

# **MOTOWELD-X350**

## Internal Cleaning Instructions

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## Internal Cleaning

Dust and dirt may cause the arc welding power source failure.

- ① Perform periodical maintenance and inspection for safe and efficient operations of the welding power source.
- ② Remove dust and dirt bimonthly to semiannual.

*Table 10-1: Maintenance and Inspection Items*

Daily inspection items	Bimonthly to semiannual inspection items
<p>(1) The switches operate without fail.</p> <p>(2) The cooling fan rotates smoothly by turning ON/OFF the power supply switch and draws the air in from the rear face.</p> <p>(3) There is no abnormal vibration, beat, or odor. There is no leakage of gas.</p> <p>(4) The cable connecting section is not excessively heated.</p> <p>(5) The power cable and its connecting section are not excessively heated.</p> <p>(6) There is no damage on the connection cable such as a cable on the input side or on the base metal side, resulting in imperfect insulation.</p> <p>(7) Each connecting section is tightened securely.</p>	<p>(1) Removal of dust and dirt Remove dust and dirt by spraying dry compressed air. Carefully clean spaces between the transformer and reactor windings, and semiconductors. To clean circuit boards, use the exclusive-use dust remover device.</p> <p>(2) Inspection of electric connecting sections Check that the bolts are firmly tightened and rust or the like does not deteriorate the contacts in the connecting sections with the external wiring such as input/output terminals or with the internal wiring. Retighten the bolts if necessary or use a file to remove rust, if any, so that the metallic faces contact with each other.</p> <p>(3) Inspection of ground line Confirm that the case is grounded properly.</p>
<p><b>Annual overhaul and repair</b></p>	
<p>Carry out the integrated repair such as replacement of defective components, case repair, and reinforcement of insulation deteriorated parts. When replacing defective components, replace them with the components which are ordered at monthly inspection. Insulation resistance must be 1 MΩ or more between the control unit circuit and the case; if it is less than 1 MΩ, the insulation of the deteriorated part must be repaired.</p>	

(Excerpt from *chapter 10 "Maintenance and Inspection"*, Manual no. HW1483776)

## 1. Precautions

[Precautions on Electric Shock]

- ① Before internal maintenance or inspection, be sure to disconnect the power cable of the welding power source or turn OFF the switch in the primary side switch gear.
- ② For internal maintenance or inspection immediately after using the welding power source, the capacitor in the welding power source may be charged. Wait for approx. five minutes and remove the cover for maintenance or inspection.
- ③ Be careful to high voltage circuit.

[Precautions on Dust and Dirt]

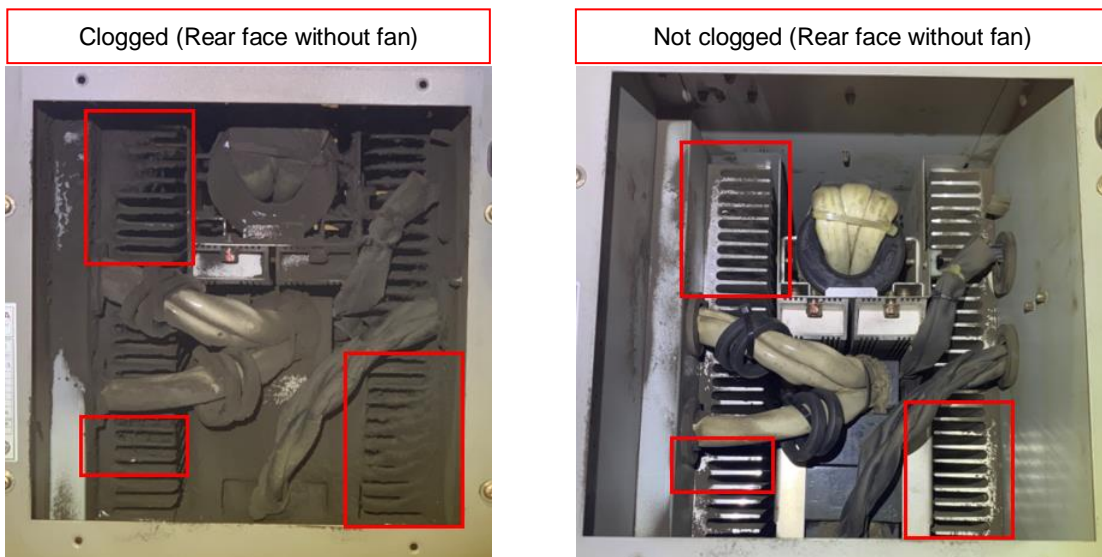
- ④ Wear **protective glasses, dust protective mask and gloves** for internal maintenance or inspection.

## 2. Tools

- Cross slot screwdriver
- Protective glasses
- Dust protective mask
- Gloves
- Dry rag
- Air gun + dry compressed air
- Small sized broom or suction cleaner
- Wrench: M6
- Wrench: M4 (Used when the fan guard is fixed by Type1. Regarding the fixing type, see *chapter 4.2 "Removing the Fan Guard"*.)

## 3. Recommended Cleaning Timing

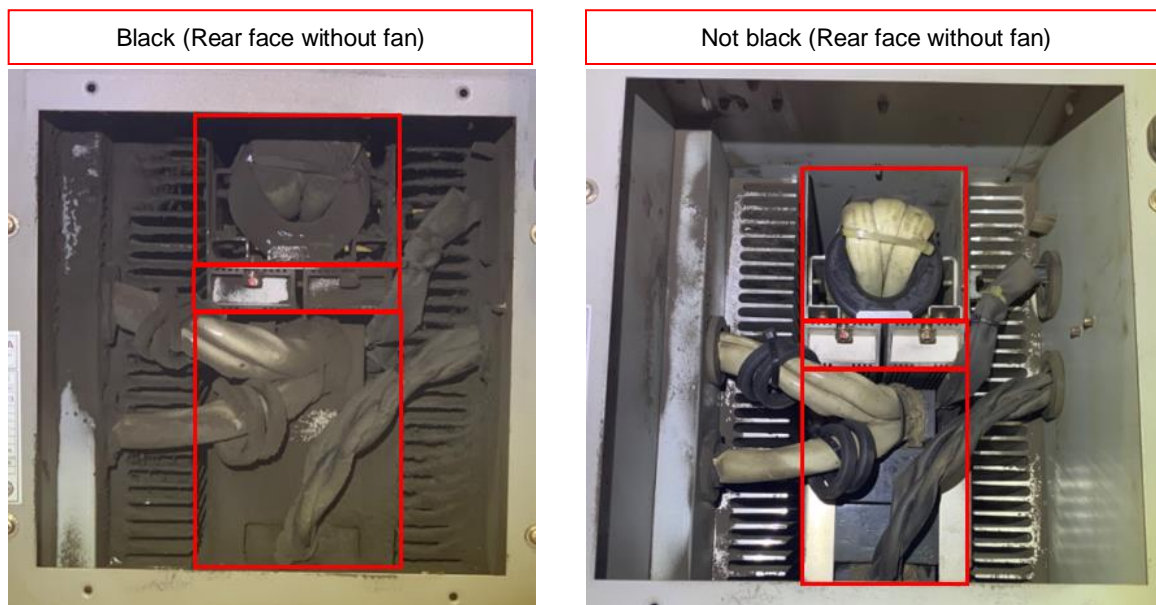
1. When the heat sink fins are clogged, clean them up. (*Fig. 3-1 "Clogged Heat Sink Fins"*)



**Fig. 3-1: Clogged Heat Sink Fins**

2. When the parts are black due to accumulation of dust and dirt, clean them up.

(Fig. 3-2 "Accumulation of Dust and Dirt (Parts)")



**Fig. 3-2: Accumulation of Dust and Dirt (Parts)**

3. When dust and dirt have accumulated at the bottom, clean them up.

(Fig. 3-3 "Accumulation of Dust and Dirt (Bottom)")



