THYRISTOR-CONTACTOR

SC-181C-00/10

OPERATION MANUAL

AMADA®

AB03OM1211872-02

Thank you for purchasing our Thyristor-Contactor **SC-181C-00/10**.
Please read this operation manual carefully before using the **SC-181C-00/10**, and keep it readily accessible for future reference.

Contents

Each of **SC-181C-10** has a current-detecting CT, and is identical with **SC-181C-00**, respectively, except the CT.

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 safe operation.
- 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.

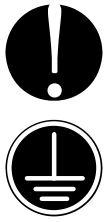
⚠ WARNING

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

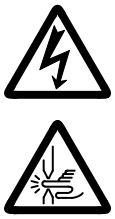
⚠ CAUTION

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 DANGER, WARNING or CAUTION to the operator.

⚠ DANGER

Do not touch the inside of the Thyristor-Contactor unnecessarily.

Since very high voltages are charged to the inside of this Thyristor-Contactor, it is very dangerous to touch it unnecessarily.

Any person other than service personnel, or authorized representatives' personnel must not touch the inside.

Never disassemble, repair or modify the Thyristor-Contactor.

These actions can cause electric shock and fire.

If any part needs to be checked or repaired, contact us or your distributor for help.

Never burn, destroy, cut, crush or chemically decompose the Thyristor-Contactor.

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.

Do not touch any welded part or electrodes during welding and just after welding finished.
The welded part of a workpiece, electrodes and arm are very hot.
Do not touch them; otherwise you may be burnt.

Ground the equipment.
If the Thyristor-Contactor is not grounded, you may get an electric shock when there is trouble, or when electricity leaks.

Connect the specified cables securely.
Cables of insufficient current capacities and loose connections can cause fire and electric shock.

Do not damage the power cable and connecting cables.
Do not tread on, twist or tense any cable. The power cable and connecting cables may be broken, and that can cause electric shock and fire.
If any part needs to be repaired or replaced, consult us or your distributor.

Do not use any damaged power cable, connecting cable and plug.
That can cause electric shock, short circuits and fire.
If any part needs to be repaired or replaced, 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 machine.
A person who uses a pacemaker must not approach the welding machine or walk around the welding shop while the welding machine is in operation, without being permitted by his/her doctor. The welding machine 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. Surface flash and expulsion can burn the skin if they touch the skin.

Wear protective glasses.
If you look at the flash directly during welding, your eyes may be damaged. If any surface flash and expulsion gets in your eye, you may lose your eyesight.

⚠ CAUTION

Apply the specified source voltage.
Application of a voltage out of the specified range can cause fire and electric shock.

Do not splash water on the equipment.
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 conductor of wire. A flaw on it can cause fire and electric shock.

Install the equipment on firm and level surface.
If the equipment falls over or drops from an uneven surface, injury may result.

Do not sit on or do not put things on it.
Sitting on it, or putting things on it may cause malfunction.

Keep combustible matter away from the welding machine.
Surface flash and expulsion can ignite combustible matter. If it is impossible to remove all combustible matter, cover them with non-combustible material.

Do not cover this equipment with a blanket, cloth, etc.
If such a cover is used, it may be overheated and burn.

Do not use this Thyristor-Contactor for purposes other than welding.
Use of this equipment 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.
Make sure there is a fire extinguisher in or near the welding shop in case of fire.

Regularly inspect and maintain the equipment.
Regular inspect and maintenance is essential to safe operation of the equipment. If you see any damage, make necessary before starting the operation.

(2) Precautions for Handling

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

- Do not install this Thyristor-Contactor in the following places:
  - Where there is considerably damp (humidity is higher than 90%).
  - Where the ambient temperature is above 40°C or below 5°C.
  - Where there is nearby high noise source.
  - Where the Thyristor-Contactor may be exposed to chemicals.
  - Where moisture may be condensed on the surface of the Thyristor-Contactor.
  - Where there is considerable dirt.
  - Where the Thyristor-Contactor may be subjected to vibration or impact.

