DC Series

High-Power CO_2 Slab Laser

Coherent DC Series high-power CO_2 lasers offer an unmatched combination of economy and reliability for a variety of materials processing tasks, including cutting, welding, and surface treatment. Plus, their far infrared output wavelength makes them compatible with a wide range of materials, including metals, wood, plastics, textiles, paper and carbon fiber reinforced polymers (CFRPs).

These lasers employ a slab discharge design, which is simpler and produces better output characteristics than the fast flow construction traditionally utilized in multi-kilowatt CO_2 lasers. The sealed, slab discharge configuration avoids optics contamination, and eliminates the complexity, cost and reliability issues of blowers for gas recirculation. All this means substantially lower operating costs, greater reliability, longer lifetimes and extended intervals between maintenance.

FEATURES & BENEFITS

- Output power: 1,000 - 8,000 Watts
- Wavelength 10.6 µm
- Minimal gas consumption due to diffusion cooling
- Low service requirements thanks to the robust, low-maintenance design
- Available configurations:
  - Compact Version: laser head and control cabinet in one unit
  - Head/cabinet combination
  - Integration modules

APPLICATIONS

- Cutting
- Welding
- Surface Treatment

COHERENT®
Superior Reliability & Performance

SPECIFICATIONS	DC 010	DC 015	DC 020	DC 025
Nominal Power (W)	1000 W	1500 W	2000 W	2500 W
Power Range (%)	10 - 100			
Laser Beam Quality *ISO 11146, deviation ± 5 %*	K (M^2) = 0.95 (1.05)			
Power Stability (%) *Cooling water* $\Delta T \leq \pm 1$ *K*	± 2			
Pointing Stability (mrad) *ISO 11145*	≤ 0.15			
Pulse Frequency Range	CW, 2 - 5000 Hz			
Beam Diameter (mm)	18 ± 3*		20 ± 3*	
Polarization	linear, 45° to horizontal level			
Wavelength	10.6 µm			
Excitation	RF			
ELECTRICAL RATINGS				
Voltage	3 x 230 /400 V ± 10%, 3 x 255/440 V ±10% or 3 x 277 / 480 V ± 10%; 50/60 Hz; 3 Phases; PE			
Connected Load (kVA)	16	22	35	41
Effective Power at Nominal Power (kW)	15	21	34	39
Max. Current Consumption at 400 V (A)	< 25	< 35	< 51	< 59
Fuses Type NH (A)	50		80	
COOLING				
Recommended Cooling Capacity (kW)	≥ 15	≥ 21	≥ 34	≥ 39
Flow Rate Laser Head (l/h)	≥ 3000	≥ 4000	≥ 4000	≥ 5000
Flow Rate Laser Cabinet (l/h)	≥ 500			
Flow Rate Laser Compact (l/h)	≥ 3500	≥ 4500	≥ 4500	≥ 5500
Temperature Θ (°C)**	20 or 27 (above dew point)			
Temperature Tolerance Range (°C)	±1			
Supply Pressure (hPa)	≤ 6000 (6 bar)			
Back Pressure (hPa)	≤ 1500 (1.5 bar)			
LASER GAS				
Type	Premix-Laser Gas			
Consumption (Nl/h)	< 0.06			
Change Interval (h)	168			
DIMENSIONS & WEIGHTS				
Standard Laser Head (L x W x H) (mm)	1685 x 800 x 850			
Weight (kg)	520		565	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062			
Weight (kg)	575		670	
Compact Laser (L x W x H) (mm)	1880 x 881 x 1863			
Weight (kg)	1310		1380	
ENVIRONMENTAL CONDITIONS				
Ambient Temperature (°C)	5 - 40			
Humidity	dew point below the cooling water temperature			
CUSTOMER INTERFACE				
	Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface			

* Measured in a distance < 10m; please contact COHERENT for detailed data of the beampropagation

** $\frac{\Delta\theta}{\Delta t} \leq 3°/\text{min}$; t >1.5 min

COHERENT

SPECIFICATIONS	DC 030	DC 035	DC 040
Nominal Power (W)	3000	3500	4000
Power Range (%)	10 - 100		
Laser Beam Quality *ISO 11146, deviation ± 5 %*	K (M²) = 0.95 (1.05)		
Power Stability (%) *Cooling water Δ T ≤ ± 1 K*	± 2		
Pointing Stability (mrad) *ISO 11145*	≤ 0.15		
Pulse Frequency Range	CW, 2 - 5000 Hz		
Beam Diameter (mm)	25 mm ± 3*		
Polarization	linear, 45° to horizontal level		
Wavelength	10.6 µm		
Excitation	RF		
ELECTRICAL RATINGS			
Voltage	3 x 230 /400 V ± 10%, 3 x 255/440 V ±10% or 3 x 277 / 480 V ± 10%; 50/60 Hz; 3 Phases; PE		
Connected Load (kVA)	48	56	60
Effective Power at Nominal Power (kW)	46	52	57
Max. Current Consumption at 400 V (A)	< 70	< 81	< 87
Fuses Type NH (A)	100		125
COOLING			
Recommended Cooling Capacity (kW)	≥ 46	≥ 52	≥ 57
Flow Rate Laser Head (l/h)	≥ 5000		
Flow Rate Laser Cabinet (l/h)	≥ 500		
Flow Rate Laser Compact (l/h)	≥ 5500		
Temperature Θ (°C)**	20 or 27 (above dew point)		
Temperature Tolerance Range (°C)	±1		
Supply Pressure (hPa)	≤ 6000 (6 bar)		
Back Pressure (hPa)	≤ 1500 (1.5 bar)		
LASER GAS			
Type	Premix-Laser Gas		
Consumption (Nl/h)	< 0.08		
Change Interval (h)	168		
DIMENSIONS & WEIGHTS			
Standard Laser Head (L x W x H) (mm)	2085 x 850 x 850		
Weight (kg)	approx. 675	approx. 685	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062		
Weight (kg)	approx. 670	approx. 750	
Compact Laser (L x W x H) (mm)	2280 x 976 x 1863		
Weight (kg)	approx. 1610	approx. 1670	
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity	dew point below the cooling water temperature		
CUSTOMER INTERFACE			
	Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface		

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** $\frac{\Delta\theta}{\Delta t}$ ≤ 3°/min; t >1.5 min

COHERENT

SPECIFICATIONS	DC 050	DC 060	DC 080
Nominal Power (W)	5000	6000	8000
Power Range (%)	20 - 100		15 - 100
Laser Beam Quality *ISO 11146, deviation ± 5 %*	K (M²) = 0.95 (1.05)		
Power Stability (%) *Cooling water Δ T ≤ ± 1 K*	± 2		
Pointing Stability (mrad) *ISO 11145*	≤ 0.15		
Pulse Frequency Range	CW, 2 - 100 Hz		
Beam Diameter (mm)	25 mm ± 3*		
Polarization	linear, 45° to horizontal level		
Wavelength	10.6 µm		
Excitation	RF		
ELECTRICAL RATINGS			
Voltage	3 x 230 /400 V ± 10% or 3 x 277 / 480 V ± 10%; 50/60 Hz; 3 Phases; PE;		
Connected Load (kVA)	76	90	107
Effective Power at Nominal Power (kW)	71	85	102
Max. Current Consumption at 400 V (A)	< 110	< 130	< 154
Fuses Type NH (A)	160		200
COOLING			
Recommended Cooling Capacity (kW)	≥ 71	≥ 85	≥ 102
Flow Rate Laser Head (l/h)	≥ 6000	≥ 7500	≥ 9000
Flow Rate Laser Cabinet (l/h)	≥ 800	≥ 800	≥ 1000
Flow Rate Laser Compact (l/h)	≥ 6800	≥ 8300	≥ 10000
Temperature Θ (°C)**	20 or 27 (above dew point)		
Temperature Tolerance Range (°C)	±1		
Supply Pressure (hPa)	≤ 6000 (6 bar)		
Back Pressure (hPa)	≤ 1500 (1.5 bar)		
LASER GAS			
Type	Premix-Laser Gas		
Consumption (Nl/h)	< 0.15	< 0.17	
Change interval (h)	168		
DIMENSIONS & WEIGHTS			
Standard Laser head (L x W x H) (mm)	2350 x 950 x 950	2600 x 950 x 945	
Weight (kg)	approx. 1000	approx. 1100	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062		1500 x 814 x 2062
Weight (kg)	approx. 800		approx. 1160
Compact Laser (L x W x H) (mm)	2520 x 1031 x 1963	2770 x 1031 x 1963	
Weight (kg)	approx. 2250	approx. 2300	approx. 2500
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity	dew point below the cooling water temperature		
CUSTOMER INTERFACE			
	Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface		