**Fig. 3-3: Accumulation of Dust and Dirt (Bottom)**

#### 4. Cleaning Fan

##### 4.1 Removing Fan

1. Remove the screws pointed in *Fig. 4-1 “Removing Screws of Fan”*



**Fig. 4-1: Removing Screws of Fan**

2. The cable is connected to the fan. Therefore, in preparation for pulling out the fan cable, pull the fan slightly toward you. (*Fig. 4-2 “Preparation for Pulling out the Fan Cable”*)

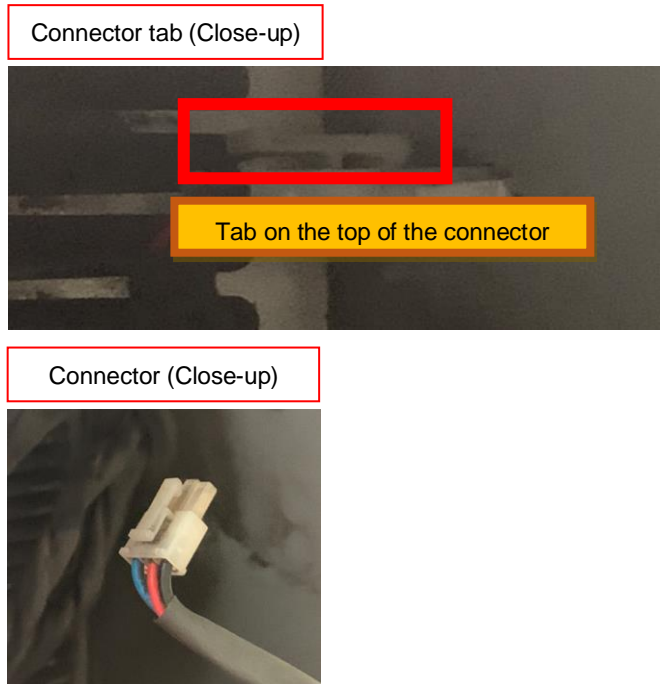
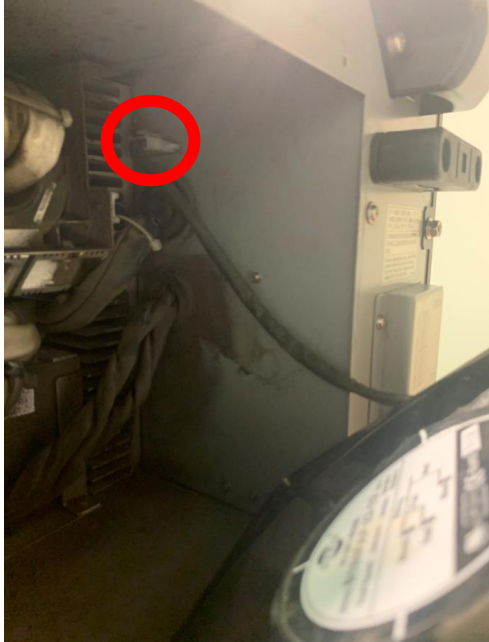
[Notes] Pull out the fan carefully to avoid damaging the cable.



**Fig. 4-2: Preparation for Pulling out the Fan Cable**



3. Disconnect the cable connected to the upper right corner inside the welder.  
Pull out the cable while pressing the tab on the top of the connector.  
(Fig. 4-3 "Disconnecting the Fan Cable")



**Fig. 4-3: Disconnecting the Fan Cable**

4. Remove the fan. (Fig. 4-4 "Fan Parts")



**Fig. 4-4: Fan Parts**

## 4.2 Removing Fan Guard

1. Remove four screws pointed in *Fig. 4-5 “Removing Screws of Fan Guard”*.

[Notes] There are two ways to fix the fan guard. After confirming which type it is, remove the screws.

To check which type it is, check the last four digits of the serial number for the welder.

- Serial number which Type1 is used. (*Fig. 4-6 “Type1, Fan Guard Fixing Type”*)

X350-CC0 SN: 12042xxxx0120 or earlier

X350-6N0 SN: 12044xxxx0060 or earlier

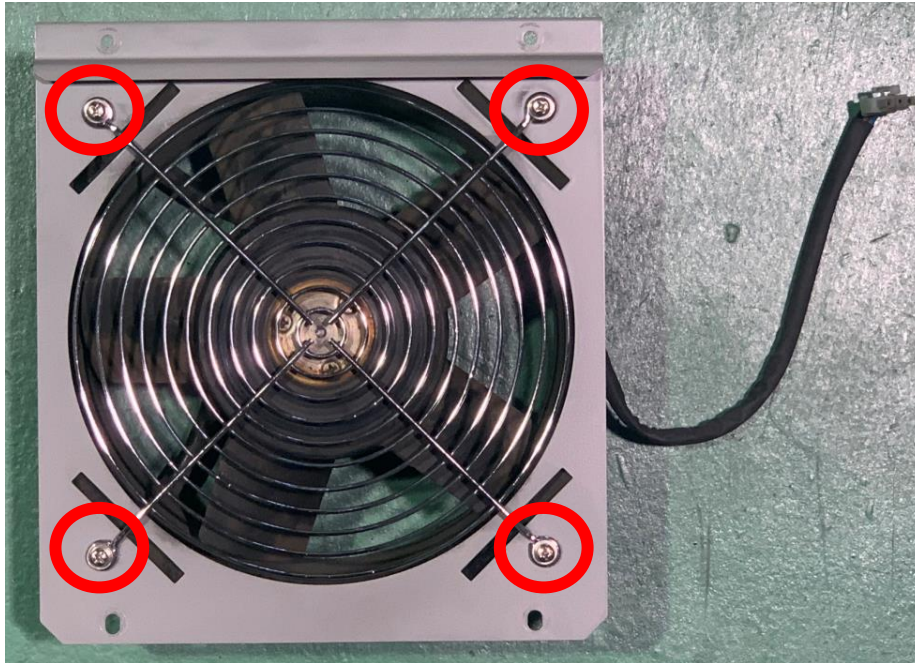
X350-CE0 SN: Not used

- Serial number which Type2 is used. (*Fig. 4-7 “Type2, Fan Guard Fixing Type”*)

X350-CC0 SN: 12042xxxx0121 or after

X350-6N0 SN: 12044xxxx0061 or after

X350-CE0 SN: 12046xxxx0001 or after



**Fig. 4-5: Removing Screws of Fan Guard**



**Fig. 4-6: Type1, Fan Guard Fixing Type**





**Fig. 4-7: Type2, Fan Guard Fixing Type**

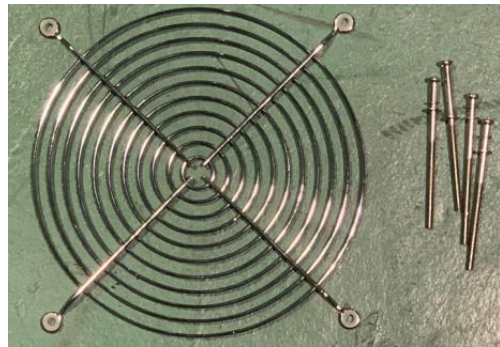
Disassembly parts after removing the fan guard is as follows.

