

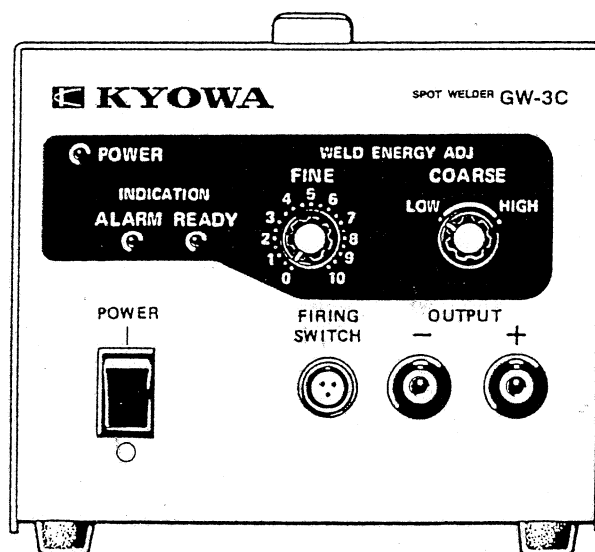
# SPOT WELDER

## GW-3C

### INSTRUCTION MANUAL

Thank you for purchasing KYOWA's product  
GW-3C Spot Welder.

Read this Instruction Manual carefully in order  
to make full use of the high performance of the  
product. Do not use the product in methods other  
than described in this Manual.



# SAFETY PRECAUTIONS

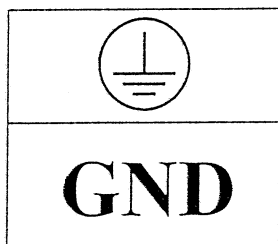
## ■ Prior to use

Before using GW-3C Spot Welder (hereinafter referred to as the GW-3C), read carefully the Instruction Manual. Always operate the GW-3C in correct manner for safety.

In addition, be sure that the Instruction Manual is ready for use at any time.

KYOWA ELECTRONIC INSTRUMENTS CO., LTD. assumes no liability for damages resulting from usage made against the safety precautions.

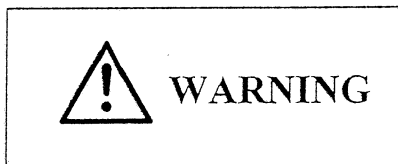
## ■ The following symbols are used for safety operation of the instrument.



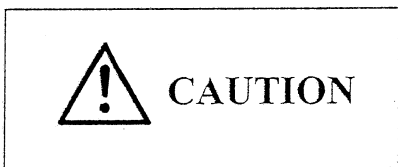
This symbol denotes the "Protective Ground Terminal."

Before operating the instrument, do not forget to ground the "GND" terminal of the instrument having this mark.

## ■ The following alarm marks are used on KYOWA's instrument in order to invite the users' attention to preserve safety.



: Improper handling may result in death or severe injury of the operator. To avoid it, the operator must refer to the accompanying instructions in the user's Manual.



: Improper handling may result in injury of the operator or damage to or destruction of parts of the product. To avoid it, the operator must refer to the accompanying instructions in the user's Manual.

## WARNING

### ● Protective Grounding

To prevent an electric shock, protective grounding should be made before turning ON the GW-3C power switch.

Do not forget to ground the "GND" terminal.

### ● Essential of Protective Grounding Terminals

To prevent an electric shock, special care should be taken not to cut the protective ground wire that is connected to exterior of the GW-3C or disconnect the protective ground terminal.

### ● Confirm Protective Ground Function

To prevent an electric shock, always confirm protective ground correctly functions. If any trouble occurs in protective ground functions including protective ground terminal, fuse holder, etc., do not operate the GW-3C.

- **Power Supply**

To prevent fire, do not forget to check whether supply voltage currently used is conforming to the specifications of the GW-3C before turning ON the power switch.

- **Power Cable and Power Supply Receptacle**

To prevent an electric shock or fire, use the attached power supply cable and 3P to 2P convertor as well as connect them only to power receptacle equipped with a protective ground terminal.

When 3P power cable is used, use only 3P power receptacle with protective ground terminal.

If an extended cable with no protective ground is used, protective operation of the cable becomes invalid.

Do not forget to connect the GW-3C power cable with power switch turned OFF before connecting the power plug to the power receptacle.

- **Fuse**

To prevent fire, use only a fuse having rated (current, voltage, and type) specified by the GW-3C. Do not use the fuse other than specified or shunt the fuse holder.

For replacing the fuse, disconnect the AC power supply cable in advance.

- **Storing & Using in Gassy Environment**

Do not store or use the GW-3C in environment with inflammable or explosive gas, or vapor. Or, it may cause serious accident.

- **Protective Equipment**

Always wear safety goggles, safety gloves, etc. during operation for safety.

