Established over 20 years, backed by more than 30 years of hands-on machinery experience.

WiseLaser EVO Series

4 in 1 Handheld Fiber Laser Welding, Cutting, Cleaning and Seam Cleaning Machine, Water Cooled

OPERATING MANUAL

Models: EVO-1000W, EVO-1500W, EVO-2000W, EVO-3000W
Document: M261015-2 Rev 1, 15/10/2026
Published by Capital Machinery Sales Pty Ltd

WARNING: Class 4 laser product. Do not operate this equipment without reading and understanding this manual.

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Quick Start

This page covers everyday use. Read Section 1 Safety before using the machine for the first time.

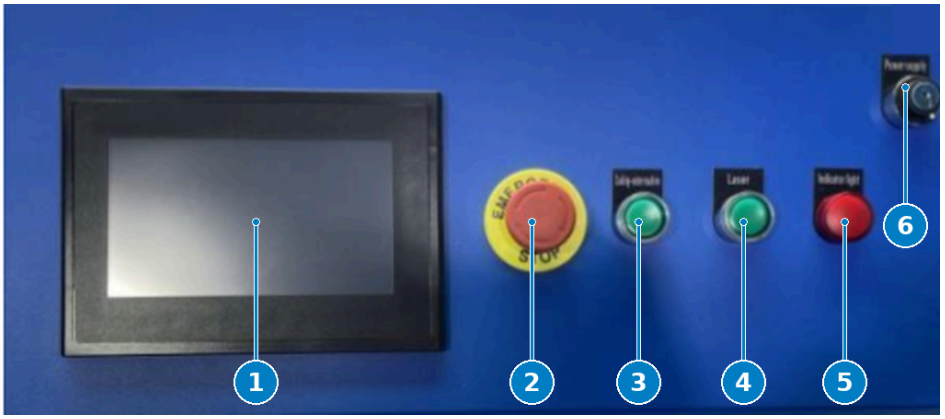


Figure 1: Control panel

Before you start (every day)

- Check the power cable is connected correctly: L to active, N to neutral and PE to earth.
- Check there is enough shielding gas (argon or nitrogen), the gas hose is intact and the gas valve is open. Gas pressure 0.1 to 0.3 MPa.
- Check the water hoses are in good condition and the coolant is at the standard level (15).
- Check the welding head output for dust or contamination. Clean with lens paper if needed.
- Make sure everyone in the room wears approved Class 4 laser safety glasses, and the warning screen is in place at the entrance.

Welding

1. Switch on the master power switch (7).
2. Turn the emergency stop button (2) clockwise to release it.
3. Press the chiller start button (3). The chiller and the system card start together and the touch screen (1) turns on.
4. When the chiller water temperature is above 19.5 °C, switch on the laser button (4) or circuit breaker.
5. Clip the safety ground clip to the workpiece. Check Safety Lock shows green on the Home screen.
6. Set scan speed, scan width and peak power for the plate thickness (Section 4.4). To save settings on the Process screen, use Import, Save, Return. **Password 123456.** Tap Save after each setting.
7. Pull the trigger on the welding head to fire the laser.

Stopping

Release the trigger. In an emergency, press the emergency stop button (2). To finish, switch off in the reverse order of start up, then close all gas valves.

WARNING: Class 4 laser. The beam is invisible (1080 nm). Direct or reflected radiation can cause permanent eye and skin damage. Never look at the output of the welding head while the laser is active.

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1 Safety

1.1 General safety

Read this manual before using the machine, and keep it with the machine.

- Only trained and authorised people may use, set up or maintain the machine. One operator only.
- Use the machine only for laser welding, cutting, cleaning and weld seam cleaning of metals within the limits in Section 2.
- Wear safety gloves and safety boots, plus any other PPE listed in Section 1.2. No loose clothing or jewellery, and tie back long hair.
- Keep the work area clean, dry, well lit and clear of offcuts.
- Never remove, bypass or modify any guard, safety device or safety sign.
- Never clean, oil or adjust the machine while it is running.
- Electrical work must only be done by a licensed electrician.
- In a fire, isolate the power and use a dry powder or CO2 extinguisher. Never use water on electrical equipment.
- Report any damage or fault, and do not use the machine until it is repaired.

1.2 Machine specific hazards

Laser radiation

- This is a high power Class 4 laser. It emits invisible radiation at a wavelength of 1080 nm.
- Direct or indirect exposure can cause serious damage to the eyes or skin. The beam can cause permanent harm to the retina and cornea.
- Approved laser safety glasses must be worn at all times while the laser is operating, by everyone in the room.
- Never look directly at the output of the welding head while the laser is active.
- Do not use the laser in dim or dark surroundings.
- The beam and its reflections are a serious threat to eyes and skin. Some materials can catch fire or give off harmful substances when hit by the beam.

Electric shock

- Electric shock can cause serious injury or death. Do not touch live electrical parts.
- Inspect the equipment regularly. Repair or replace worn or damaged parts straight away.
- Always disconnect the power before maintenance or repairs.
- Make sure the earth wire of the power cable is securely connected to the earth point in the isolator box. The product must be earthed through the PE wire of the AC power cable.
- Tighten all electrical connections to stop them overheating.
- Make sure the DC power source is set to the correct voltage.
- Do not open the laser cover. This can cause electric shock and voids the warranty.
- The laser source has no user serviceable parts. All maintenance and repairs on it must be carried out by Raycus. Do not break the seal or remove the protective cover.

