Dynalasers

S10 User Manual

Shenzhen Dynalasers Technology Co. Ltd

Introduction

Welcome to use the handheld laser welding products developed and produced by Shenzhen Dynalasers Technology Co., Ltd We have organized personnel to compile this document in order to facilitate the better use and maintenance of your laser equipment. If you have any comments and suggestions during use, please feel free to give us your advice to help us continuously revise and improve. Thank you again for using Dynalasers' products!

Before using this product, please carefully read the User Manual for Handheld Laser Welding Machine provided by Dynalasers to familiarize yourself with the operation and maintenance of this equipment. We strongly recommend that operators read Chapter 2 Safety Information of this manual before operating the equipment.

This Manual will be provided with the machine to provide important operation, safety and other information for our existing or potential customers.

Please be sure to read the User Manual carefully to prevent unnecessary risks.

Disclaimers

Dynalasers strives to provide accurate and reliable user manual. However, Dynalasers makes no express or implied warranties or representations for this manual document, including but not limited to any implied warranties of merchantability or fitness for a particular use, purpose or application, whether alone or with any other device or equipment, material or process, the user must bear all responsibilities and application of any product. Dynalasers assumes no responsibility for any incidental, consequential, indirect or special damages, including but not limited to loss of profits, loss of production costs or similar damages. The information contained in this document may infringe the patents or other rights of a third party. Dynalasers shall not be liable for errors in statements or omissions in this document or any incidental consequential, indirect or special damages.

Company Profile

Shenzhen Dynalasers Technology Co., Ltd is located in Shenzhen City, focusing on the research and development, production and sales of laser intelligent equipment, lasers and related core components, intelligent automation equipment, computer software, hardware and control systems, and artificial intelligent robots. Based on the matching technologies of electronics, mechanics, optics and control systems, the company provides complete solutions according to the needs of the market and customers, involving IT manufacturing, new energy product manufacturing, instrumentation, computer manufacturing, mobile communications, home appliances & kitchen appliances, auto parts, precision equipment, building materials, hardware tools, urban lighting, food and medical industries, etc.

Dynalasers adheres to the people-oriented principle and takes the advantages of technological innovation. It introduces industry elites from home and abroad, invests a lot of money in the field of research and development, and has won many industry technology patents. The company has independent R&D, design, quality, operation and sales teams. The R&D team has a working background in cross-industry and large enterprises such as consumer and industrial industries. The quality management team and operation management team are from well-known companies.

Dynalasers is committed to providing customers with stable, reliable and high-quality products and equipment, perfect customer service, and creating greater value for global customers!

Shenzhen Dynalasersh Laser Technology Co., Ltd.
Address: Hongwei Industrial Park, No. 6 Liuxian 3rd Road, Xingdong Community, Xin'an Subdistrict, Bao'an District, Shenzhen
Tel: 400-000-3207
Email: info@dynalasers.com

Website: http://www.dynalasers.com/, https://dynalaserstech.com/

目录

Chapter 1: Feature Description

The S10 series is a high-efficiency, high-reliability, maintenance-free high-power laser series developed by Shenzhen Dynalasers Technology Co., Ltd. It employs air-cooled heat dissipation, operates within a wavelength range of 910-920 nm, and achieves laser efficiency >35%.

The Dynalasers S10 series laser is a Class 4 laser product. Its design and testing fully consider safety.

Lasers possess unique characteristics that may pose specific safety hazards and cannot be treated as ordinary light sources. All personnel operating or approaching the laser must be aware of these particular risks.

Dynalasersta recommends: Strictly adhere to all warnings and safety instructions in this manual to ensure safe operation and optimal performance. To guarantee the safety of operators during operation, maintenance, and servicing of this equipment, do not disassemble the device without authorization.

Chapter 2: Safety Information

1 - Safety Regulations

1. Safety Label Names and Descriptions

As shown in the table below, all safety warning labels during the operation of the handheld laser welding machine (not limited to labels affixed to the laser unit itself) include:

Safety Label	Name	Description
	Electrical Hazard	Warning: Text marked with the electrical warning symbol indicates a potential personal hazard. Failure to follow specified procedures may result in injury or death to you or others.
	Warning	Caution: Text bearing the warning symbol indicates potential product hazards. It requires a specific operating procedure; failure to follow it correctly may result in damage or destruction of the product or components.
	Laser Radiation Hazard	Caution: Text marked with the laser radiation warning symbol indicates a potential personal hazard.

2 - Laser Protection

1. Laser Safety Goggles Requirements

Wear safety goggles when operating this equipment. Selecting appropriate laser safety goggles requires the end user to accurately identify the wavelength range emitted by this product. If this equipment is a tunable laser or Raman product, it emits light within a specific wavelength range. The end user must confirm that the laser safety goggles used protect against light emitted across the entire wavelength range of the device. Check the safety label on the product and verify that the personal protective equipment (goggles) meets the requirements for output power and wavelength range.

2. Welding Environment Area Requirements

To avoid interference, keep the device at least 5 meters away from TIG welders, MIG welders, and other high-interference equipment during operation. This is especially critical for TIG welders exceeding 3000V; avoid simultaneous operation whenever possible.

3 - Reference Standards

Electromagnetic Compatibility Immunity:

ENIEC 61000-6-4:2019

EN IEC 61000-6-2:2019

Electrical Safety:

ISO 12100:2010

ISO 11553-2017

EN 60204-1:2018

Laser Safety: EN 60825-1:2014+A11:2021 CDRH 21 CFR 1040.10

Power supply safety:

EN 62368-1:2014+A11:2017

Please be advised:

◎ In accordance with relevant EU and national standards and requirements, lasers must be classified based on their output power and laser wavelength. All medium-to-high power laser products fall under Class 4 (per EN 60825-1).

4 - Welding Feature Safety

1. Optical Safety

Warning:

◎ Provide an enclosure for the laser beam.

◎ Do not look into the output port when the laser is powered on.

◎ Avoid positioning the laser and all optical components at eye level.

◎ Avoid using the laser in dark environments.

Warning:

◎ Laser output passes through a window. First ensure the window is clean; any contamination at the end of the head assembly risks burning the window and damaging the machine. Check the spot quality emitted from the laser output at low power levels, then gradually increase the output power.

◎ Do not look directly at the welding head while the device is powered on. Always wear safety goggles and a helmet with protective features when operating the product. Personnel in the vicinity must also wear the same safety equipment. Ensure all personal protective equipment is suitable for the output power and wavelength range listed on the

laser safety label affixed to this product.

WARNING:

◎ Do not install or remove the laser output head while the laser is active. When the machine is performing a task, ensure the switch is in the "OFF" position and the unit is disconnected from the AC power source.

2. Equipment and Solvents

Warning:

◎ Photosensitive components within the equipment, such as photodiodes, can also be damaged by laser exposure. Laser intensity is sufficient to burn skin, ignite clothing and paint. Lasers can cut and weld metal. Lasers can ignite volatile substances such as alcohol, gasoline, ether, and other solvents. Avoid exposure to solvents or other flammable materials and gases during installation and use of this equipment.

3. Electrical Safety

Warning:

◎ Ensure all electrical and welding gas connections are secure before energizing the unit. Verify sufficient gas supply in cylinders prior to operation. Additionally, where applicable, all connections must be secured with screws to ensure proper functionality. All components of electrical cables, connectors, or equipment housings should be considered hazardous.