(Fig. 4-8 "Fan Parts Disassembly")

Fan



Fan guard



Metal steel



**Fig. 4-8: Fan Parts Disassembly**

### 4.3. Cleaning Fan, Fan Guard and Metal Steel

1. Wipe the dust and dirt off the fan casing with a dry rag. (Fig. 4-9 “Cleaning Fan”)

**[Notes] Do NOT blow dry compressed air on the fan.**

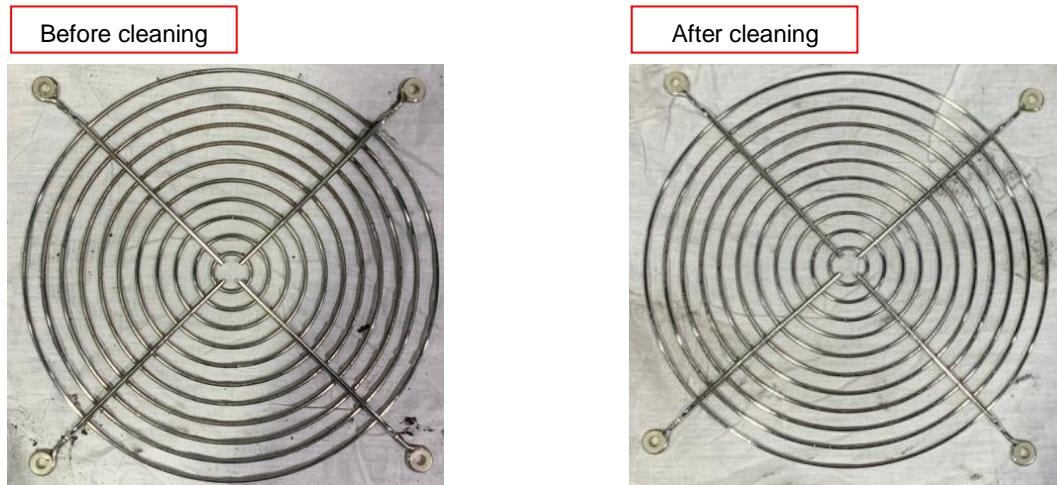
**It is very dangerous to injure your fingers due to the rotating fan.**



**Fig. 4-9: Cleaning Fan**

2. Wipe the dust and dirt off both sides of the fan guard with a dry rag.

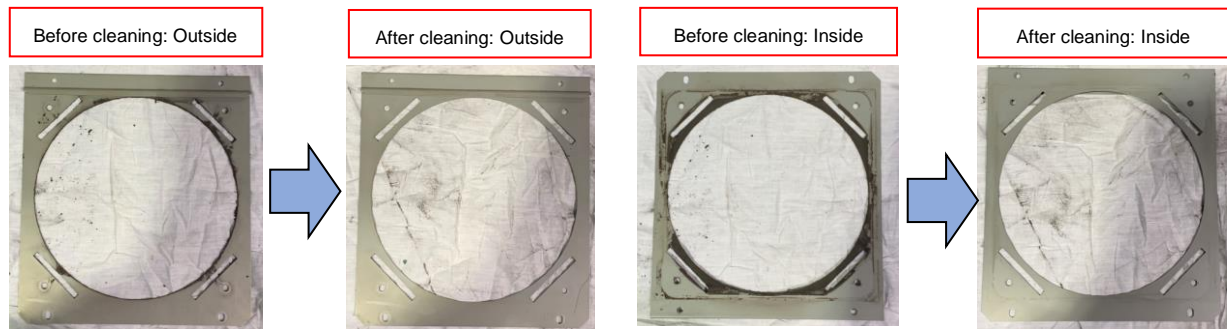
(Fig. 4-10 “Cleaning Fan Guard”)



**Fig. 4-10: Cleaning Fan Guard**

3. Wipe the dust and dirt off both sides of the metal steel with a dry rag.

(Fig. 4-11 “Cleaning Metal Steel”)



**Fig. 4-11: Cleaning Metal Steel**

## 5. Cleaning Welding Power Source

### 5.1. Overall Flow of Cleaning

The cleaning consists of the following steps.

1. Removing rear fan  
→ See **chapter 5.2 “Removing Rear Fan”**
2. Removing front panel unit  
→ See **chapter 5.3 “Removing Front Panel Unit”**
3. Blowing dry compressed air on rear face  
→ See **chapter 5.5 “Blowing Dry Compressed Air on Rear Face”**
4. Blowing dry compressed air on front face  
→ See **chapter 5.6 “Blowing Dry Compressed Air on Front Face”**
5. Removing side cover (right)  
→ See **chapter 5.8 “Removing Side Cover (Right)”**
6. Removing side cover (left)  
→ See **chapter 5.9 “Removing Side Cover (Left)”**
7. Wiping the bottom of the right and left sides of welder  
→ See **chapter 5.10 “Wiping the Bottom of the Right and Left Sides of Welder with a Dry Rag”**
8. Cleaning front panel unit and side cover  
→ See **chapter 5.11 “Cleaning Front Panel Unit and Side Cover”**
9. Attaching side cover (left)  
→ See **chapter 6 “Attaching Fan, Front Panel Unit and Side Cover”**
10. Attaching side cover (right)  
→ See **chapter 6 “Attaching Fan, Front Panel Unit and Side Cover”**
11. Attaching front panel unit  
→ See **chapter 6 “Attaching Fan, Front Panel Unit and Side Cover”**
12. Attaching rear fan  
→ See **chapter 6 “Attaching Fan, Front Panel Unit and Side Cover”**