Fire and explosion

- Hot metal and sparks can cause burns and fires.
- Clear all flammable material within 10.7 m (35 ft) of the welding area.
- Watch for any sign of fire, and keep a fire extinguisher close by.

Moving parts

- Stay clear of all moving parts.
- Only qualified people may remove covers, panels or guards for maintenance. Refit them all securely before reconnecting the power.

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Welding head and optics

- Dust on the end of the collimator can damage the lens.
- Before use, inspect the welding head output for dust or contamination. Clean it with suitable lens paper if needed.
- Never fit the output head while the laser is operating.
- Cap the output head when not in use and do not touch the output lens.
- Use the correct power supply as shown in Section 2. A wrong supply can damage the machine.
- Operate the laser only by the control and adjustment methods in this manual. Using it any other way can damage the laser, compromise its safety features and void the warranty.

Training and the work area

- Read all safety instructions in this manual and the safety labels on the machine. Make sure you fully understand the machine and its controller before use.
- Do not let anyone use the machine without proper training. The operator must be fully trained in advance and understand the risks and benefits of the equipment.
- Keep the machine in good working condition. Unauthorised modifications compromise safety and shorten its life.
- Fit a protective screen at the room entrance with the warning: "Enter at your own risk. Portable laser welding in progress."
- Children and pets must not enter the room during welding.
- Class 3B and Class 4 lasers should be fully enclosed and run as Class 1 lasers where possible. If full enclosure is not practical, use the laser only in a controlled and monitored area so no one is exposed by accident.
- No one may ever be exposed to hazardous laser radiation.
- Safety measures must be in place, and everyone using the equipment must be trained or given clear instructions. Employers must enforce safety rules and employees must follow them.
- On purchase of the laser system, all responsibility for its use and any associated risks passes to the buyer.

1.3 Safety devices

- **Emergency stop button (2):** stops the machine. Turn it clockwise to release it before starting.
- **Master power switch (7) and laser button (4) or circuit breaker:** switch the machine and the laser source on and off.
- **Safety lock (safety ground clip):** the Safety Lock indicator on the Home screen shows green only when the safety ground clip is properly connected.
- **Temperature alarm:** default setting 65 °C. Setting it to 0 turns the alarm off.
- **Laser, water cooler and air pressure alarms:** shown on the Monitor screen.
- **Protective lens:** protects the focus lens, collimator and mirror parts in the welding head.
- **Output head cap:** protects the output lens when the machine is not in use.

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2 Specifications

Item	EVO-1000W	EVO-1500W	EVO-2000W	EVO-3000W
Laser type	Continuous fibre laser	Continuous fibre laser	Continuous fibre laser	Continuous fibre laser
Output rated power	1000 W	1500 W	2000 W	3000 W
Supply	Three-phase 415 V AC	Three-phase 415 V AC	Three-phase 415 V AC	Three-phase 415 V AC
Frequency	50 Hz	50 Hz	50 Hz	50 Hz
Current	< 27 A	< 36 A	< 26 A	< 45 A
Whole machine power	< 6 kW	< 8 kW	< 10 kW	< 17 kW
Welding thickness	0.3 to 3 mm	0.3 to 4.5 mm	0.3 to 6.5 mm	0.3 to 8 mm
Optical fibre core	20 µm	30 µm	50 µm	50 µm
Water flow	> 12 L/min	> 15 L/min	> 25 L/min	> 25 L/min
Welding head	SUP20S	SUP20S	SUP20S	SUP21S
Welding head weight	1.1 kg	1.1 kg	1.1 kg	0.8 kg
Product mix	Integrated	Integrated	Integrated	Integrated
Size (L x D x H)	1200 x 600 x 1300 mm	1200 x 600 x 1300 mm	1200 x 600 x 1300 mm	1250 x 510 x 1170 mm
Weight	160 kg	160 kg	250 kg	320 kg

Table 1: Model data

All models use a left and right oscillating galvanometer welding head.

Material	EVO-1000W	EVO-1500W	EVO-2000W	EVO-3000W
Stainless steel	3 mm	4.5 mm	6.5 mm	8 mm
Mild steel	3 mm	4.5 mm	6.5 mm	8 mm
Aluminium alloy	2.7 mm	4 mm	5.5 mm	6 mm
Aluminium	2 mm	3 mm	4.5 mm	5 mm
Galvanised sheet	2.5 mm	3.8 mm	5 mm	5.5 mm
Brass	1 mm	1.5 mm	2.5 mm	3.5 mm
Red copper	0.8 mm	1.2 mm	2 mm	3 mm

Table 2: Maximum welding thickness

The maximum thickness above includes the use of filler wire. Gaps or seams smaller than 0.3 mm can be welded without filler wire. In such cases the maximum thickness increases by 1 mm with each increment.