◎ Before energizing the unit, ensure all electrical and welding gas connections are secure. Additionally, where applicable, all connections must be fastened with screws to ensure proper functionality.

◎ Ensure electrical safety: Verify the equipment is properly grounded via the protective conductor of the AC

power cable. The protective grounding terminal must remain intact; any disconnection may cause personal injury.

◎ Before energizing the equipment, verify the correct AC power voltage is being used. Incorrect voltage may damage the laser. Refer to the markings on the product model for proper power connections.

◎ No user-serviceable parts are located internally. All servicing must be performed by Dynalasers after-sales personnel. To prevent electric shock, do not remove protective covers. Any tampering with the product will void the warranty.

◎ External circuit connections (excluding power supply): External connections between this product and other external devices are PELV (Protected Extra-Low Voltage) as defined by IEC 61140. Non-power outputs from other devices connected to this product must also be PELV or SELV (Safety Extra-Low Voltage).

4.Environmental Safety

Warning:

◎ Electronic equipment must be disposed of in accordance with regional directives concerning electronic and electronic waste disposal.

◎ Ensure all personal protective equipment is suitable for the output power and wavelength range specified on the safety label affixed to the laser.

◎ Exercise caution when operating the equipment to avoid laser damage.

◎ For further details, refer to the product specification sheet. This equipment is not intended for use in areas where unprotected personnel or children may be present. Keep away from sources of impact or vibration. Use appropriate enclosures to ensure a laser-safe working area. Do not operate the output welding head at eye level.

Humidity Requirements: Do not expose the equipment to high humidity environments (>85% humidity).

This laser device is air-cooled. Operating at elevated temperatures accelerates aging, increases threshold current, and reduces slope efficiency. If the equipment overheats, cease operation and contact Dynalaserst for assistance.

Ensure adequate ventilation during operation. Reactions between the laser beam and welding materials produce fumes, vapors, sparks, and particulate debris. Fumes generated during laser processing are typically toxic and may pose additional safety hazards.

For general information on laser products, visit the Dynalasersta official website.

5. Gas Cylinder Safety

Warning:

◎ Damaged cylinders or those placed near welding areas may explode. Store cylinders where they cannot be struck or damaged. Keep away from heat sources, sparks, or flames. Cylinders must be stored upright and secured in a cylinder rack. Use a regulator suitable for the required gas type and pressure. All hoses and fittings must also be compatible and maintained in good working condition.

6. Radiation Hazards

Welding processes generate both visible and invisible light radiation. The interaction between high-power laser beams and welded materials may produce plasma, which emits ultraviolet radiation and "blue light." This can cause conjunctivitis, photochemical damage to the retina, or skin sunburn reactions. Welders exposed to invisible ultraviolet light without proper protection may suffer permanent eye damage. Therefore, always wear appropriate safety equipment during welding operations.

7. Skin Hazards

Exposure to infrared and ultraviolet radiation during welding can damage the skin. Infrared and ultraviolet radiation can cause skin burns, increase a welder's risk of skin cancer, and accelerate signs of skin aging. Welding sparks may also cause burns. Laser material processing can transfer significant energy into components. Even after cutting is complete, parts may remain extremely hot to the touch. Ensure appropriate personal protective equipment is used to prevent potential burns. Take precautions to guard against skin damage by wearing protective clothing such as fire-resistant gloves, hats, and leather aprons.

8. Fire Hazards

Heat and sparks generated during welding can ignite fires or explosions if combustible or flammable materials are present near the welding area. Laser welding should only be performed when the area is free of combustible materials. Never weld containers containing flammable or combustible substances. If the contents of a container are unknown, assume they are flammable or combustible. Fire extinguishers should be located nearby and easily accessible.

9. Hazards of Welding Fumes

Welding fumes can consist of extremely fine particles and gases. These fumes and gases originate from a combination of welding materials, any filler materials used, shielding gases, paints, coatings, chemical reactions, and air pollutants. Welding fumes can adversely affect the lungs, heart, kidneys, and central nervous system.

(1) When welding, keep your head away from the fumes. Always weld in a well-ventilated area to ensure safe breathing air.

(2) Respirators may also be required in confined spaces and other situations.

(3) Conduct routine air monitoring to determine harmful fume levels in welding areas.

(4) Use exhaust systems to remove vapors, particulates, and hazardous debris from welding work areas.

10. Safety Guidance

To ensure safe operation and optimize the performance of this product, strictly adhere to the following warnings and important notices, as well as other information contained in this manual.

Warning:

◎ The output connector of this product is connected to the handheld welding head via an optical fiber cable. Handle the handheld welding head with care.

Warning:

◎ When using this product, ensure a properly grounded power source is employed.

Warning:

◎ Users must not open any internal components for repair. Contact Dynalasersta technicians for service if needed. Unauthorized modifications void the warranty.

Warning:

◎ Failure to operate this product according to the instructions in this manual may compromise its protective mechanisms. This product must be used exclusively under normal operating conditions.

Important:

◎ When operating the laser welding output connector (e.g., installing fiber optic connectors, inspecting connector end faces with optical instruments, or performing wire filling), ensure the AC power supply is turned off.

Warning:

◎ Never look directly into the fiber optic output connector. Always wear appropriate protective eyewear when using laser products to prevent injury.

Important:

◎ Performing operations or adjustments beyond the scope specified in this manual may result in radiation injury.

11. Output Safety Specifications

Important:

◎ The laser is hazardous when the power is activated. All precautions must be taken.

Take precautions to prevent accidental exposure to direct and reflected beams. Diffuse and specular reflections can cause severe retinal or corneal damage leading to permanent eye injury. Class 4 laser beams also pose potential fire and skin damage hazards during operation or proximity to equipment. All personnel must wear all recommended PPE, including safety glasses and helmets with face shields, during operation. To ensure awareness of laser safety information, properly use laser control measures to adjust or control program execution; failure to do so may expose you to harmful radiation environments.

12. Welding Protection and Hazard Prevention During Welding Processes

Warning:

◎ Personal protective equipment must be worn during welding to prevent eye exposure to hazardous conditions! Use a face shield, gloves, welding helmet, and laser safety goggles. To mitigate equipment airflow and noise, wear noise-canceling earplugs during welding for optimal protection. Welding helmets also shield welders from injuries caused by hot spatter, metal particles, and sparks. All personnel working near the laser welding area must also wear personal protective equipment.

Warning:

◎ If combustible or flammable materials are present near the welding area, the heat and sparks generated during welding may cause fires or explosions. Laser welding must only be performed in areas free of combustible materials. Never weld on containers holding flammable or combustible substances. If the contents of a container are unknown, assume they are flammable or combustible. Fire extinguishers must be readily available near the welding area, and welders must receive professional training in their use.

13. Hazards from Reflected Beams During Welding

Warning:

◎ Significant secondary laser beams can typically be generated at various angles near the laser output aperture. These beams, termed "specular reflections," occur when the laser reflects off surfaces where the main beam is incident. Laser welding systems may produce specular reflections due to the interaction between the laser beam and the work-piece. Although the power of these secondary beams is lower than the total laser output power, their intensity is sufficient to cause damage to the eyes, skin, and surrounding materials.

