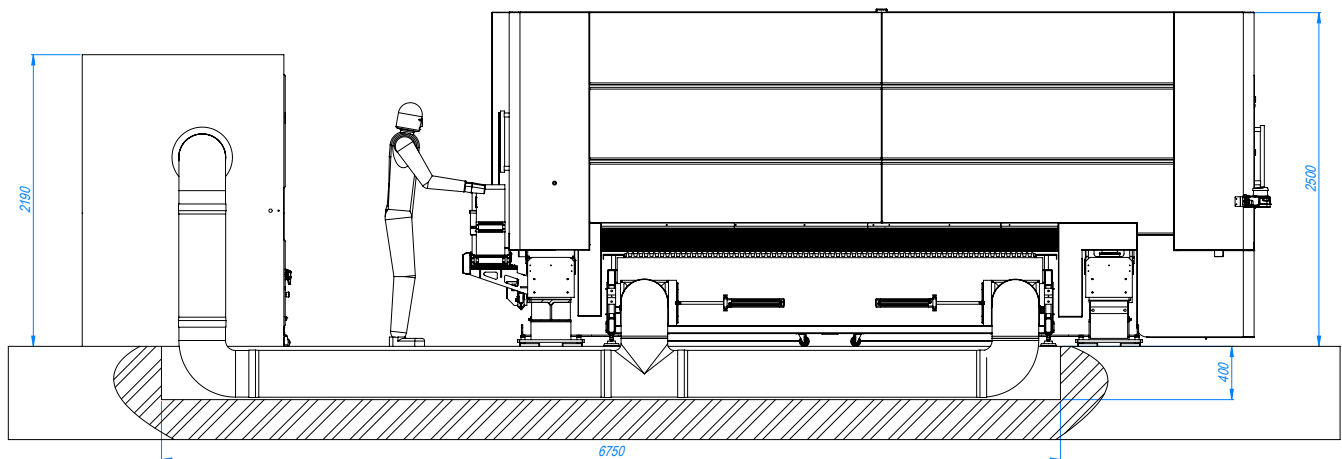
Cutting Length            20.000 mm  
Cutting Width             3.000 mm

Power Source              6 kW



## HD-F 20030 Technical Specifications

Y Axis maximum speed	100 mm/min
U Axis maximum speed	35 mm/min
X axis maximum speed	100 mm/min
Y axis maximum acceleration	1 g
U axis maximum acceleration	0.1g
X axis maximum acceleration	1 g
Positioning accuracy 15 mt. x 3 mt.	0.05 mm/1.5m
Positioning accuracy 15 mt. x 3 mt.	0.05 mm
Y axis moving bulk	50 kg.
U axis moving bulk	3500 kg.
X axis moving bulk	450 kg.



# Automatic Sheet Loading & Unloading Unit

Automatic solutions for your business

Manual Loading and Unloading

Mini - Server Loading and Unloading

Tower- Server Loading and Unloading





# HD-TC

## LASER TUBE CUTTING

Laser tube cutting is specifically designed for businesses that care about high quality profile and tube cutting. Full automatic Loading and Unloading requires less effort and time save for the operator.

HD-TC Lasers make differences with speed, high quality components, efficiency and industrial design.



**User  
Friendly**

**Ergonomic**

**Efficient**

**Fast**

**Reliable  
Brand**



## Control Panel

The Sinumerik 840D CNC controller is an efficient 32-bit microprocessor system with an integrated PC. The controller has a Durma operator interface and a complete cutting database for all standard pipe cutting applications. The database includes the cutting parameters for standard tubes and profiles (steel, stainless steel, aluminium) for common thickness ranges. Based on these reference values the operator can easily improve the cutting quality for different types of materials.



## Rack and Pinion Motion System (HD-F Series)

Axes motions achieved by rack and pinion design. There are low backlash gears between the motor and the pinion which otherwise could cause precision losses.

High precision two-day, hardened helical racks with low clearance make it possible to achieved very high acceleration ( $10 \text{ m/s}^2$ ), speed (100 m/min.) and accuracy (0,05 mm) values.



