



A Mark of Quality, High-Technology  
& Trustworthiness

Serial No. 2010-062-01

"ADDS VALUE TO THE LIFE"

# User Manual

## CIS

### COPPER ION GENERATOR



WACO Corp.

[www.waco.co.kr](http://www.waco.co.kr)

## CONTENTS

What is CIS?

A)PRINCIPLE

B)SILVER ION

C)SAFETY

D)ADVANTAGE

COMPOSITION & SPECIFICATION OF CIS

CIRCUIT DIAGRAM OF CIS

INSTALLATION

OPERATION

MAINTENANCE

CAUTION & NOTE

## WHAT IS CIS?

### A) Principle

Generated Copper ion by Electrolysis- "by flowing DC current to the copper and titanium panels which are attached to STS housing" sterilizes water which gets through this CIS housing over the water flow switch.

### B) Copper Ion

It has a greatest effect on sterilization and extermination for Algae.

### C) Safety

By use of Copper Electrode(99.97%), the generated 250-350ppb Copper Ion is less than the standard of EPA (1000ppb of copper consistency). CIS is designed safely much more than TDI (Tolerable Daily Intake) of EPA.

### D) Advantage

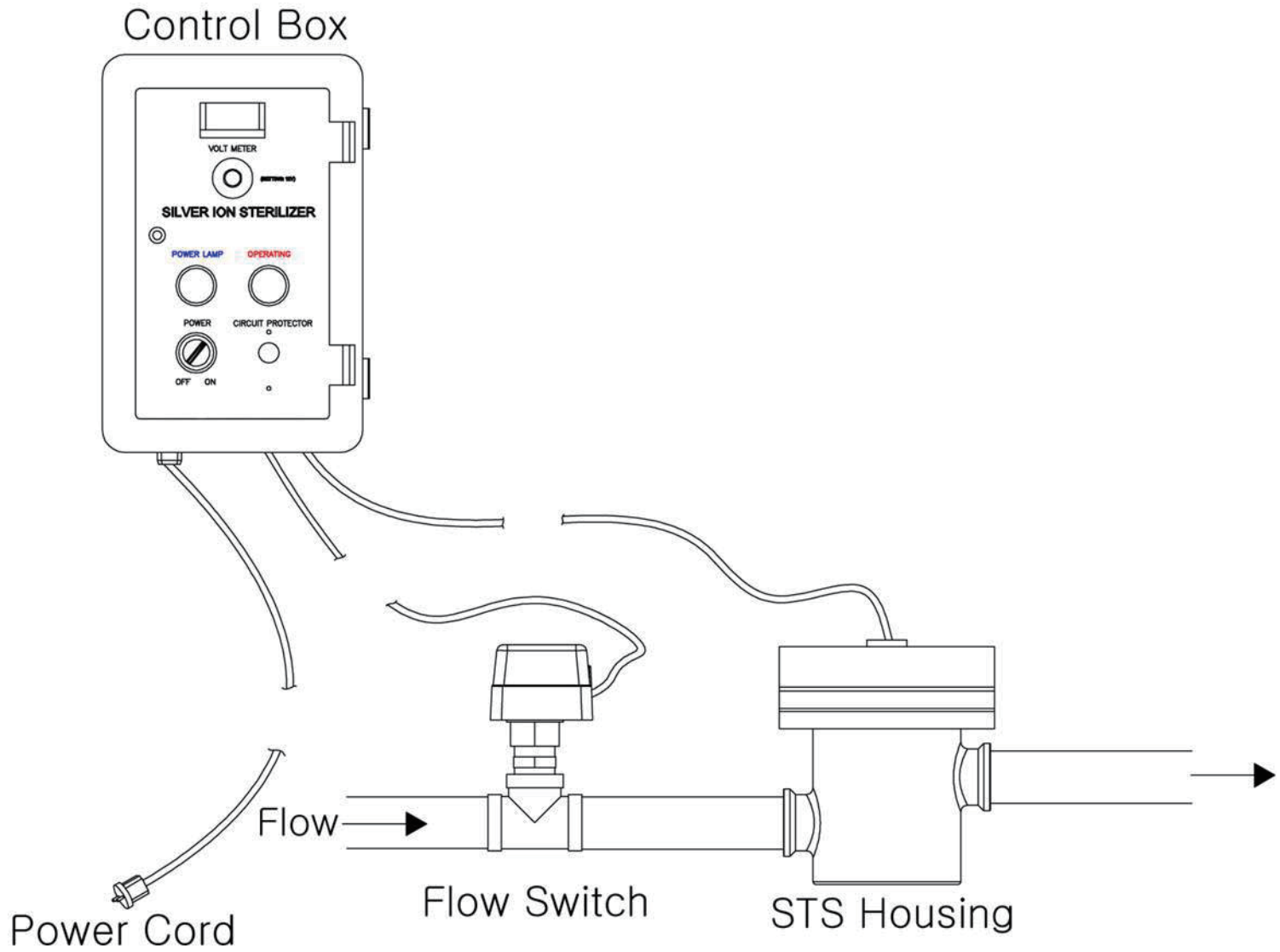
CIS is new-safe-cost save effective with high sterilizing power. Specially easy maintenance with lower maintenance cost as an economical sterilizer.