Item	Value
Power regulation range	0 to 100%
Laser centre wavelength	1080 ±5 nm
Output mode	Continuous or modulated
Modulation frequency	50 to 20000 Hz
Power instability	±1.5%
Optical fibre output interface	QBH
Indicating system	Red laser
Optical fibre length	10 mm (as stated by the supplier)

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Item	Value
Welding torch cable length	10 m
Collimating focal distance	60 mm
Focusing focal distance	150 mm or 200 mm
Wire diameter	0.8, 1.0, 1.2, 1.6 and 2.0 mm
Shielding gas mode	Coaxial
Weld seam width (adjustable)	0 to 8 mm
Operating ambient temperature	-10 to 40 °C
Working humidity	< 70%

Table 3: Common data

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3 Installation

3.1 Main components



Figure 2: Machine overview: control panel (8) and wire feeder (9)



Figure 3: Laser source (10), chiller (11) and wire feeder (9)

The photos are for reference only. The equipment supplied matches the actual product.

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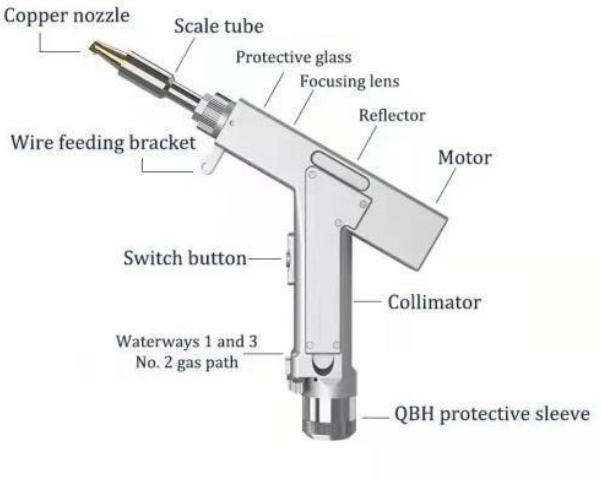


Figure 4: SUP20S welding head (EVO-1000W, EVO-1500W and EVO-2000W)



Figure 5: SUP21S welding head (EVO-3000W)

3.2 Site

Item	Requirement
Floor	Flat ground, with no source of shock or vibration nearby.
Environment	Clean, anti-corrosion, with no high concentration of volatile gas.
Temperature and humidity	10 to 40 °C, humidity less than 70%.
Optical fibre	Bending radius 0.2 m or more.

Table 4: Operating environment

Dew point (°C) at ambient temperature and maximum relative humidity:

Ambient (°C)	20%	30%	40%	50%	60%	70%	80%	90%	95%
20	-3.5	2	6	9	12	14.5	16.5	18	19
25	0.5	6	10.5	14	16.5	19	21	23	24
30	4.6	10.5	15	18.5	21.5	24	26	28	29
35	8.5	15	19.5	23	26	28.5	31	33	34
40	13	20	24	27.5	31	33.5	36	38	39

Table 5: Constant dew point at ambient temperature and relative humidity

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3.3 Electrical connection

1. Have a licensed electrician connect the machine to the supply shown for your model in Section 2.
2. Connect L to active, N to neutral and PE to earth.
3. Earth the machine as required. Make sure the earth wire is securely connected to the earth point in the isolator box.
4. Tighten all electrical connections.

Supply quality: line voltage fluctuation must be less than 10%.

NOTE: A three-phase outlet with a neutral can be used, or a dedicated high current outlet can be installed by a licensed electrician.

3.4 Shielding gas and coolant

- Use argon or nitrogen with a purity of at least 99.99%.
- Check the nameplate on the gas cylinder matches the required gas, purity and pressure.
- Connect the gas from the cylinder to the gas inlet on the machine.
- Gas flow: 15 L/min or more. Gas pressure: 0.1 to 0.3 MPa.

CAUTION: Connect the gas correctly. A poor gas connection can damage the lens and the welding head.

Coolant: for first time use, fill the water inlet (14) with coolant and pure water up to the standard level on the water level gauge (15).

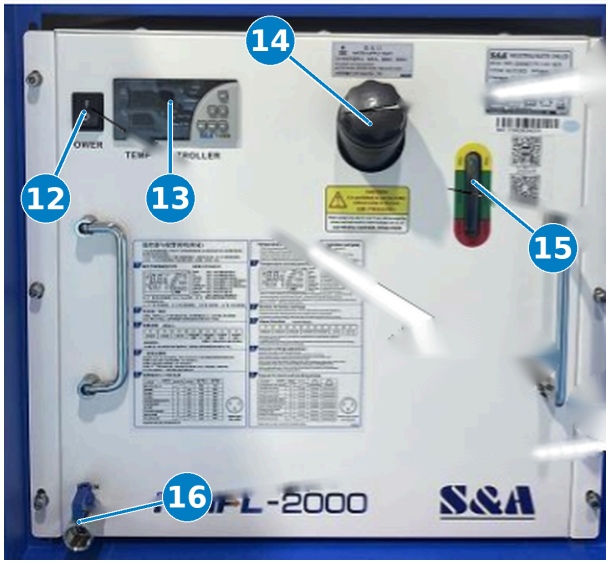


Figure 6: Chiller: power switch (12), temperature controller (13), water fill inlet (14), water level gauge (15), drain outlet (16)

3.5 Wire feeder

The wire feed system has three main parts: the wire feed unit, the wire feed hose and the wire feed centre. It handles aluminium, carbon steel and stainless steel welding wire. Standard wire sizes are 0.8, 1.0, 1.2, 1.6 and 2.0 mm. Fit the correct roller for the wire being used. A detailed installation video is available from Capital Machinery Sales through capitalmachinery.com.au.