Highly reflective metals, such as aluminum and copper, may cause partial beam energy to reflect away from the target weld site, requiring additional precautions. Specular reflections can also pose a hazard to the operator if any portion of the beam reflects off multiple surfaces. Take precautions to understand the expected specular reflection cone for each work-piece section. Do not attempt to view the section or place any part of your body within the expected specular reflection cone.

Warning:

◎ Operators and observers must also remain vigilant for reflections. Increased reflections may occur if laser parameters are improperly set to achieve melting of the target section.

To achieve safe operating conditions: 1. Select the appropriate mode based on material and thickness; 2. Choose the correct nozzle based on joint geometry.

Warning:

◎ For safety reasons, Dynalasers recommends that equipment operators use only Dynalasers nozzle tips.

5 - General Safety Instructions

1. Specular Reflection

The output port of the handheld laser welder may generate secondary laser beams radiating outward at multiple angles. This phenomenon, where the main beam diverges after planar reflection, is termed specular reflection. Although

the energy of secondary beams is significantly lower than the main beam, their intensity may still cause harm to human eyes, skin, or certain material surfaces. Exercise particular caution when welding highly reflective materials. Ensure no personnel are present opposite the welding area and that no flammable materials are nearby during operation.

Warning:

◎ Since laser radiation is invisible, you must exercise extreme caution to avoid or minimize specular reflection.

2. Accessory Safety Precautions

The photosensitive components integrated into the optical accessories of handheld laser welding machines may be damaged by laser exposure. Ensure proper protection of these components.

Warning:

◎ The output laser intensity of Dynalasers handheld laser welders is sufficient to weld metals, burn skin, clothing, and paint, and ignite volatile substances such as alcohol, gasoline, ether, etc. Therefore, during operation, ensure flammable items are isolated from the vicinity of the handheld laser welder.

3. Optical Operation Guidelines

Dynalasers strongly recommends reading the following operational points before operating the handheld laser welder:

(1) Do not look directly into the laser beam exit port of the handheld laser welder;

(2) Avoid positioning the handheld laser welder or related optical output components at eye level;

(3) Select appropriate safety equipment based on the device's output power and wavelength to ensure operator safety;

(4) Affix warning labels in the area where the handheld laser welder is placed to demarcate the safe operating zone;

(5) Do not operate the handheld laser welding machine in dark environments;

(6) Ensure the handheld laser welder is powered off and disconnected from the power source before installing or cleaning protective lenses, copper nozzles, or wire feeding components;

(7) Perform debugging, calibration, and focusing operations without the laser activated. Only turn on the laser after debugging is complete.

(8) Strictly follow the operating procedures outlined in this document. Failure to do so may compromise the device's protective mechanisms and performance, and Dynalasers will not provide warranty coverage for such issues.

Note:

◎ The optical path output of the handheld laser welder passes through lenses with anti-reflective coatings before emission. Before using the handheld laser welder, thoroughly inspect the output head lens and rear-stage lenses to ensure

no dust or foreign matter is present. Any visible deposits will severely damage the lenses, potentially burning out the handheld laser welder or any downstream optical equipment.

◎ Refer to the Fiber Optic Connector Inspection and Cleaning Guide to follow the lens cleaning and inspection procedures.

◎ Exercise extreme caution during cleaning operations to avoid exposure to intense heat or molten metal particles.

◎ When performing output debugging and calibration on the handheld laser welder, first set the device to detect laser spot quality via the indicator red light without emitting laser. Only activate the laser after confirming no abnormalities.

Warning:

◎ Select appropriate safety equipment based on the laser's output power and wavelength requirements.

◎ Do not look directly at the laser beam. Always wear safety goggles during all operations.

4. Electrical Operation Guidelines

Dynalasers strongly recommends reviewing the following operational points before operating the handheld laser welder:

(1) Ensure the equipment housing is properly grounded. Any interruption in the grounding circuit may result in personal injury.

(2) Before use, verify that the power source connected to the equipment has a protective ground connection;

(3) To reduce fire risk, replace circuit fuses only with identical types and ratings when necessary. Do not substitute with other fuses or materials;

(4) Verify that the input AC voltage for the handheld laser welder matches standard utility power and that wiring is correct. Incorrect wiring may cause personal injury or equipment damage.

(5) Except for the hand-piece consumables, users must not attempt to repair any parts, components, or assemblies of this product. All maintenance must be performed by Dynalasers professional personnel;

(6) Unauthorized disassembly of the handheld laser welder or removal of relevant labels is strictly prohibited, as it may result in electric shock or burns.

(7) Flammable materials must not be present near the welding area. Heat and sparks generated during welding may cause fire or explosion. Laser welding must only be performed in areas free of combustible materials.

(8) Never weld on containers holding flammable or combustible materials. If a container's contents are unknown, you should assume they are flammable or combustible. Keep a fire extinguisher nearby, and personnel must be trained in its use.

(9) Any product that has been disassembled without authorization will void its warranty.

Warning:

◎ The handheld laser welder operates on single-phase AC power (100-260V AC), posing an electric shock hazard.

All associated cables and connectors present potential risks.

5. Handheld Laser Welder Operating Environment Requirements

This equipment is typically used in: (1) Environmental pollution level (2) Dry locations (3) Altitudes below 2000 meters (4) Category II overvoltage. For further details, refer to the product specifications.

Humidity: Do not expose the equipment to high humidity environments (>85% humidity).

Cooling and Temperature: The laser unit is air-cooled. Operation at elevated temperatures accelerates aging, increases threshold current, and reduces slope efficiency. Do not use the equipment if it overheats; contact Dynalasers for assistance. The device triggers an alarm and ceases laser output when the laser temperature becomes excessively high.

To ensure laser work area safety, interactions between the laser and work surfaces may generate gases, sparks, and debris due to high temperatures, potentially creating additional hazards. Operators must undergo appropriate certification training and be thoroughly familiar with standard laser safety protocols.

Dynalasers recommends the following measures to extend the service life of your handheld laser welder:

(1) Ensure adequate ventilation in the work area and place the handheld laser welder in a dry, cool, and clean environment. Never expose the handheld laser welder to high temperatures, high humidity, or environments with water ingress risks.

(2) During operation, ensure the air intake vent at the bottom of the laser is unobstructed. Keep the surrounding 1-meter area free of debris that could impede airflow. Ensure unobstructed airflow at the top exhaust vent within a 1-meter height range.

(3) Ensure no foreign objects (including liquids) enter the laser unit through the top. Failure to do so may damage the laser and cause personal injury.

(4) Operating the equipment under high temperatures accelerates aging, increases current thresholds, and reduces the sensitivity and conversion efficiency of the handheld laser welder. If the equipment overheats, stop using it immediately and contact Dynalasers for assistance.

Caution:

◎ Handle the equipment with care to prevent accidental damage.

◎ Periodically remove dust and debris from the air intake filter located at the bottom of the laser unit.

Chapter 3 Product Description

1- Feature Overview

The handheld laser spot welder integrates a laser source, handheld laser welding pen, and control system into a single unit. Compared to traditional handheld welding equipment, it offers significant advantages including simple configuration, high integration, compact size, ease of operation, and advanced intelligence.

