

AntBelt G1

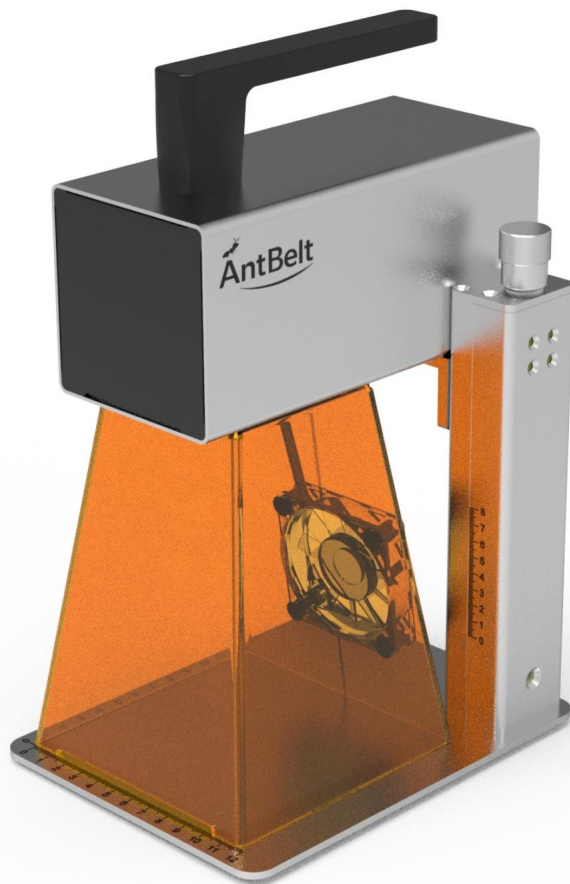
LASER ENGRAVER

USER MANUAL

Models: AntBelt G1 2.5 W / AntBelt G1 12 W

Revision 1.0 - August 2026

<https://antbelt.com/>



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Read this first

This manual applies to both the 2.5 W and 12 W AntBelt G1 variants.

DANGER

Class 4 visible laser radiation

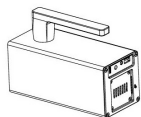
Avoid eye or skin exposure to direct, reflected, or scattered laser radiation. The 450 nm blue laser can cause immediate and permanent injury. Operate only in a controlled area.

Before every job

- Wear laser safety eyewear suitable for 450 nm. Verify the required optical density using the eyewear documentation and your local laser safety assessment.
- Install and correctly position the supplied laser shield. The shield does not make the system a Class 1 enclosed product.
- Provide effective local exhaust ventilation. Never engrave an unknown material.
- Keep the work area controlled, stable, non-reflective, and free of children, pets, and bystanders.
- Keep a suitable fire extinguisher nearby and never leave the machine unattended while powered or operating.

In the box

Check all items before assembly. Contact AntBelt Support if anything is missing or damaged.



1

Main unit



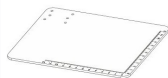
2

Power adapter



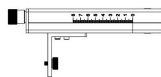
3

Laser shield



4

Base plate



5

Support bracket



6

**Laser safety
eyewear**



7

Measuring ruler



8

USB cable



9

Material samples



10

Hex key



11

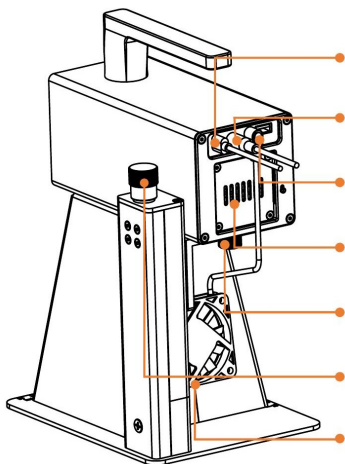
**Phillips
screwdriver**



12

**Countersunk
screws x4**

Device overview



- 1. USB port**
Connects to a computer.
- 2. Power input**
Connects the power adapter.
- 3. Exhaust fan port**
Connects the exhaust fan.
- 4. Replaceable laser module bay**
Holds a compatible AntBelt G1 module.
- 5. Main unit locking screw**
Secures the main unit in place.
- 6. Height adjustment knob**
Adjusts the main unit height.
- 7. Cooling fan**
Runs automatically while the device is powered.

