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DMK SUP23T

DMK SUP23T Laser Welding Gun Head User Manual

Model: SUP23T

1. INTRODUCTION

The DMK SUP23T is a versatile handheld laser welding head designed for multiple functions, including welding, cleaning, cutting, and welding gap cleaning. This manual provides essential information for the safe and effective operation, setup, and maintenance of your SUP23T device.



Figure 1: The DMK SUP23T Laser Welding Gun Head, a portable device for various laser applications.



SUP23T

4 in 1 Laser Welding Head



Figure 2: The SUP23T's multi-functional capabilities, including welding, cleaning, cutting, and gap cleaning.

2. SAFETY INFORMATION

Operating laser equipment requires strict adherence to safety protocols. The SUP23T incorporates a self-developed safety detection system and real-time temperature monitoring to ensure safe operation. Always wear appropriate personal protective equipment (PPE), including laser safety glasses, and ensure the work area is properly ventilated and free from flammable materials.

- Always wear certified laser safety eyewear.
- Ensure proper ventilation to remove fumes and debris.
- Keep the work area clear of combustible materials.
- Do not point the laser at people or animals.
- Refer to local safety regulations and guidelines for laser operation.

3. PRODUCT OVERVIEW AND COMPONENTS

The SUP23T handheld laser welding gun head is designed for ergonomic use and precision. Familiarize yourself with its key components:

