WELDING TRANSFORMER

MT-530A

OPERATION MANUAL

AMADA®

W12M0041E-10

Thank you for purchasing the Amada Miyachi Welding Transformer **MT-530A**.

- For correct use, read this operation manual carefully.
- After reading, save it in a proper place where you can easily access to.

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

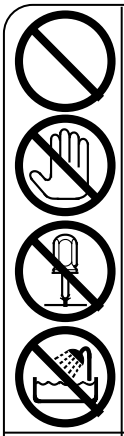
Denotes operations and practices that may imminently result in serious injury or loss of life if not correctly followed.

⚠ WARNING

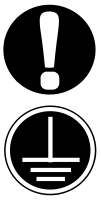
Denotes operations and practices that may result in serious injury or loss of life if not correctly followed.

⚠ 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” in the rear panel.

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 Amada Miyachi Co., Ltd. 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 any welded part or electrodes 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.

Use the rated voltage; the input voltage is up to 200 V AC (242 V AC max.).

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

Use only specified cables.

Use of a cable of insufficient capacity 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 Amada Miyachi Co., Ltd. or your distributor.

Do not use any damaged connecting cable and plug.

That can cause electric shock, short circuits and fire. If any part needs to be repaired or replaced, consult Amada Miyachi Co., Ltd. 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 Amada Miyachi Co., Ltd. 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.

Wear protective glasses.

If you look at the flash directly during welding, your eyes may be damaged. If any spatter gets in your eye, you may lose your eyesight.

Protective gear must be worn.

Put on protective gear such as protective gloves, long-sleeve jacket, leather apron, etc. Spatter can burn the skin if they touch the skin.

⚠CAUTION

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

Securely connect cables.
Use of a cable of loose connection can cause fire and an electric shock.

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.

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.

Use ear protectors.
Loud noises can damage hearing.

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 two 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:
  - Where there is considerably damp (humidity is higher than 90%).
  - Where there is considerable dirt.
  - Where the Transformer may be exposed to chemicals.
  - Where there is nearby high noise source.
  - Where the ambient temperature is above 40°C or below 5°C.
  - Where moisture may be condensed on the surface of the Transformer.
  - Where an altitude is above 1000 meters.

- Do not put any voltage to the secondary, or it may break the control.

- Do not change “POWER” switch during supplying current.

- If the outside of the Transformer is stained, wipe it with a dry cloth or a moistened cloth. If it is badly stained, use diluted neutral detergent or alcohol to clean it. Do not use paint thinner, benzene, etc., which can discolor or deform the parts.

- Do not put anything other than a workpiece, e.g., a tool, a screw, etc., between the electrodes. It can cause serious trouble.

- Do not put screws, coins, etc., in the Transformer, as they may cause a malfunction.

- 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.

(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. Features

The Amada Miyachi **MT-530A** is the AC spot welding transformer suitable for welding small precision components such as thin metal sheets.

