INVERTER WELDING TRANSFORMER

ITH-1050C6W

OPERATION MANUAL

AMADA®

Y02OM1189298-03

Thank you for purchasing our Inverter Welding Transformer **ITH-1050C6W**.

- 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.

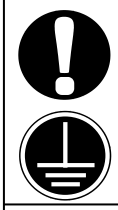
⚠ WARNING

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

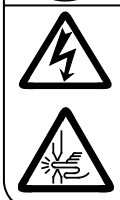
⚠ CAUTION

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” on the rear panel 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 put your hands between the electrodes.
When welding, keep your fingers and hands away from the electrodes.

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

Do not touch +/- terminal, secondary cable, 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.

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.

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.

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.

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 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 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 splash water on the Transformer.
Water splashed over the electric parts, can cause electric shock and short-circuits.

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.

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

Use ear protectors.
Loud noises can damage hearing.

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.

- Install this Transformer securely on a firm and level surface. If it is inclined malfunction may result.

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

- Do not block up the vent slits and provide the clearance of 10 cm minimum for better radiation.

- Do not put a screw, a coin, etc., through the slits on the enclosure, since they can cause a malfunction.

- 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.

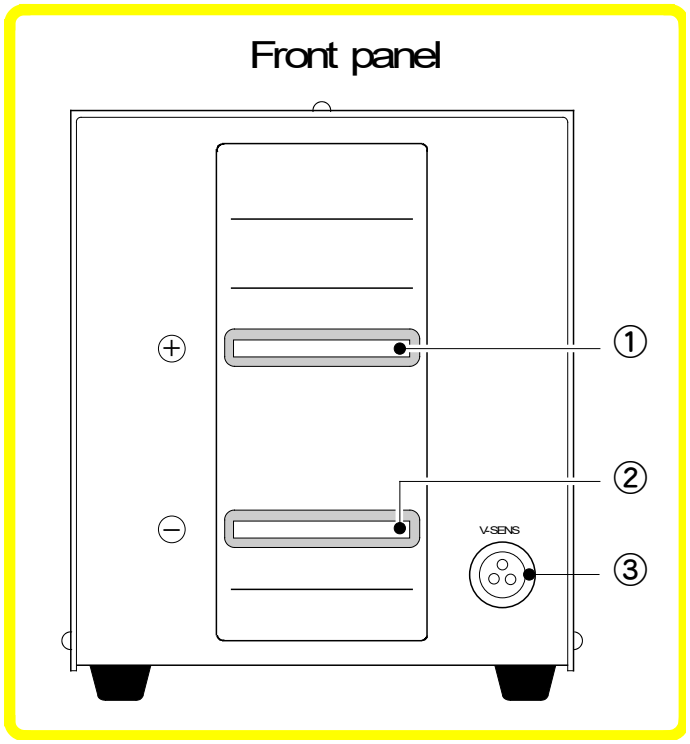
- The Transformer is not equipped with auxiliary power such as an outlet for lighting.

- 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.

(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. Name and Functions of Each Section