- **Insulation**

Do not use the GW-3C in environment with water leakage. Or you will receive an electric shock.



## CAUTION

- **Shock**

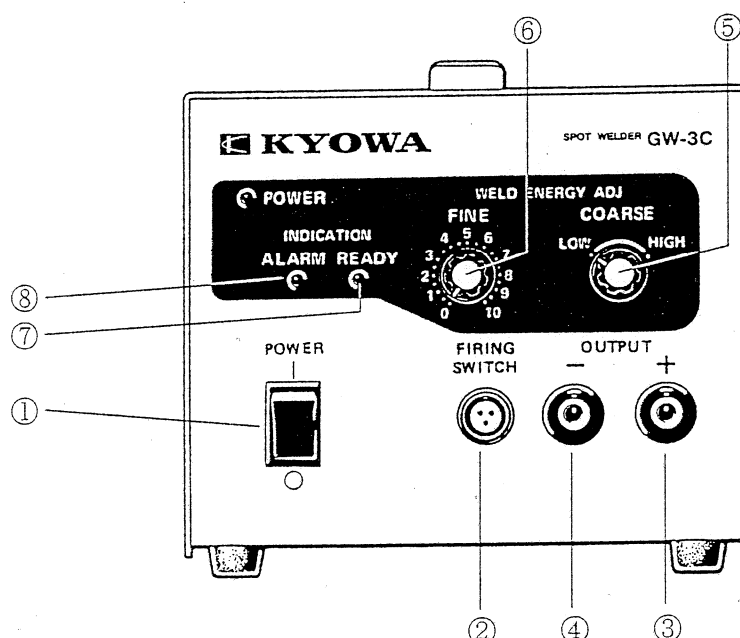
Pay attention that large sound and intense light may be seen or heard during welding.

## STANDARD ACCESSORIES

Square Type Weld Head .....	1
Earth Clip .....	1
AC Power Cable .....	1
Electrode Rod .....	2
Metal File .....	1
Fuse (5A) .....	1
Hexagon Head Wrench (2) .....	1
Hexagon Head Wrench (2.5) .....	1
Instruction Manual .....	1

## CHAPTER 1. PARTS NAMES & PRINCIPLE FUNCTIONS

### 1.1 PARTS NAMES & PRINCIPLE FUNCTIONS



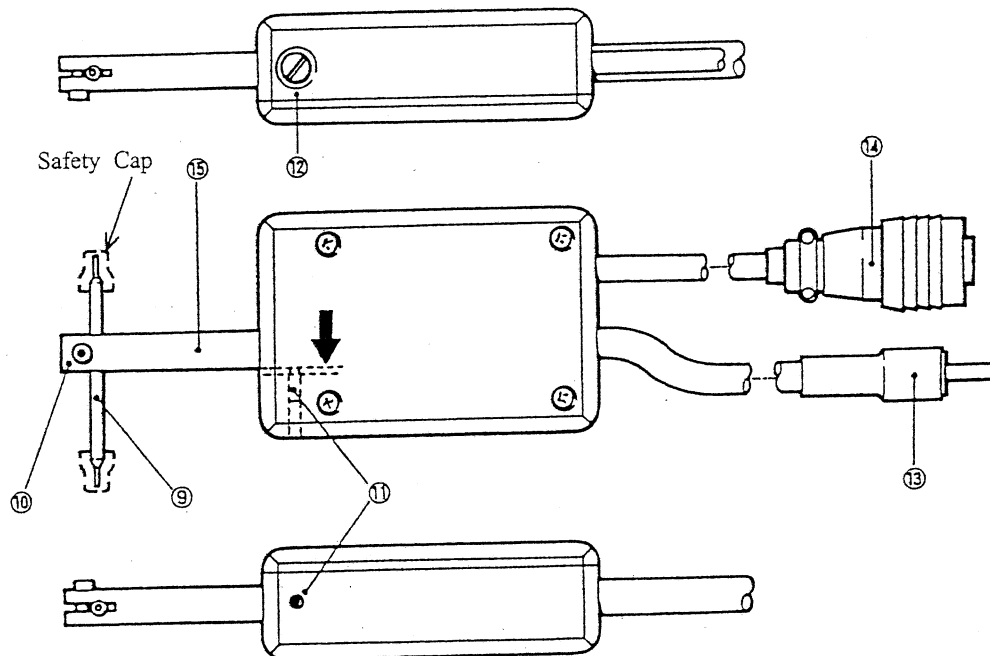
- ① [POWER] Power Supply Switch ..... Turn ON and the [POWER] lamp lights up to indicate the GW-3C is ready for operation.
- ② [FIRING SWITCH] Weld Switch ..... Entry for connecting a square type weld head plug. The weld switch is installed in the square type weld head. Connect a 3-P plug that is protruding from the weld head.
- ③&④ [OUTPUT] Output Terminals ..... Weld current output terminals. The weld current flows from the '+' side and returns to the '-' side terminals.
- ⑤ [COARSE] Range Switching Knob ..... Range switching knob [COARSE].  
[LOW], [HIGH] Switchovers the range from [LOW] to [HIGH] to obtain the weld energy of approx. twice-hold. When the [COARSE] is switchovered, always wait approx. 3 seconds before welding, or no weld current is supplied.