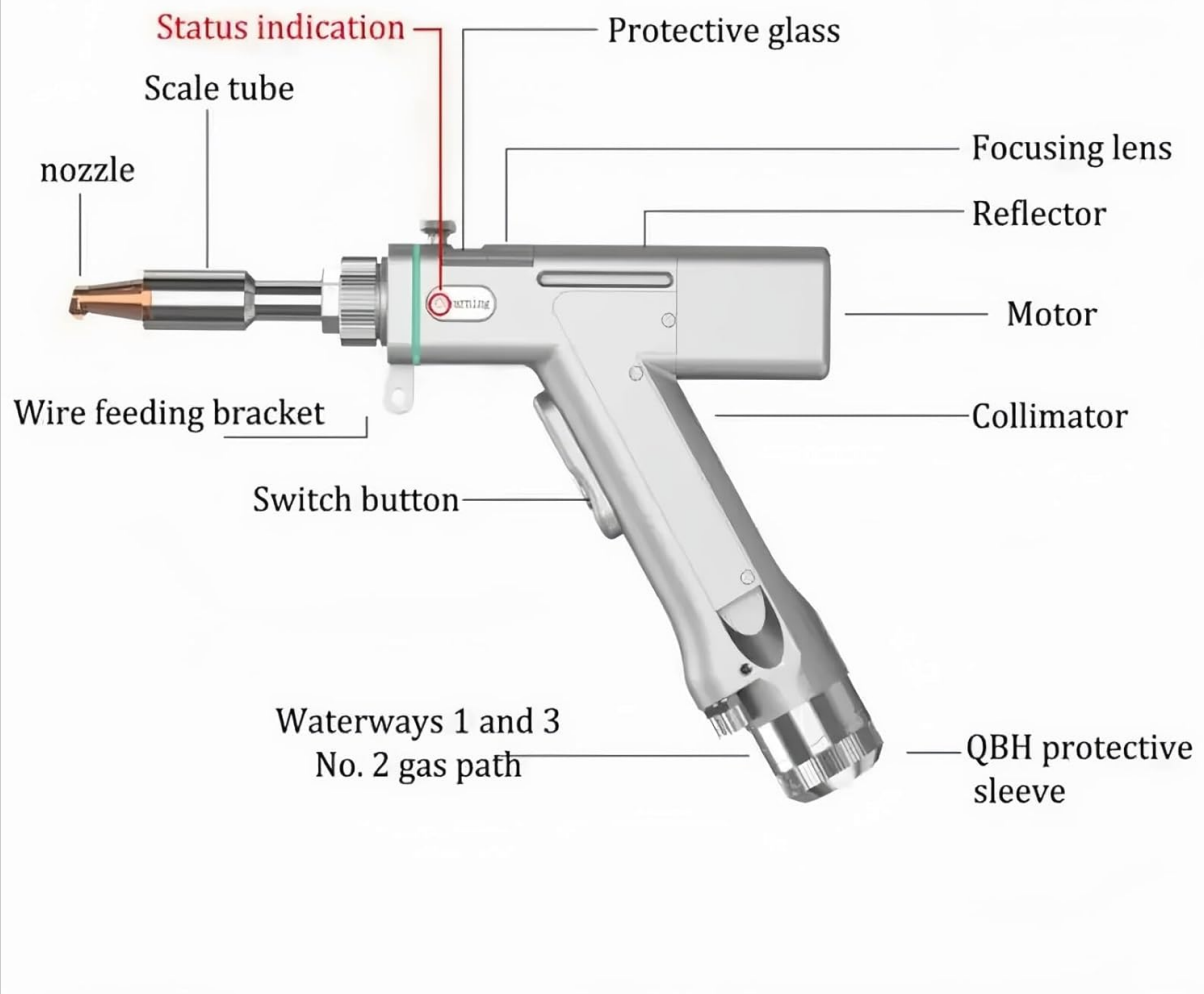


Figure 3: Detailed diagram of the SUP23T components, including nozzle, protective glass, focusing lens, reflector, motor, collimator, wire feeding bracket, switch button, waterways, and QBH protective sleeve.

- **Nozzle:** Directs the laser beam and shielding gas.
- **Protective Glass:** Shields internal optics from spatter and debris.
- **Focusing Lens:** Concentrates the laser beam to a precise spot.
- **Reflector:** Redirects the laser beam within the head.
- **Motor:** Component for internal mechanisms, potentially beam oscillation or wire feeding.
- **Collimator:** Ensures the laser beam is parallel before focusing.
- **Wire Feeding Bracket:** Supports the wire feeder mechanism (if used with a compatible system).
- **Switch Button:** Activates the laser.
- **Waterways:** Channels for the cooling system.
- **QBH Protective Sleeve:** Connects the laser head to the fiber optic cable from the laser source.

4. SETUP AND INSTALLATION

Proper setup is crucial for optimal performance and safety. The SUP23T is designed for ease of installation and maintenance.

1. **Connect to Laser Source:** Securely attach the QBH protective sleeve to your compatible laser

source's fiber optic output. Ensure all connections are tight and free from damage.

2. **Cooling System:** Connect the waterways to your external cooling system. Verify proper coolant flow before operation.
3. **Gas Supply:** Connect the appropriate gas lines for shielding gas (if required for your application).
4. **Power Connection:** Ensure the laser source and any associated control systems are correctly powered according to their respective manuals.
5. **Lens Installation:** The focusing and protective lenses feature a pull-out design for easy installation and replacement. Ensure they are clean and correctly seated.
6. **Collimating Lens:** The collimating lenses are integrated with the QBH for easy on-site replacement.
7. **Motor Maintenance Window:** Utilize the motor maintenance window for easy alignment and inspection of internal components.



Figure 4: The SUP23T handheld laser welding gun head shown with its associated cables and control unit, illustrating a typical setup configuration.

5. OPERATING INSTRUCTIONS

The SUP23T offers four primary functions: welding, cleaning, cutting, and gap cleaning. Select the appropriate function and parameters on your laser source control system.

1. **Power On:** Activate the laser source and control system according to their respective manuals.
2. **Parameter Setting:** Adjust laser power, pulse duration, frequency, and other relevant parameters on your laser source for the desired application (welding, cleaning, cutting, or gap cleaning).
3. **Focus Adjustment:** Adjust the vertical focal length ($\pm 10\text{mm}$) and spot adjustment range (Line 0-8mm) as needed for your application.
4. **Initiate Operation:** Hold the SUP23T firmly using its ergonomic design. Press the switch button to activate the laser.
5. **Perform Task:** Guide the laser head smoothly and consistently over the workpiece. Observe the process carefully and adjust parameters as necessary.
6. **Power Off:** Release the switch button to deactivate the laser. Follow the shutdown procedure for your laser source and cooling system.



Figure 5: An operator demonstrating the use of the SUP23T handheld laser welding gun head during a welding operation, highlighting its ergonomic design.

SUP 23T Handheld Laser Welding Gun

SUP23T



Figure 6: Close-up of a hand holding the SUP23T, emphasizing its lightweight and ergonomic design for comfortable operation.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your SUP23T laser welding head.

