WELDING TRANSFORMER

# MT-25

# OPERATION MANUAL

AMADA®

Y02M0038E-08

Thank you for purchasing our Welding Transformer **MT-25**.

- This operation manual explains its method of operation and precautions for use.
- Before using, read this operation manual carefully; after reading, save it in a proper place where you can easily access.

# Contents

# 1. Special Precautions

## (1) Safety Precautions

Before using, read “Safety Precautions” carefully to understand the correct method of use.

- These precautions are shown for safe use of our products and for prevention of damage or injury to operators or others. Be sure to read each of them, since all of them are important for safety.
- The meaning of the words and symbols is as follows:

**⚠DANGER**

Denotes operations and practices that may imminently result in serious injury or loss of life if not correctly followed.

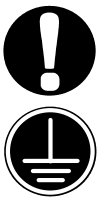
**⚠WARNING**

Denotes operations and practices that may result in serious injury or loss of life if not correctly followed.

**⚠CAUTION**

Denotes operations and practices that may result in personal injury or damage to the equipment if not correctly followed.

These symbols denote "prohibition". They are warnings about actions out of the scope of the warranty of the product.



These symbols denote actions which operators must take.

Each symbol with a triangle denotes that the content gives notice of **DANGER**, **WARNING** or **CAUTION** to the operator.

**⚠DANGER**

**Do not touch the “Terminal block” of the Welding Transformer.**
Since very high voltage is applied to the “Terminal block”, it is very dangerous to touch it unnecessarily. When connecting or disconnecting a cable, be sure to turn off the power. After connecting the cable, install the terminal cover so that operator can not touch the terminal block during work.

**Never disassemble, repair or modify the Transformer.**
These actions can cause electric shock and fire. Consult your distributor or us for repair and maintenance.

**Never burn, destroy, cut, crush or chemically decompose the Transformer.**
This product incorporates parts containing gallium arsenide (GaAs).

# ⚠WARNING

**Do not touch the Transformer or the secondary conductor during welding and just after welding finished.**

These parts are very hot. Do not touch them; otherwise you may be burnt.

**Ground the Transformer.**

If the Transformer is not grounded, you may get an electric shock when there is trouble, or when electricity leaks.

Ground the Transformer with the Transformer mounting hole and the hole for eyebolt.

**Use the rated voltage; the input voltage is up to 200 V AC.**

Applying a voltage exceeding rated voltage can cause abnormal heat and fire.

**Securely connect only specified cables.**

Use of a cable of insufficient capacity or loose connection can cause fire and an electric shock.

**Do not damage the connecting cables.**

Do not tread on, twist or tense any cable. The connecting cables may be broken, and that can cause electric shock, short and fire. When repairing or replacing, consult us or your distributor.

**Stop the operation if any trouble occurs.**

Continuous operation after occurrence of a trouble such as burning smell, abnormal sound, abnormal heat, smoke, etc. can cause electric shock and fire. If such a trouble occurs, immediately consult us or your distributor.

**Persons with pacemakers must stay clear of the welding transformer.**

A person who uses a pacemaker must not approach the welding transformer or walk around the welding shop while the welding transformer is in operation, without being permitted by his/her doctor. The welding transformer generates a magnetic field and has effects on the operation of the pacemaker while it is turned on.

# ⚠CAUTION

**Do not splash water on the Transformer.**
Water splashed over the electric parts, can cause electric shock and short-circuits.

**Use proper tools (wire strippers, pressure wire connectors, etc.) for termination of the connecting cables.**
Do not cut the wire conductor. A flaw on it can cause fire and electric shock.

**Install the Transformer on firm and level surface.**
If the Transformer falls or drops, injury may result.

**Use the Transformer with water-cooled.**
If the Transformer is not used with water-cooled, that can cause malfunction and fire.

**Do not place a water container on the Transformer.**
If water spills, insulation will deteriorate, and this may cause electric leak and fire.

**Keep combustible matter away from the Transformer.**
Spatter can ignite combustible matter. If it is impossible to remove all combustible matter, cover them with non-combustible material.

**Do not cover this Transformer with a blanket, cloth, etc.**
Do not cover this Transformer with a blanket, cloth, etc. while you are using it. The cover may be overheated and burn.

**Do not use this Transformer for any purpose other than welding.**
Use of this Transformer in a manner other than specified can cause electric shock and fire.