- ⑥ [FINE] Weld Energy Variable Knob ..... Continuously varies the weld energy.  
Turn this knob to larger numerics to obtain intense weld current.
- ⑦ [READY] ..... Lights up to notify the GW-3C is ready for welding.  
No weld current flows if welding is conducted with no [READY] lamp lit.
- ⑧ [ALARM] ..... Lights up when the GW-3C is faulty.  
In such case, turn OFF the power and contact KYOWA's service shop or representative.

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## 1-2 SQUARE TYPE WELD HEAD

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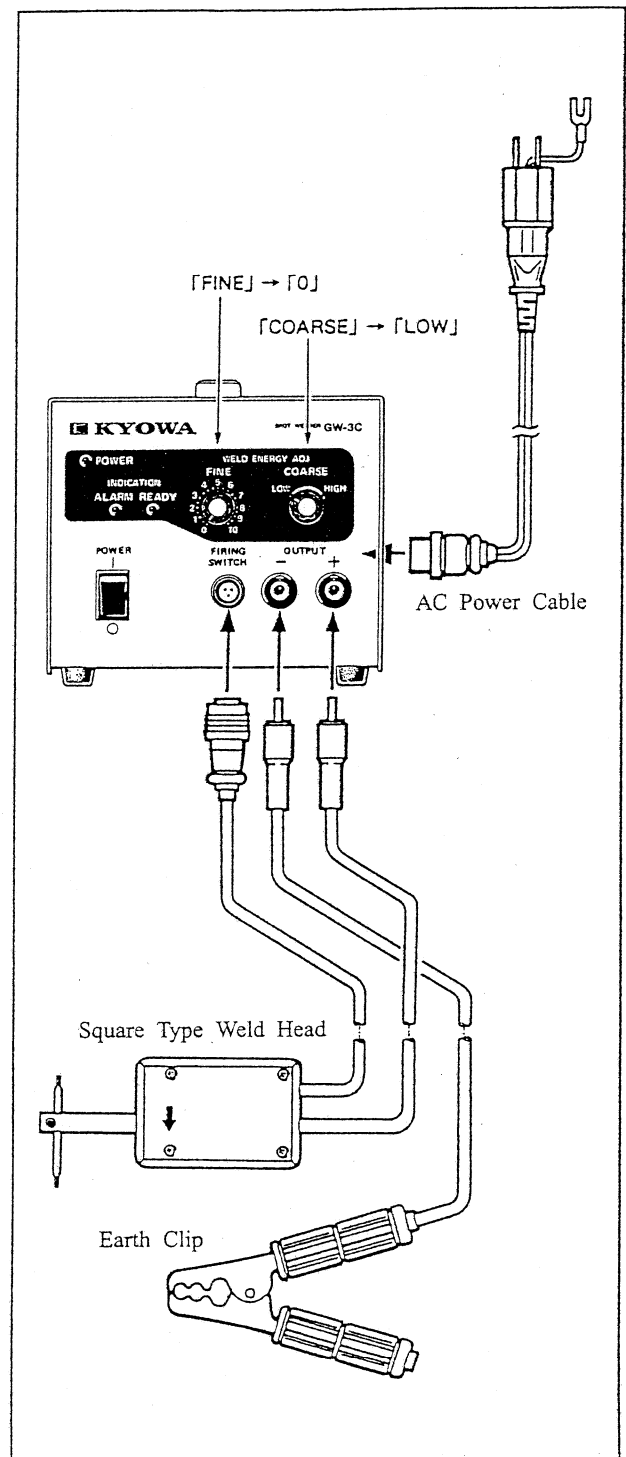


- ⑨ Electrode Rod ..... A safety cap is attached on the electrode rod tip.  
Remove the cap before welding.
- ⑩ Electrode Rod Fixing Screw ..... Tightly fixed with a hexagon head wrench (2.5).
- ⑪ Electrode Stroke Adjust Screw ..... Place the welding object on the welded material and apply pressure from the electrode rod of the weld head. Then, the electrode operates to turn ON the built-in weld switch. This screw adjusts the switch operating stroke using a hexagon head wrench (2).