### E) Application

- 1) Cooling Tower
- 2) Swimming Pool
- 3) Sauna, Bath Room
- 4) Spa
- 5) Pond, Fountain System



COMPOSITION & SPECIFICATION OF CIS



## COMPOSITION & SPECIFICATION OF CIS

	SPEC	
Control Box	Main power	Free voltage : AC 100~240V (50/60Hz)
	SMPS(2.2A)	Input : AC 100~240V, Out put : DC24V
	Constant current controller	Input : DC24V, Out Put : 1000mA (MAX)
	Panel Meter(Volt)	Input : DC24V
	Voltage control lever	
	On-OFF switch	6A 250V
	Main power Lamp	6V (LED)
	Operating Lamp	24V (LED)
Housing	BODY	STS 304 +MC NYLON
	Electrode(pole)	Silver Panel(99.97%) : 1.5T X 4ea
		Titanium panel : 1.5T X 5ea
Flow Switch	Micro Switch Type	Flow sensor

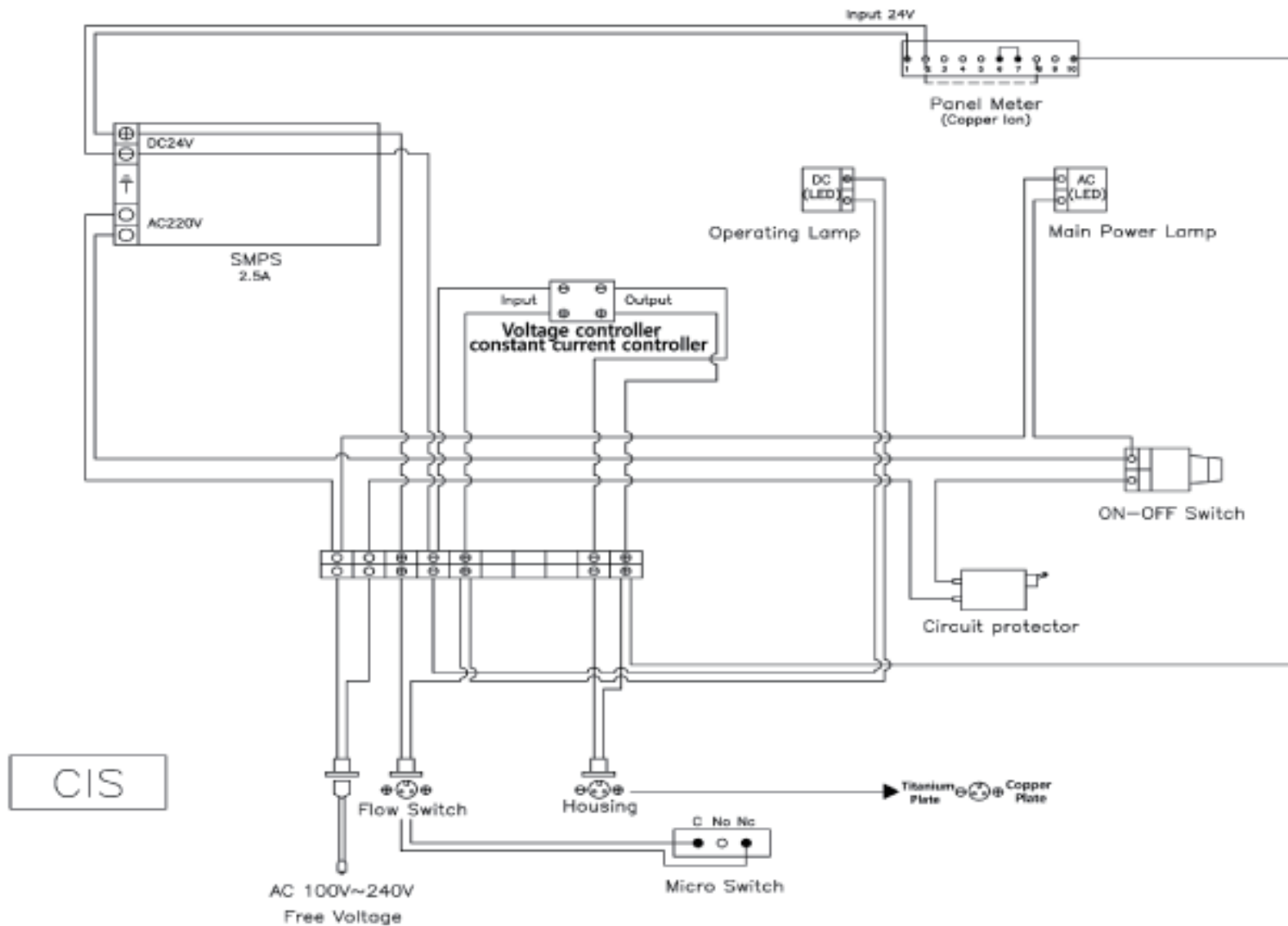
## COMPOSITION & SPECIFICATION OF CIS

Operation method	Constant voltage & Constant current
In & Out pipe size	15A~50A
Copper Ion concentration	Copper Ion : 250~350ppb (In case of 6.0V setting) - Recommendatory value
Durability	9,000hours (considering the operation of 8 hours per a day, about 3~4 years available)
* Depends on the condition of water, durability and generation of Silver Ion will be different.	