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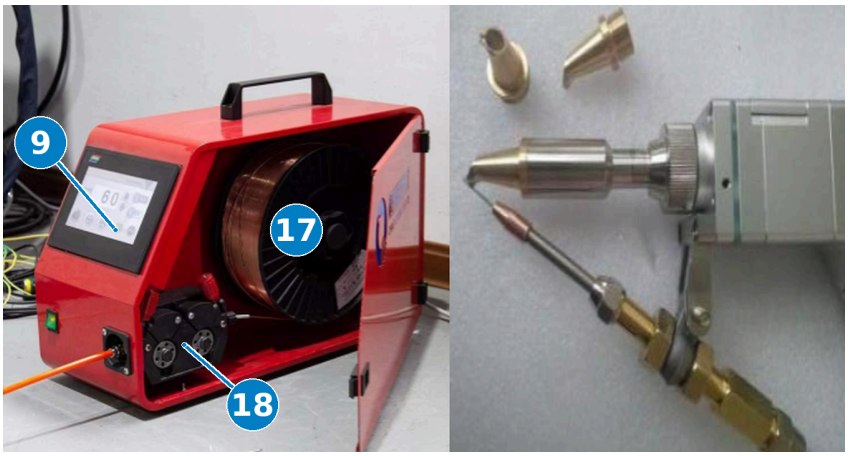


Figure 7: Wire feeder (9), wire spool (17) and wire feed rollers (18). Right: welding head nozzle with wire feed

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4 Operation

4.1 Controls

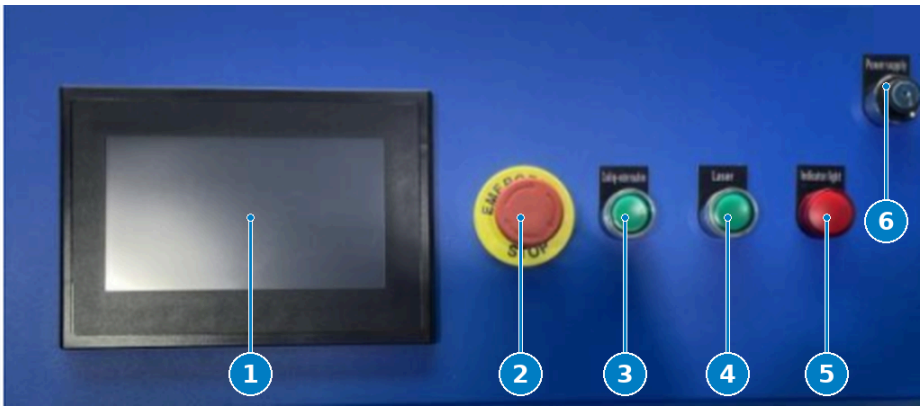


Figure 8: Control panel

Item	Control	Function
1	Touch screen	Sets and saves welding settings and shows machine status.
2	Emergency stop button	Stops the machine. Turn clockwise to release before starting.
3	Chiller start button	Starts the chiller and the system card together. The touch screen turns on.
4	Laser button	Switches the laser source on. Press only when the chiller water is above 19.5 °C.
5	Indicator light	Indicator lamp on the control panel.
6	Power supply key switch	Key switch labelled "Power supply" on the control panel.
7	Master power switch	Switches the machine power on and off.
12	Chiller power switch	Power switch on the chiller.
	Welding head trigger	Fires the laser while pulled.
	Safety ground clip	Clips to the workpiece. The laser works only when the safety lock is connected.

Table 6: Controls

4.2 Touch screen

Home screen

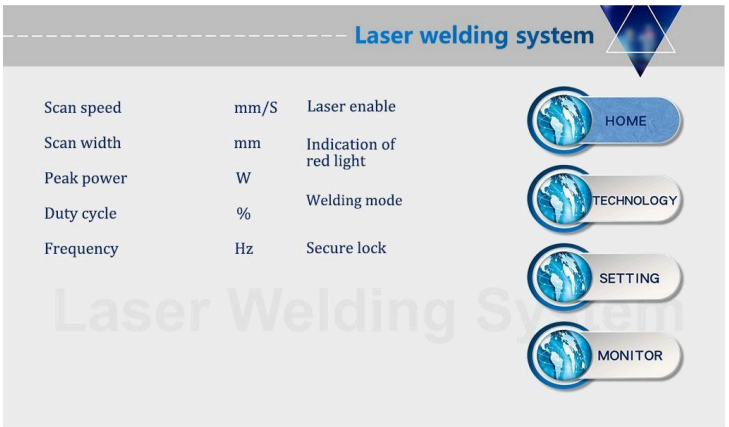


Figure 9: Home screen

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Field	What it does
Scan speed	Left and right swing speed of the red light. Range 0 to 6000 mm/s. Normally about 300 mm/s.
Scan width	Left and right swing width of the red light. Range 0 to 6 mm (2 to 5 mm).
Peak power	Laser output power. Set it to suit the material thickness.
Duty cycle	Ratio of the time the signal stays high during one pulse cycle. No change needed.
Pulse frequency	Number of times per second the signal goes from high to low and back. No change needed.
Laser activation	Shows red in welding mode. No change needed.
Safety lock	Shows green when the safety ground clip is properly connected to the welding head.