BEFORE POWER

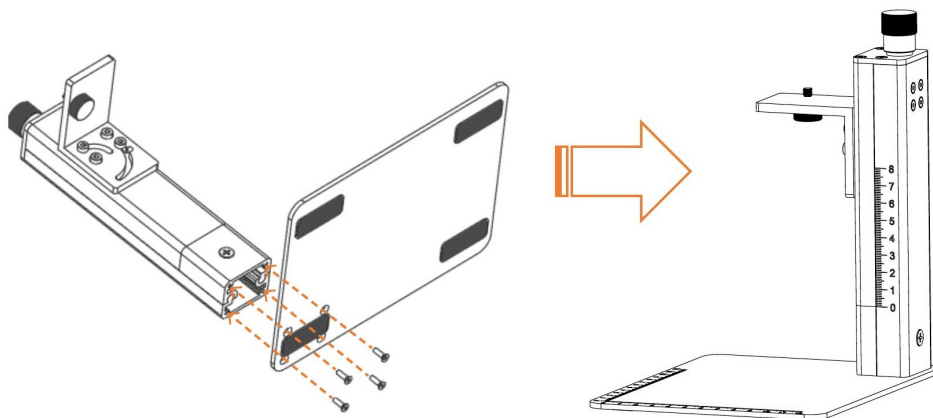
Secure the unit and module, connect exhaust, then use only the supplied or approved adapter.

Assembly

1

Step 1: Install the support bracket

Align the bracket with the base plate and tighten all four supplied screws securely.



CHECK

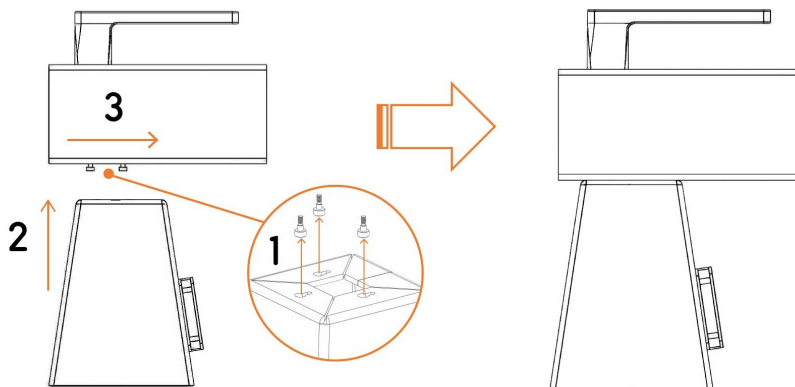
The bracket must sit flat with no movement or visible gap.

Assembly

2

Step 2: Install the laser shield

Align the shield with the mounting slots, push it upward, and slide it to the right until it locks into place.



CHECK

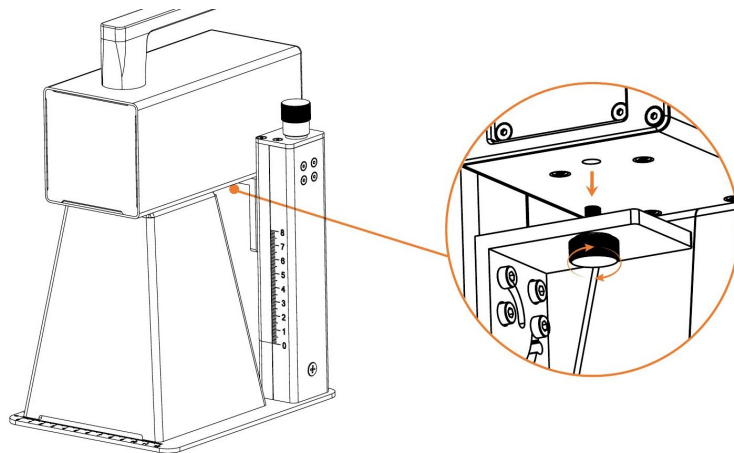
The shield must be secure and correctly positioned before every job.