Key Features:

(1) Stable output power with excellent consistency;

(2) Precise power adjustment with linear, one step power regulation;

(3) Separate interlock safety mechanism for enhanced safety;

(4) Comprehensive high-grade protection;

(5) Modular components for building-block style replacement and maintenance;

Application Areas:

Widely used in welding applications for hardware and building materials such as advertising, doors/windows, and lighting fixtures, as well as in consumer products and craft sectors like DIY craft projects;

2- Module Configuration

Dynalasers offers multiple configurable modes. This manual provides detailed explanations for all modes; please refer to Chapter 6, "User Guide."

3- Laser Model Specifications and Product Functional Safety

Model Naming	Model Meaning
S10	Handheld Laser Spot Welder
Product Functional Safety	
Electrical Safety	ISO 12100:2010 ISO 11553-2:2015 EN 60204-1:2018

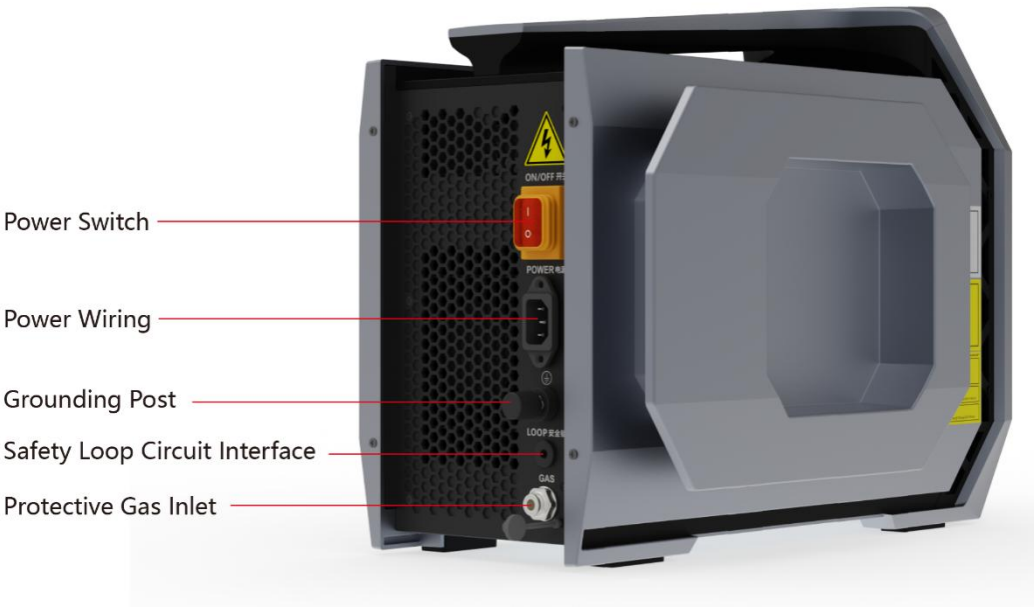
Laser Safety	EN 60825- 1:2014+All:2021 CDRH 21 CFR 1040.10

4- Certificate of Conformity

Dynalasers warrants that this product has undergone comprehensive testing and inspection prior to packaging and shipment, and complies with published standards and procedures. Upon receiving this product, please inspect the packaging for any signs of external damage. Check the equipment for damage and immediately notify the carrier and Dynalasers after-sales personnel. Exercise extreme caution when removing the product from its packaging to ensure the fiber optic cable remains intact and undamaged. Verify the accompanying packing list. Upon receipt, inspect all items against this list. Under no circumstances attempt to install or operate the laser equipment if any items are missing or the device shows visible or suspected damage.

5-Front and Rear Panel Instructions for Laser Welding Machine

Front Panel Labeling	Function Description
ACTIVE/ALARM	Normal laser output: Green light; Standby mode: Yellow light Alarm status: Red light
Emergency Stop Switch	Stop device light emission
Laser Output	Armored cable



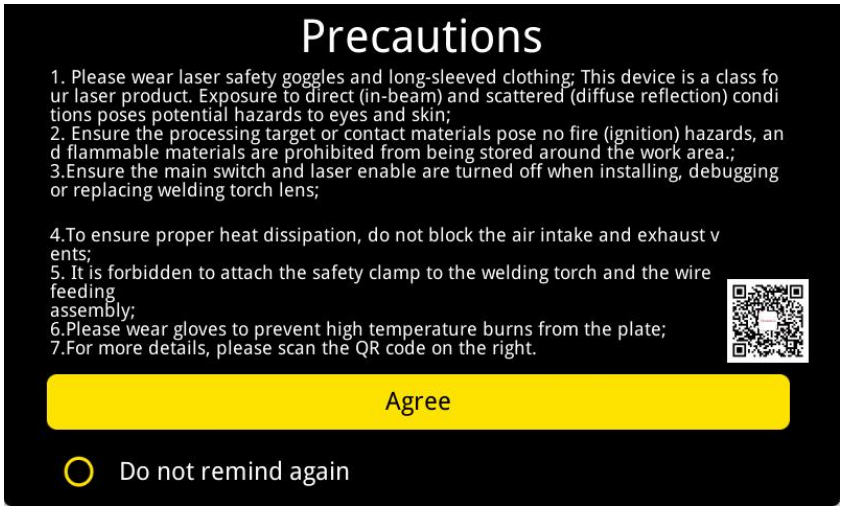
Rear Panel Label	Function Description
ON/OFF	100-260V AC Power Switch
GAS_IN	Protective Gas Inlet Port
POWER	100-260V AC Power Input
GROUNDING POST	Grounding Post
LOOP	Safety Return Loop Interface

6- Control Panel Description

This unit includes a 5-inch industrial display connected to the host via a serial interface for device control and status monitoring. All connections to the equipment must be made with the machine powered off to prevent surge damage.

1. Power-On Safety Instructions

Upon initial startup, a detailed safety notice page will appear. Please carefully read and understand the safety instructions. After reviewing and agreeing, click the "Agree" button to proceed to the operation interface.



Clicking "Do Not Show Again" will skip the safety instructions page on subsequent startups, proceeding directly to the operation interface.

2. Operating Interface

The operation interface allows for specialized welding settings.

◎ Main Interface

The main interface consists of three sub-interfaces: Home, Settings, and Information.

●Home Page: Configure laser power, pulse frequency, pulse duration, laser delay, and gas shut-off delay.

Function Classification	Function Description	Notes
Operation Buttons	Laser Start	Laser activation button used to initiate laser welding. Yellow indicates laser is active; gray indicates laser is deactivated.
	Laser Enable	Enables the working laser, primarily used for machine setup when the laser is not active. Yellow indicates laser enabled, gray indicates disabled.
	Manual Gas Feed	Enables or disables manual gas supply. Yellow indicates enabled manual gas supply; gray indicates disabled.
Settings	Laser Power	Adjustable from 10% to 50%. At 50% power setting, the machine operates at its rated maximum power.
	Pulse Frequency	1–200 Hz
	Pulse Duration	1–500 ms
	Air Shut-off Delay	0-500ms
	Light-out delay	0-500ms
Icon Legend		This icon indicates "Laser Enabled"
		This icon indicates "blowing air"

●Status Bar:

Function Categories	Function Description	Notes
Enable Status	Laser	Green: Laser emitting; Gray: Standby state
	Red Light	Green: Red light emitting, Gray: Standby state
	Air Purge	Green: Protective gas output in progress, Gray: Standby state
	Communication	Green: Communication normal
	Torch Switch	Green: Torch switch pressed, Gray: Torch switch not pressed

Function Classification	Function Description	Remarks
Mode Adjustment	Light Output Mode	Pulse: Emits a single laser pulse per output.
Current Machine	Laser Power	Set the laser output power.