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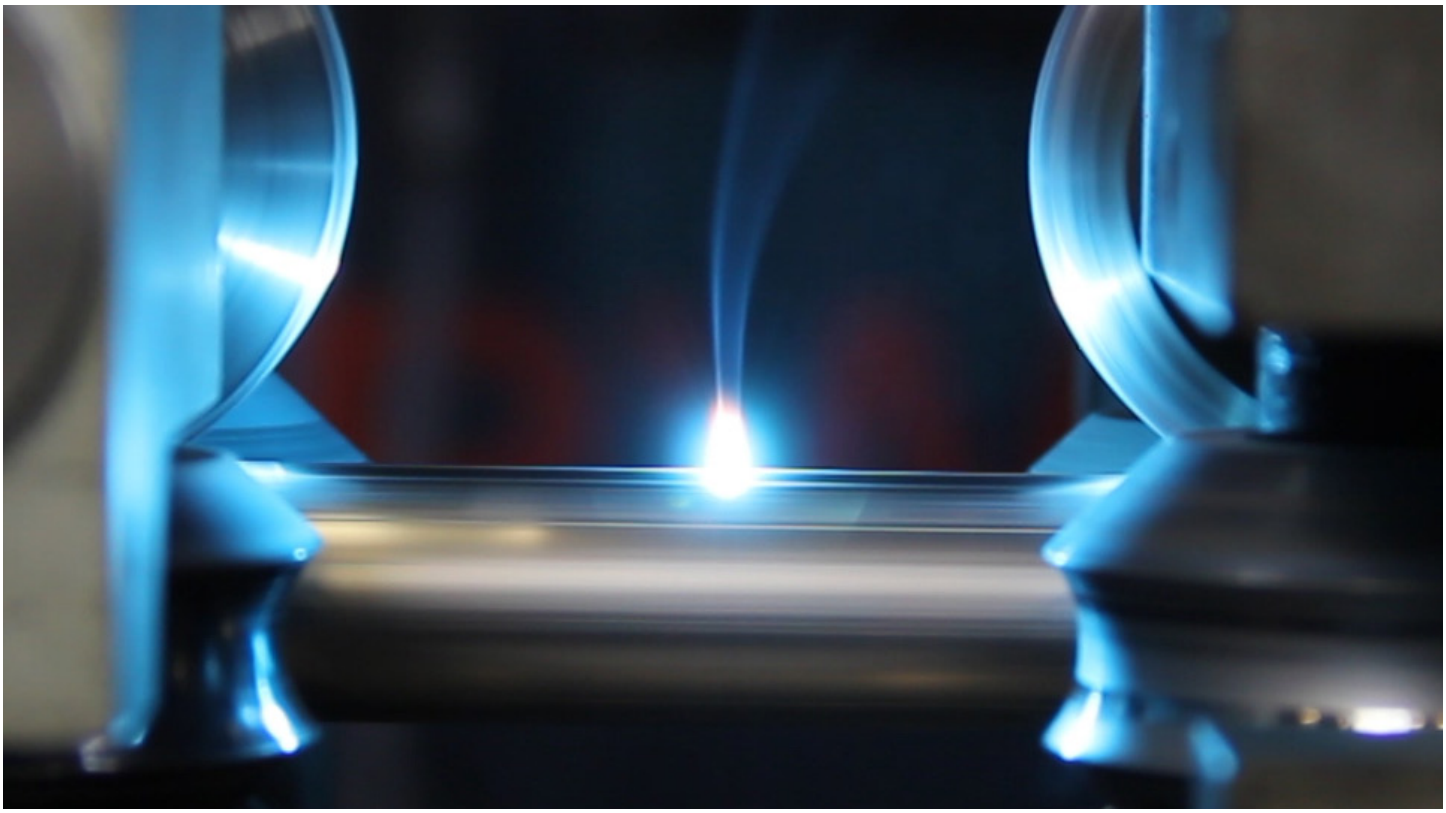
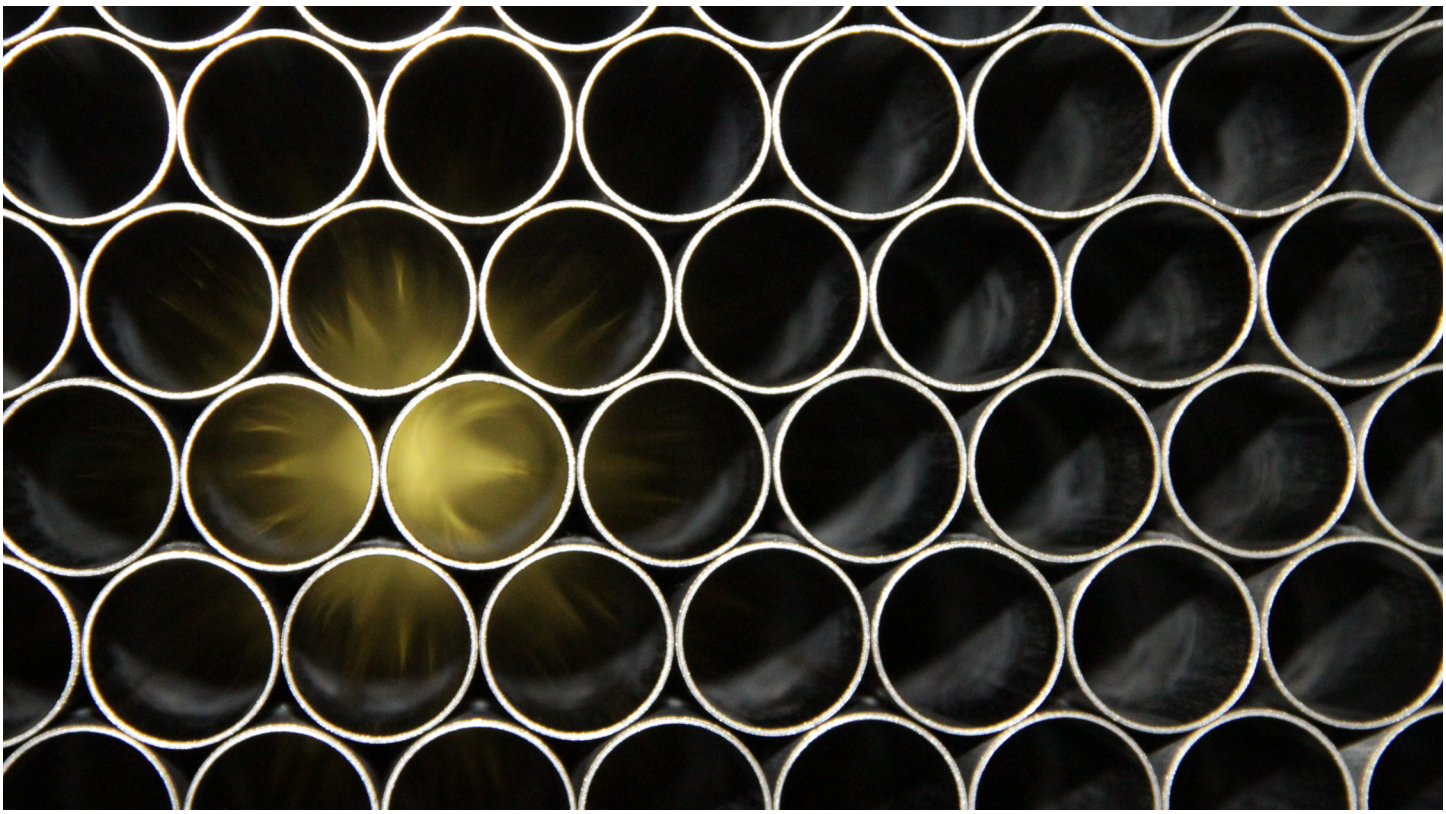