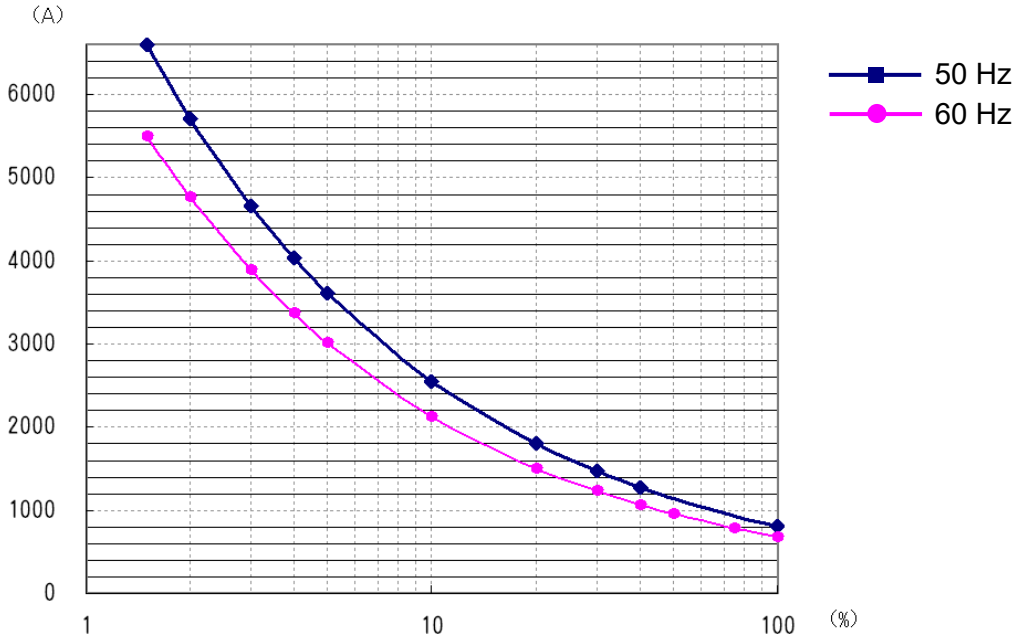
3. Specifications

Rated Primary Voltage	200 V AC ±10% * 50/60 Hz
Rated Secondary Voltage	OFF, 2.7 V, 3.4 V, 4.3 V, 5.3 V (without Load) [OFF, 2.2 V, 2.8 V, 3.6 V, 4.4 V (without Load)]
Turn Ratio	74:1, 59:1, 47:1, 38:1
Max. Secondary Current	6600 A [5500 A]
Allowable Duty Cycle	1.5% or less
Standard Max. Input Capacity	35 kVA [24.2 kVA]
Rated Capacity	6.0 kVA [4.2 kVA] (Contracted Power Capacity)
Insulation Voltage	3 kV AC for 1 minute
Insulation Resistance	1000 V DC megger 50 M ohms or more
Operation Environment	Temperature 5°–40°C, Humidity 90% or less (Dew condensation not allowed), Altitude 1000 meters or lower
Storage Environment	Temperature -10°–55°C and dew condensation not allowed
Heat-Resistant Class	F
Pollution Level Class	2
Case Protection	IP20
Outline Dimensions	244 mm (H) × 228 mm (W) × 370 mm (D) (Not including projections)
Mass	52 kg

Values at 60 Hz input are indicated in brackets [ ].