Table 7: Home screen

Process screen

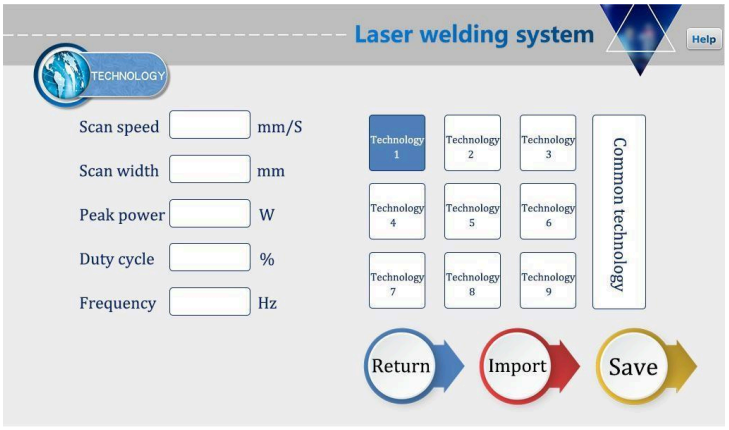


Figure 10: Process screen

- Set scan speed, scan width and peak power to suit the plate thickness.
- Save settings with Import, Save, Return.
- Add common settings to the process library for quick use.

NOTE: Settings password: **123456**. Enter it each time you import and save settings. Tap Save after each setting.

Parameter settings

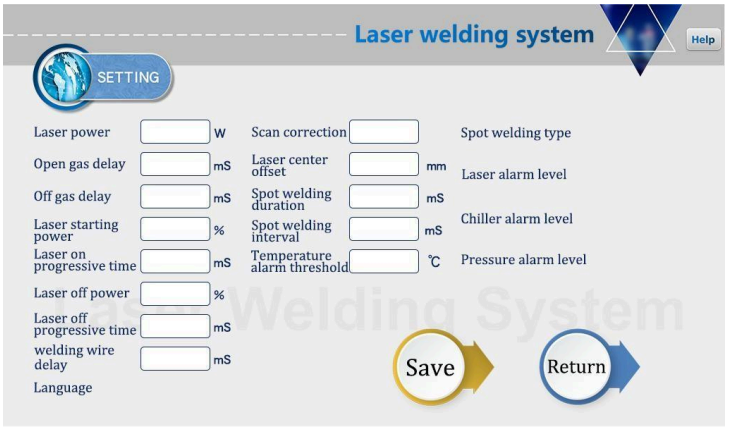


Figure 11: Setting screen

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Field	What it does
Laser power	Output of the laser source. Make sure this is entered accurately.
Gas switch delay	Default 200 ms. Adjustable from 200 to 3000 ms.
Power ramp	On power up, laser power rises from N1% to 100%. On power down, it falls from 100% of the process power to N2% (Figure 12). Default switch light power 20%, delay 200 ms.
Wire feed delay compensation	Sets how far ahead of the light out the wire feed signal is sent. Works with the wire withdraw function. No manual setting needed.
Maximum temperature alarm	Default 65 °C. Set to 0 to turn the temperature alarm off.
Scan correction coefficient	Range 0.01 to 4. Usually target line width divided by measured line width. Standard value 1.25.
Red laser centre	Adjustable from -3 to 3 mm. Move left to decrease, right to increase.
Spot weld duration	Light out time after the trigger is pulled. The light stays on even if the trigger is released.
Spot weld interval	Light off time between two welds while the trigger is held.

Table 8: Parameter settings

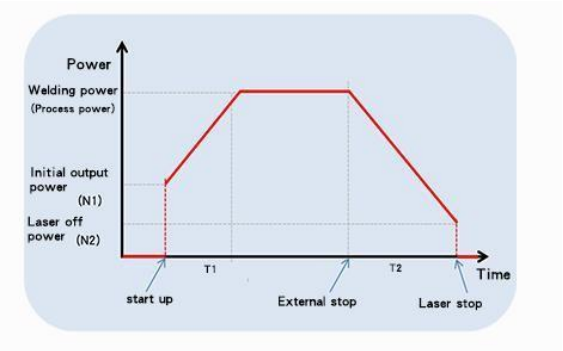


Figure 12: Power ramp: initial output power (N1), welding power and laser off power (N2)

For a full explanation of each setting, tap HELP in the top right corner of the screen.