Resonator	1.0 kW	2.0 kW	3.0 kW
Product Designation	YLS-1000	YLS-2000	YLS-3000
Available operation modes	CW, QCW, SM		
Polarization	Random		
Available Output Power	100-1000 w	200-2000 w	300-3000 w
Emission Wavelength	1070 -1080nm		
Feed fiber diameter	Single Mod, 50, 100, 200, 300µm		
Ancillary Options	Options Available: Internal coupler, Internal 1x2 beam switch, Internal 50:50 beam splitter, External 1x4 or 1x6 beam switch		
Interface	Standart: LaserNet, Dijital I/O, Analog Control / Option: DeviceNet or Profibus		

Material	YLS 1000 (1kW)	YLS 2000 (2kW)	YLS 3000 (3kW)
Mildsteel	4 mm	8 mm	10 mm
Stainless	2 mm	4 mm	6 mm
Aluminium (AlMg3)	3 mm	6 mm	8 mm

## Low Operating Costs

- Low energy consumption
- Low cost per component
- Optimised focal distance for all thickness values
- Maintenance free operation
- Compact design, fast installation
- Rigid body structure, high durability

## CAD/CAM Software

- The laser power is controlled as a function of the path, velocity, time and travel
- Close-loop working
- Optional functions
- 6 MB expanded user memory, external memory option
- Advanced optimisation: tools optimisation
- Fast tool way collision protection. Toolway optimisation to prevent damage from possible deformed material
- Writings supported by your operating system can be applied directly on the material to be cut
- Cutting direction, clockwise or opposite is supported
- Advanced corner applications provide perfect corners and soft cutting. Fillets, cooling, slowing down, circulation
- Shared Cuttings: This function is especially useful for thick plates and reduces the need of marking holes during cutting
- Automatic entry point
- Fully automatic cutting
- Z-Axis control



## Chiller

The cooler is a device that provides cooling of the laser power source, optics in the cutting head. It has a water-based cooling system.

Thanks to the dual circuit system, cooling water is sent at different temperatures, which are needed for optics and laser power supply.



## Filter

It provides a healthy working environment by absorbing smoke, dust and small particles formed during cutting. The vibrating dust collection filter is fully automatic. It runs automatically when cutting is started. Filter cartridges are a compact unit with integrated fan motor assembly and jet-pulse (back blow) cleaning system.



Low noise level



Easy access to filters and dust bins.

### Auto Loading System

Profiles taken from bundle one by one to the chain, system moves the profile up and grippers clamps the profile and move it to the chuck axis and chuck holds the profile.



### Tube Transfer System

Tube transfer system ensures that tubes are taken to cutting line with right position.



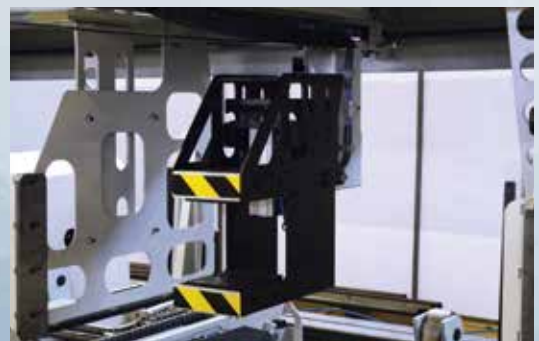
### Chain Transfer System

Chain transfer system is used with the principle of loading stainless steel aluminium brass etc. tubes without scratching.



### Automatic Loading Gripper System

Tubes which come from loading unit are transferred to cutting zone and centered automatically.





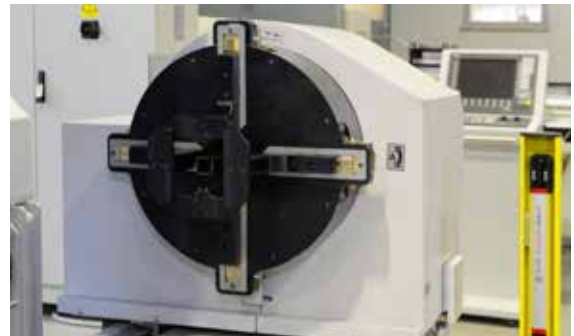
## Measuring Profile Length

With servo motor on it measures profile length and send the data to the system.



## Hydraulic Profile Holder

It can hold variety of profiles by 4 clamps working independently as 2+2. Adjust hydraulic pressure automatically according to profile material thickness.



## Z Axis

Z axis allows faster cutting process with its high dynamic performance.

Laser head with automatic focusing eliminates time loss in the preparation phase before cutting.