**Keep a fire extinguisher nearby.**
Keep a fire extinguisher in the welding shop in case of fire.

**Maintain and inspect the Transformer periodically.**
Maintain and inspect the Transformer periodically, and repair any damage nearby before starting operation.

## (2) Precautions for Handling

- When transporting or moving the Transformer, do not lay it down. Also, handle the Transformer with care so as not to make an impact such as drop on it. Moving the Transformer by hand must be done by at least four people.

- Install the Transformer on a firm and level surface. If it is used inclined or on its side, it may have a malfunction.

- Do not install this Transformer in the following places:
  Damp places (where humidity is higher than 90%), dusty places,
  places near a high noise source, places where water will be condensed,
  hot or cold places (where temperatures are above 40°C or below 5°C),
  places where chemicals are handled, and places at an altitude above 1000 meters

- Do not apply any voltage to the secondary of the transformer. Weld Control may be damaged.

- Clean the outside of the Transformer with a soft, dry cloth or one wet with a little water. If it is very dirty, use diluted neutral detergent or alcohol. Do not use paint thinner, benzine, etc., since they can discolor or deform the Transformer.

- Operate the Transformer according to the method described in this operation manual.

- The Transformer is not equipped with auxiliary power such as an outlet for lighting.

- The welding power supply, the welding head, and the secondary cables for connecting the welding power supply, the welding head and the Transformer are separately needed to use the Transformer.

- When installing the Transformer, enclose it in a case or the like not to touch the terminal block.

## (3) On Disposal

This product incorporates parts containing gallium arsenide (GaAs). At the time of disposal, separate it from general industrial waste or domestic waste and carry out the disposal in accordance with applicable laws and regulations.

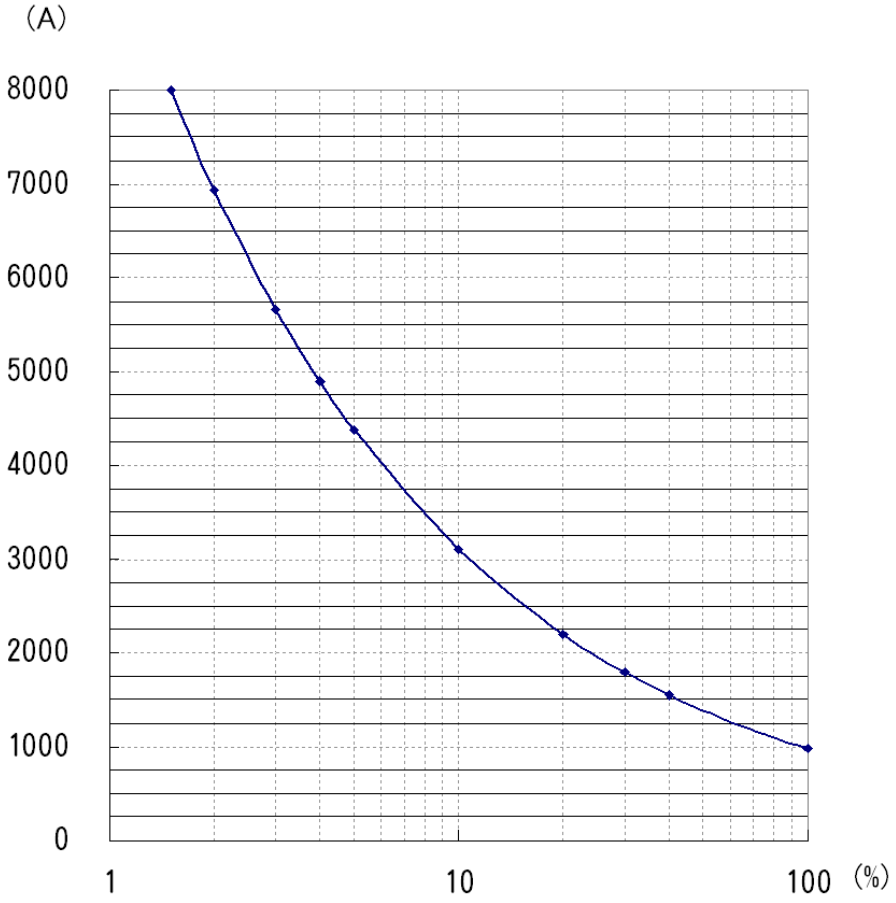
# 2. Introduction

The **MT-25** AC Spot Welding Transformer is suitable for precision welding of small thin metal parts.

