

# Laser Cutting Machines

## ACE Laser PRO 4020 20R

SKU : 141114

ACE-Laser PRO series machines feature a cutting system that sets new standards for price and performance. They have been designed to optimize cutting processes and provide superior parts quality. These machines guarantee high productivity, safety, and reliability. Extensive standard equipment ensures efficiency and versatility. These characteristics make the ACE-Laser the first choice for industrial laser cutting applications - from complex workpieces with lot size 1 to large-scale series productions in the electronics, aerospace or automobile industries.

- High cutting power with 12 to 30 kW laser sources
- Robust design with premium components
- Complete cutting package with filtered vacuum system
- Comprehensive KNUTH Service: setup, commissioning, and maintenance



### TECHNICAL SPECS

#### WORKING AREA

Table dimensions	4000 mm x 2000 mm
Workpiece weight (max.)	2500 kg
Axis acceleration X- / Y- axis	15 m/s <sup>2</sup>
Axis acceleration Z axis	15 m/s <sup>2</sup>

#### TRAVELS

Travel X-axis	2050 mm
Travel Y-axis	4100 mm
Travel Z-axis	370 mm

#### RAPID FEED

Rapid feed X-/ Y-axis	180 m/min
Z-axis rapid feed	35 m/min
Change time at cutting table	20 sec - 23 sec

#### ACCURACIES

Positioning accuracy	0.03 mm/m
Repeatability	0.03 mm/m

#### LASER

Fiber laser	20000 W
Shaft length	1,08 ± 0,5% µm
Beam power max.	20000 W
Supply voltage	AC 380V ± 10%
Cutting capacity in structural steel	40 mm
Cutting capacity in stainless steel	30 mm
Cutting capacity in aluminum	25 mm

#### DRIVE CAPACITY

Machine drive capacity X- axis	2.9 kW
Machine drive capacity Y- axis	1.3 kW
Machine drive capacity Z- axis	0.75 kW

#### MEASURES AND WEIGHTS

Overall dimensions (length x width x height)	11.54 m x 4.1 m x 2.52 m
Weight	9288 kg



*An automatic changer table system minimizes down-times by allowing simultaneous loading and unloading of the table during the cutting process*



*Well-organized design and careful selection of components guarantees consistent trouble-free function*



*Smart cutter heads of the BLT 6 series also were custom designed for high-power laser cutting systems with max. 40 kW power*



*A completely new beam path design with optimized lenses and dual dust collector ensures reliable cutting performance as well as easy setup and maintenance*

## PRODUCT DETAILS

- ACE Laser Pro laser cutter systems have been designed for the use of high-power laser sources and for working with high workpiece weights
- Work area dimensions can be selected from 3000 mm x 1500 mm to 6000 mm x 2000 mm
- The machine frame is made of an thermally treated weldment for a tension-free construction - this ensures long-term repeatability for all cut parts
- The precision linear guides require minimal maintenance and are designed for long-lasting precision and high cutting speeds
- High-precision rack-and-pinion gears on the X and Y axis ensure superior and reliable positioning accuracy
- Powerful servo motors on all axes ensure high dynamics, i. e. fast response to control signals
- This allows precise adaptation of the feed for the respective cutting conditions
- To ensure operator and environment safety the cutting system is totally enclosed, and a custom safety glass window provides a clear view to observe the cutting process inside the machine
- An automatic changer table system minimizes down-times by allowing simultaneous loading and unloading of the table during the cutting process
- Perpendicularity and squareness tolerance for laser cutting acc. to DIN EN ISO 9013-1

### Control

- The FSCUT8000 CNC control is based on a modern EtherCAT bus system that was developed for high-power lasers above 8 kW
- It is very user-friendly and provides extensive functions
- FSCUT is one of the leading EtherCAT controls for laser cutting systems in the market
- HypCut is a customized software for high-power laser cutters and allows smart production
- It supports planning and scheduling to simplify the system's production management

### Cutting head

- Smart cutter heads of the BLT 6 series also were custom designed for high-power laser cutting systems with max. 40 kW power
- A completely new beam path design with optimized lenses and dual dust collector ensures reliable cutting performance as well as easy setup and maintenance
- The Smart-Piercing and Auto-Recut functions fulfill the strict requirements for air-assisted and N2-assisted high-power cutting and significantly improve efficiency and yield
- Auto-Recut: A real-time cut sensor ensures constant cutting performance by detecting uncut path sections and automatically recutting them
- Smart piercing: Real-time monitoring of the piercing process allows immediate start of the cutting process when pierced - eliminates waiting periods for significantly increased efficiency
- Slag-free laser cutting: Laser beam monitoring allows prompt shut off when reaching the contour end, resulting in a virtually slag-free cut.
- Easy maintenance: The modern drawer-type design allows quick replacement of lens guards and lenses
- Lens guard monitoring: An optimized algorithm in the sensor prevents tearing of the lens guard due to contamination

### Height control

- The FSCUT laser cutting system also includes a capacitive height control. Functions like height sensing, segmented and stepped plunge-cutting, detecting and finding workpiece edges, vibration suppression, etc. can be implemented via Ethernet communication
- The latest anti-collision function can effectively prevent tilt collisions in production

### Laser source

- HP series CW multi-module fiber lasers from Raycus come with 4000 W to 40 kW power and feature high electro-optical conversion efficiency, high beam quality, high energy density, wide modulation frequency bandwidth, and superior reliability
- The maintenance-free laser source reduces maintenance and operating cost

## STANDARD EQUIPMENT

Complete system with CNC control (FSCUT8000)

Hypecut CAD/CAM Software  
CypNest offline software  
Ytterbium Faserlaser Raycus  
BOCI BLT 6 generation autofocus cutting head  
Extraction 6000 m<sup>3</sup>  
Laser safety cabin  
Automatic shuttle table system  
Centralised lubrication  
Cooling water cooler  
Aventics proportional valve  
Operator instructions

## OPTIONAL EQUIPMENT

- Oxygen pressure reducer 200 bar/0-20bar infinitely variable, SKU : 254030
- Oxygen pressure reducer 300 bar/0-20bar, SKU : 254032
- Refrigerated compressed air dryers, SKU : 251090