* Input rated voltage: 200 V AC ±10%
  Maximum input voltage: 242 V AC

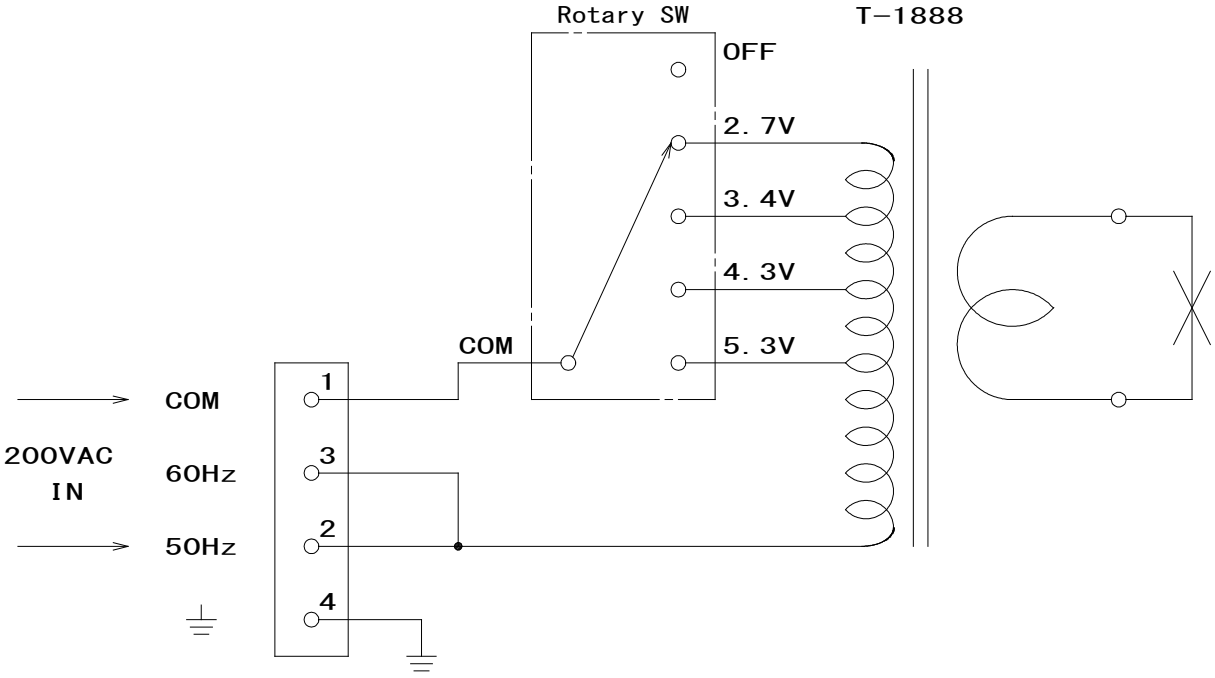
■ Duty Cycle Graph



■ Major Components List

Item	Q'ty
W transformer	1

■ Schematic



4. Description of Operation

Connect the output cable from the welding control to the terminal board in the rear panel. In 50 Hz area, connect to "COM" and "50Hz", and in 60 Hz area, connect to "COM" and "60Hz". At this time, be sure to put OFF the power source of the welding control. Connections must be made firmly.

For connecting the transformer to the head by a secondary cable, use the braiding cable or copper plate which has 100 square mm or more, and connect it as short as possible. If any dirt such as oil or metal scrap is stuck on the contact surfaces of connecting terminals, or if there is a slack in the connection of the secondary cable, it causes to lower the welding current or generate extra heat.

For connections, use the power cable and output cable having a thickness of 5.5 square mm or more and a withstand voltage of 250 V or more.

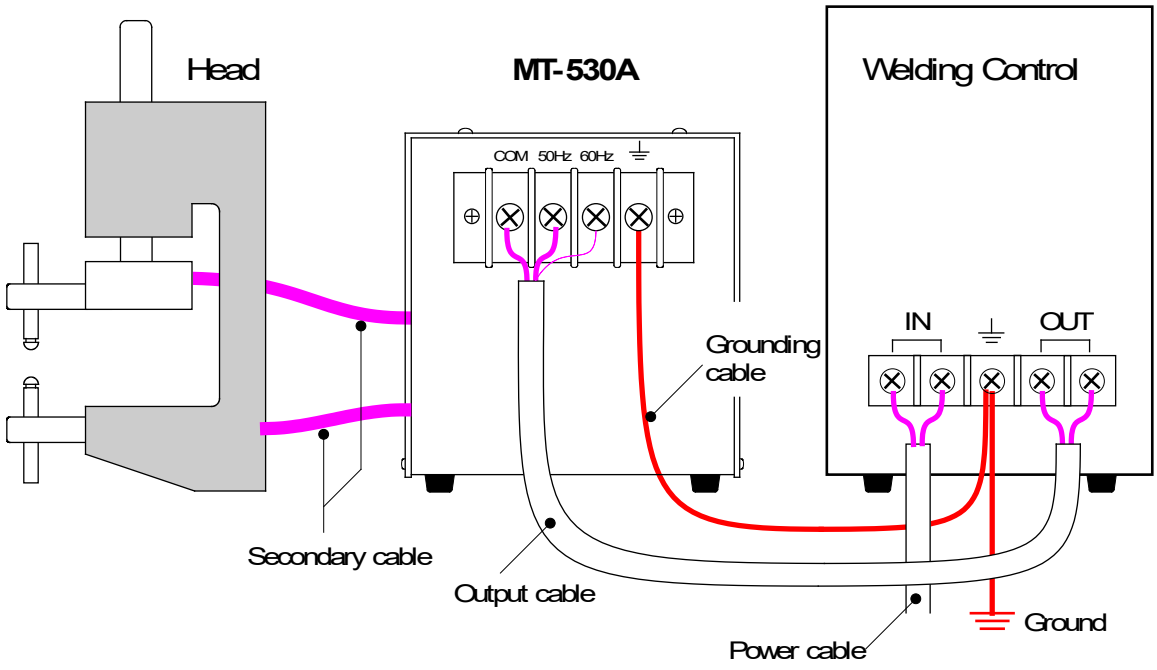
The welding current (voltage) can be switched to four steps by changing "POWER" switch. The welding current (voltage) increases from 1 to 4 in order. According to the characteristic of the heads and type of a work to be welded, switch the voltage for use.