### \* Size & Weight

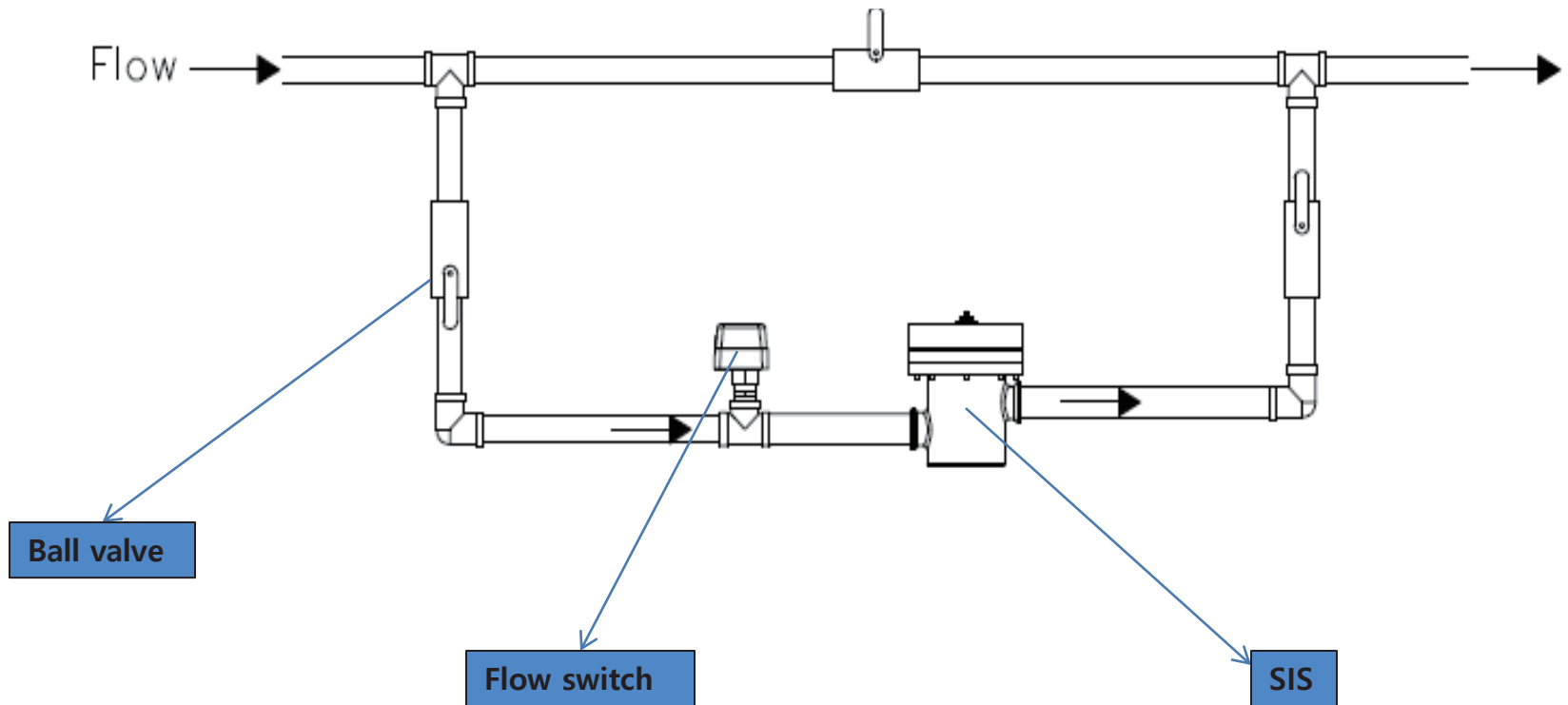
	SIZE( W X L X H / mm)	Weight(kg)
Control box	225 X 150 X 310	2.5
STS Housing	160 x 195	4.5
Flow Switch	65 x 80 x 155	1.5
Packing	400 x 300 x 400	12