## 5.2. Removing Rear Fan

1. Remove the rear fan, seeing *chapter 4.1 “Removing Fan”*.

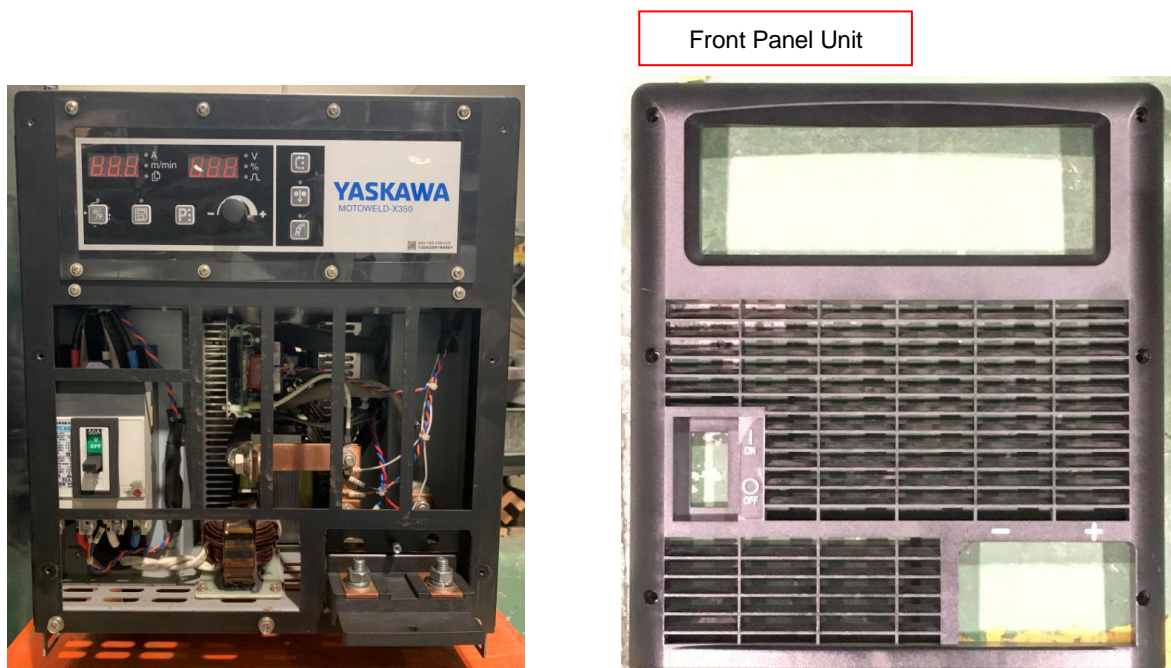
## 5.3. Removing Front Panel Unit

1. Remove six screws of the front panel unit. (*Fig. 5-1 “Removing Screws of Front Panel Unit”*)



**Fig. 5-1: Removing Screws of Front Panel Unit**

2. Pull the front panel unit toward you to remove it. (*Fig. 5-2 “Front Face of Welder”*)



**Fig. 5-2: Front Face of Welder**

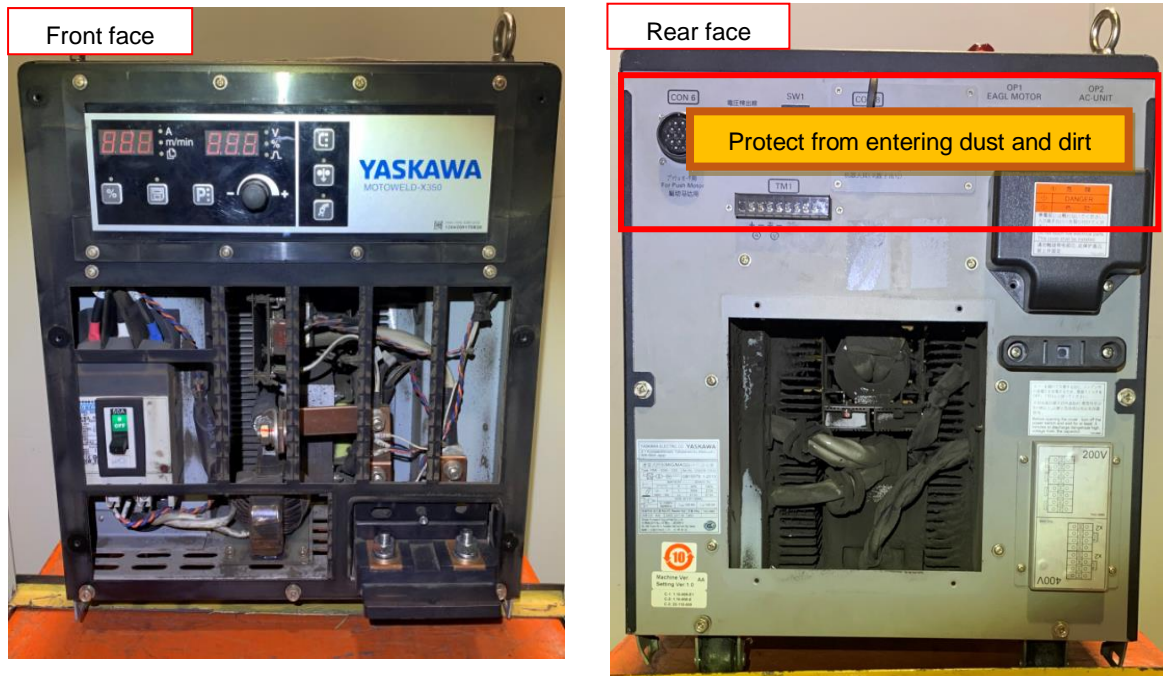


#### 5.4. Welder situation when Blowing Compressed Air

1. The front and rear face of the welder should be in the following situation.

(Fig. 5-3 “Welder situation when Blowing Compressed Air”)

[Notes] Use cloth or tape to protect rear connectors, OP1, OP2, TM1 and rubber bushings from dust and dirt to prevent them from entering.

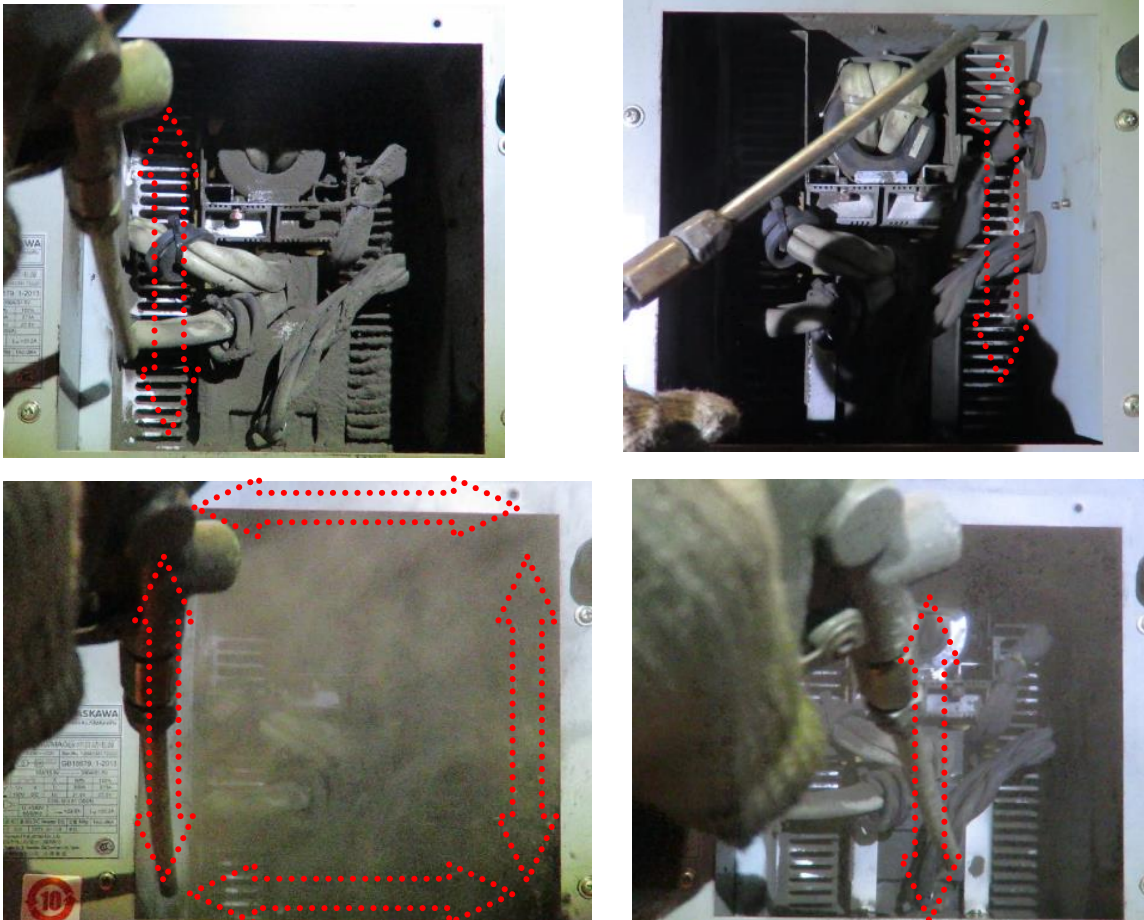


**Fig. 5-3: Welder situation when Blowing Compressed Air**

### 5.5. Blowing Dry Compressed Air on Rear Face

1. When there is a large lump of dust or dirt inside the rear face, sweep it with small sized broom.  
Or if you have a suction cleaner, use it to suck out the dust and dirt.
2. Remove the dust and dirt by blowing dry compressed air on the left and right heat sink, the center area, top, bottom, left and right. (*Fig. 5-4 "Blowing Dry Compressed Air on Rear Face"*)

[Notes] Remove large dust and foreign objects before blowing compressed air.



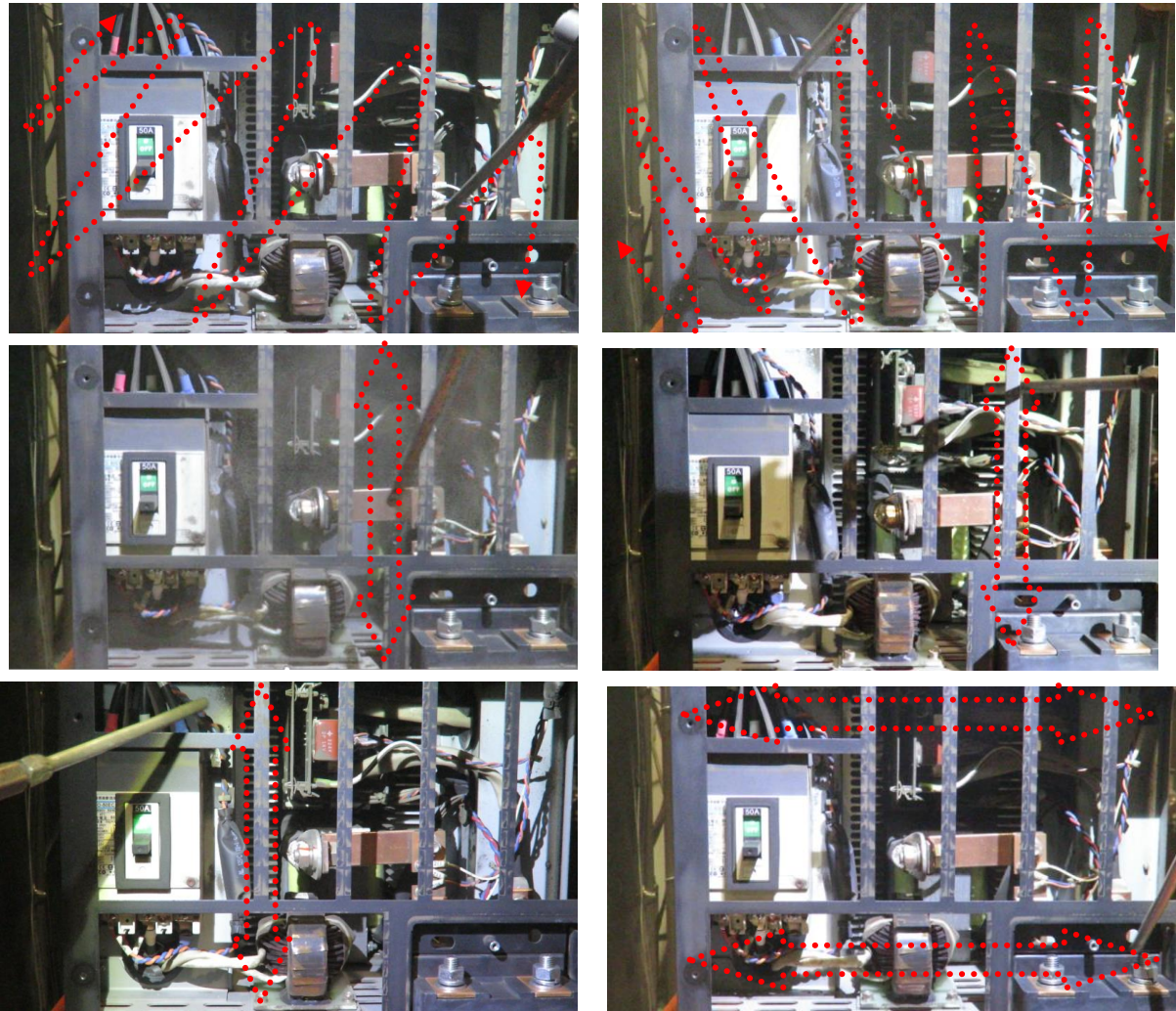
**Fig. 5-4: Blowing Dry Compressed Air on Rear Face**