Monitor screen

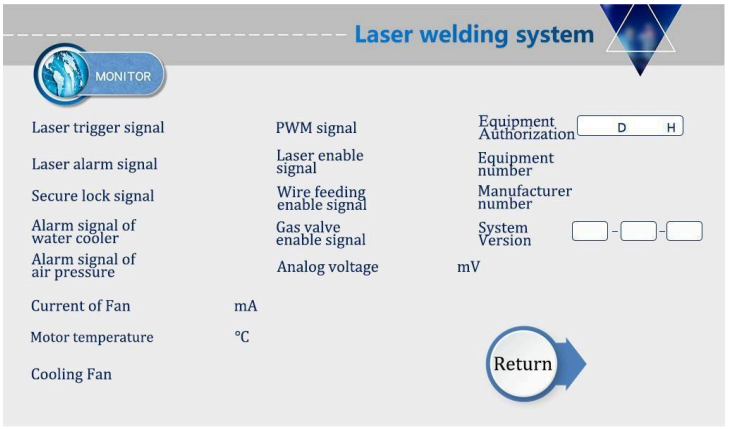


Figure 13: Monitor screen

Field	What it does
Input signal status	Laser trigger signal changes from grey to green when the trigger is pulled. Safety lock signal changes from grey to green when the welding head engages the safety lock. Laser, water cooler and air pressure alarm signals show high or low.
Output signal status	The matching area changes when a signal is output.

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Field	What it does
Device basic information	Equipment authorisation. A time limit can be set, and authorisation expires when the time is up.
Power status	Shows input voltage and current.
Communication status	Shows communication between the touch screen and the main board. If it fails, check the connection cable.
Diagnose	Checks whether each signal port gives a real output. The output value normally matches the detected value. A difference means an abnormal load. For example, if the laser does not fire, check the laser monitoring port for a signal, or use a multimeter.

Table 9: Monitor screen

4.3 Starting up

1. Complete the checks in Quick Start "Before you start", then switch on the master power switch (7).



Figure 14: Master power switch (7)

2. Turn the emergency stop button (2) clockwise to release it.



Figure 15: Releasing the emergency stop button

3. Press the chiller start button (3). The chiller and the system card start together and the touch screen (1) turns on. For first time use, fill with coolant (Section 3.4).
4. When the chiller water temperature is above 19.5 °C, switch on the laser button (4) or circuit breaker.
5. Clip the safety ground clip to the workpiece to make sure of good contact.
6. Set the welding settings for the plate thickness (Section 4.4).

4.4 Welding settings

Follow these principles when welding:

- The thicker the plate, the thicker the wire, the higher the power and the slower the wire feed speed.
- At lower power the weld surface is white. As power increases, the weld colour goes from colourful to black, and the weld forms on one side only.
- The wire should not be thicker than the plate. Wire size affects how full the weld is.
- The thinner the wire, the smaller the scan width.

The settings below were tested with Reci, MAX, JPT and Raycus lasers using argon. Results vary between laser brands, so use them as a reference only and fine tune as needed. Duty cycle 100%, frequency 2000 Hz for all tables.

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Carbon steel and galvanised sheet

Thickness (mm)	Scan speed (mm/s)	Scan width (mm)	Power (W)	Wire	Weld position	Result
1	300	2.5	380	ER1.0	Flat	90% penetration
1	300	2.5	380	ER1.0	Inside corner	Yellowish
1	300	2.5	380	ER1.0	Outside corner	70% penetration
0.5	300	2.5	220	ER0.8	Flat	Penetration
0.5	300	2.5	220	ER0.8	Inside corner	Yellowish
0.5	300	2.5	220	ER0.8	Outside corner	Penetration
2	300	3	700	ER1.2	Flat	Penetration
2	300	3	700	ER1.2	Inside corner	White colour
2	300	3	700	ER1.2	Outside corner	Penetration
3	300	3	1200	ER1.2	Flat	Penetration
3	300	3	1200	ER1.2	Inside corner	White colour
3	300	3	1200	ER1.2	Outside corner	80% penetration
4	250	3.5	1500	ER1.6	Flat	Penetration
4	250	3.5	1500	ER1.6	Inside corner	Penetration
4	250	3.5	1500	ER1.6	Outside corner	80% penetration
5	250	3.5	1700	ER1.6	Flat	Penetration
5	250	3.5	1700	ER1.6	Inside corner	Penetration
5	250	3.5	1700	ER1.6	Outside corner	80% penetration
6	200	4	2000	ER1.6	Flat	Penetration
6	200	4	2000	ER1.6	Inside corner	Penetration
6	200	4	2000	ER1.6	Outside corner	80% penetration
7	150	4.5	2500	ER1.6	Flat	Penetration
7	150	4.5	2800	ER1.6	Inside corner	80% penetration
7.5	150	5	3000	ER1.6	Flat	Penetration
7.5	150	5	3000	ER1.6	Inside corner	80% penetration

Table 10: Carbon steel and galvanised sheet settings

Stainless steel

Thickness (mm)	Scan speed (mm/s)	Scan width (mm)	Power (W)	Wire	Weld position	Result
1	300	2.5	200	ER304.1.0		White colour
1	300	2.5	320	ER304.1.0		Colourful
1	300	2.5	350	ER304.1.0		Colourful
2	300	2.5	600	ER304.1.0	Flat	Penetration
2	300	2.5	450	ER304.1.0	Flat	Blue white
2	300	2.5	260	ER304.1.0	Inside corner	Golden
2	300	2.5	200	ER304.1.0	Flat	Yellowish
3	300	3	550	ER304.1.2	Flat	Colour modelling