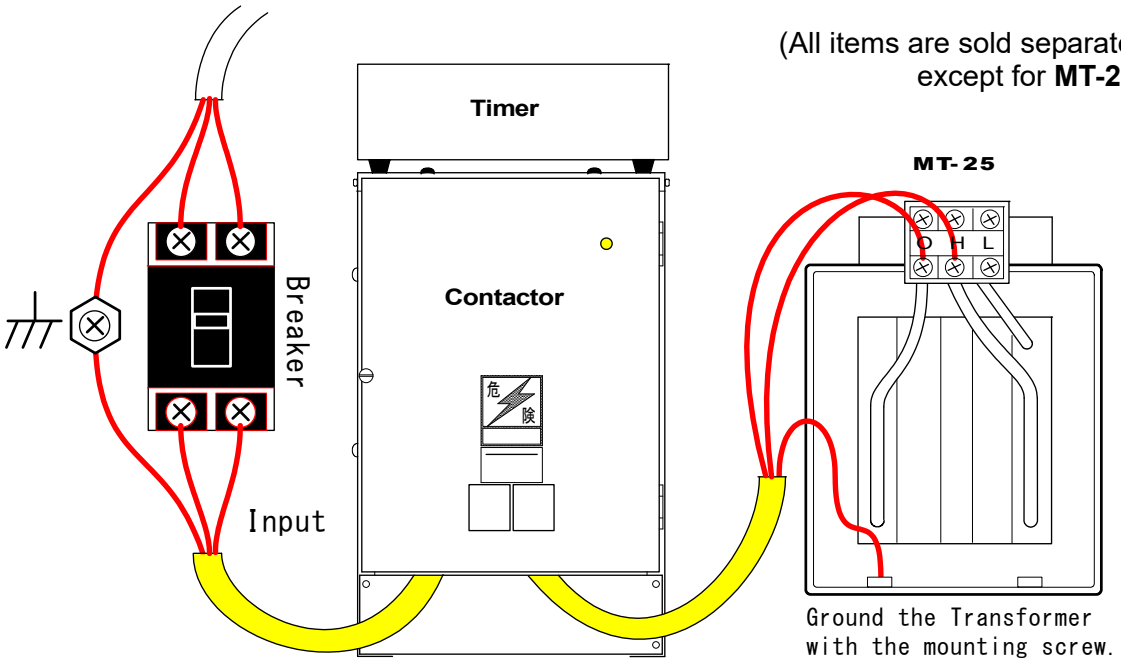
# 3. Specifications

| | |
|---|---|
| Rated primary voltage | 200 V AC ±10%  50/60 Hz |
| Rated secondary voltage | 2.6 V, 4.0 V (Parallel connection),<br>5.3 V, 8.0 V (Series connection) |
| Turn ratio | 77:1, 50:1 (Parallel connection),<br>38:1, 25:1 (Series connection) |
| Max. secondary current | 8000 A |
| Allowable duty cycle | 1.5% max.<br>Duty cycle = $\frac{\text{Weld time}}{\text{Weld interval}}$ x 100 (%) |
| Standard max. input capacity | 64.0 kVA |
| Rated capacity | 11.1 kVA (Contracted power) |
| Cooling water | 4 liters/minute or more |
| Dielectric strength | 3 kV AC for 1 minute |
| Insulation resistance | 50 MΩ or more by 1000 V DC Megger |
| Operation environment | Temperature 5°–40°C,<br>Humidity 90% or less (Dew condensation not allowed),<br>Altitude 1000 meters or lower<br>Caution: Use this product in the environment without conductive dust. If conductive dust enters in the product, this may result in a failure, electric shock, or fire. When using this product in this environment, make contact with us. |
| Storage environment | Temperature -10°–55°C and dew condensation not allowed |
| Heat-resistant class | F |
| Case protection | IP20 |
| Outline dimensions | 240 mm (H) × 180 mm (W) × 370 mm (D) |
| Mass | 60 kg |

## ■ Duty Cycle Graph



# 4. Connection




① Disconnect the Weld Control off the line before connecting the transformer.

② Connect the output cable of the Weld Control to the primary terminals mounted on the upper side of the transformer; connect wires to terminals "0" and "H", or terminals "0" and "L", whichever can supply your desired current (see table below).