- **Lens Cleaning and Replacement:** The focusing and protective lenses are critical components. Inspect them regularly for damage or contamination. Their pull-out design facilitates easy replacement. Use only approved lens cleaning materials and techniques.
- **Collimating Lens Replacement:** The collimating lenses are integrated with the QBH and can be replaced on-site if necessary.
- **Motor Inspection:** Periodically inspect the motor through the dedicated maintenance window.
- **Cooling System:** Ensure the cooling system is functioning correctly and that coolant levels are maintained.
- **General Cleaning:** Keep the exterior of the welding head clean and free from dust and debris. The SUP23T body is designed to be dust-proof and wear-resistant.

Dust-proof and Wear-resistant Strong Anti-interference Ability

The body of the SUP 23T has excellent dustproof and anti-interference performance, ensures more efficient working performance

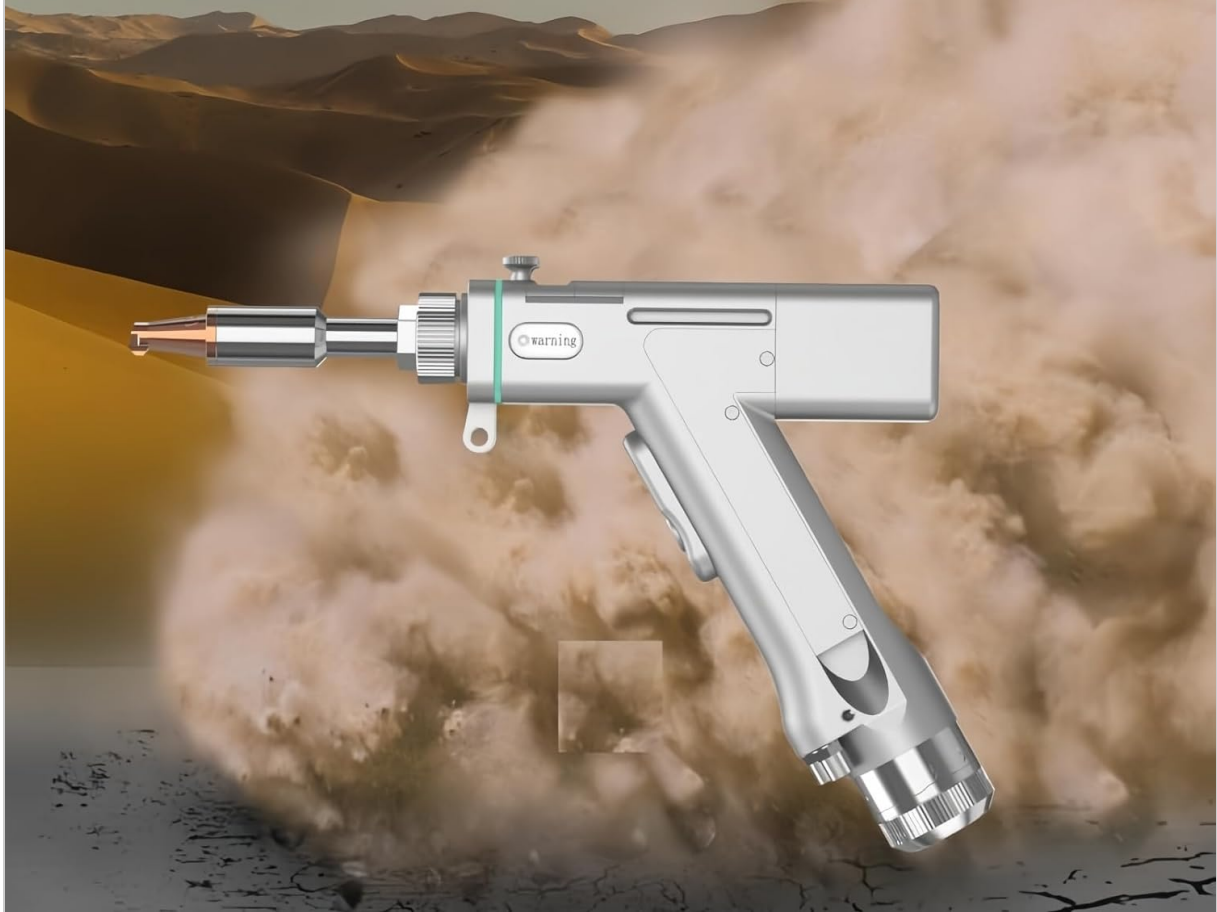


Figure 7: The SUP23T laser welding gun head demonstrating its dust-proof and wear-resistant construction, suitable for various working environments.