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Thickness (mm)	Scan speed (mm/s)	Scan width (mm)	Power (W)	Wire	Weld position	Result
3	300	3	700	ER304.1.2	Inside corner	70% penetration
3	300	3	800	ER304.1.2	Flat	Single side forming
4	250	3	1000	ER304.1.2	Flat	Colourful
4	250	3	1200	ER304.1.2	Inside corner	70% penetration
4	250	3	1500	ER304.1.2	Flat	Single side forming
5	250	3	1500	ER304.1.6	Inside corner	Colourful
5	250	3	1500	ER304.1.6	Flat	50% penetration
5	250	3	1700	ER304.1.6	Outside corner	80% penetration
6	200	3	1500	ER304.1.6	Flat	80% penetration
6	200	4	1700	ER304.1.6	Outside corner	Penetration
6	200	4	1900	ER304.1.6	Inside corner	90% penetration
7	150	4.5	2500	ER304.1.6	Flat	Penetration
7	150	4.5	2800	ER304.1.6	Inside corner	80% penetration
7.5	150	5	3000	ER304.1.6	Flat	Penetration
7.5	150	5	3000	ER304.1.6	Inside corner	80% penetration

Table 11: Stainless steel settings

Aluminium

Start from the stainless steel settings. Power can be increased by 20 to 30%. The focus is different and must be adjusted by hand.

Worked example from the supplier, 0.8 mm stainless steel, scan speed 350, scan width 2, duty cycle 100, frequency 2000:

- Peak power 350: the light penetrates the plate and distortion is very large, so power is reduced.
- Peak power 260: distortion is reduced, but the start of the weld still burns through easily, so power is reduced again.



Figure 16: Weld at peak power 260

- Peak power 200: good result. The scan width can then be increased to 3.

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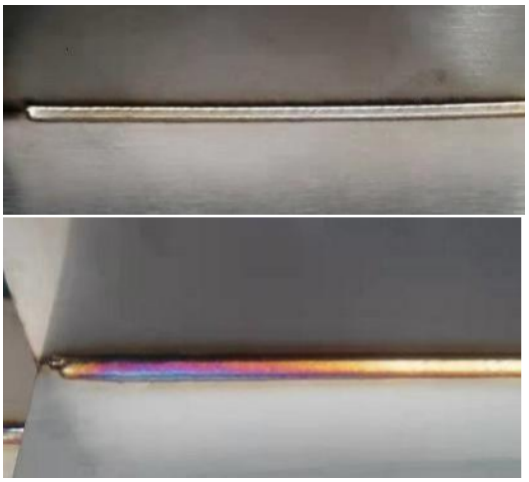


Figure 17: Top: peak power 200, scan width 2. Bottom: scan width increased to 3

Thickness (mm)	Scan speed (mm/s)	Scan width (mm)	Power (W)	Wire	Weld position	Result
1	250	2.5	500	ER304.1.0	Flat	Penetration
1	250	2.5	500	ER304.1.0	Inside corner	80% penetration
1	250	2.5	500	ER304.1.0	Outside corner	Penetration
2	200	3	1000	ER304.1.0	Flat	Penetration
2	200	3	1000	ER304.1.0	Inside corner	80% penetration
2	200	3	1000	ER304.1.0	Outside corner	Penetration
3	200	3.5	1500	ER304.1.2	Flat	Penetration
3	200	3.5	1500	ER304.1.2	Inside corner	80% penetration
3	200	3.5	1500	ER304.1.2	Outside corner	Penetration
4	120	4	2000	ER304.1.2	Flat	Penetration
4	120	4	2000	ER304.1.2	Inside corner	80% penetration
4	120	4	2000	ER304.1.2	Outside corner	Penetration
5	120	5	2500	ER304.1.6	Flat	Penetration
5	120	5	2500	ER304.1.6	Inside corner	80% penetration
5	120	5	2500	ER304.1.6	Outside corner	Penetration
6	100	5.5	3000	ER304.1.6	Flat	Penetration
6	100	5.5	3000	ER304.1.6	Inside corner	80% penetration
6	100	5.5	3000	ER304.1.6	Outside corner	Penetration

Table 12: Aluminium sheet settings

4.5 Switching off

1. Release the trigger.
2. Switch off in the reverse order of start up.
3. Close all gas supply valves.
4. Cap the output head.

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5 Maintenance and Troubleshooting

WARNING: Before any maintenance, switch off and isolate the power, unplug the machine, close the gas supply and lock out. Refit all covers and guards, and check all safety devices work, before using the machine again.

5.1 Maintenance schedule

When	Task
Before use	Inspect the welding head output for dust or contamination. Clean with suitable lens paper if needed.
Daily	Clean the machine and remove any dust when work is finished. Switch off the power and close all gas supply valves after use.
Weekly	Check the welding head is securely assembled and firmly fixed in place. Clean the welding machine thoroughly.
Monthly	Check all cables work correctly. Check all pipe fittings are tight. Retighten if needed. Inspect gas pipes and hoses for cracks or damage. Replace straight away if faulty. Test all buttons and switches on the control panel. Check the connectors on the electrical rear panel for wear or damage. For replacements, contact Capital Machinery Sales. Inspect all electrical cables for damage or cuts in the insulation. Replace promptly if needed.