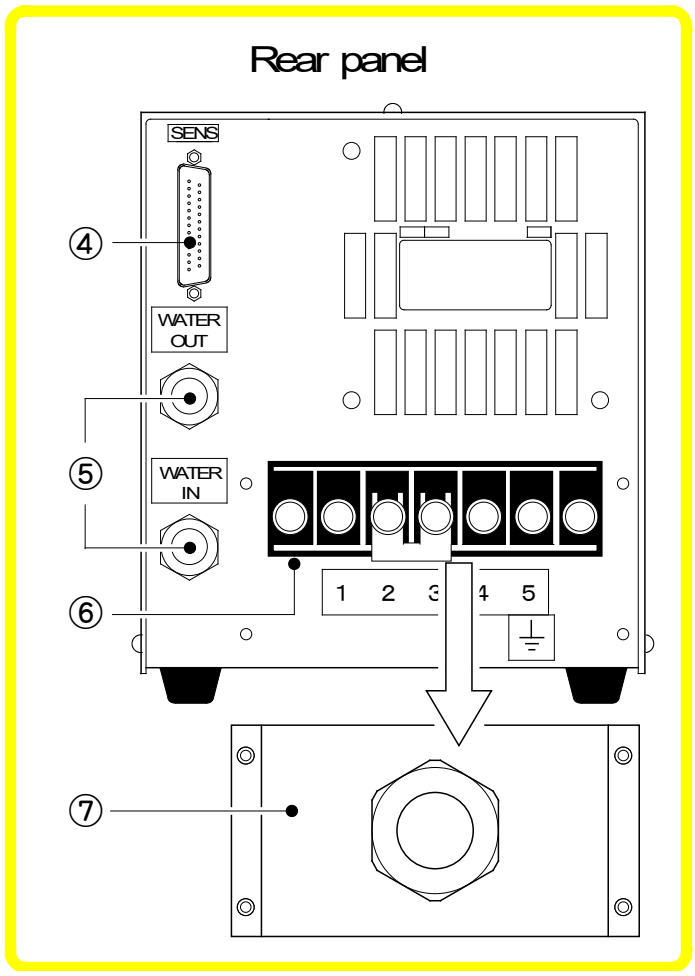


① [+] terminal *
Connect the positive (+) cable of the welding head to this terminal.

② [-] terminal *
Connect the negative (-) cable of the welding head to this terminal.

③ [V-SENS] connector
Connect the plug of the attached voltage-sensing cable. Connect the other side of this cable to the screws near the electrode of the welding head.

* **[+] terminal** and **[-] terminal** are connected to chassis with a 30 Ω of resistance.



④ [SENS] connector
Connect the dedicated [SENS] Cable (separately sold) to our inverter power supply.

⑤ Hose connector
Connect cooling water hoses to [WATER OUT] and [WATER IN] connectors. The connector outer diameter is 10.5 mm. Upper one is for drain; lower one, supply. Use water of 35°C or below at 3 liters/min. minimum.

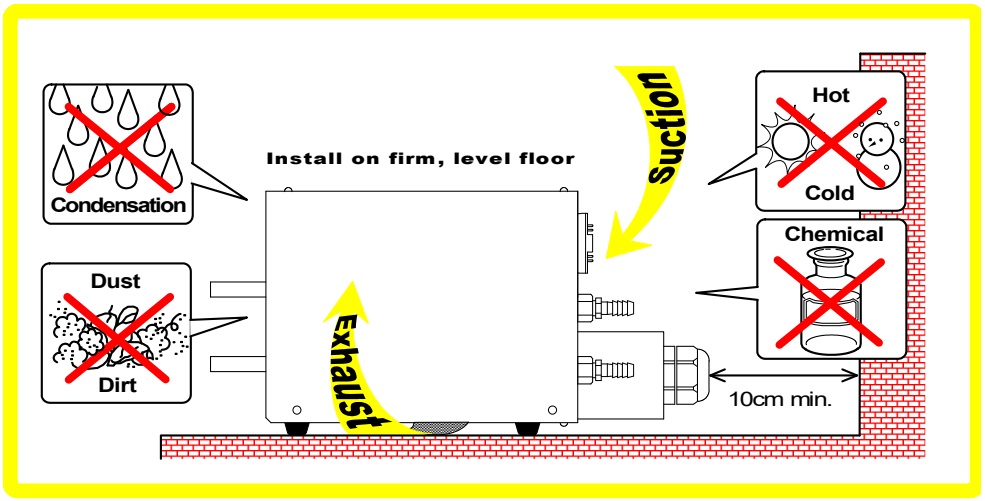
⑥ Terminal block
Connect the dedicated output cables (separately sold) to these terminals and to our inverter power supply.

⑦ Terminal cover
This cover is installed so that a worker will not touch the terminal block directly. Keep this cover installed normally.

3. Installation and Connection

● Place for installation

Slits are provided on rear side and bottom of the **ITH-1050C6W** for higher heat radiation efficiency. Install this transformer in a well-ventilated place and make a clearance of at least 10 cm from the surrounding walls to extract the full performance.