7. SPECIFICATIONS

Technical specifications for the DMK SUP23T Laser Welding Gun Head:

Parameter	Value
Product Name	Laser Welding Gun Head
Model	SUP23T
Applicable Range (Power)	≤3000W
Collimated Focal Length	D16 F60mm
Focus Focal Length	D20 F150mm
Maximum Air Pressure	15 Bar
Vertical Focal Length Adjustment	±10mm
Light Spot Adjustment Range	Line 0-8mm
Applicable Wavelength	1070nm
Weight	0.7kg

SUP 23T Handheld Laser Welding Gun

Model	SUP 23T Handheld Laser Welding Gun
Power	3000W
Scope of Application	<3000W
Collimation Focal Length	60mm
Focus Focal Length	150mm
Maximum Air Pressure	15Bar
Vertical Focus Adjustment Range	±10mm
Spot Adjustment Range	Line0-8mm
Applicable Wavelength	1070nm
Weight	0.75kg

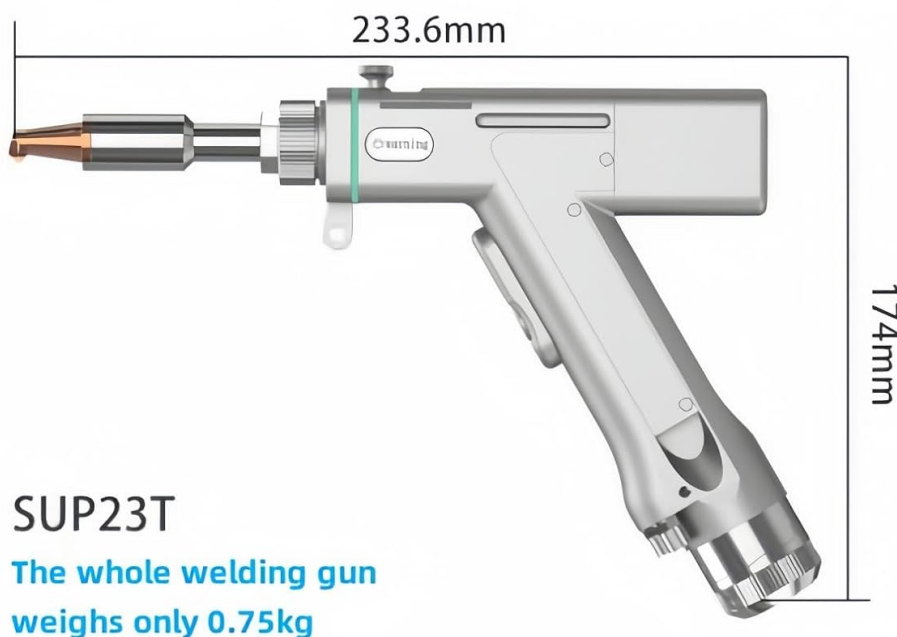


Figure 8: Visual representation of the SUP23T's key specifications and physical dimensions.

8. TROUBLESHOOTING

If you encounter issues with your SUP23T laser welding head, consider the following general troubleshooting steps:

- **No Laser Output:** Check power connections, laser source status, and safety interlocks. Ensure the switch button is fully pressed.
- **Poor Weld/Clean Quality:** Verify laser parameters (power, speed, focus), lens cleanliness, and gas flow.
- **Overheating:** Check the cooling system for proper function, coolant levels, and blockages. Refer to the real-time temperature monitoring system.
- **Unusual Noises/Vibrations:** Power off immediately and inspect for loose components or obstructions.

For persistent issues or complex problems, please contact DMK customer support for assistance.

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please refer to the documentation provided with your complete laser system or visit the official DMK website. Keep your purchase receipt and model number (SUP23T) readily available when contacting support.

DMK Laser Store: Visit the DMK Store on Amazon