- If the outside of the Thyristor-Contactor 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.

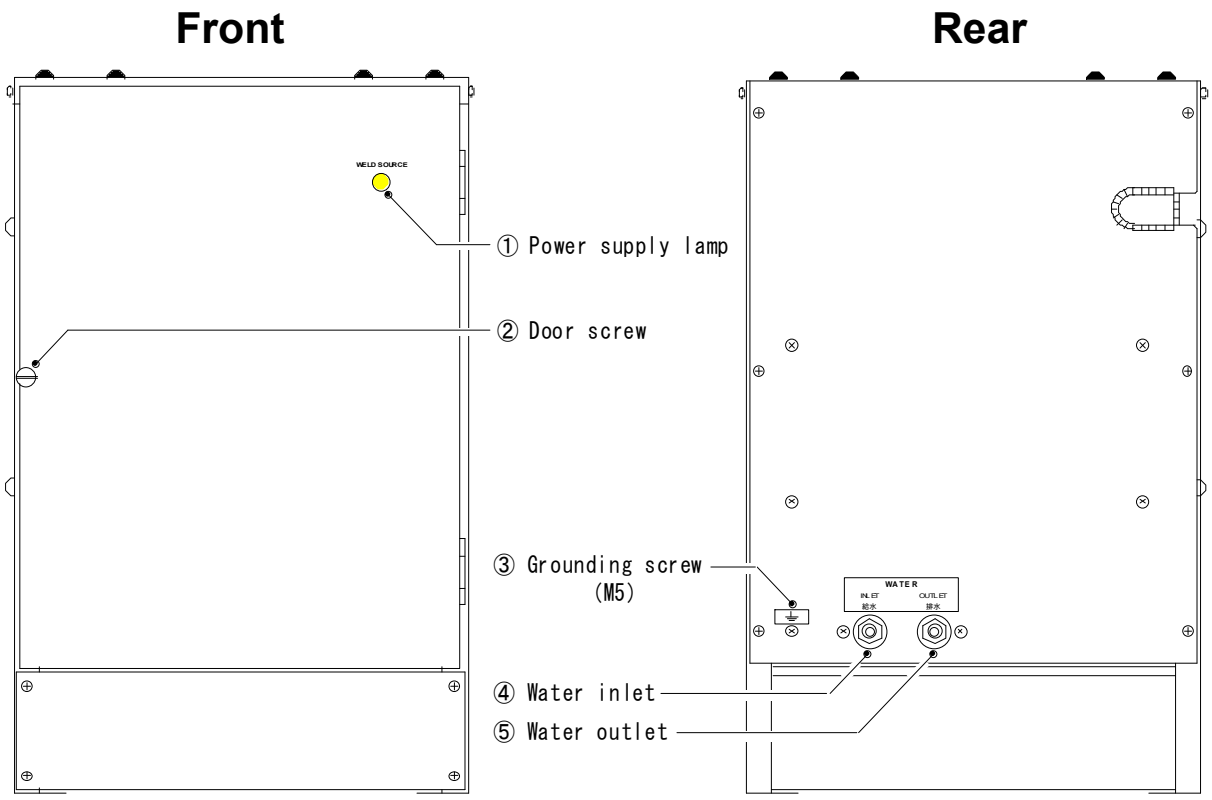
- Do not put screws, coins, etc., in the Thyristor-Contactor, as they may cause a malfunction.

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

(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. Names and Functions of Each Parts



① **Power Supply Lamp**
Lights up when a welding power supply is on.

② **Door Screw**
Fastens the door.

⚠ DANGER
High voltage is impressed in the interior of **SC-181C**; do not touch it unnecessarily. When opening the door, be sure to take the **SC-181C** off the line.