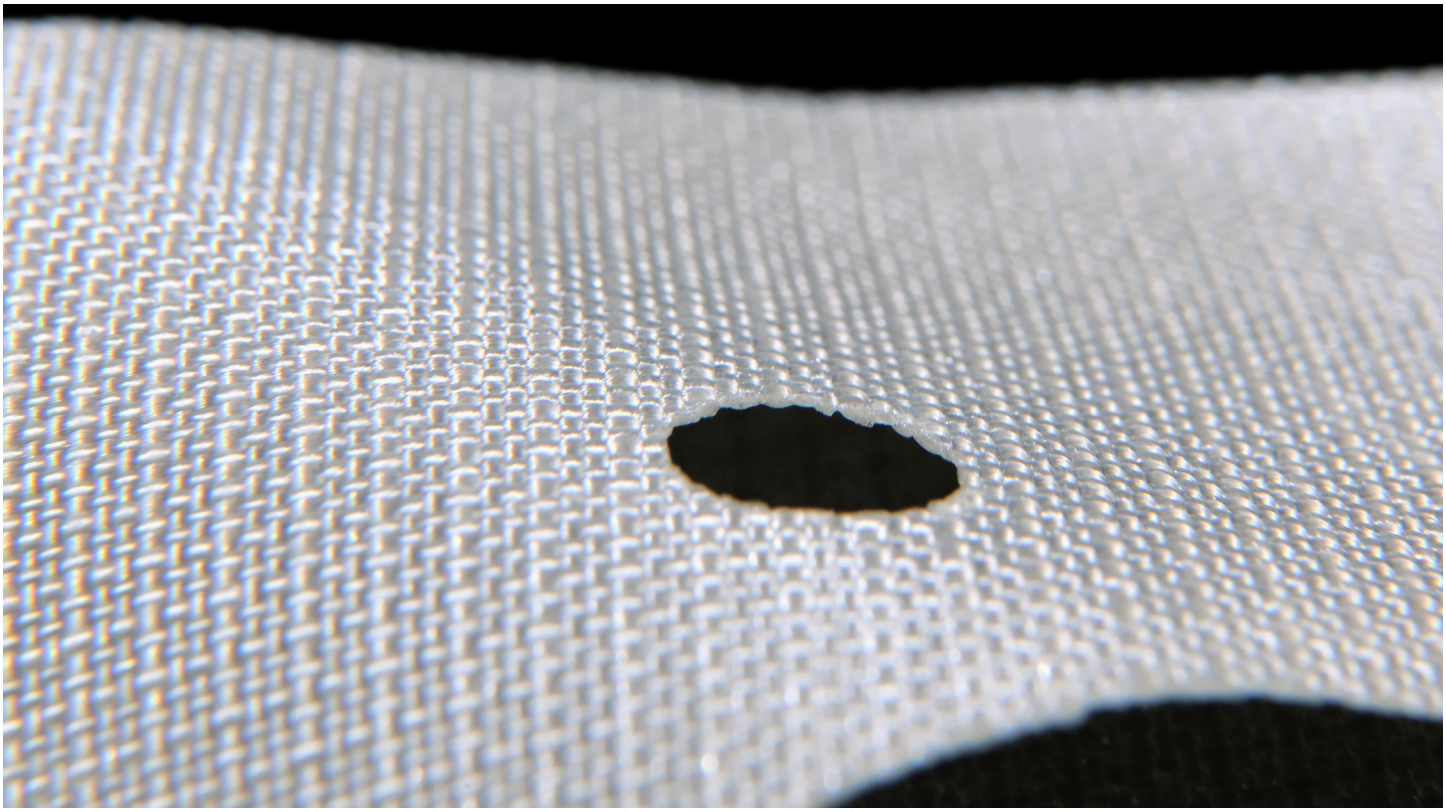
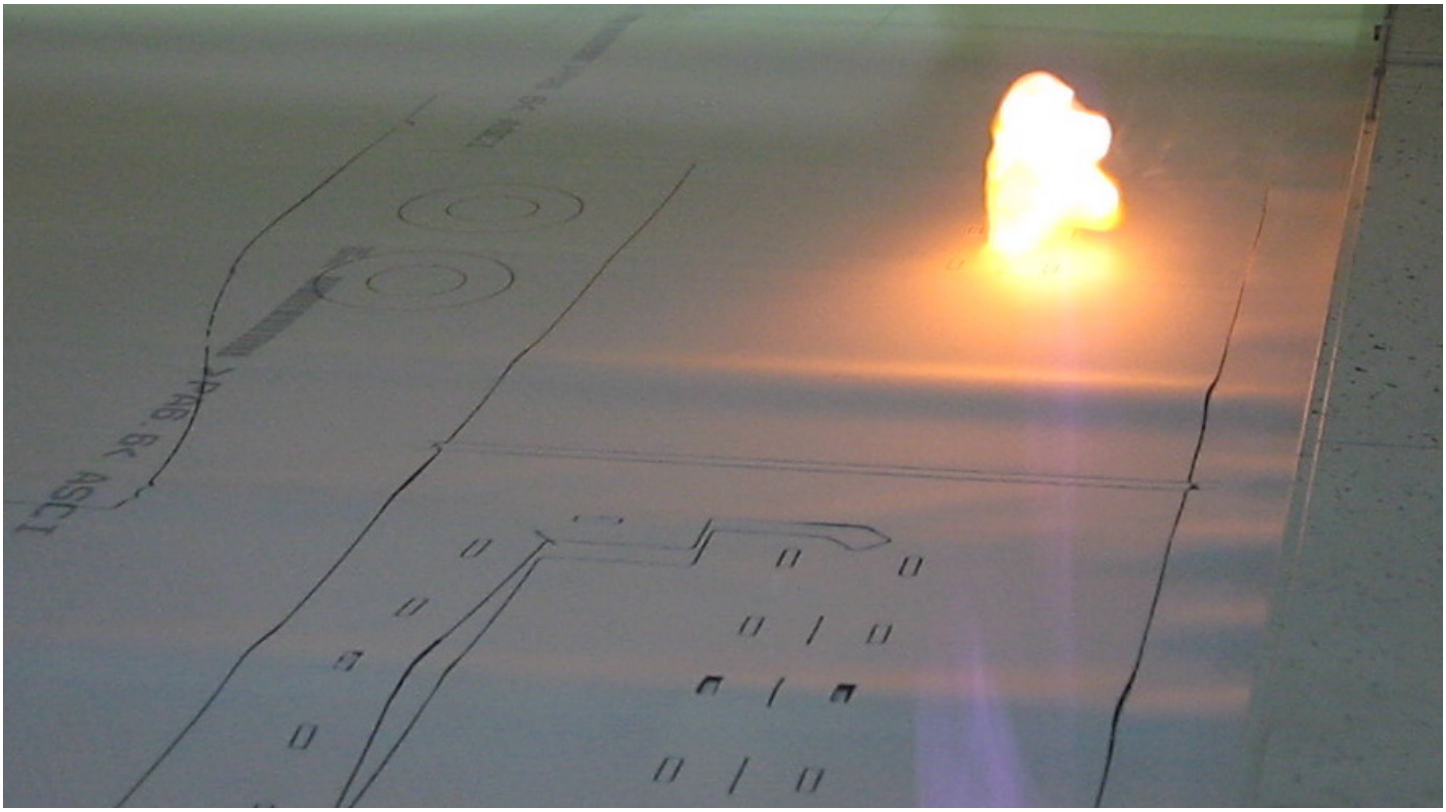
COHERENT