## 5.6. Blowing Dry Compressed Air on Front Face

1. When there is a large lump of dust or dirt inside the front face, sweep it with small sized broom.  
Or if you have a suction cleaner, use it to suck out the dust and dirt.
2. Remove the dust and dirt by blowing dry compressed air all over the welder as pointed in the following pictures. (Fig. 5-5 “Blowing Dry Compressed Air on Front Face”)

[Notes] Remove large dust and foreign objects before blowing compressed air.



**Fig. 5-5: Blowing Dry Compressed Air on Front Face**

## 5.7. Blowing Dry Compressed Air on Rear and Front Face

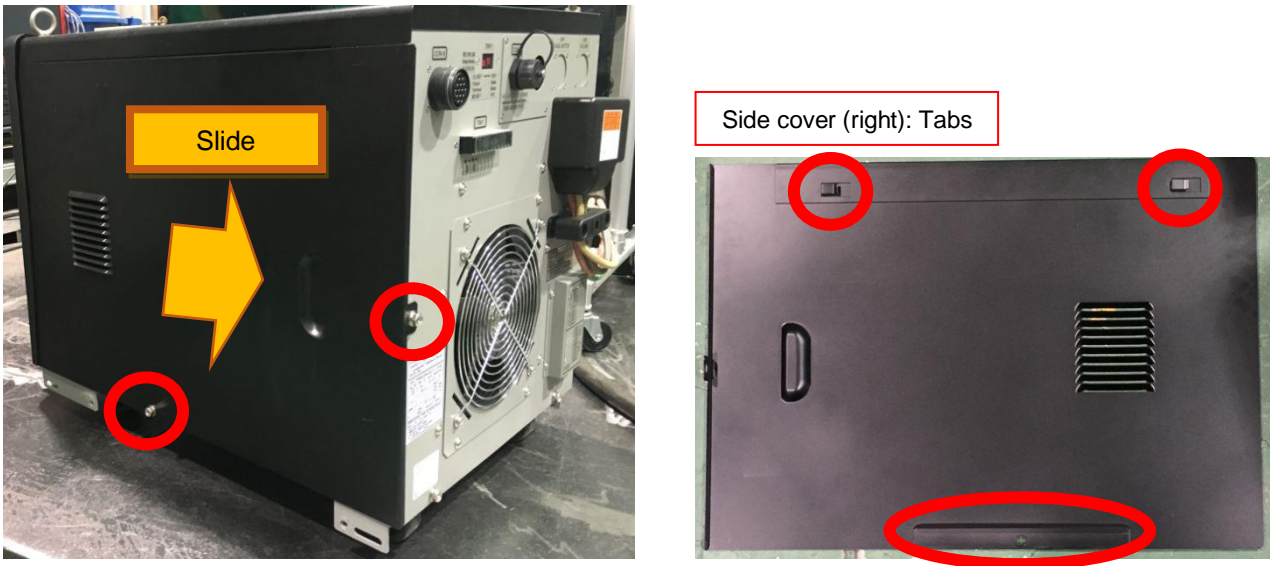
1. Blow dry compressed air on the rear face once again. If dust or dirt still come out, repeat *chapter 5.5 “Blowing Dry Compressed Air on Rear Face”* and *chapter 5.6 “Blowing Dry Compressed Air on Front Face”*.

### 5.8. Removing Side Cover (Right)

1. Remove a screw of the side cover (right) and a screw of the rear face. See the following picture.
2. Slide the side cover (right) backward and remove the side cover (right).

(Fig. 5-6 "Removing Side Cover (Right)")

[Notes] There are tabs on the inside of the side cover (right), so be careful when removing and attaching it.



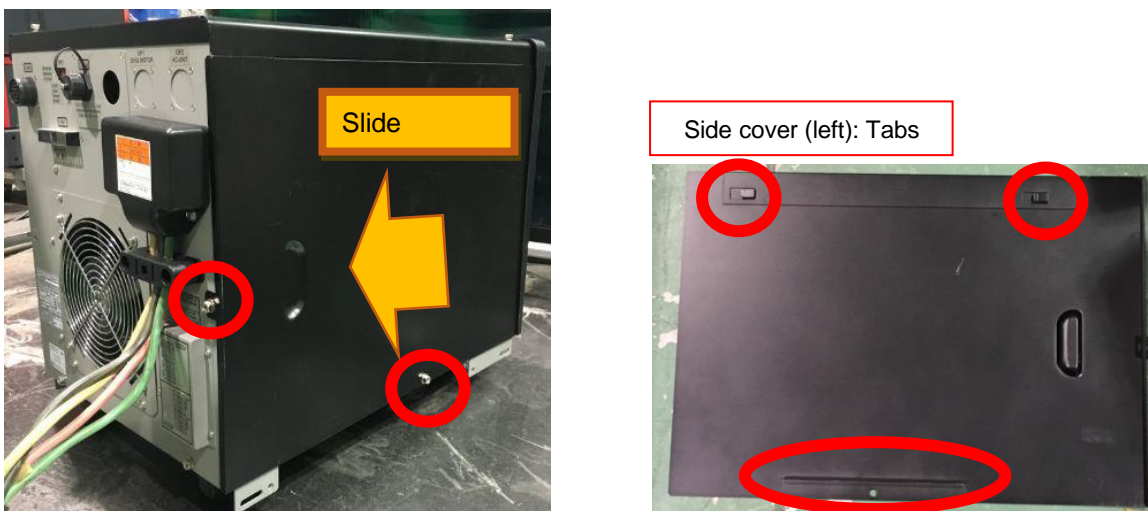
**Fig. 5-6: Removing Side Cover (Right)**

### 5.9. Removing Side Cover (Left)

1. Remove a screw of the side cover (left) and a screw of the rear face. See the following picture.
2. Slide the side cover (left) backward and remove the side cover (left).

(Fig.5-7 "Removing Side Cover (Left)")

[Notes] There are tabs on the inside of the side cover (left), so be careful when removing and attaching it.