## Profile Support system

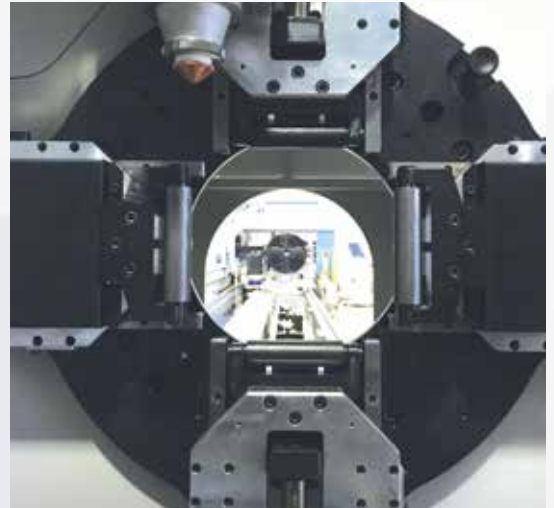
4 pieces support arms with servo motors obtain the loading to be the same level with hydraulic chuck.

As hydraulic chuck move forward the profile at X1 axis, supports arms close down one by one to open the front of hydraulic chuck.



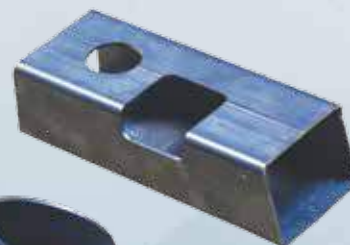
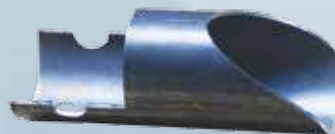
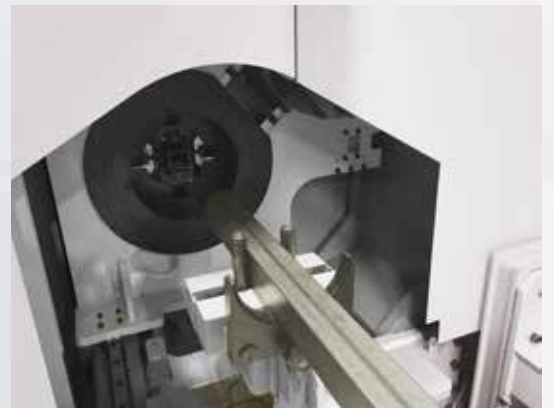
## Centering Chuck

To get cutting precision, centers the profile as close as possible to cutting head. Driver turn synchronized with chuck. 4 independent clamps come to position automatically before profile comes.



## Tube Centering Mechanism

Tubes centering mechanism which is on the first support takes tubes to the chuck axis.



## Automatic Unloading System

Unloading unit support mechanism height controlled by servo motor and keep supporting profile during cutting.

- 4 m and 6 m options.
- Front and back side options.
- Unloading table can remove the cut tubes by taking out of cabin with its in-out movement.



Unloading Unit (4 m Front)



For smaller parts than 800 mm, unloading table stays in outside and another small unloading system unloads the parts.



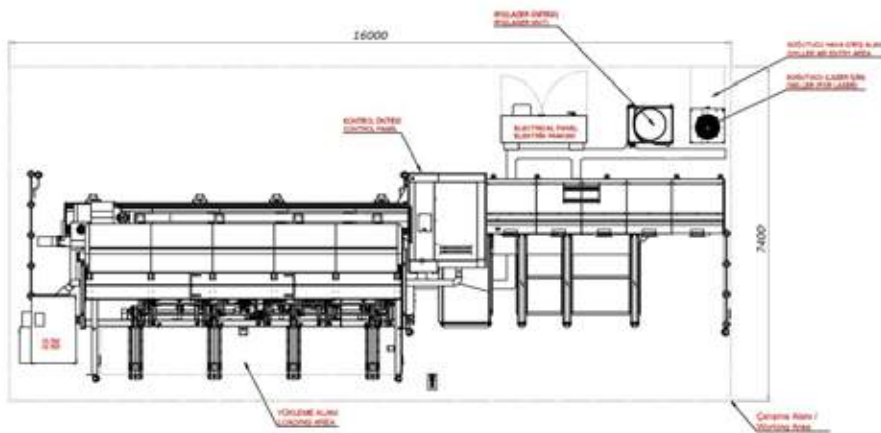
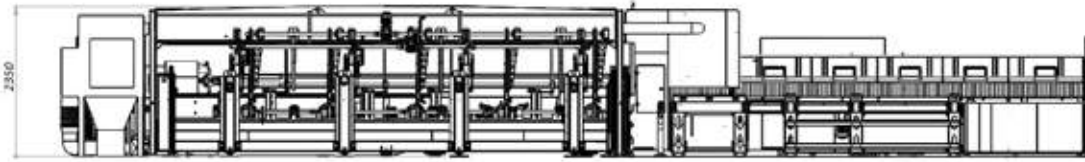
For longer parts than 800 mm, unloading table enters the cabin and unloads the parts.