Assembly

3

Step 3: Install the main unit

Place the main unit on the support bracket and tighten the locking screw fully before connecting power.

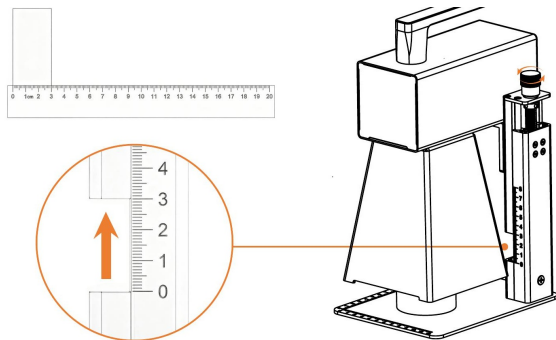


CHECK

Do not power the machine if the main unit can move on the bracket.

Positioning and focusing

Use the fixed support bracket. Handheld laser operation is not permitted.



1

Place the machine on a stable, level, non-reflective work surface.

2

Measure the workpiece thickness and adjust the support bracket height.

3

Set the laser-to-surface distance to 153.8 mm, measured from the specified reference point.

4

Tighten the height adjustment knob and main unit locking screw.

5

Use the software framing function at the lowest safe setting to confirm position. Do not start the job if the beam path can leave the work area.

Operating workflow

1

Prepare

- Identify the material.
- Remove flammables and reflective objects.
- Start local exhaust ventilation.

2

Connect

- Connect USB or Wi-Fi.
- Open AntBelt Studio or compatible software.
- Confirm the correct device and laser module.

3

Preview

- Import the design.
- Select conservative test settings.
- Frame the job and verify focus and clearance.

4

Engrave

- Wear laser safety eyewear.
- Position the laser shield.
- Start the job and remain present.

5

Finish

- Wait for fumes to clear.
- Disconnect power before cleaning.
- Inspect the machine and work area.

STOP IMMEDIATELY

Unexpected flame, smoke, odor, sound, or movement

Stop the job. Disconnect power if safe. Do not resume until the cause is identified and corrected.

Product specifications

Values below must match the product label and the supplied power adapter.

Specification	AntBelt G1 2.5 W	AntBelt G1 12 W
Laser optical output	2.5 W	12 W
DC power input	24 V DC, 2.5 A	24 V DC, 2.5 A
AC adapter input	100-240 V AC, 50/60 Hz	100-240 V AC, 50/60 Hz
Connection	USB / Wi-Fi	USB / Wi-Fi
Laser type	450 nm blue diode laser	450 nm blue diode laser
Nominal spot size	0.05 x 0.08 mm	0.05 x 0.08 mm
Maximum engraving speed	600 mm/s	600 mm/s
Supported files	JPG / SVG / PNG / BMP / DXF / G-code	JPG / SVG / PNG / BMP / DXF / G-code
Supported software	AntBelt Studio / compatible third-party software	AntBelt Studio / compatible third-party software
Net weight	1,890 g +/- 15 g	1,940 g +/- 15 g
Computer system	Windows / macOS	Windows / macOS
Dimensions	210 x 512 x 282 mm	210 x 512 x 282 mm
Working area	80 x 80 mm	80 x 80 mm
Recommended working distance	153.8 mm	153.8 mm

Third-party software compatibility may change. AntBelt Studio is the recommended workflow.

Laser safety

DANGER

Eye and skin hazard

Direct, reflected, and scattered 450 nm laser radiation can cause immediate and permanent injury. Never look into the aperture or expose skin to the beam.