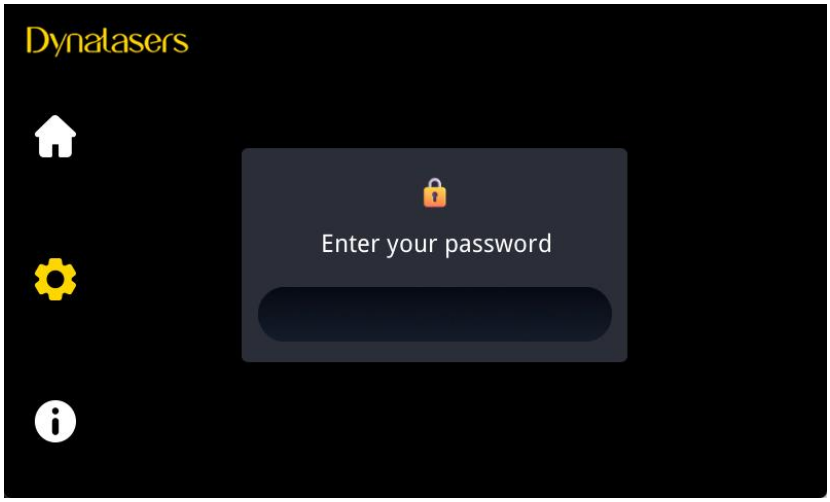
Parameters	Laser Delay	Set the gas pre-flow time before laser emission.
	Gas Shutdown Delay	Set the delay time for gas shut-off after laser shutdown.
	Pulse Duration	Set the pulse duration in pulse mode.
	Burst Interval	Set the interval between bursts in burst mode.

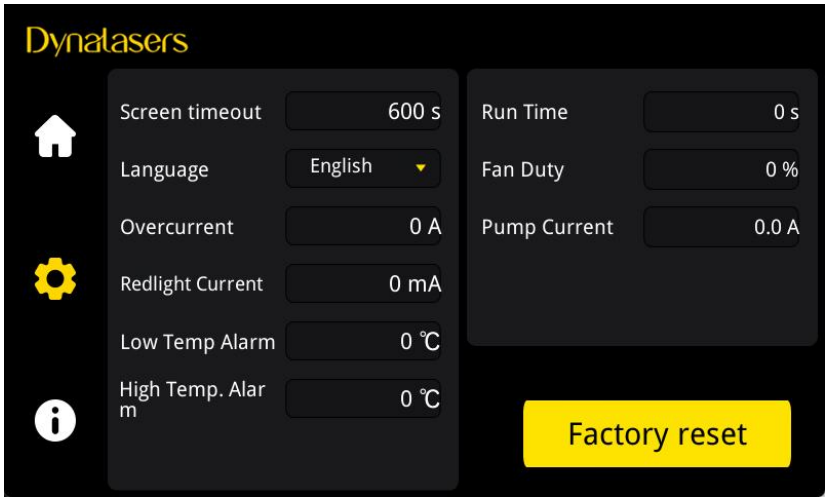
3.Settings Interface

1. First, tap the Settings interface to bring up the input field where you must enter your password：0205.

2. Access to the settings interface is granted only after successful password entry.

3. If the password is incorrect, a prompt will appear: "Incorrect password. Please re-enter." The settings interface contains two sub-interfaces: System Settings and Laser Settings.





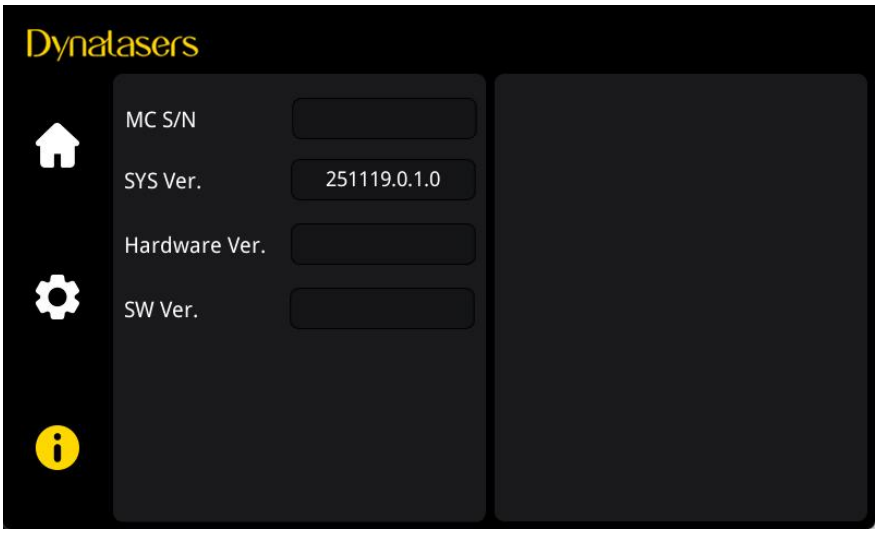
● System Settings: Includes reference point and alarm point information viewing,

Function Categories	Function Description	Notes
Manufacturer Settings	Screen Saver Time	Users can customize the screen saver time, with parameter values ranging from 5 to 60,000 seconds. This facilitates entering standby mode when the device is not in use.
	Language Settings	Users can customize the language.
Power & Fan Status	Operating Time	Unit: seconds. This value displays the total operating time of the machine.
	Overcurrent	Set the current alarm threshold.
	Red Light Current	Adjust the red light current to control the intensity of the red light.
	Low Temperature Alarm	Set the low-temperature alarm threshold.
	High Temperature Alarm	Set the high-temperature alarm threshold.
	Pump Source Current	Display the pump source current magnitude.
	Fan Duty Cycle	Displays the current fan duty cycle of the machine. The higher the value, the faster the fan spins.
Other	Restore Factory Settings	Click to reset the device to factory settings, restoring all data to its original state.

Function Categories	Function Description	Notes
Reference Point Settings	Overcurrent Threshold	Users can customize the overcurrent reference current value within the range of 0-45A. Note: This parameter value cannot be restored by clicking "Restore Factory Settings".
	Red Light Current	Users can customize the red light current within the range of 0-500mA. Note: This parameter value cannot be restored by clicking the factory reset button.
Alarm Point Settings	Low Temperature Alarm	Users can customize the low-temperature alarm value within the range of -20 to 0. Note: This parameter value cannot be restored by clicking "Restore Factory Settings".
	High Temperature Alarm	Users can customize the pump source board temperature alarm value within the range of 40-73°C. Note: This parameter value cannot be restored by clicking the factory reset button.