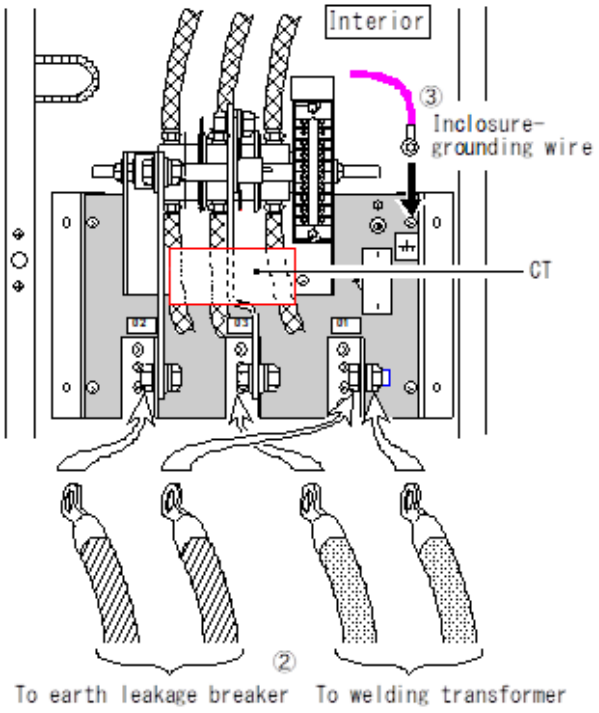
③ **Grounding Screw (M5)**
Accepts the grounding wire.

④ **Water Inlet**
Receives the cooling water.

⑤ **Water Outlet**
Drain the cooling water.

3. Connection

A built-in CT is provided in the **SC-181C-10**.



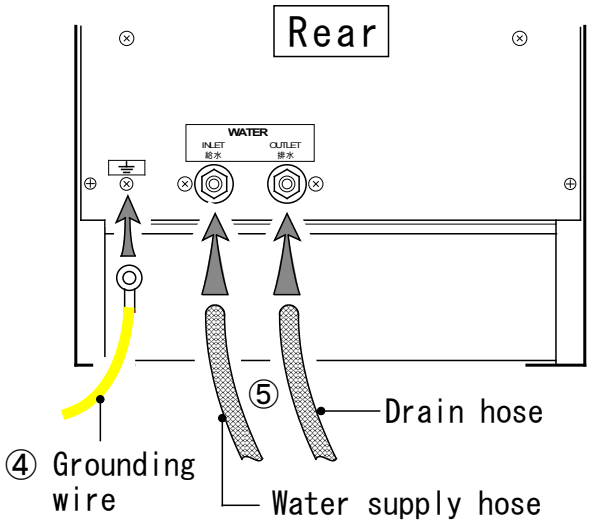
⚠ DANGER

High voltage is impressed in the interior of **SC-181C**; do not touch it unnecessarily. When opening the door, be sure to take the **SC-181C** off the line.

① Loosen the door screw to open the door.

② Connect the wires from earth leakage breaker and welding transformer to this **SC-181C** as shown. Bolt size is M10. Select the sectional area of the cable properly for the capacity of welding transformer.

③ When connecting the enclosure-grounding wire, connect it to the screw bearing on grounding symbol (black arrow in the sketch at left).



CAUTION

Do not turn off the cooling water while welding power supply is on. Electric current may flow through cooling water, generating heat, and hose may puncture.