# CIRCUIT DIAGRAM



CIS

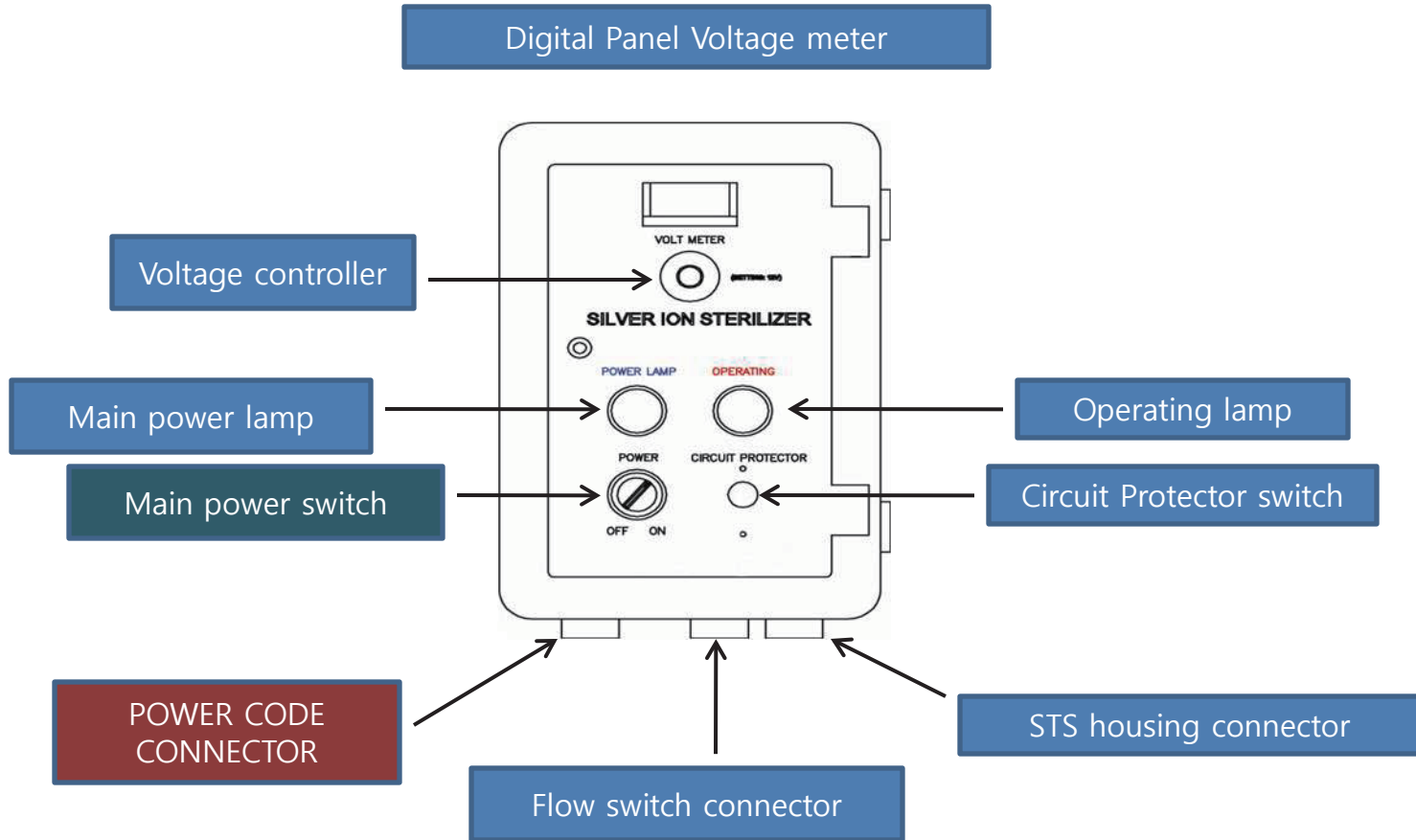
## INSTALLATION



By using "BY PASS" PIPE as the above drawing, connect our CIS ,FLOW SWITCH, and each "ball valve"



