

Technical specifications ROFIN DC 045 W:

8.

Specified technical data:

| | | |
|--|--------|---------------|
| Nominal power | [W] | 4500 |
| Power range | [%] | 10 - 100 |
| Laser beam quality | | |
| <i>ISO 11146, deviation $\pm 5\%$</i> | | |
| Gauss K (M ²) | | 0.95 (1.05) |
| Donut K (M ²) | | 0.45 (2.22) |
| Power stability | [%] | ± 2 |
| <i>cooling water $\Delta T \leq \pm 1\text{ K}$</i> | | |
| Pointing stability | [mrad] | ≤ 0.15 |
| <i>ISO 11145</i> | | |
| Pulse frequency range | [Hz] | CW or 2 - 100 |

Typical technical data:

| | | |
|---|-------------------|--|
| Beam diameter | | |
| <i>measured in the range < 10 m</i> | | |
| Gauss | [mm] | 25 ± 3 |
| Donut | [mm] | 30 ± 5 |
| <i>please contact ROFIN for detailed data of the beam propagation</i> | | |
| Polarization | | linear, 45° relative to the horizontal plane |
| Wavelength | [μm] | 10.6 |
| Excitation | | Radio frequency |

General technical data and requirements:

Electrical ratings:

The provision of a main power supply is the responsibility of the customer.

| | | |
|----------------------------------|-------|--|
| Voltage | | 3 x 230 / 400 V $\pm 10\%$ or 3 x 277 / 480 V $\pm 10\%$; 50 or 60 Hz; PE |
| <i>other voltages on request</i> | | |
| Connected load | [kVA] | 66 |
| Current consumption | [A] | < 95 @400 V |
| | [A] | < 79 @480 V |
| Fuses type NH | [A] | 160 |

— Data subject to change without notice —

Laser version: ROFIN DC 045 W

Cooling:

| | | |
|------------------------------|-------|---------|
| Recommended cooling capacity | [kW] | ≥ 63 |
| Flow rate | | |
| Laser head | [l/h] | ≥ 5000 |
| Control cabinet | [l/h] | ≥ 800 |
| Temperature | [°C] | 20 - 22 |
| <i>others on request</i> | | |
| Temperature stability | [K] | ≤ ± 1 |
| Supply pressure | [hPa] | ≤ 6000 |
| Back pressure | [hPa] | ≤ 1500 |

Laser gas:

| | | |
|---------------------------|--------|-----------------------------|
| Laser gas type | | ROFIN-SINAR Premix |
| Consumption | [NI/h] | < 0.2 (NI = standard liter) |
| Laser gas change interval | [h] | 72 |
| Mode | | semi - automatic |

Dimensions:

| | | |
|-----------------|------|------|
| Laser head | | |
| Length | [mm] | 2100 |
| Breadth | [mm] | 850 |
| Height | [mm] | 853 |
| Control cabinet | | |
| Breadth | [mm] | 800 |
| Depth | [mm] | 600 |
| Height | [mm] | 1900 |

Laser head with compact control cabinet (optional):
see **section 8.6**

Weights:

| | | |
|--|------|------|
| Laser head | [kg] | 750 |
| Control cabinet | [kg] | 690 |
| Laser head with compact control cabinet (optional) | [kg] | 1830 |

Laser version: ROFIN DC 045 W

Customer interface:

- Commands from external control system / control panel
- Status signals to external control system
- External pulse interface
- External analog and digital power control
- CNC interface (serial)

Pulse generator:

Pulse width 26 μ s - CW

Options:

Ramping generator:

| | | |
|------------------|--------------|-------------|
| Level | [%] | 0.0 - 100.0 |
| Time / Increment | [ms / Incr.] | 0 - 65535 |
| Frequency | [Hz] | 2 - 100 |
| Duty cycle | [%] | 0.0 - 100.0 |

More options: see **section 8.1** and the following

Permanent sound pressure level:

In operation (nominal output): < 56 dB (A)

Purge gas / purge air specifications:

Inert gas supply fittings are provided on the connection side of the laser head and are dimensioned to fit 4K plastic tubing. The tubes are placed over the fittings and secured with union nuts.

Purge gas nitrogen:

Purity: ≥ 4.6

Pressure: 3800 to 5300 hPa (3.8 to 5.3 bars)
(all pressure specifications related to atmosphere)

Flow rate: ≥ 4 l / min
(factory adjusted by ROFIN-SINAR)

or purge air:

Oil: ≤ 0.005 mg / m³

Water: ≤ 0.05 g / m³

Permissible filter pore size: ≤ 0.05 μ m

Pressure: 3800 to 5300 hPa (3.8 to 5.3 bars)
(all pressure specifications related to atmosphere)

Flow rate: ≥ 4 l / min
(factory adjusted by ROFIN-SINAR)

The purge gas or purge air which is used to flush the laser beam telescope must correspond to this specifications!

The usage of purge gas or purge air which is not corresponding to this specifications can cause:

- massive damages at the laser resonator which will not be covered by the manufacturer's warranty and
- negative influences on processing of workpieces.

Purge air without oil, water and particles is not available from a factory compressed air supply! Factory compressed air supplies are contaminated by oil, water and particles.

Note strictly the maintenance guidelines of the operating manual of your purge air supply unit!



Acceptable ambience conditions:

Operation:

| | |
|----------------------------|--|
| Relative air humidity: | 50 % at 40 °C, 90 % at 20 °C (non-condensation forming) |
| Air temperature: | + 5 °C to + 40 °C (rise in temperature must be even) |
| Cooling water temperature: | see section 4.2.1 |

Storage:

| | |
|--|--------------------|
| Air temperature (with anti-freeze): | - 25 °C to + 55 °C |
|--|--------------------|

Extreme climatic conditions:

Condensation at important assemblies of the laser will be prevented by an aimed supply of individual assemblies with purge gas or purge air without oil, water and / or particles.

When you want to use the laser at very high ambient temperatures and / or at very high air humidity, ROFIN-SINAR recommends you to install the supplementary kit for extreme climatic conditions (optional, see **section 8.4**).