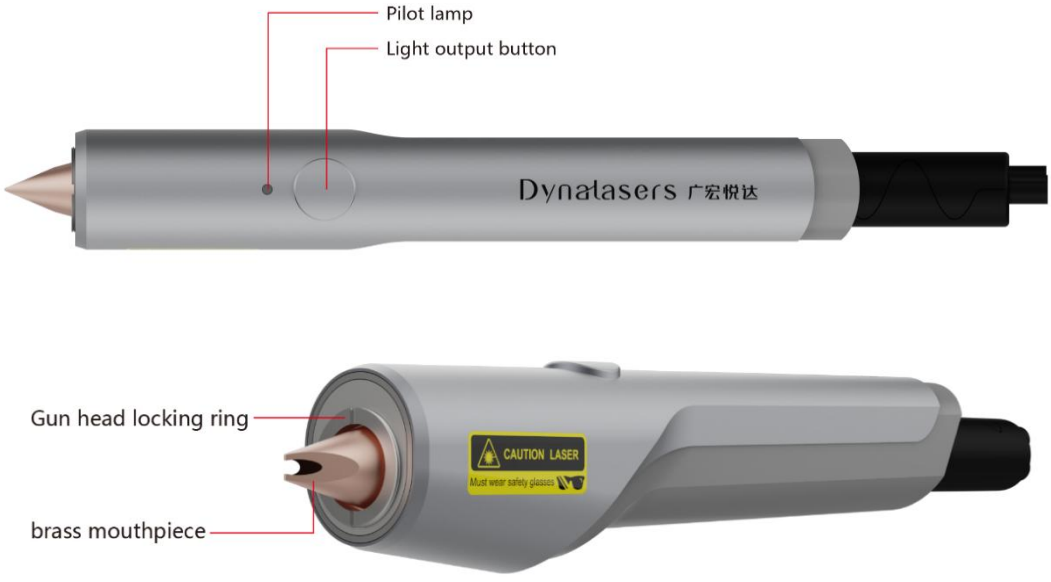
4.Information Interface

The Information Interface displays both device information and business information.



Function Categories	Function Description	Notes
Machine Information	Hardware Version	Machine Hardware Version Number
	Software Version	Machine Firmware Version
	Main Controller S/N	Machine Serial Number (Unique ID for Each Host)
	System Version	Display Firmware Version Number

7-Welding Head Description



The indicator light on the welding gun displays different operational states. When the safety lock and copper nozzle

simultaneously contact the material to be welded, the safety lock activates. At this point, grasp the gun head and press the laser trigger button to emit light; the indicator light will illuminate green. If the welding head or laser malfunctions, the indicator light will illuminate red.

Note:

◎ The copper tip is the contact component for welding operations. During use, the copper tip of the welding gun must form a circuit by directly contacting the work-piece to initiate welding.

Welding Head Indicator Light Explanation:

Indicator Light Color	Description
Green	Laser output
Red	Fault Alarm

Chapter 4 Detailed Specifications

1- Optical Characteristics Parameters Table

Serial No.	Characteristic Parameter	Test Conditions		Minimum Value	Typical Value	Maximum Value	Unit
1	Operating Mode	Continuous Burst	Ambient Temperature 25°C	170	190	210	W
2	Polarization State	Random					
4	Power adjustment range	1% Gradient		10		100	%
5	Center wavelength	100% Continuous		900	915	930	nm
6	Overall electro-optical efficiency	10-100% linear fit			35		%
7	Spectral bandwidth (3dB)	100% Continuous		3		5	nm
8	Short-term power stability	100%continuous>1h			2		%
9	Laser On Time	10%→90%output		50	100	μs	μs
10	Laser Off Time	90%→10%output		50	100	μs	μs
11	Indicator Red Light Power	100% Output		300		1000	μW
12	Fiber Armored Cable Length			3			m
13	Fiber-optic armored cable bend radius			135			mm
14	Output Method	SMA					

2- Lens Specifications

S/N	Lens Name	Lens Specification	Usage
1	Protective Lens	D13*T1.5	1
2	Aspherical Plano-Convex Lens	F23*D13*T4±0.05	1

3-

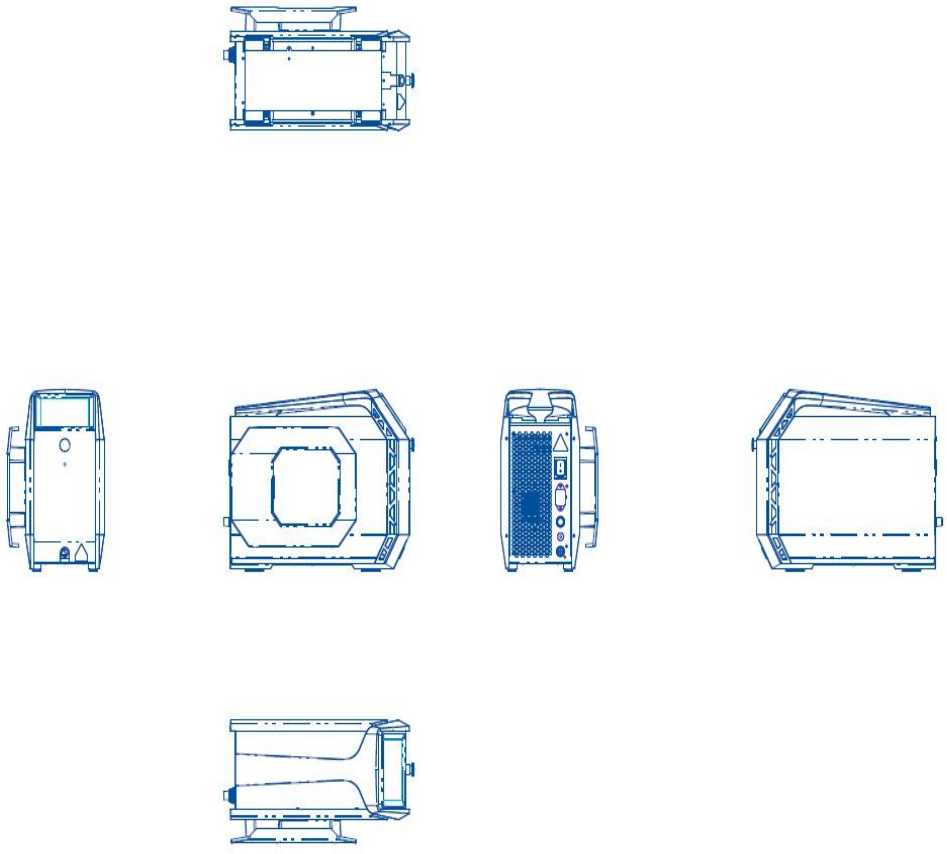
3- General Characteristics Parameters Table

Serial No.	Characteristic Parameter	Test Conditions	Minimum Value	Typical Value	Maximum Value	Unit
1	Operating Voltage	/	100	220	260	VAC
2	Input Power	100% Output	/	/	1	KW
3	Operating Ambient Temperature	/	-15	/	40	°C
4	Operating Environment Relative Humidity	/	10	/	85	%
5	Laser Cooling Method	Air-cooled heat dissipation				

6	Gun tip cooling method	Nitrogen/Argon Gas Cooling				
7	Storage Temperature	/	-20	/	85	°C
8	Overall Dimensions	410-180*328mm				
9	Unit Weight	<8kg				
10	Gun tip size	210.6*33*25mm				
11	Weight of the spearhead	<100g				

3- Structural Layout

Laser Unit Three-View Diagram (Unit: mm)



Chapter 5: Assembly and Disassembly Guide

1- Unpacking Instructions for Shipping Crate

If the packaging shows any signs of external damage, inspect the equipment for damage and notify the freight forwarder immediately. When removing the device from its packaging, proceed with extreme caution to ensure the fiber optic cable does not break or become damaged.