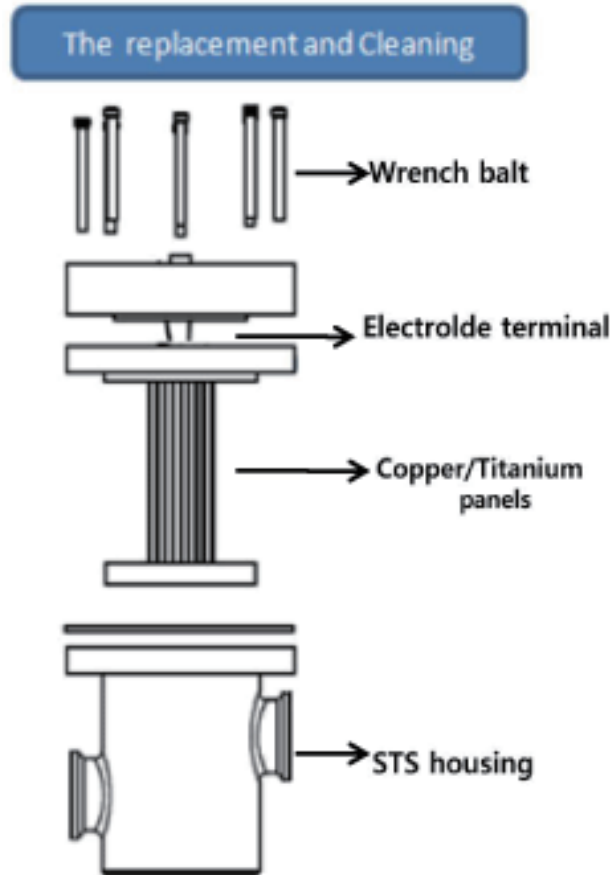
OPERATION



## OPERATION

1. After installation of CIS and Flow switch through BY PASS, they(CIS and Flow switch) shall be connected to the Control Box as the above drawing,
2. Then, power plug shall be connected to the Control box as the drawing,
3. Turn on the Main power switch then Main power lamp is on
4. Open the ball valve, the sensor of the flow switch let an electric current flow to the each pole then, silver ion be generated(at this moment, Operating lamp can be on)
5. The Digital Panel meter and if necessary, control the voltage value by the Voltage controller (Copper Ion : 6V)
6. After finishing operation, the flow switch senses no water flow and cuts off electric current to stop emitting of silver ion(Operation lamp can be off)
7. As it's not used for a long time, turn off the main switch and plug out of the outlet

Disassemble flow cell very 3 months and clean or remove any scale from the each pole for smooth operation and long life.



- 1) Turn off the power switch and disconnect the power plug
- 2) Disconnect STS housing from the control box
- 3) Undo the 5 wrench bolts which hold the cover
- 4) Lift the top cover assembly from the STS body for the separation
- 5) Silver panels and Titanium panels shall be cleaned with soft brush and remove any scale from panels  
(be careful not to let any water flow to the electrode terminal of inside top cover)
- 6) Assemble them again after cleaning



## Management in case of malfunction

Cause	Management
In case of Power shutting off	Check whether Power cord is connected with Wall out or Control Box.
	Check whether Circuit switch is off.
In case of non operating even turning on main power	Check whether Flow switch of Control box is connected with STS housing of Control box.
	Check whether the speed of a running fluid is smooth (Perceivable Flow switch : 3 bar)
	Open Upper cover of Flow Switch and check Micro-Switch
In case of non - lighting of LED	Change the standardized and correct LED LAMP
In case of the connection part leakage of STS housing cover	Assemble after checking whether Gasket is destroyed by disassembly & assembly

- Connect after checking IN/OUT directions once connecting pipes with Flow Switch & STS housing
- Assemble after checking Marked parts that has Assembly directions once assembling or disassembling STS housing & Electrode (Pay attention that water does not flow into the connection part once assembly or disassembly)
- Connect DC or Electrode part to the correct connection part because they have their own polarized positive or negative electrode.

## CAUTIONS

**Following cautions about safety are to prevent unexpected harms beforehand. Please use this facility carefully according to this guide.**

- Surely pay attention in Electric Shock wherever Electricity can flow
- Use the standardized & correct parts once need to replace parts
- Un-plug once need to reinforce, assemble, disassemble or replace parts
- Recover the primary wiring to avoid Electric Shock, troubles, and fire after repair or reinforcement

## NOTE

- Implement after being familiar with Manual before installation, operation, maintenance or reinforcement
- Do not assemble or remodel products excepting engineer
- Pay attention not to damage or to fall drop products once movement or installation
- Check whether Electric Power and Piping are connected correctly before operation
- Check all sections where leakage can occur at all times
- Clean hands after maintenance or reinforcement