● Connection

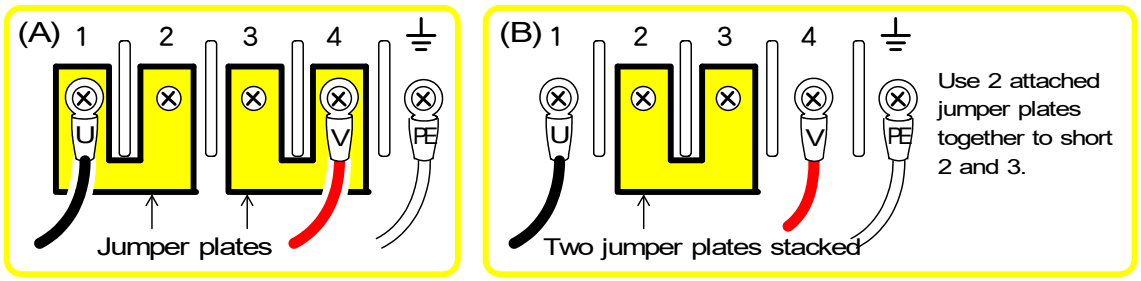
After selecting a proper place for installation of **ITH-1050C6W**, connect it to the other devices according to the explanatory drawings on pages 3-2 to 3-3.