The device is shipped in a foam-lined wooden crate with foam shock absorbers and impact indicators to secure it and ensure safe handling during transit. Exercise extreme caution when unpacking the shipment. To minimize the risk of equipment damage, Dynalasersy recommends thoroughly reviewing these instructions.

2- Delivery and Transportation

The shipping packaging bears carrier and shipper information. However, these markings may not reflect accurate details. Please inspect the exterior of the crate for any visible damage incurred during transit.

• Identification — Packaging labels affixed to the top panel of the wooden crate identify the manufacturer's name, address, and phone number; provide general product information such as model, model code, and serial number; and indicate the shipment date (Month/Day/Year).

• Handling Indicators — Labels and indicator panels affixed to the sides or ends of the wooden crate provide guidance for proper handling.

Caution:

◎ Do not use product accessories or optical cables to lift or position the equipment.

3- Accessory List

Material Name	Quantity	Unit
Laser Safety Goggles (Domestic Version)	1	pcs
Round-tip cotton swabs	1	Pack
Masking tape	1	Roll
Welding Copper Nozzle (Double-Sided)	3	pcs
Welding copper nozzle (single-sided)	3	pcs
Air hose adapter 10 to 6	1	pcs
Trachea D10	0.1	m
Protective lens	10	pcs
Focusing lens	1	pcs
Air tube	3	m
External safety grounding wire	1	PCS
External safety return line	1	PCS
M3*3 machine screws	5	PCS
Hex Socket Screwdriver, Flat Head, Metric M1.5	1	PCS
Y-type wrench	1	PCS

Chapter 6 User Guide

1- Precautions

Note:

◎ Refer to Chapter 4, "Detailed Specifications," to select an appropriate power supply.

◎ Refer to Chapter 2, "Safety Information," to verify that the laser's peripheral operating environment meets requirements.

◎ Wear the supplied noise-canceling earplugs before performing laser welding operations.

2-Power Connection

1. The laser power input cable must be connected to single-phase AC (100-260VAC). Use a power cable with a copper core cross-sectional area of no less than 4 square millimeters (current-carrying capacity no less than 30A).

2. Do not connect the power cord directly to a household power strip.

3. Connect the power cord to the designated voltage and phase: L=220VAC, N=0VAC, PE=grounded. Ensure correct wiring before powering on; failure to connect PE is strictly prohibited.

To ensure safety, Dynalasers strongly recommends installing a 32A circuit breaker (air switch) in series between the power supply unit and the laser.

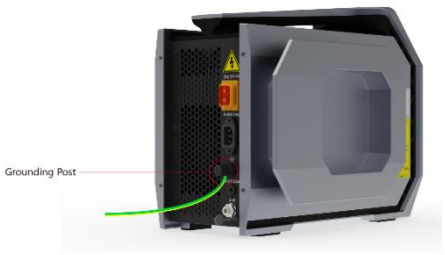
If you have further questions regarding power connections, refer to Chapter 4, Detailed Specifications, to confirm the product's electrical specifications. Electrical connections must be performed by personnel familiar with electrical safety and wiring practices, and all wiring must comply with applicable national and local regulations.

3- Electrostatic Grounding Connection

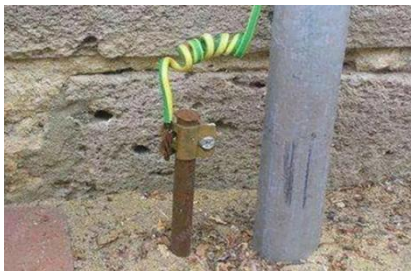
The laser enclosure grounding nut must be securely connected to earth ground using a grounding wire to prevent potential damage to the laser from static electricity.

Wiring as shown:

Insert the wire into the grounding terminal hole and tighten the grounding terminal nut.



One end of the ground wire is secured to the grounding port of the machine.



Connect the other end of the grounding wire to a reliable grounding post.

4- Safety Ground Lock Connection

Before activating the laser, the safety ground lock must be connected to the laser's loop interface. When preparing to emit the laser, attach the other end of the safety ground lock (alligator clip) to the work-piece. Ensure the alligator clip forms a closed circuit with the welding head before laser emission. The safety clip must only be attached to the work-piece. Never attach it to the gun head to prevent accidental laser emission.

5- Gas Connection

This welding head utilizes inert gas cooling. Ensure gas purity and pressure specifications are met. Typically, nitrogen or argon is used as the shielding gas. The shielding gas purity must be 99.99%, and the input gas pressure must be greater than 80Kpa and less than 500Kpa. To ensure welding quality, use a pressure regulator with a flow meter (rated flow 25L/min) to precisely control the gas flow rate.

Connect a 4mm outer diameter gas hose to the Gas_in port and adjust the gas flow rate to 15-20L/min. Set the valve mode to Normally Open (in the Advanced Settings interface) to facilitate gas flow rate adjustments.

Equipment Connection Diagram:

6- Routine Maintenance

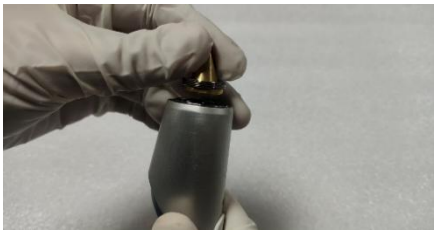
1.Equipment cleaning

The equipment must be blown and cleaned at least once a month. During daily use, avoid dust and water entering the laser to prevent damage to optical components, power supplies, and other parts.

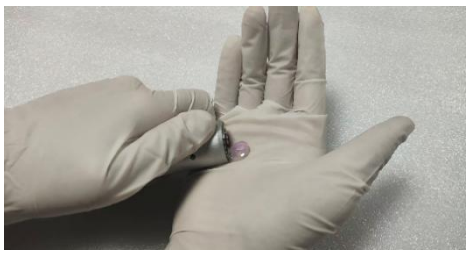
2.Replacement lens operation steps

Below are the lens disassembly and assembly steps:

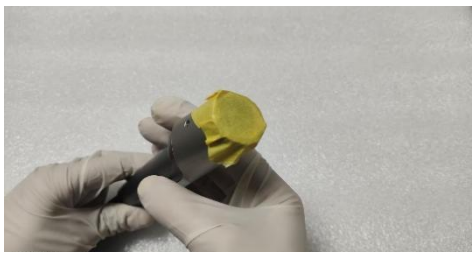
1. Use the Y-shaped tool to loosen the locking ring clockwise and remove it;