Tube-Cutting Technical Specifications	
Max Diameter (mm)	Ø170
Max Square Tube Dimension(mm)	120x120
Max Rectangular Tube Dimension (mm)	150x100
Min. Diameter (mm)	Ø20 (Ø12 Option)
Max. Tube Length (mm)	6500
Min. Tube Length (for automatic loading)	3000
Max. Tube Weight (kg/m)	37,5
Max. Material Thickness (mm) (for 2 kW )	8
Min. Material Thickness(mm)	0,8
Automatic Loading	Yes
Automatic Unloading	Yes
Cutting Head	2D
Amount of Chuck	1
Centering Chuck	Yes
Last Cut Tube Length (mm)	185
Velocity of Driver Chuck (m/dk.)	90
Acceleration of Driver Chuck (m/s <sup>2</sup> )	10
Accuracy (mm)	±0,20
Positioning Accuracy (mm)	±0,05
Tube Types	Pipe, Square, Rectangular, Eliptic H, C, U, L

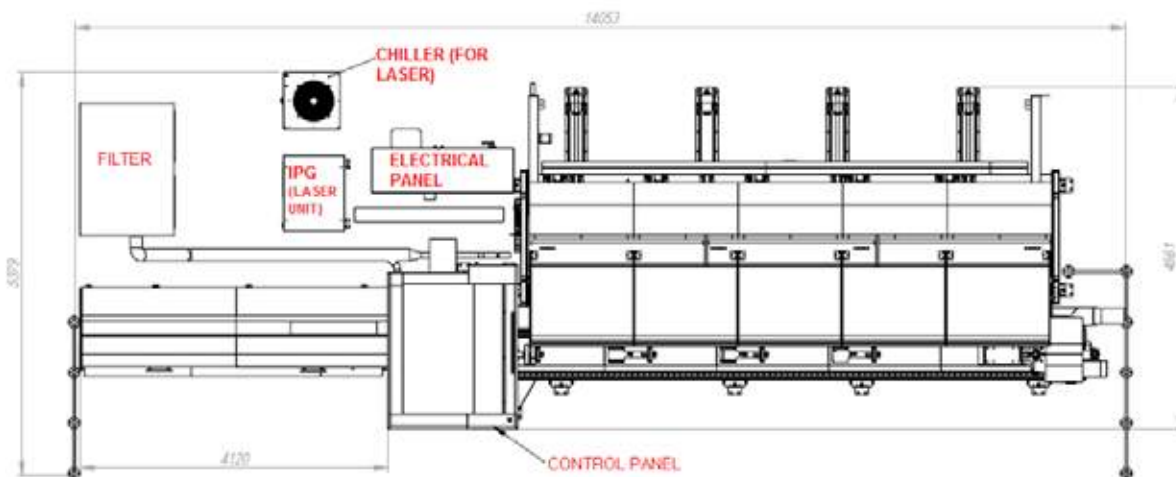


Tubes up to 6 m of length are removed by automatic unloading system with conveyor.

Layout (6 m Unloading System With Conveyor)



Layout(4 m Unloading System)





# SPECIAL APPLICATIONS



Industrial Machines



Steel Service Center



Damper Trailer



Lighting and Energy Poles

# Fast on Service and Spare Parts

*DURMA* provides the best level of service and spare parts with qualified personnel and spare parts in stock. Our experienced and professional service personnel are always ready at your service. Our professional training and application enriched courses will give you an advantage to use our machinery.



Consultancy



Spare Parts



R&D Center



After Sales Service



Service Agreements



Software

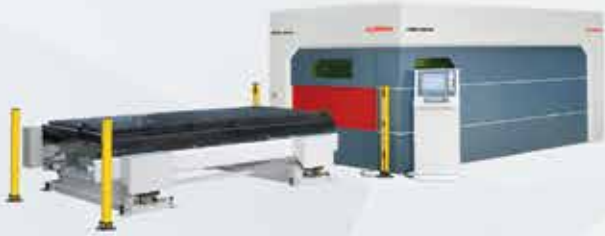


Training



Flexible Solution

**DURMA**



FIBER LASER



PUNCH



PLASMA



L ANGLE PROCESSING CENTER



IRON WORKER



POWER OPERATED SHEAR





PRESS BRAKE



VARIABLE RAKE SHEAR



ROLL BENDING



PROFILE BENDING



BANDSAW



CORNER NOTCHER







# DURMA

Today, Tomorrow and Forever With You...

## FIBER LASER Technologies

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