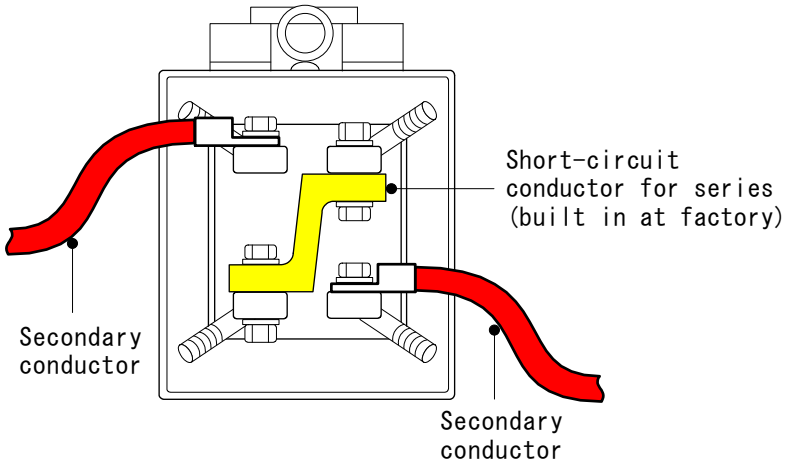
<Connection method and tap voltage>

| Output terminal / Terminal block | Parallel | Series |
|---|---|---|
| 0-L | 2.6 V | 5.3 V |
| 0-H | 4.0 V | 8.0 V |

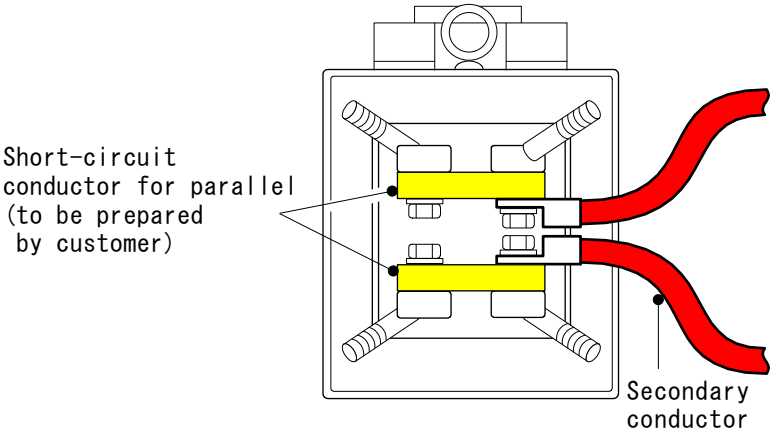
As the tap voltages go higher, the welding current increases. Set the tap voltage suitable for the workpiece.

③ Connect the secondary conductor and the short-circuit conductor to output terminals.
See Fig. A for series connection; Fig. B for parallel connection.

**A**



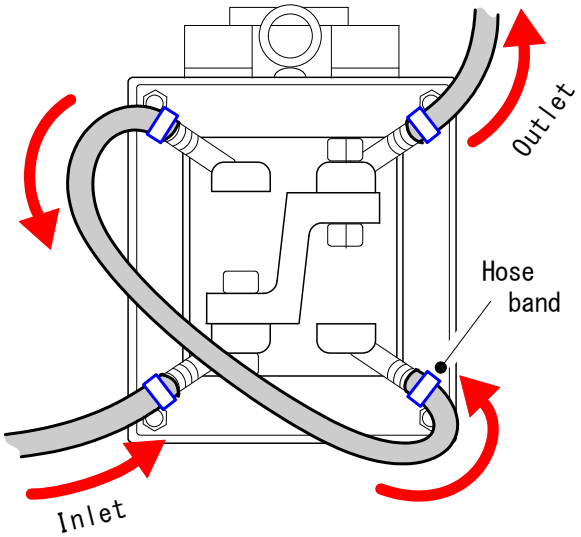
**B**




**ATTENTION**

For the secondary conductor and the short-circuit conductor, use braided wires or copper bars of at least 200 $mm^2$; make the wires or bars as short as possible. Be sure to avoid oil, metal debris, etc. on the contact surfaces and loose connections because they may cause overheating or welding current to lower.

④ Connect the cooling water hoses.
Connect the hoses with φ9 inner diameter as shown below and fix them securely with hose bands. The directions of inlet and outlet may be the same as shown below or opposite.




⑤ Make a flow test and check for water leak.
Connection of the welding transformer is now complete.

**⚠ CAUTION**

If a weld control of small capacity is used, it may be damaged.
Be sure to use the weld control of sufficient capacity for the welding transformer.

# 5. Outline Drawing

(Dimensions in mm)