**Fig. 5-7: Removing Side Cover (Left)**

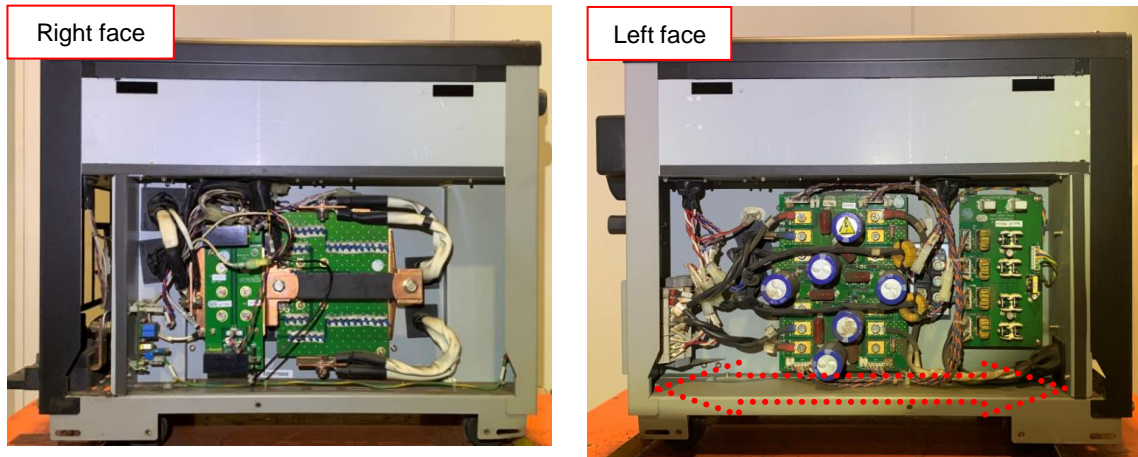


### 5.10. Wiping the Bottom of the Right and Left Faces of Welder with a Dry Rag

1. Wipe off any dust and dirt from the bottom of the right and left faces of the welder with a dry rag.

(Fig. 5-8 “Wiping the Bottom of the Right and Left Faces of Welder”)

[Notes] When wiping, be careful not to touch the parts.



**Fig. 5-8: Wiping the Bottom of the Right and Left Faces of Welder**

### 5.11. Cleaning Front Panel Unit and Side Cover

1. Wipe off any dust and dirt from the side cover (right) with a dry rag.

(Fig. 5-9 “Cleaning Side Cover (Right)”)



**Fig. 5-9: Cleaning Side Cover (Right)**

2. Wipe off any dust and dirt from the side cover (left) with a dry rag.

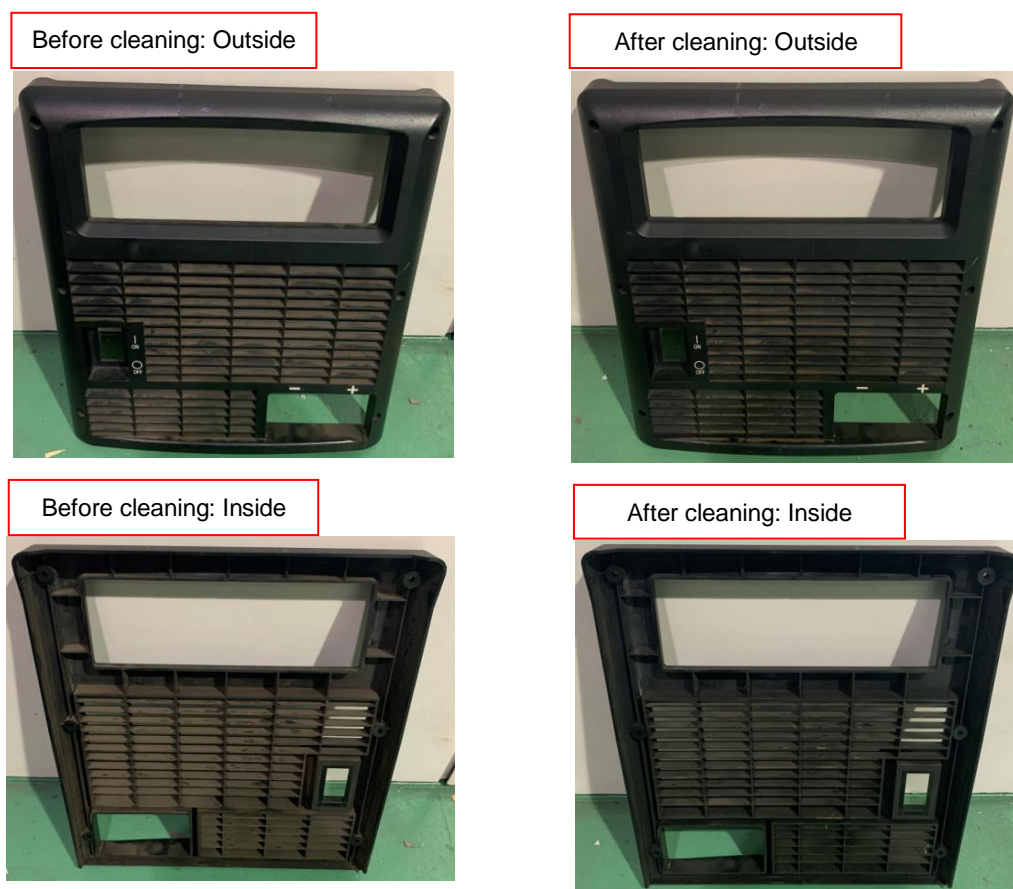
(Fig. 5-10 “Cleaning Side Cover (Left)”)



**Fig. 5-10: Cleaning Side Cover (Left)**

3. Remove the dust and dirt by blowing dry compressed air on both sides of the front panel unit.

(Fig. 5-11 “Cleaning Front Panel Unit”)



**Fig. 5-11: Cleaning Front Panel Unit**

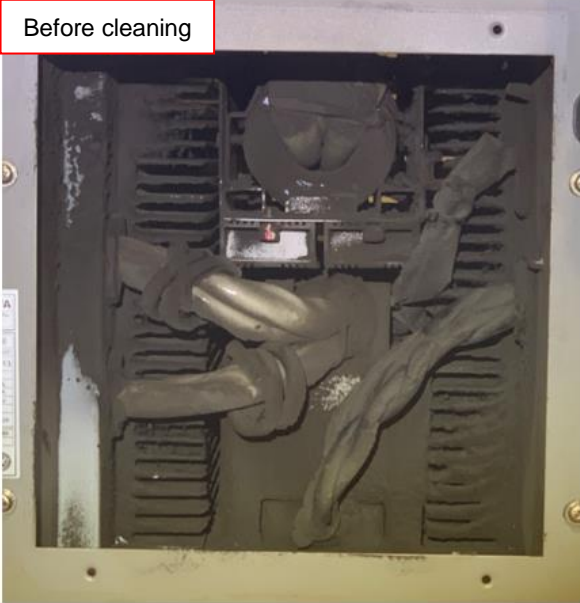
## 6. Attaching Fan, Front Panel Unit and Side Cover

1. Attach the side cover (right and left) in reverse order, seeing *chapter 5.8 “Removing Side Cover (Right)”* and *chapter 5.9 “Removing Side Cover (Left)”*.
2. Attach the front panel unit in reverse order, seeing *chapter 5.3 “Removing Front Panel Unit”*.
3. Attach the rear fan in reverse order, seeing *chapter 5.2 “Removing Rear Fan”*.