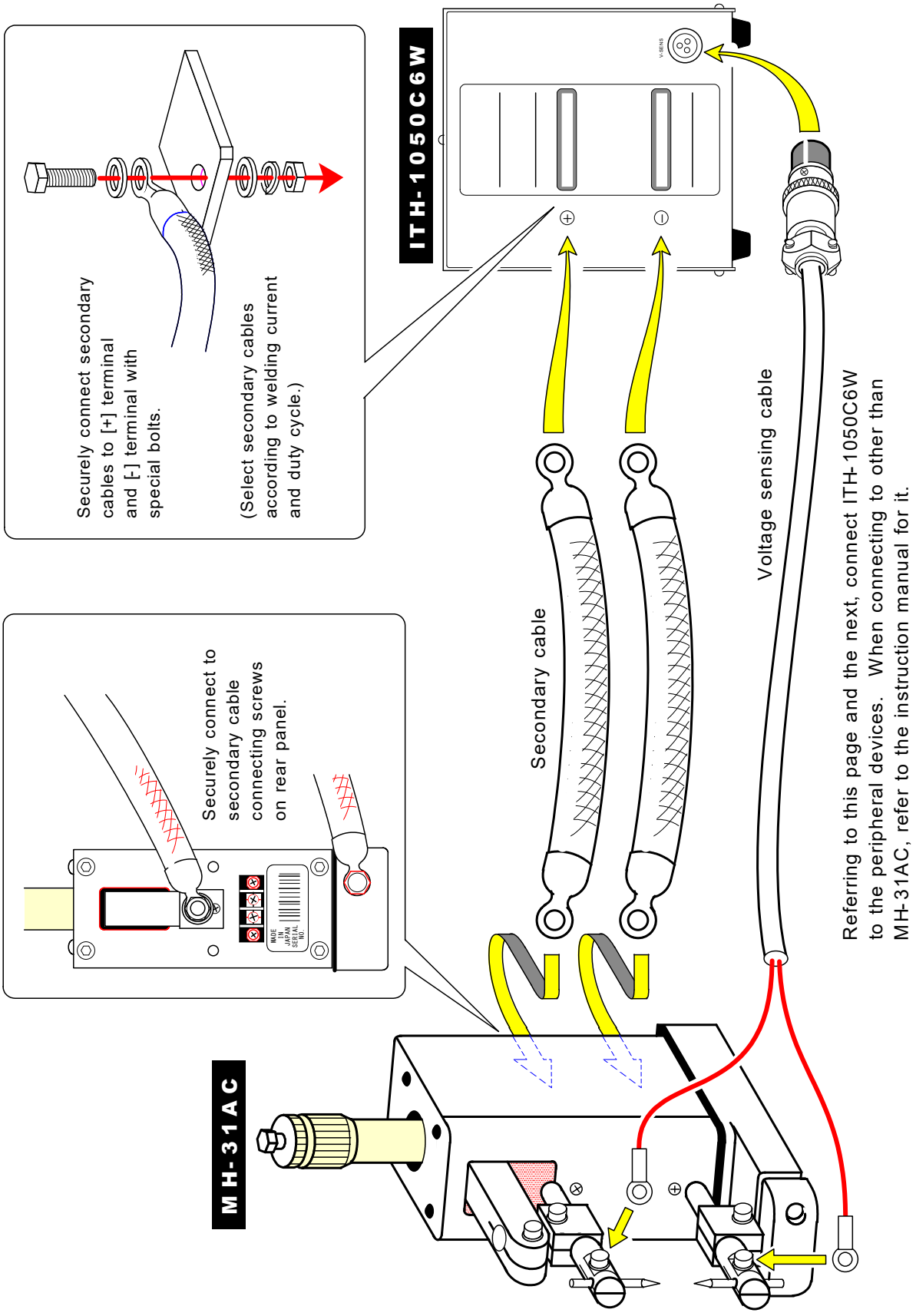
Notice

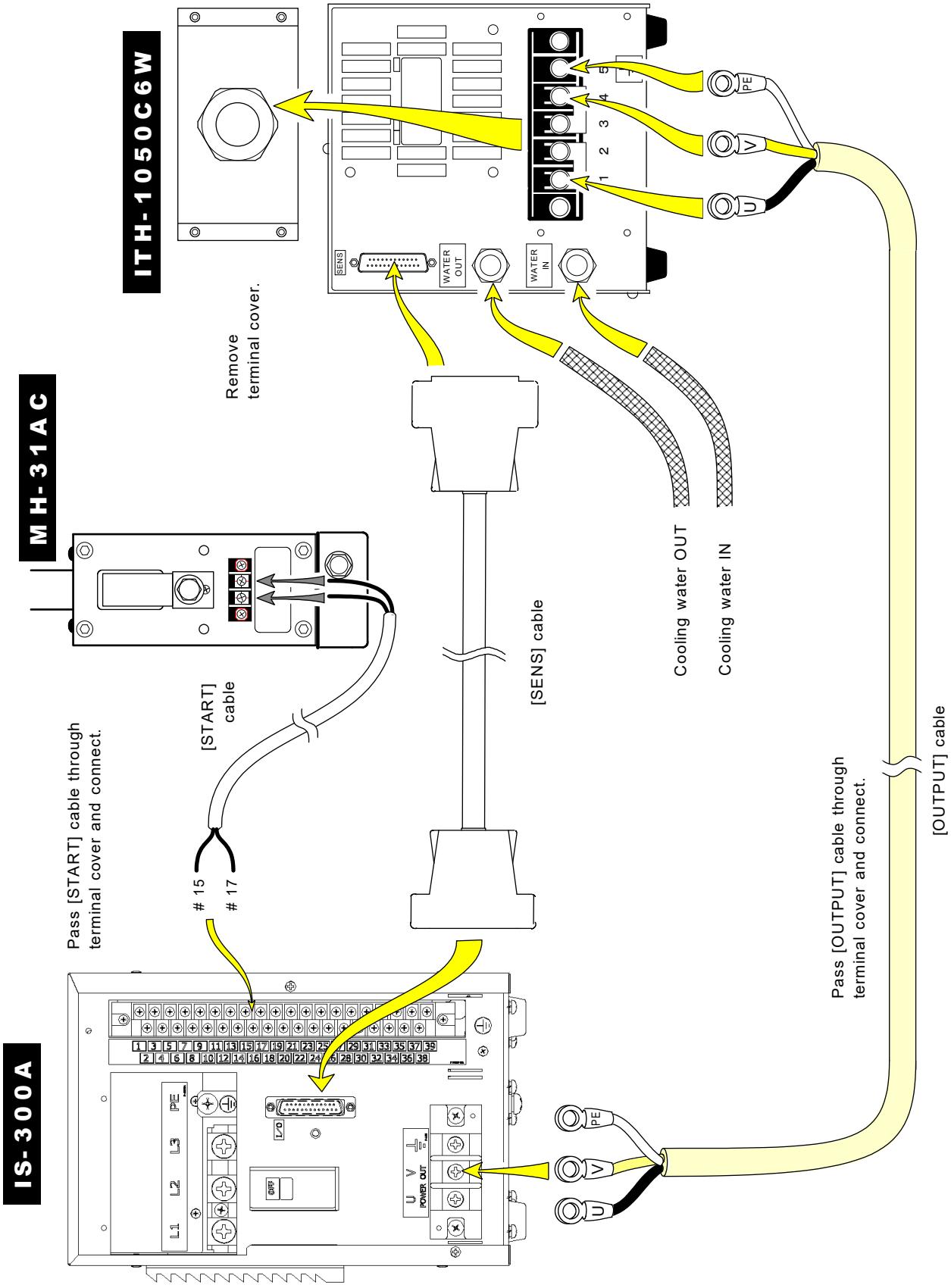
Our welding head **MH-31AC** and welding power supply **IS-300A** are used in the explanatory drawings.
The connection varies with the type and using method of the devices to be used. When connecting them, refer to their instruction manuals.
Make sure to disconnect the power supply before connecting work.