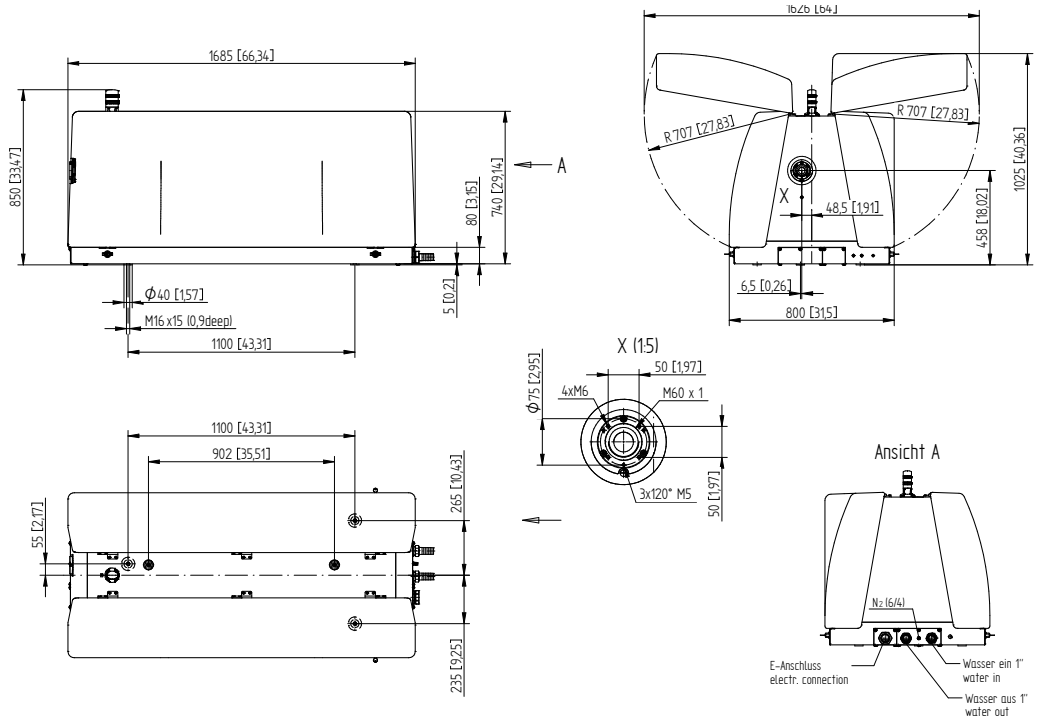




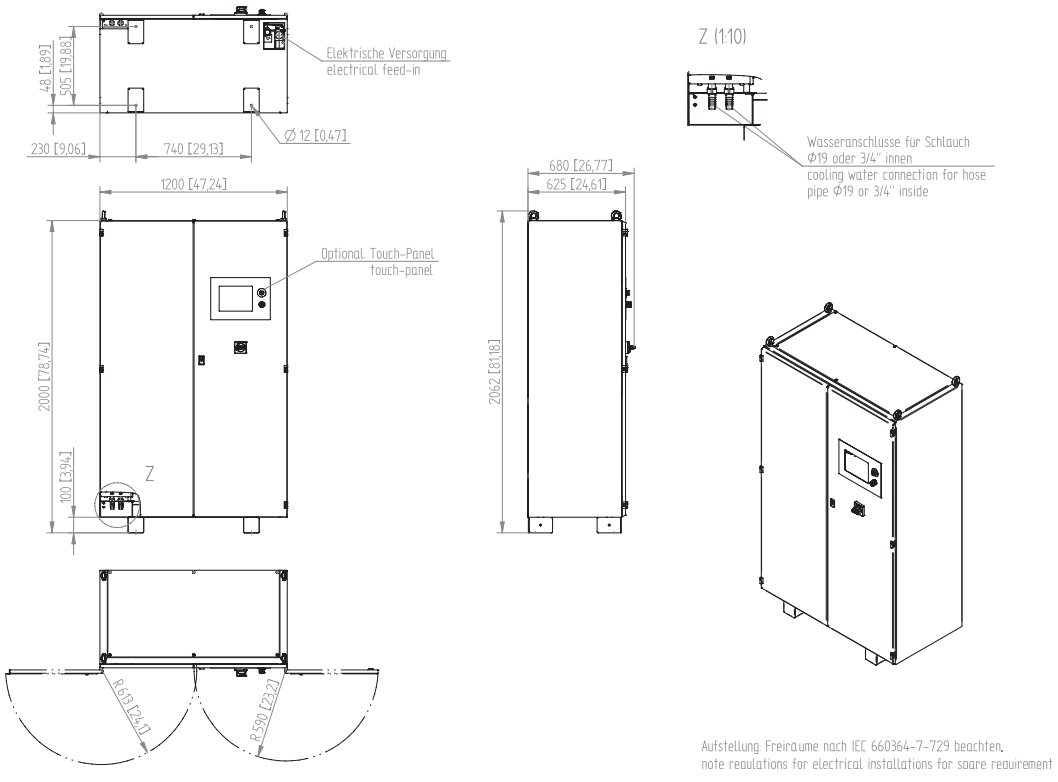
MECHANICAL SPECIFICATIONS

DC 010 - DC 025 Standard

Laser Head

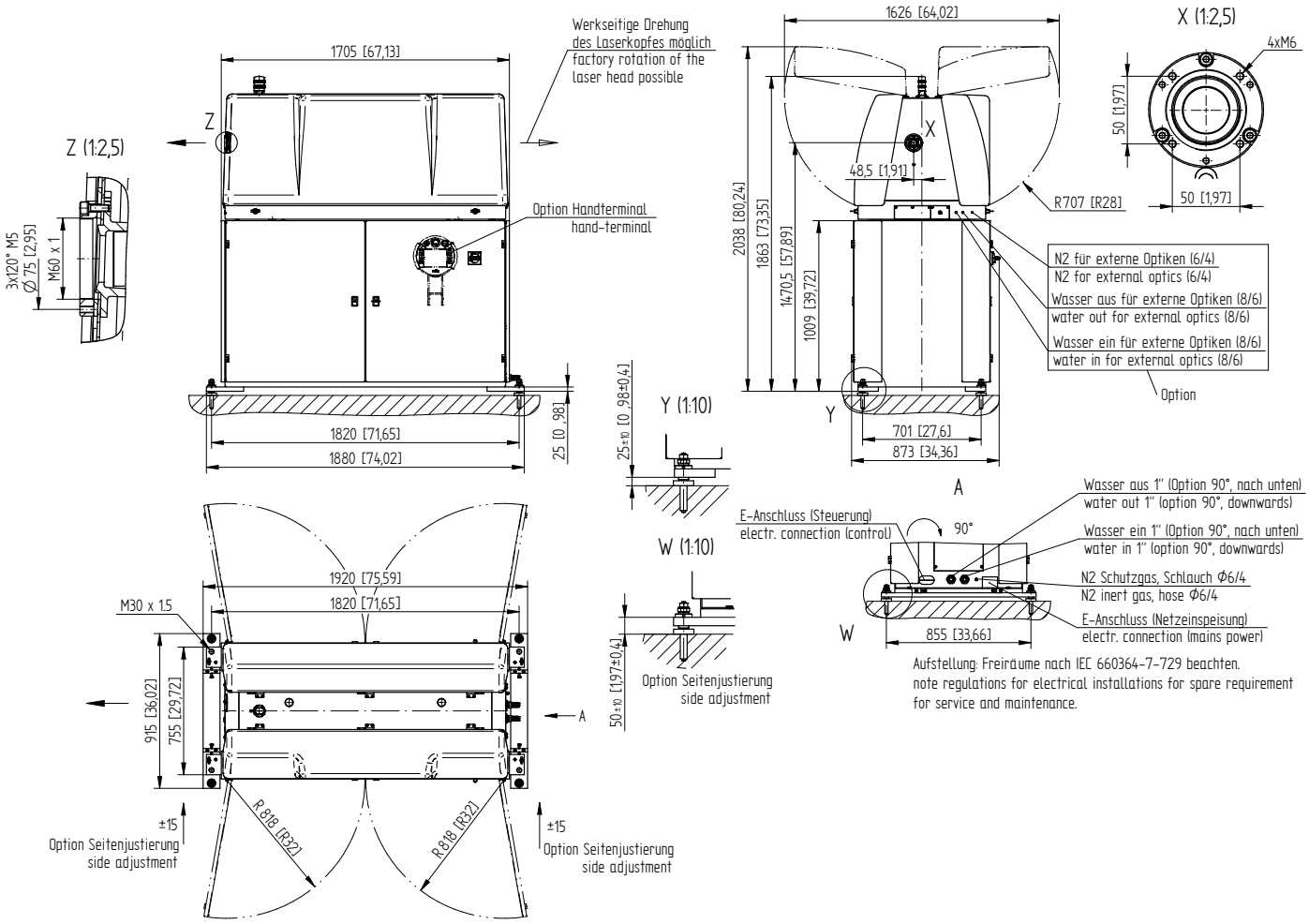


Cabinet



MECHANICAL SPECIFICATIONS

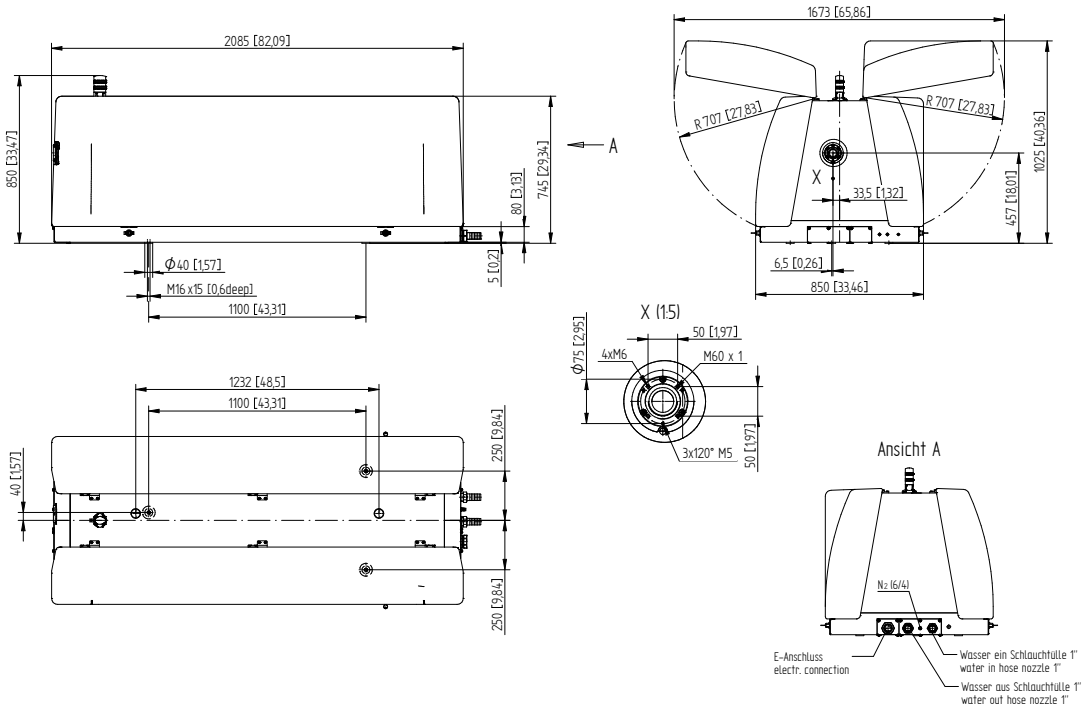
DC 010 - DC 025 Compact