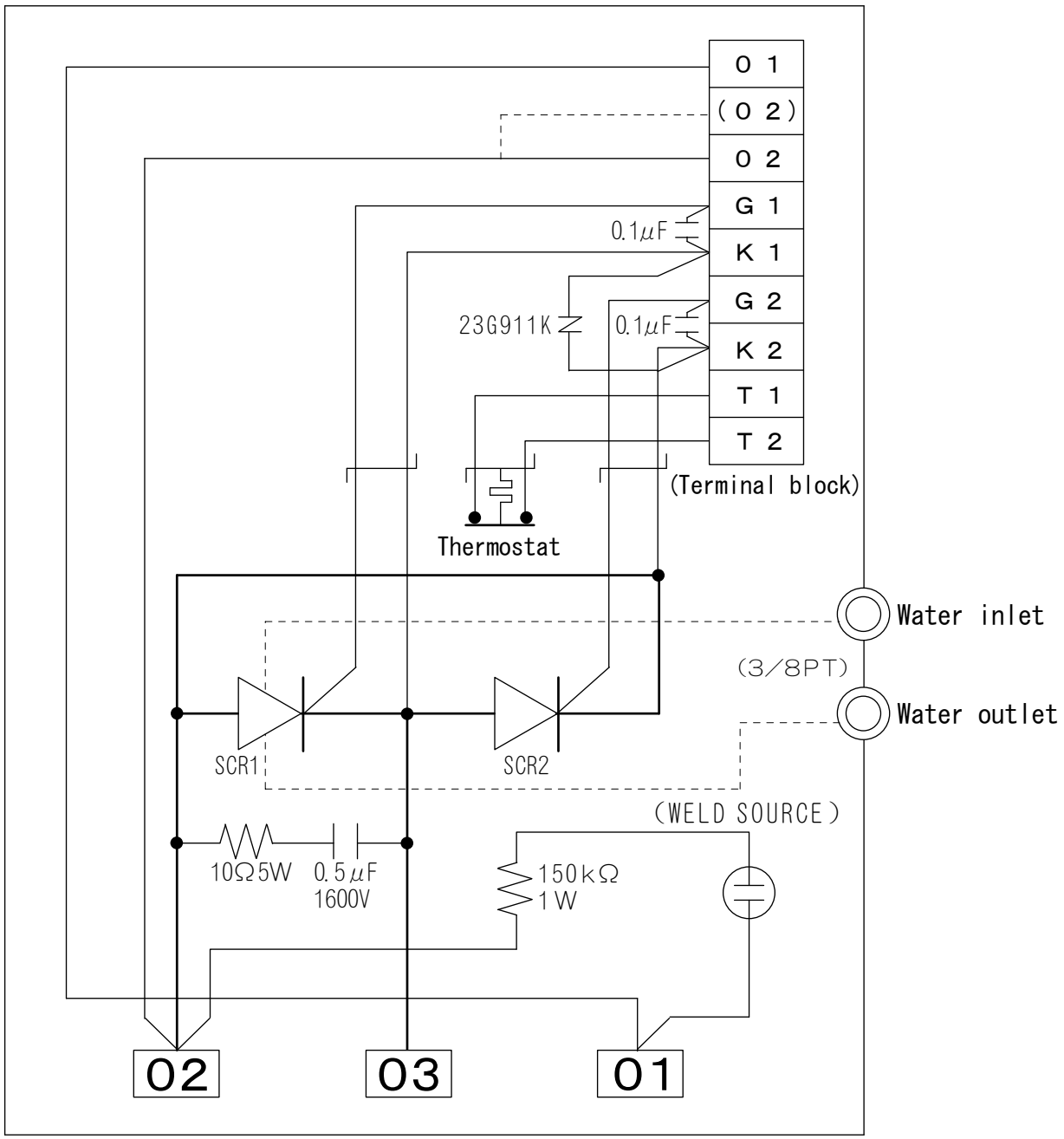
④ Connect the grounding wire to the grounding screw.

⑤ Connect the hoses to the water inlet and outlet, respectively.
Size of the inlet and outlet is 3/8PT (outer dia.; φ11 mm).
Tighten the hose securely with a hose band.

⚠ DANGER

When water leaks, be sure to turn off the welding power supply before handling. If you contact the water without turning off the power supply, you may get on electric shock.