● Connecting jumper plate

When the power supply voltage of the power supply part is 200 V to 240 V AC, connect the attached jumper plates to the terminals 1 and 2, and the terminals 3 and 4 as shown in the illustration (A); when, 380 V to 480 V AC, two jumper plates to the terminals 2 and 3 as shown in the illustration (B). When the power supply voltage of the power supply part is 200 V to 240 V AC, the output voltage is 15 V with a connection shown in (A) and 7.5 V with a connection shown in (B). The terminals are factory-wired as shown in (B).




ITH-1050C6W
MH-31AC
Securely connect secondary cables to [+] terminal and [-] terminal with special bolts.
(Select secondary cables according to welding current and duty cycle.)
Securely connect to secondary cable connecting screws on rear panel.
Secondary cable
Voltage sensing cable
Referring to this page and the next, connect ITH-1050C6W to the peripheral devices. When connecting to other than MH-31AC, refer to the instruction manual for it.


ITH-1050C6W
MH-31AC
IS-300A
Remove terminal cover.
SENS
WATER OUT
WATER IN
PE
V
U
Cooling water OUT
Cooling water IN
[SENS] cable
[START] cable
15
17
Pass [START] cable through terminal cover and connect.
Pass [OUTPUT] cable through terminal cover and connect.
[OUTPUT] cable
L1
L2
L3
POWER OUT

4. Specifications

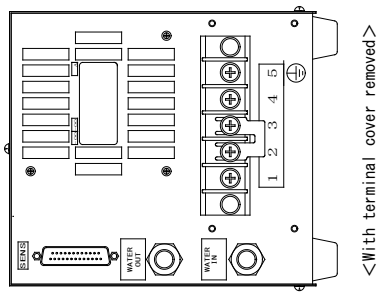
Rated capacity	40.7 kVA
Input voltage	200–240 V AC of welding power supply: 300 V, 1 kHz 380–480 V AC of welding power supply: 600 V, 1 kHz
No-load secondary voltage	200–240 V AC of welding power supply: 15 V/7.5 V 380–480 V AC of welding power supply: 15 V
Turn ratio	200–240 V AC of welding power supply: 20:1/40:1 380–480 V AC of welding power supply: 40:1
Max. output current	7000 A
Max. duty cycle	8.5% (at 7000 A) 11% (at 6000 A) **NB**: See **7. Duty Cycle Graph**.
Cooling method	Water cooling (Cooling water: ≦35°C, ≧3L/min.)
Fan motor voltage	24 V DC
Protection	100°C thermostat switch (built-in)
Operating environment	Temperature 5°–40°C, Humidity 90% or less (Dew condensation not allowed), Altitude 1000 meters or lower 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	H
Case protection	IP20
Outline dimensions	199 mm (H) × 167 mm (W) × 403 mm (D) (Not including projections)
Mass	Approx. 21 kg
Accessories	Operation manual × 1 Voltage-sensing cable × 1