Be careful to obtain the sufficient effect of heat release when the transformer is assembled in the automatic welder and the like.
Since it leads to the excessive heat or breakage to use the transformer in the closed condition or beyond the duty cycle, it is very dangerous, so never use it in those conditions.

$$\text{Duty Cycle} = \frac{\text{Current Running Time}}{\text{Running Interval}} \times 100\ (\%)$$

Also, if the capacity of the control is rather small, the control may break, so be sure to use the proper welding control which fits to **MT-530A**.

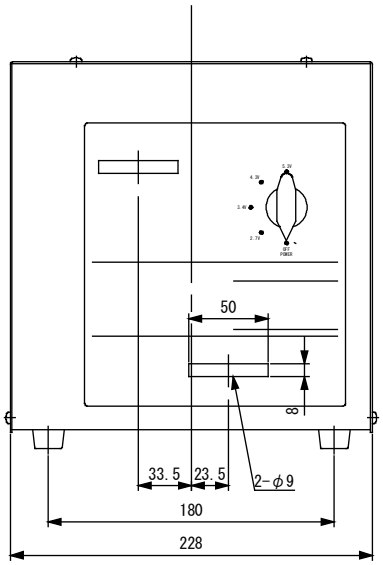
5. Wiring



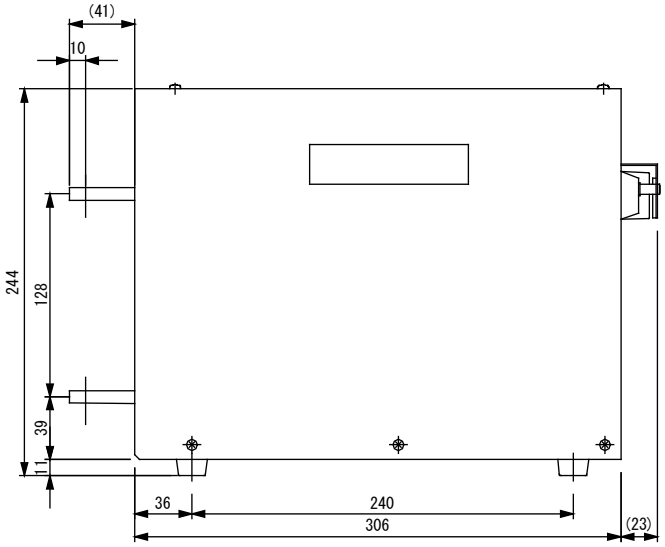
6. Outline Drawing

(Dimensions in mm)

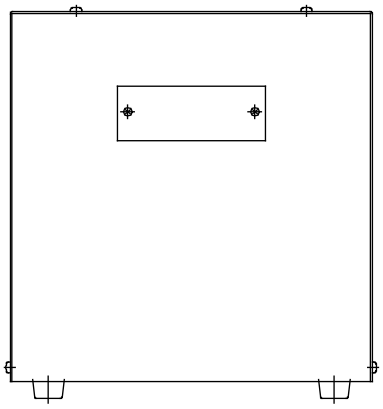
Front



Right side



Rear



* The dimension in parentheses ( ) may have allowance 3 mm approx.