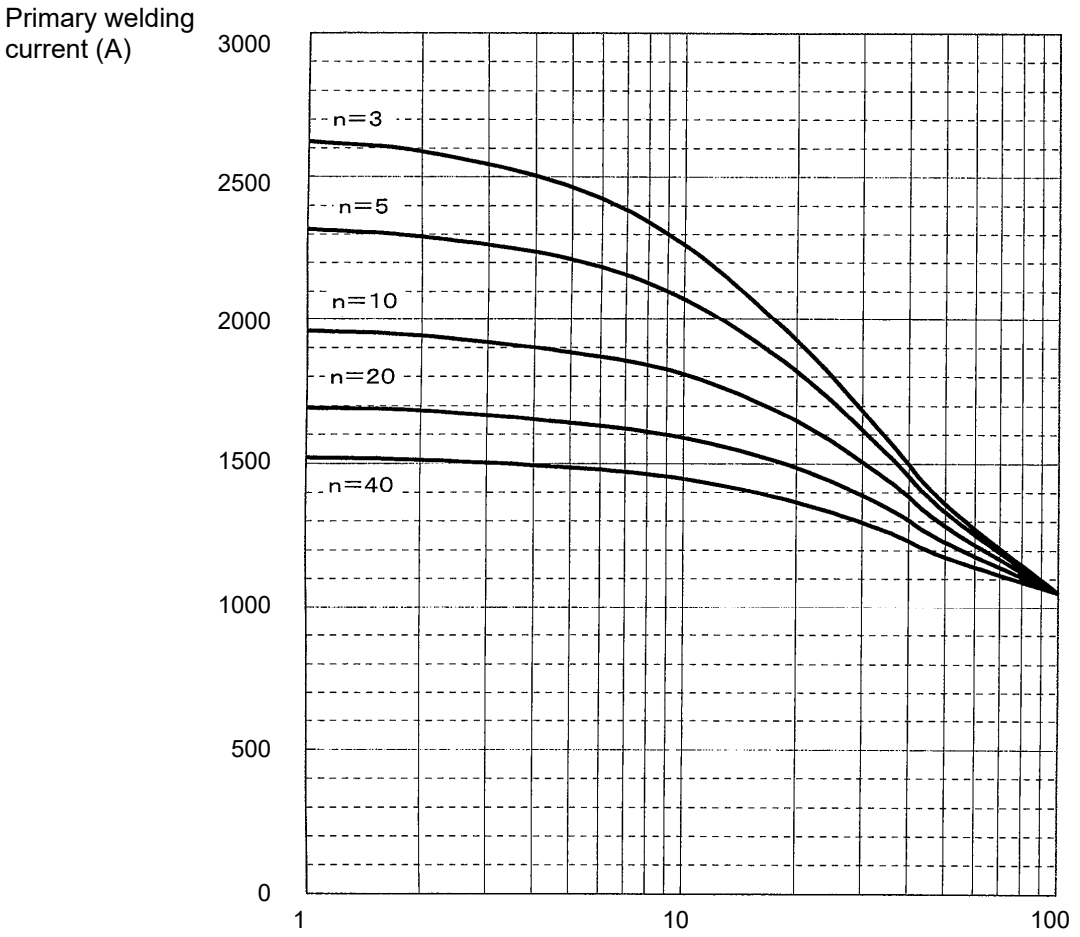
4. Wiring Diagram

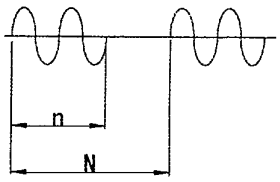


5. Specifications

Welding voltage	200 V to 240 V AC / 380 V to 480 V AC, 50/60 Hz
Primary welding current	1050 A at 100% duty factor 1588 A at 20 cycle of 10% duty factor
CT	-00: --- -10: built-in
Cooling method	Water cooling (6 liters/min., water temperature 30°C)
Cooling water piping	3/8PT (Hose inner dia.: φ9 mm)
Protection	with 60°C-thermostat
Mass	14 kg

Duty cycle graph





$$\alpha = \frac{n}{N} \times 100\ (\%)$$

- α: duty cycle
- n: number of current-flow cycles
- N: number of cycles equivalent to welding frequency

6. Outline Drawing

(Dimensions in mm)