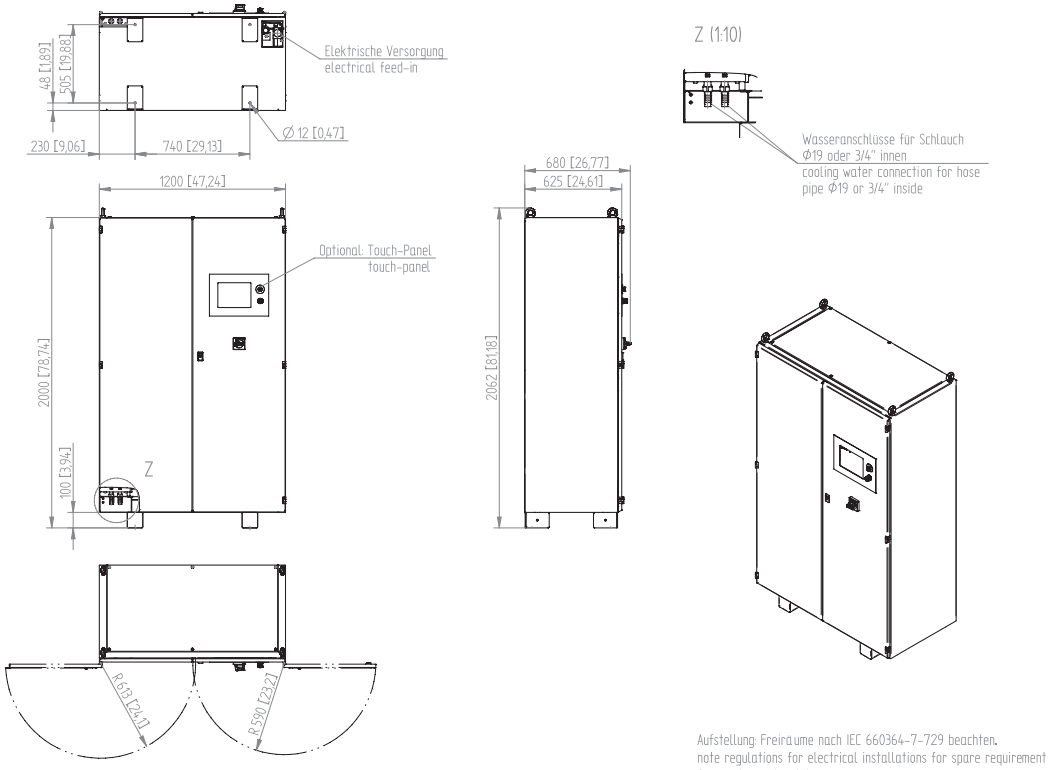
MECHANICAL SPECIFICATIONS

DC 030 - DC 040 Standard

Laser Head



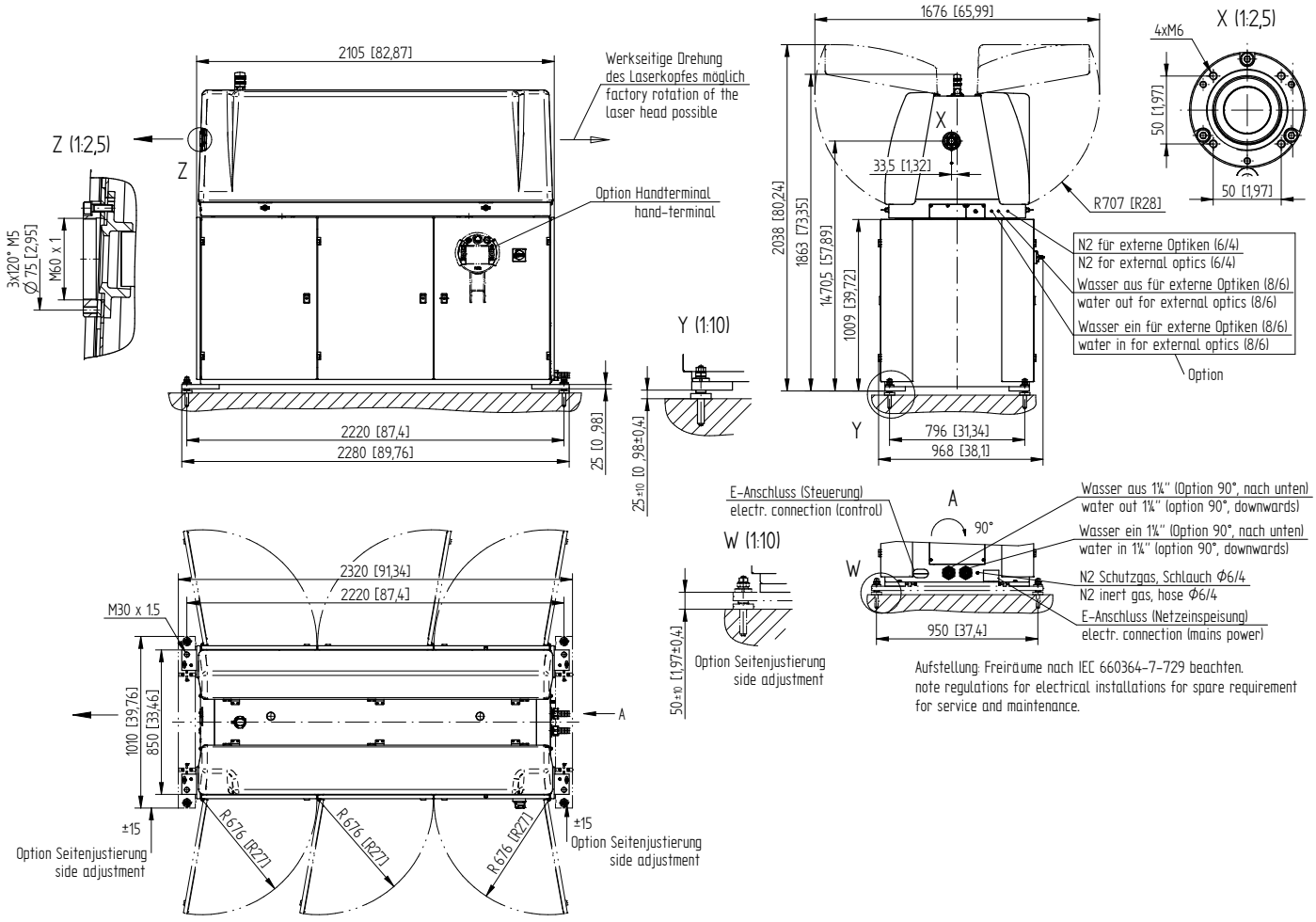
Cabinet



Aufstellung: Freiraume nach IEC 660364-7-729 beachten.
note regulations for electrical installations for spare requirement
for service and maintenance.