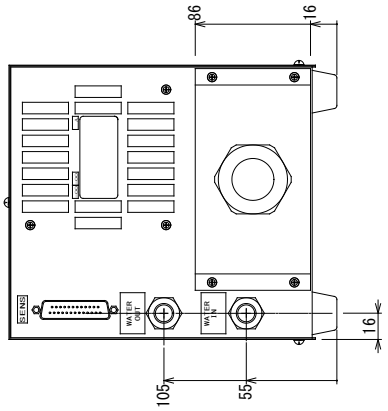
5. Troubleshooting

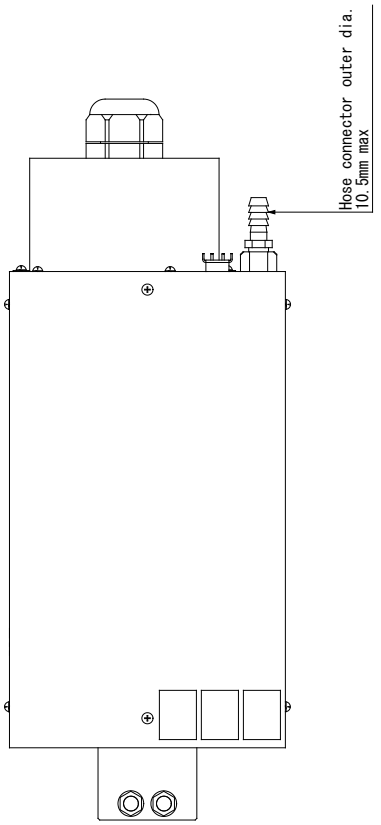
Contents	Cause	Measures
ITH-1050C6W becomes hot abnormally.	Fan motor does not work.	Consult us or your distributor.
	Cooling water does not flow.	Clean up cooling water circuit, especially cooling water hose.
Current does not flow.	Secondary cables are not connected correctly.	Check that all cables are connected correctly.
	[Output] cable is not connected correctly to power supply.	
Current is reduced.	Contacts of secondary cables are oxidized.	Disconnect secondary cables and polish their contacts.
	Internal trouble of transformer.	Consult us or your distributor.

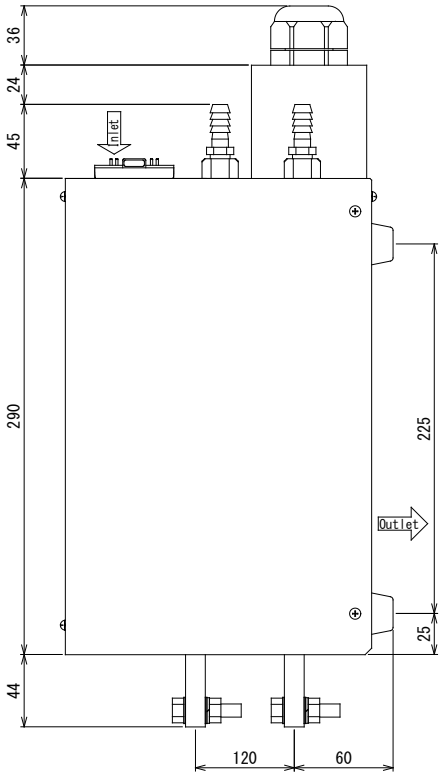
6. Outline Drawing

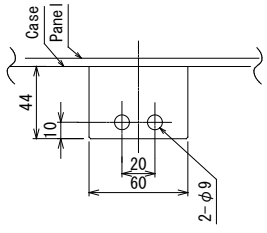
(Dimensions in mm)

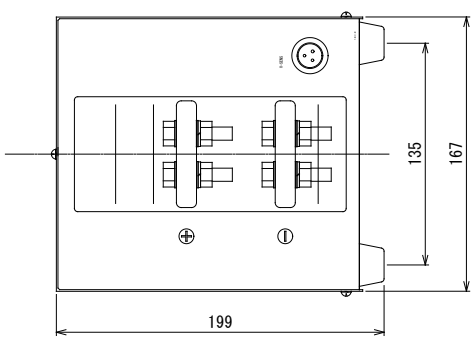












7. Duty Cycle Graph