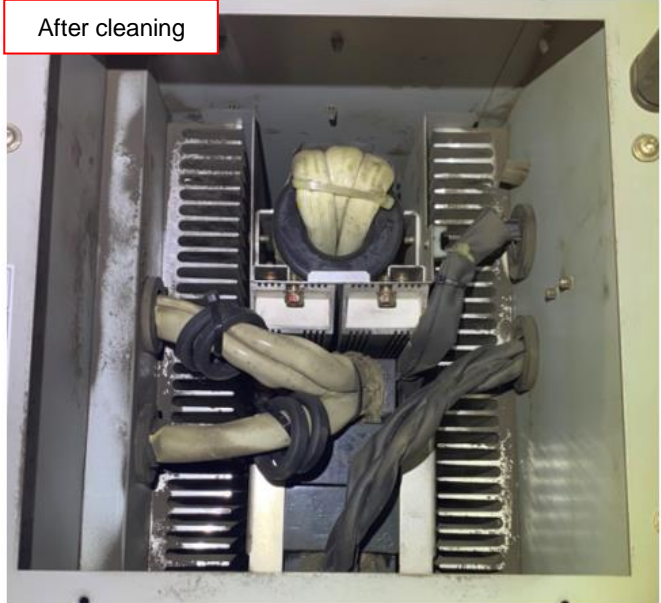
### 【Reference Pictures: Before and After Cleaning】