MECHANICAL SPECIFICATIONS

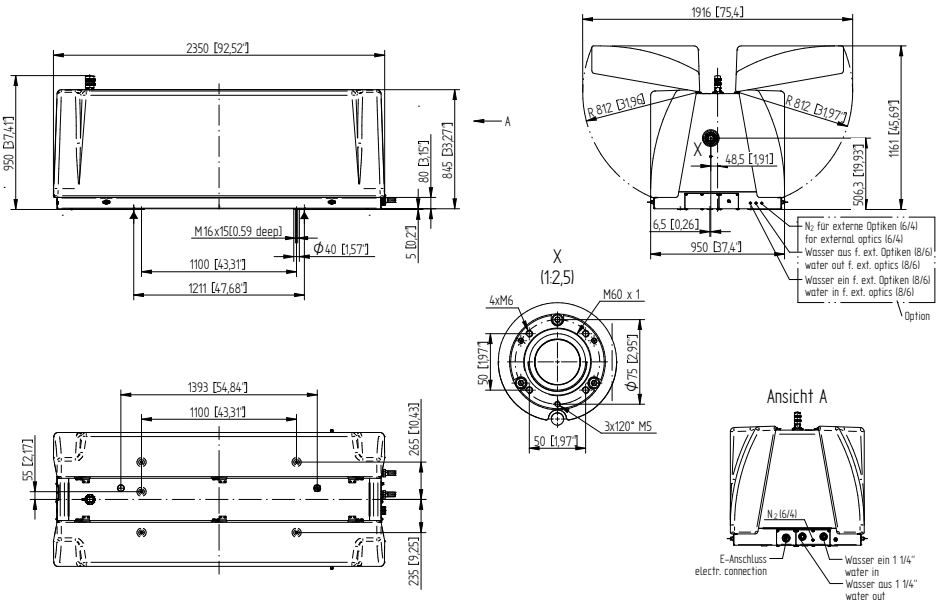
DC 030 - DC 040 Compact



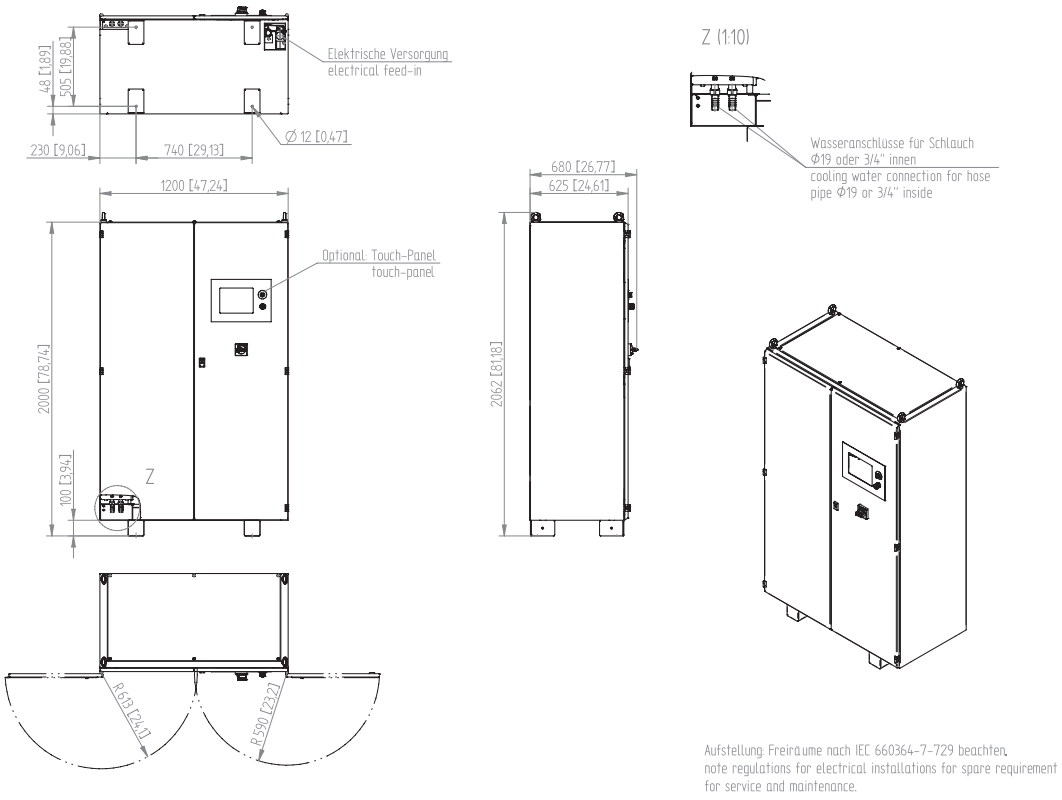
MECHANICAL SPECIFICATIONS

DC 050 Standard

Laser Head



Cabinet



Aufstellung: Freiräume nach IEC 660364-7-729 beachten.
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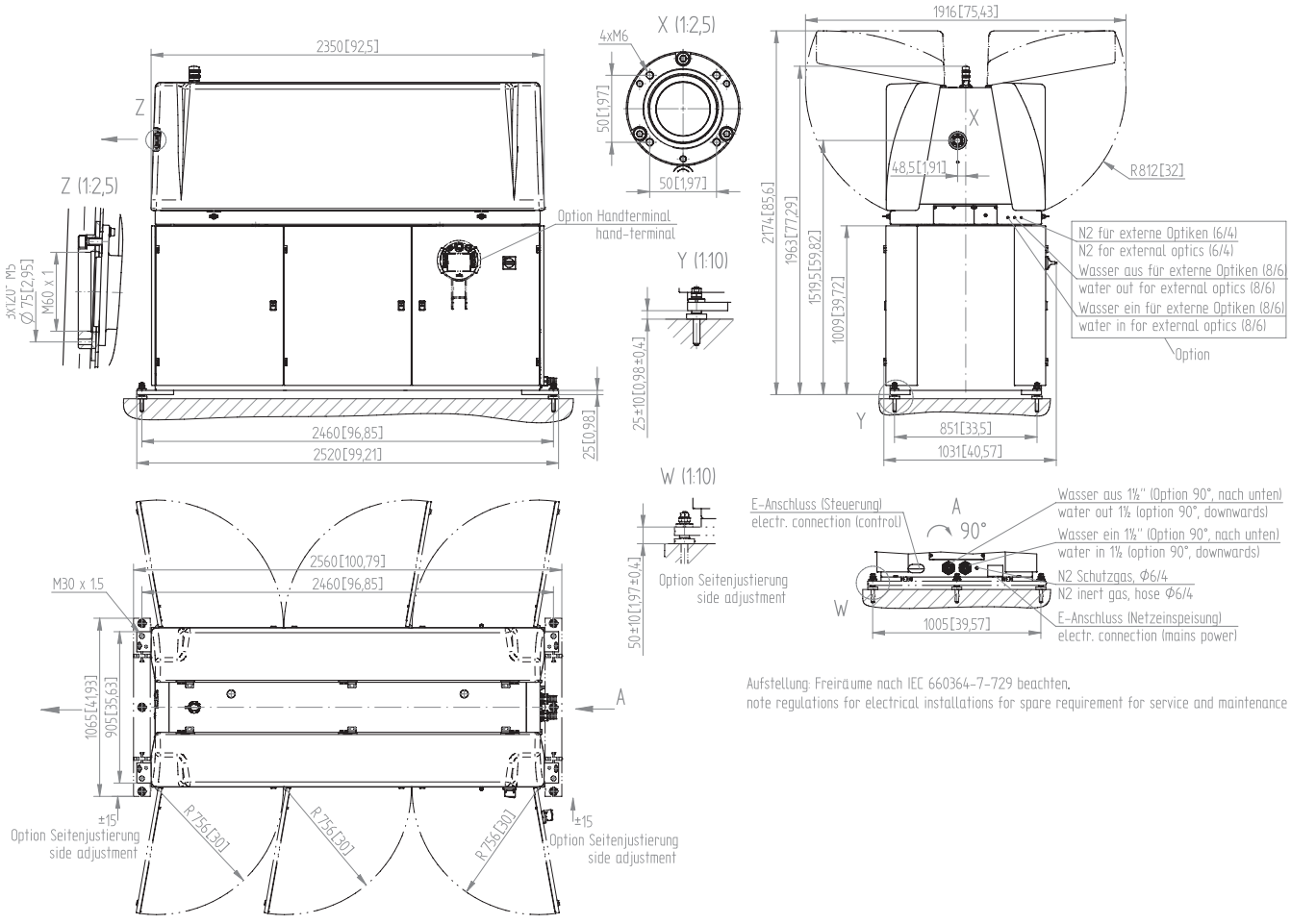
for service and maintenance.