Table 13: Maintenance schedule

CAUTION: Keep the collimating and output lenses clean, and cap the output head when not in use. Contaminated or damaged lenses can cause laser power loss, which is not covered by warranty (Section 6).

5.2 Troubleshooting

Problem	Cause	Fix
Laser light goes from strong to weak	Protective lens damaged	Replace the protective lens promptly, to stop damage to the focus, collimator or mirror parts.
Safety lock signal not detected	Ground clamp or signal connection loose	Check the ground clamp is securely connected to the workpiece. Check terminals 5 and 6 of the safety lock on the system card are in place. Check the grey signal cable plug, 50 cm behind the welding head, is connected.
No trigger signal	Signal plug off or trigger open circuit	Check the grey signal cable plug, 50 cm behind the welding head, is connected. Check the trigger button is not open circuit. Check terminals 7 and 8 on the system card are connected.
No light output	Laser source off, water too cold or connector off	Check the laser source is switched on. Check the chiller water temperature is above 19.5 °C. Check the connector on system card signal interface 3 is connected.

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Problem	Cause	Fix
Protective lens damages easily	Focus, gas or lens problem	Adjust the focal length. Check the shielding gas is correct (100% pure argon or nitrogen) and gas flow is normal. Check the focus lens is not damaged.
Light is intermittent	Poor contact	Check the safety lock and workpiece are well connected. Check the trigger button makes good contact. Check terminals 5, 6, 7 and 8 of system card signal interface 2 make good contact.
Display abnormal	Connector off or supply fault	Check no connector is loose (Figure 18). Check the power supply is normal.
Nozzle burning	Red light off centre, focus or angle wrong, or lens damaged	Centre the red light. Adjust the focal spot. Adjust the welding angle. Check the lens is not damaged.
Red light swing abnormal	Power or plug fault	Check the 15 V power supply is normal. Check the welding head plug has not come off (Figure 19).
Red light off centre	Welding head knocked	Handle and set down the welding head gently. Adjust the laser centre deviation in the settings. Mechanical adjustment: turn the rear screw of the welding head (Figure 20).
No wire feed or wire stuck	Signal connection or wrong roller	Check the signal plug is securely connected. Check the signal wire connector on the system board is attached. Fit the correct roller (18) for the welding wire.
Touch screen not communicating	Connection cable fault	Check the cable between the touch screen and the main board.
Any problem that continues		Contact Capital Machinery Sales through capitalmachinery.com.au.

Table 14: Troubleshooting

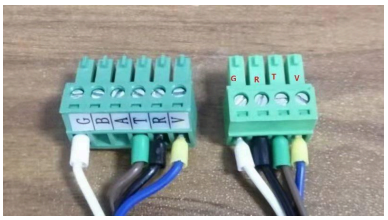


Figure 18: Signal connectors

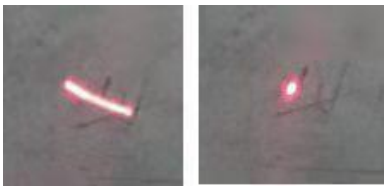


Figure 19: Red light swing check



Figure 20: Red light centred (left) and off centre (right)

5.3 Parts

To order parts, contact Capital Machinery Sales with the machine model, serial number and part description. A photo of the part helps.

Common wear parts: protective lenses, focus lens, nozzles and wire feed rollers.

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6 Warranty and Support

6.1 Warranty

- Standard 12 month warranty, unless a different period is shown on the product page or your invoice.
- Covers replacement of any part or material found to be defective under normal working conditions. Misuse and damage are not covered.
- This warranty is in addition to your rights under the Australian Consumer Law. Full terms are at capitalmachinery.com.au.

Not covered by warranty

- Using non-genuine parts, or parts not supplied or approved by Capital Machinery Sales, including consumables such as protective lenses, focus lenses, nozzles and wire feed rollers. Any damage this causes is not covered.
- Tampering with, opening or modifying the machine or its sealed components.
- Incorrect power, air or gas connection.
- An unsuitable operating environment, poor maintenance, work by unauthorised people, excessive use, or not following this manual.
- Opening the laser cover, or breaking the seal or protective cover of the laser source.
- Laser power loss caused by contamination of or damage to the output head or lenses, or by not following the lens care instructions in this manual.

6.2 Making a warranty claim

Lodge your claim online at capitalmachinery.com.au/warranty-claim. Have your invoice number and date of purchase ready, and describe the problem. Photos or a short video help us resolve it faster. Our team will reply by email with the next steps.

6.3 Service and parts

For service, spare parts and support, visit capitalmachinery.com.au.

6.4 Revision history

Revision	Date	Changes
Rev 0	15/10/2026	Added supplier photos, screen captures and diagrams with item numbers. Added the 19.5 °C chiller check to start up and the mechanical red light adjustment to troubleshooting. New Section 3.1 Main components, so the later Section 3 sub-sections are renumbered. Extended to cover all models: EVO-1000W, EVO-1500W, EVO-2000W and EVO-3000W.

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Capital Machinery Sales has supplied, serviced and supported workshop machinery across Australia for over 20 years, backed by more than 30 years of hands-on industry experience.

Sales, service and spare parts

capitalmachinery.com.au

Warranty claims: capitalmachinery.com.au/warranty-claim

Hallam, Victoria

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