1. Rear Face

Before cleaning



After cleaning



Before cleaning



After cleaning





Before cleaning



After cleaning



Before cleaning



After cleaning





Before cleaning

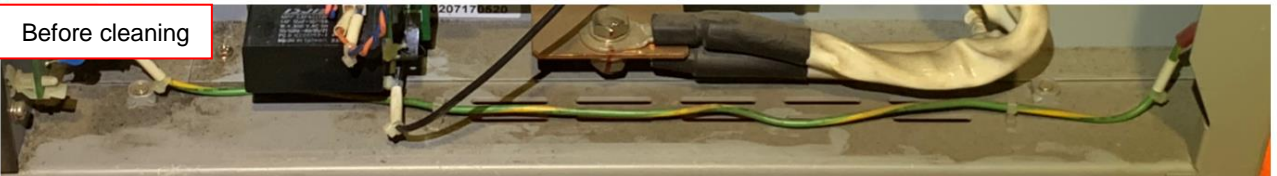


After cleaning



## 2. Right Face

Before cleaning



After cleaning



## 3. Left Face

Before cleaning



After cleaning



#### 4. Front Face

Before cleaning



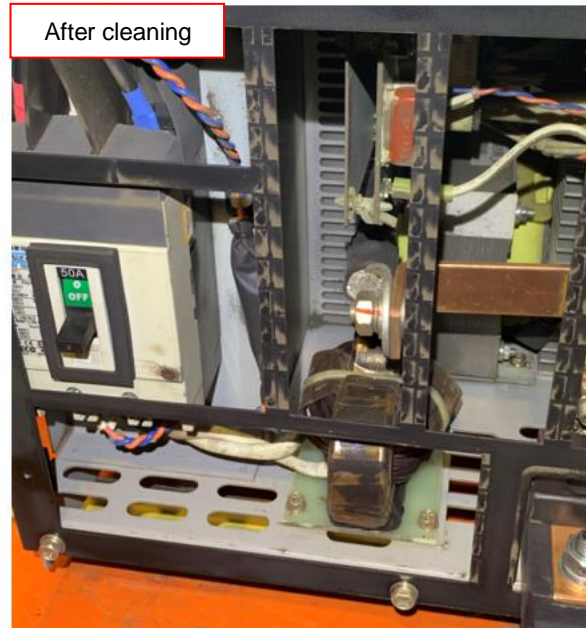
After cleaning



Before cleaning



After cleaning

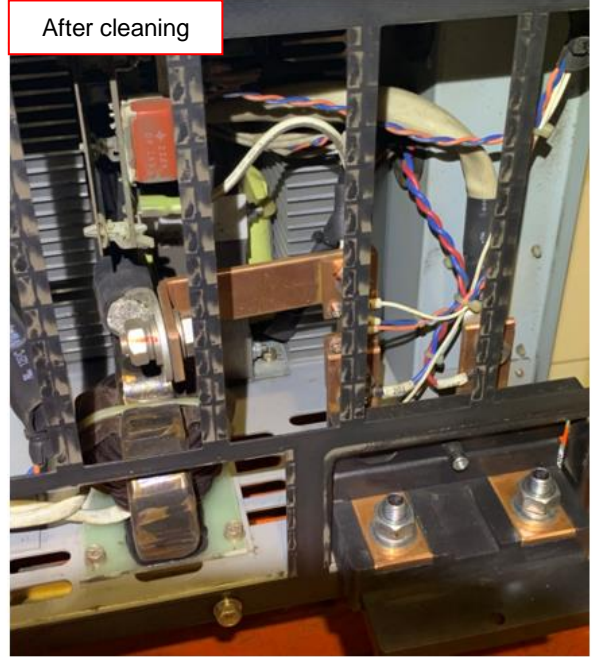




Before cleaning



After cleaning



Before cleaning

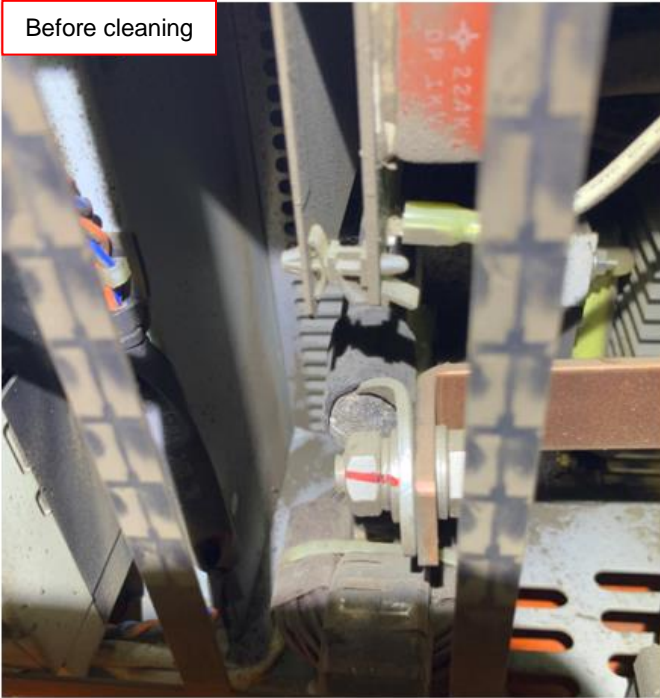


After cleaning





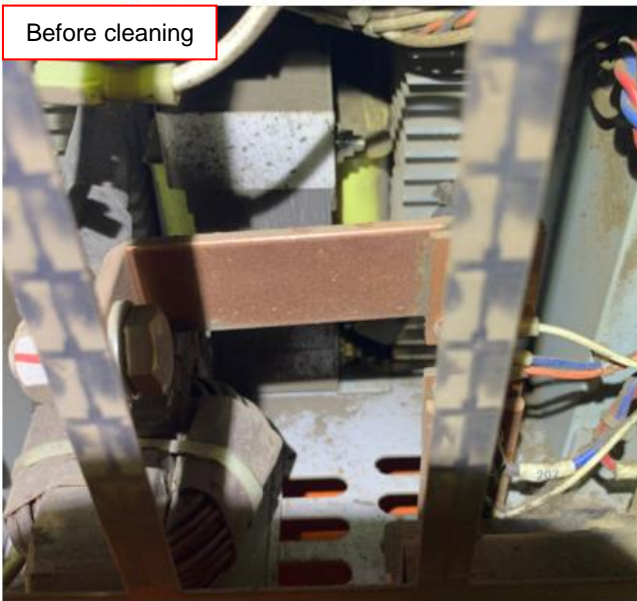
Before cleaning



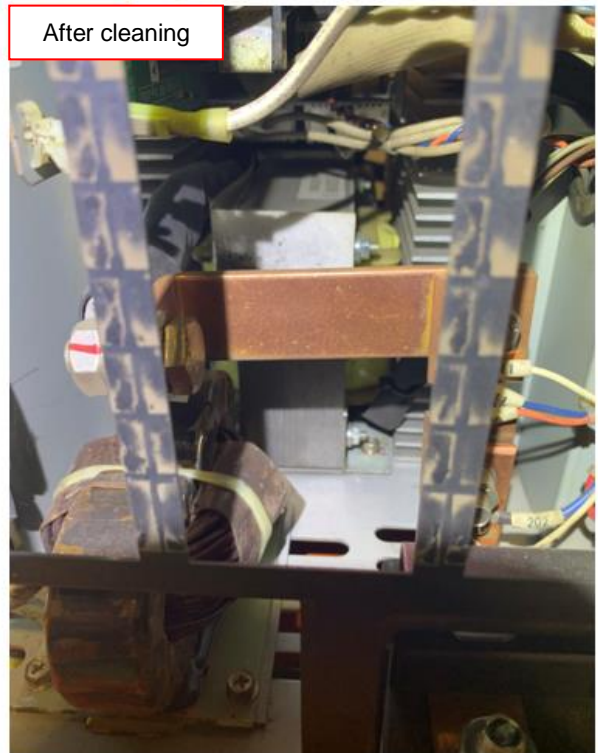
After cleaning



Before cleaning



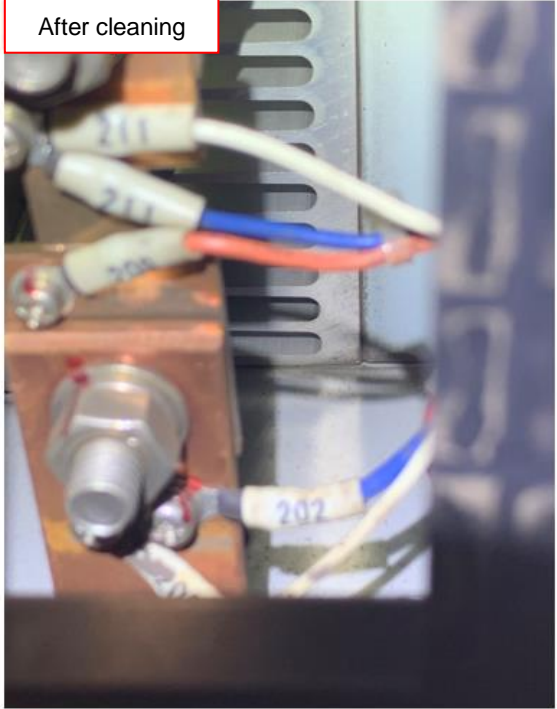
After cleaning



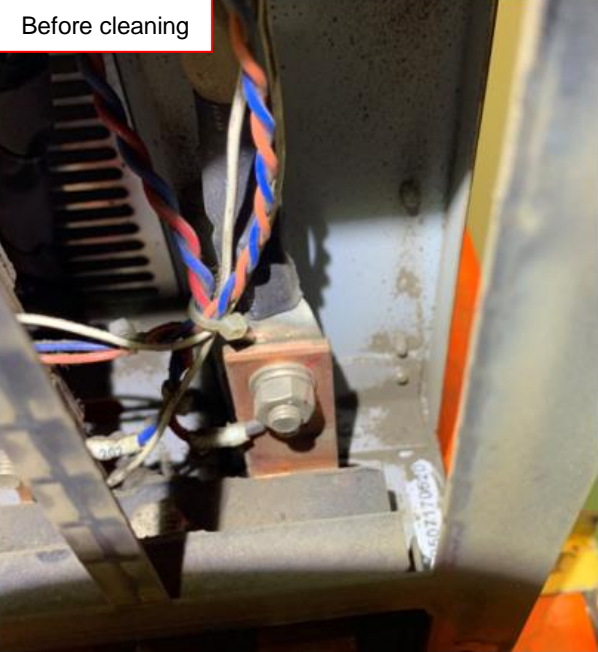
Before cleaning



After cleaning



Before cleaning



After cleaning





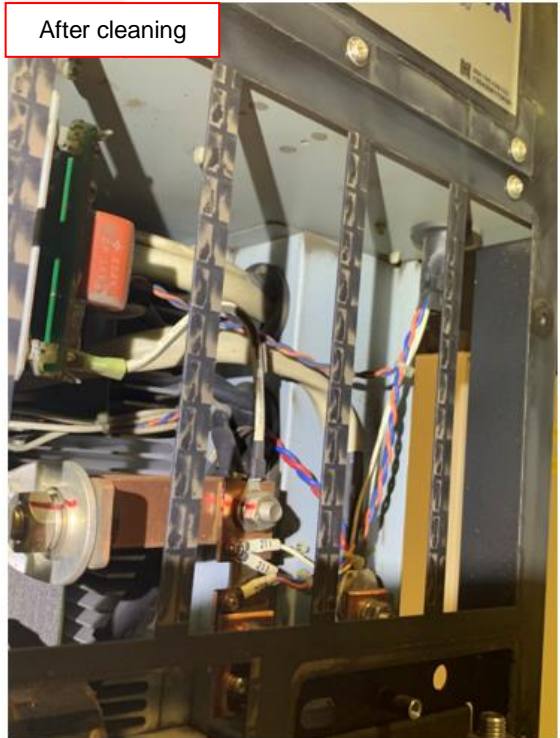




Before cleaning



After cleaning



Before cleaning



After cleaning



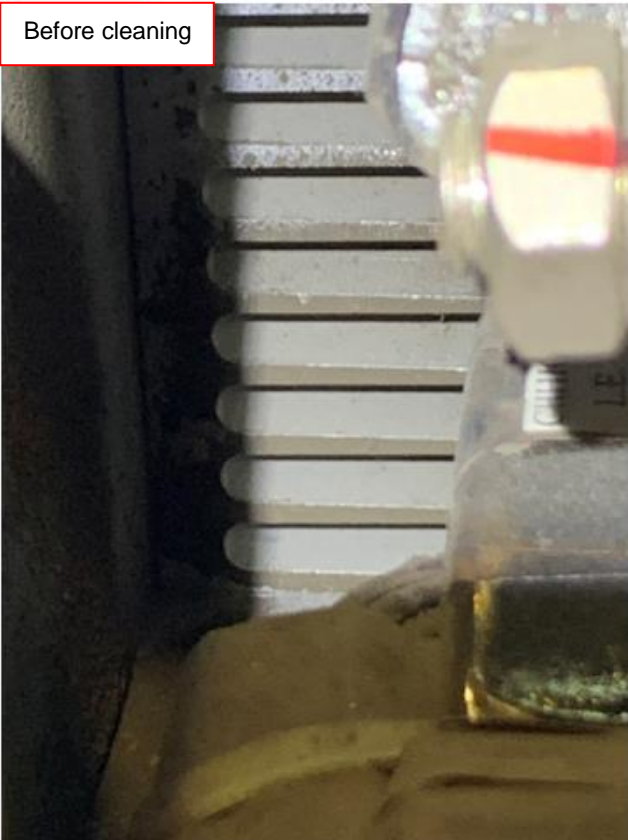
Before cleaning



After cleaning



Before cleaning



After cleaning

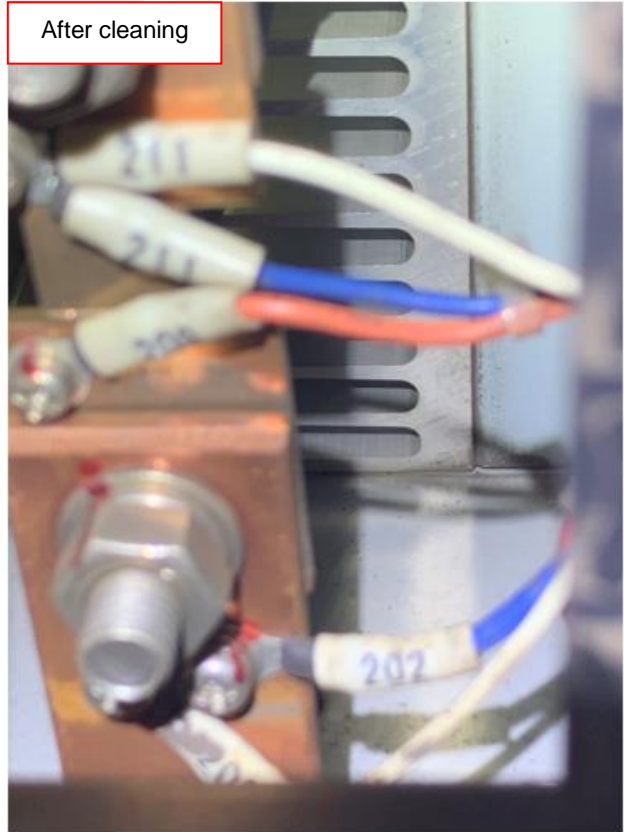




Before cleaning



After cleaning



Before cleaning



After cleaning