MECHANICAL SPECIFICATIONS

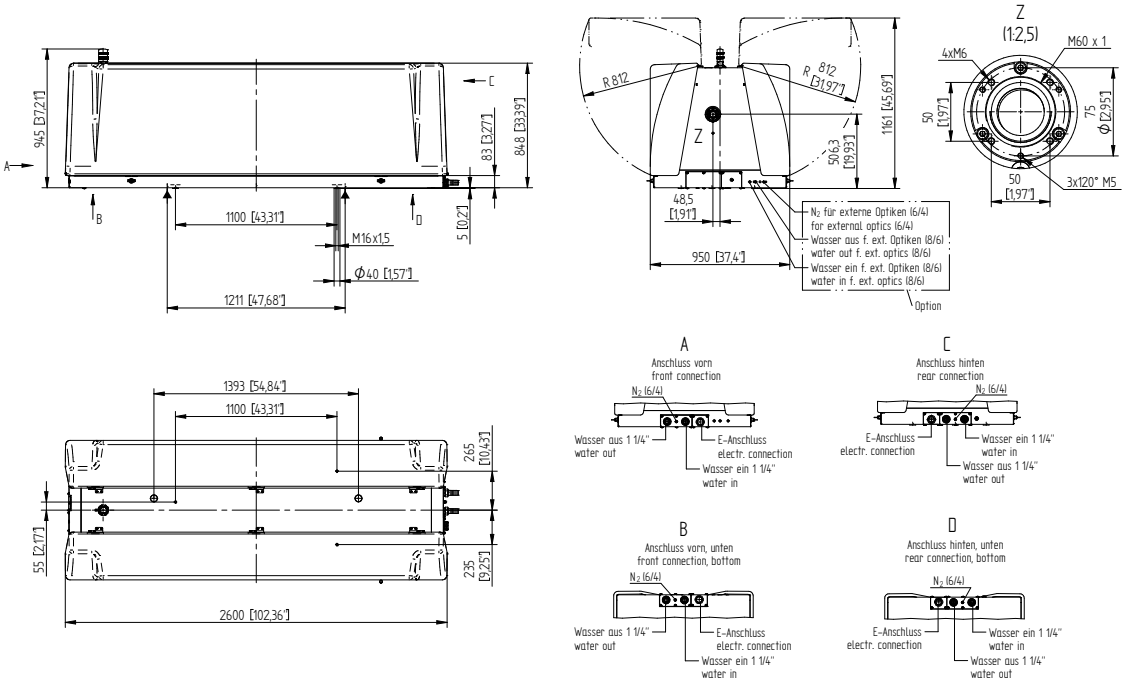
DC 050 Compact



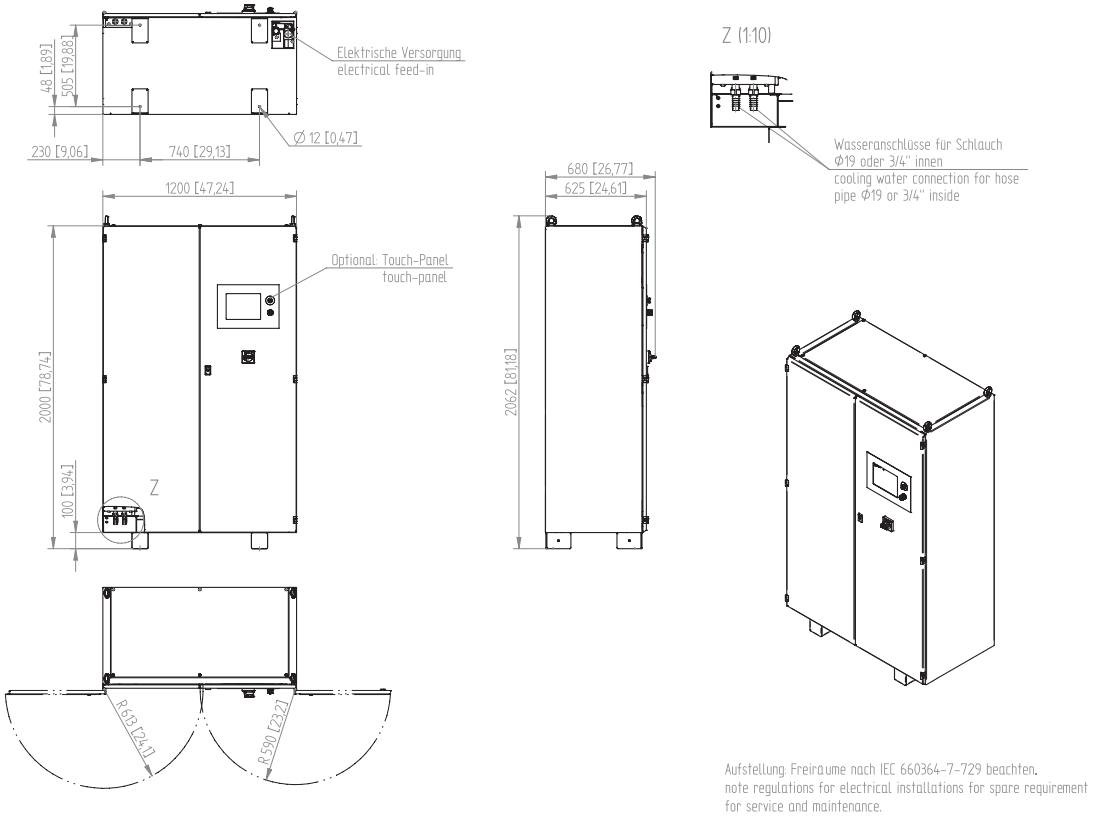
MECHANICAL SPECIFICATIONS

DC 060 Standard

Laser Head



Cabinet

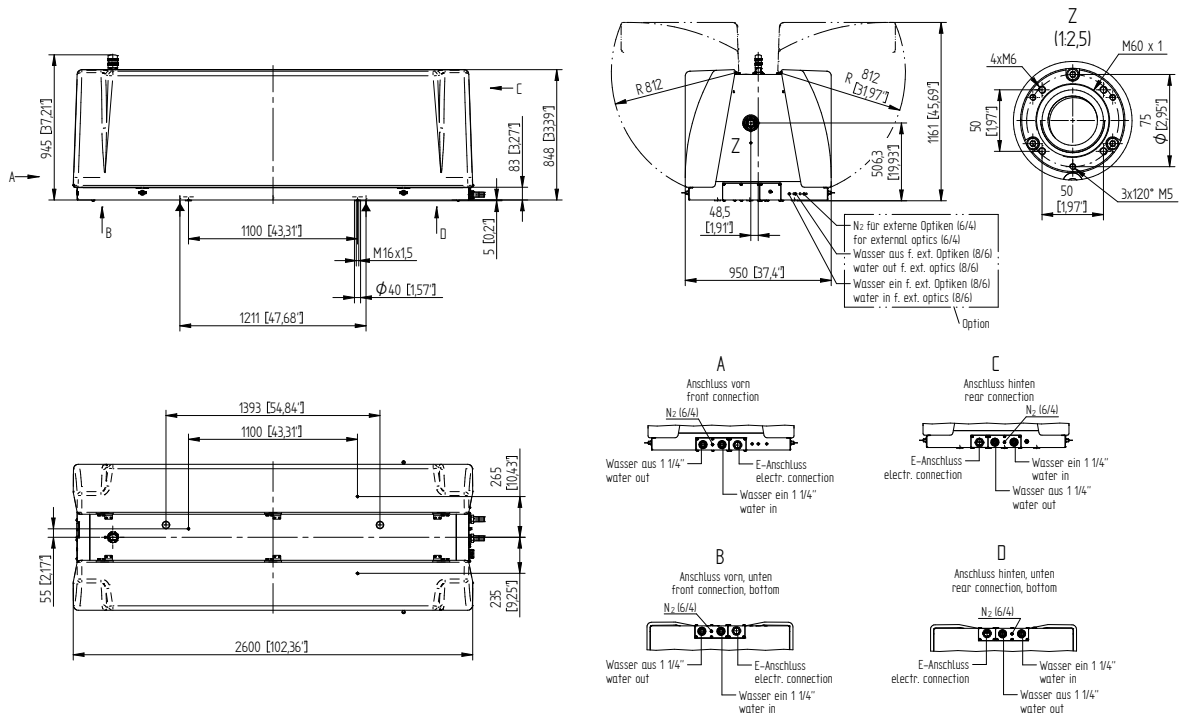


Aufstellung: Freiräume nach IEC 660364-7-729 beachten.
note regulations for electrical installations for spare requirement
for service and maintenance.