Controlled area

- Restrict access during operation.
- Keep children, pets, and bystanders away.
- Use non-reflective barriers where required.

Personal protection

- Wear 450 nm-appropriate laser safety eyewear.
- Do not rely on the orange shield or eyewear alone.
- Cover exposed skin where the risk assessment requires it.

Beam control

- Keep the beam inside the work area.
- Remove mirrors, polished metal, glass, and reflective jewelry.
- Never bypass a guard, indicator, or safety control.

Fire, fumes, and materials

Use only identified, laser-compatible materials

Before engraving

- Confirm the exact material composition with the supplier.
- Run a small test at conservative settings.
- Use effective local exhaust that vents or filters fumes appropriately.
- Secure the workpiece so that it cannot move or warp into the beam.
- Keep the area clean and keep a suitable fire extinguisher within reach.

Do not engrave

- Unknown materials or coatings.
- Materials that may release toxic, corrosive, or irritating gases.
- PVC, vinyl, or other chlorine-containing materials.
- Highly flammable, explosive, pressurized, or heat-sensitive items.
- Mirror-like or highly reflective surfaces unless a qualified risk assessment and approved process are in place.

WARNING

Never leave an active laser job unattended

Flame or smoldering can develop quickly, including after the visible laser pass has moved away.

Maintenance and module replacement

Routine maintenance

- Disconnect the power adapter and allow the machine to cool.
- Remove debris using a soft brush or low-pressure air suitable for electronics.
- Clean the lens only with the method and materials specified for the installed module.
- Inspect cables, fasteners, shield, fan, and exhaust path before use.
- Do not operate with damaged cables, optics, guards, or fasteners.

Replacing the laser module

- Power off, disconnect the adapter, and wait for all indicators and fans to stop.
- Use only a compatible AntBelt G1 laser module.
- Do not open or modify the sealed laser module.
- Secure all fasteners and connectors before restoring power.
- Confirm the correct module in software, refocus, and run a controlled test.

SERVICE

Stop using damaged equipment

If the machine has been dropped, exposed to liquid, overheated, or shows abnormal behavior, disconnect it and contact AntBelt Support before further use.

Troubleshooting

No power

Confirm the adapter rating, wall outlet, DC connector, and cable condition. Disconnect immediately if a connector is hot, loose, or damaged.

Computer cannot connect

Reconnect USB, try a known-good cable or port, restart the software, and confirm the selected device. For Wi-Fi, recheck the network and pairing instructions.

Weak or inconsistent engraving

Stop the job. Confirm focus distance, lens cleanliness, material flatness, module selection, and conservative test settings.

Unexpected offset or distortion

Secure the workpiece and all fasteners. Re-run framing and confirm the work area before engraving.

Excessive smoke or odor

Stop immediately, keep ventilation running if safe, disconnect power, and verify material composition and exhaust performance.

Flame, abnormal sound, or movement

Stop the job and disconnect power if safe. Do not resume until the cause is identified and corrected.

Need help? hello@antbelt.com

Warranty, software, and support



Software

Download AntBelt Studio and current setup instructions from <https://antbelt.com/>. LaserGRBL, LightBurn, and Mantisolo are third-party products; compatibility and licensing may change.



Technical support

Contact hello@antbelt.com. Include your model, order number, serial number, software version, a clear description of the issue, and photos or video when helpful.



Warranty

Warranty coverage, duration, exclusions, and remedies are those provided at the time and place of purchase. Warranty service may require proof of purchase and product identification.



Consumer rights

Nothing in this manual limits statutory consumer rights that cannot legally be excluded or restricted in the country of purchase.



Returns and repairs

Contact AntBelt Support before sending a product. Follow the return and shipping instructions provided for your region.

AntBelt

G1 LASER ENGRAVER

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Support

hello@antbelt.com

<https://antbelt.com/>

Keep this manual and the product label for future reference.