2. Remove the copper nozzle;

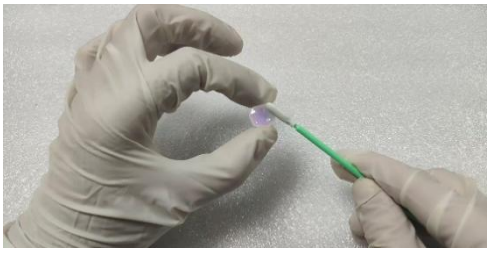


3. Remove the lens (preferably using a lint-free cloth);

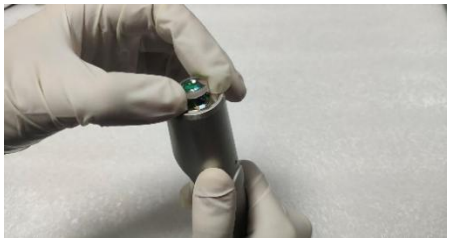


4. Seal the nozzle opening with masking tape;

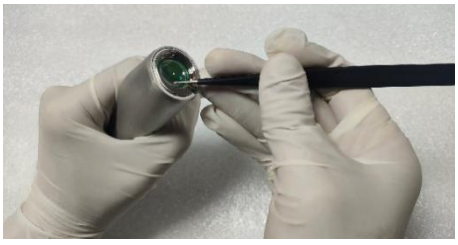
5. Dip a cotton swab in alcohol;



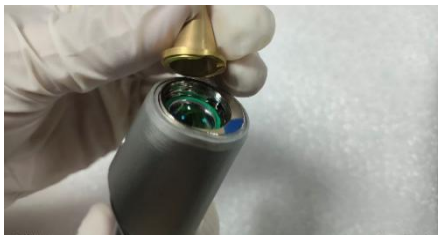
6. Hold the lens by its edges with your fingers and clean it with the swab;



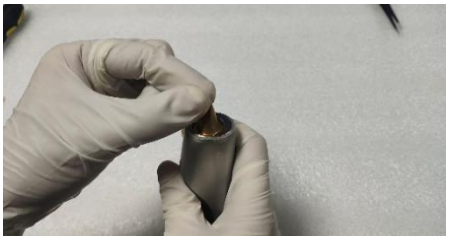
7. Replace the cleaned lens into the gun body;



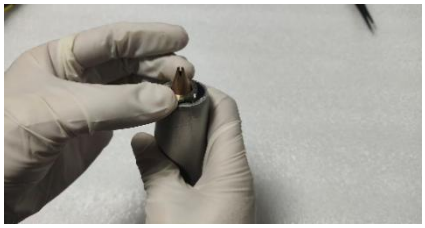
8. Use tweezers to align the lens flat;



9. Align the air vent beneath the copper nozzle with the step plate on the gun body;



10. Press the nozzle into the gun body;



11. Slide on the locking ring;

12. Use the Y-shaped tool to tighten the locking ring;

7- Startup Procedure

Warning:

◎ Before use, ensure all electrical connections (including shielding gas and grounding) are properly connected. Where possible, secure all connectors with screws.

◎ Never look directly at the laser output port during operation. Always wear safety goggles, earplugs, and a mask.

◎ Before performing any wiring operations, turn off all power switches for the laser.

The startup procedure is as follows:

(1) Connect the power input to the circuit breaker;

(2) Connect the safety ground lock to the loop interface;

(3) Connect the shielding gas tubing (OD 4mm) to the gas port and open the gas valve;

(4) Turn on the power switch on the rear panel of the laser;

(5) Release the emergency stop switch on the laser's front panel;

(6) Tap the touchscreen to enter the software interface and adjust the corresponding parameters (laser power, pulse frequency, pulse duration, laser delay, gas shut-off delay);

(7) Set the gas valve mode to normally open and adjust the shielding gas flow rate to 15-20 L/min;

(8) Attach the alligator clips to the work-pieces requiring welding;

(9) Turn on the laser enable switch;

(10) Press and hold the gun trigger to initiate laser emission.

8- Product Accessories Inspection and Cleaning Guide

1. Product Accessory Inspection

To clean the gun head focusing lens window, you will need the following equipment:

(1) Lint-free fiber optic cleaning cloth and cotton swabs

(2) Anhydrous ethanol

(3) Masking tape

Note:

◎ Before using this product, inspect the protective lens for cleanliness and damage. Using a dusty or damaged protective lens may damage the welding gun head (focusing lens, extension tube, etc.) and affect welding results.

◎ Unauthorized disassembly of the gun head or laser product will void Dynalasers warranty.

◎ Clean the product in a dust-free environment while wearing powder-free gloves or finger cots. Dynalasers Laser will not provide warranty coverage for damage to the torch caused by improper operation or incorrect cleaning procedures.

◎ During cleaning, the concentration of anhydrous ethanol must exceed 99.5%.

Chapter 7: Service and Maintenance

1- Maintenance Guidelines

Note:

◎ This product contains no user-serviceable parts, components, or assemblies. All maintenance must be performed by Dynalasers professionals.

◎ To protect your rights, contact Dynalasers after-sales service or local sales representative immediately upon discovering any malfunction. Request product repair or replacement service. After authorization from Dynalasers, securely package the warranty item and return it to Dynalasers.

◎ If any damage is found upon receiving the product, retain proof documentation to file a claim with the carrier.

Important:

◎ Do not ship any products back to Dynalasers without prior communication and confirmation.

◎ If the product is outside the warranty period or coverage, the customer is responsible for repair costs.

Modifications:

Dynalasers reserves the right to modify any product design or structure without prior notice.

2- Service Statement

For questions regarding Dynalasers product safety, setup, operation, or maintenance, please carefully read this manual and strictly follow the operational guidelines provided.

For inquiries, please call Dynalasers Customer Service at: 400-000-3207

After your issue is confirmed by Dynalasers Customer Service Department, it will be specifically followed up by the Technical Support Team. If your issue remains unresolved after communicating with the Technical Support Team, you may need to return the product to Dynalasers for further investigation.

Chapter 8 Warranty Statement

1- General Terms

Shenzhen Dynalasers Technology Co., Ltd. provides warranty services for products exhibiting defects caused by materials or manufacturing processes within the contractual warranty period. We guarantee that products will meet the relevant quality and specification requirements documented in the relevant materials under normal usage conditions.

Shenzhen Dynalasers Technology Co., Ltd. provides repair or replacement services for products that fail due to material or manufacturing defects within the contractual warranty period. Repaired or replaced products under warranty shall retain the remaining warranty period of the original product.

2- Warranty Limitations

Products, components (including fiber optic connectors), or equipment are not covered under warranty under the following circumstances:

(1) Products that have been tampered with, opened, disassembled, or modified by personnel other than Dynalasers;

(2) Damage caused by improper use, negligence, or accidents;

(3) Use beyond the product's specified specifications and technical requirements;

(4) Indirect laser damage caused by faults in user software or interfaces;

(5) Damage resulting from improper installation, maintenance, or use under abnormal operating conditions not covered in this manual;

(6) Accessories and fiber optic connectors are not covered under warranty.

Customers are responsible for understanding the above information and operating the product in accordance with the user manual. Failure to do so will result in product malfunctions not being covered under warranty.

Important:

◎ Within the warranty period, customers must report any malfunctions within one month of discovery.

◎ Dynalasers does not authorize any third-party entity or individual to repair or replace our products.

Chapter 9 Decommissioning instructions

1 – Machine Scrap

The main methods for handling waste laser equipment include selecting professional recycling, following environmental principles and taking preventive measures.

The best way to dispose of discarded laser tubes is to choose a professional electronic waste recycling service. These services usually have the qualifications and technology to handle hazardous substances, ensuring that laser tubes are safely and environmentally treated. Recycling companies will classify, dismantle, and refine waste laser tubes, and recycle useful materials to reduce the pressure on natural resource extraction.