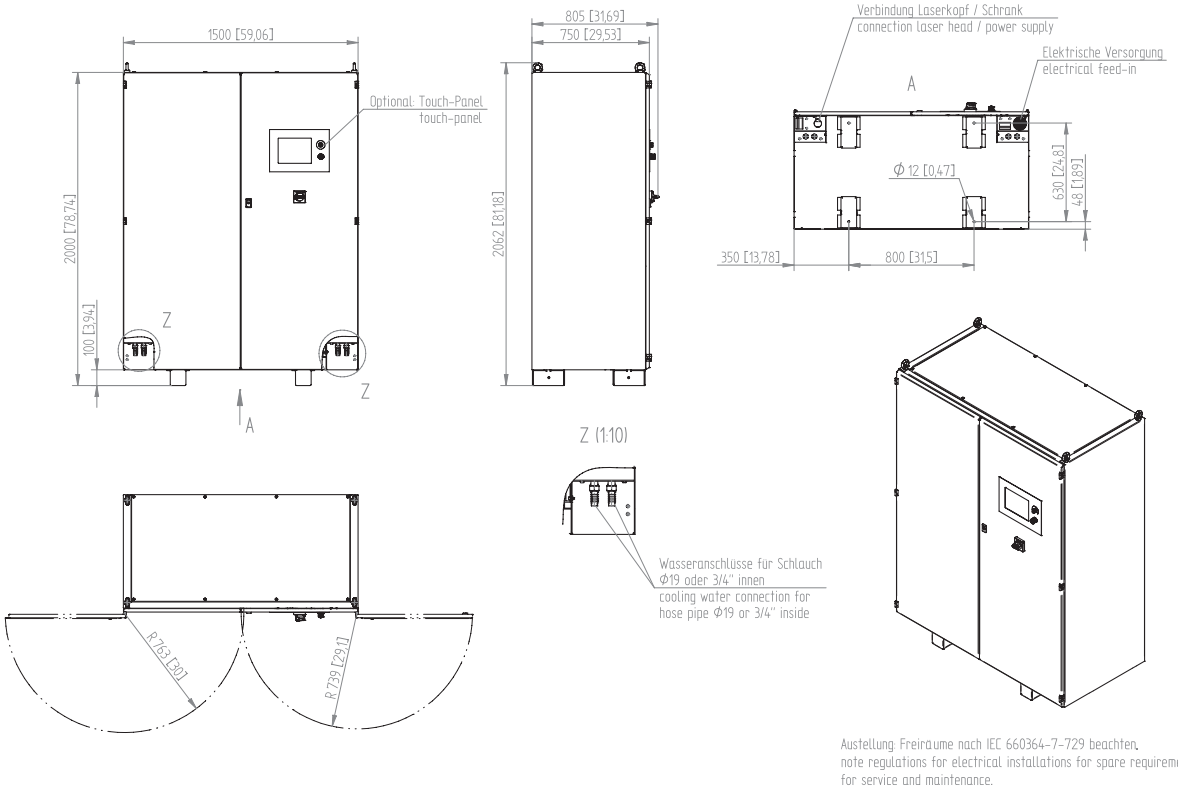
MECHANICAL SPECIFICATIONS

DC 080 Standard

Laser Head



Cabinet



Aufstellung: Freiräume nach IEC 660364-7-729 beachten.
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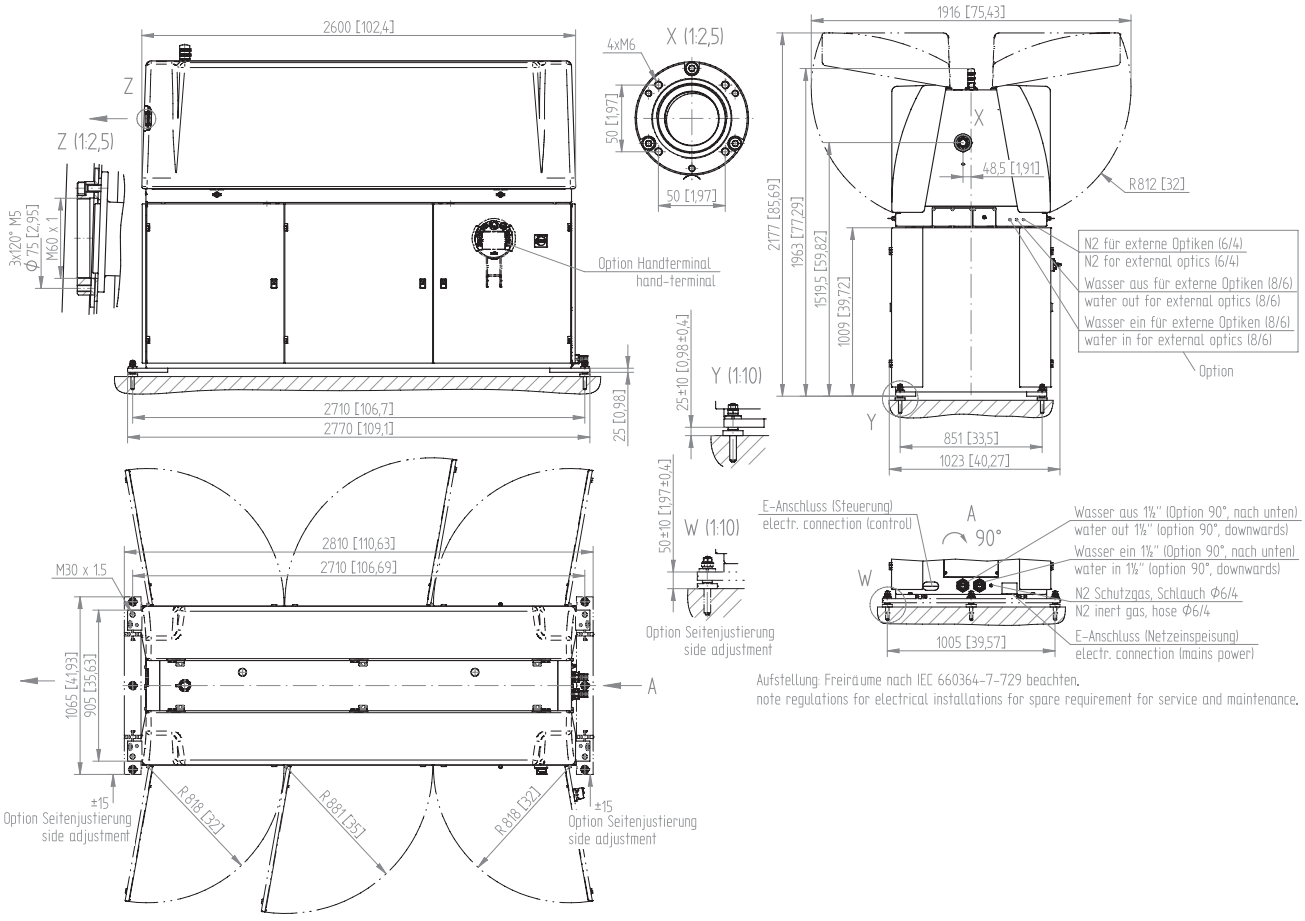
MECHANICAL SPECIFICATIONS

DC 060 - DC 080 Compact



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