- ⑫ Electrode Applied Pressure Adjust Screw . . . . . Adjusts the pressure applied to the welding object from the electrode rod.
- ⑬ Terminal . . . . . Supplies plus '+' weld current to the electrode.  
Connected to the '+' output terminal [OUTPUT] of the GW-3C chassis.
- ⑭ 3-P Plug . . . . . Weld switch signal output plug.  
Inserted into the [FIRING SWITCH] of the GW-3C chassis.
- ⑮ Electrode

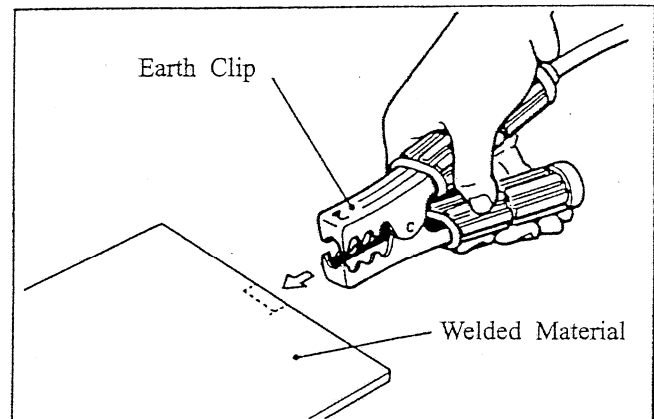
## CHAPTER 2. CONNECTION

- (1) Connecting square type weld head  
Insert a 3-P plug into the [FIRING SWITCH] of the GW-3C chassis .  
Connect a terminal to the '+' side [OUTPUT] terminal and tightly fasten with a screw.
- (2) Connecting earth clip  
Connect an earth clip terminal to the '-' side [OUTPUT] terminal and tightly fasten with a screw.
- (3) Connecting AC power cable  
Confirm the power switch is turned OFF, range switching knob [COARSE] is [LOW], and weld energy variable knob [FINE] is '0.' Next, connect the AC power cable to the [AC INPUT] connector on the GW-3C rear. Then, connect the power plug to the receptacle.



## CHAPTER 3. OPERATION

- (1) Turn ON the power switch. The [POWER] lamp lights up to be in operating state.
- (2) Connect an earth clip to the welded material.

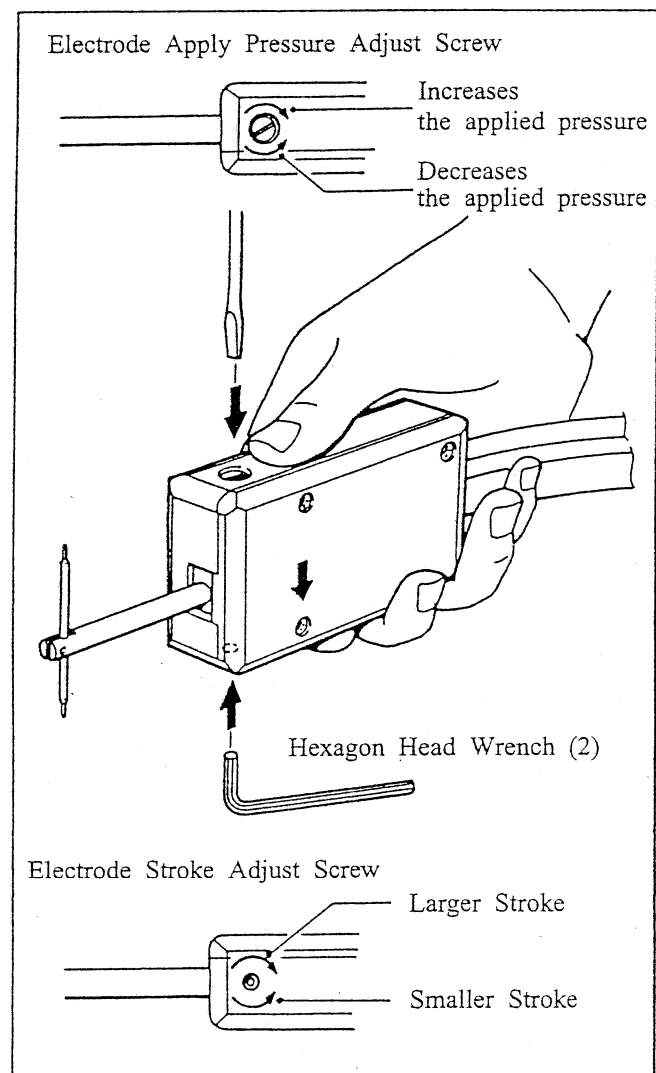


- (3) Adjust the electrode stroke and pressure of the square type weld head according to the size and shape of the welding object.

For a small welding object, adjust the electrode stroke to a smaller stroke to lessen blur in the electrode rod resulting to allow easy operation. Turn clockwise the electrode stroke adjusting screw to operate the weld switch with a small stroke. If the electrode stroke is set to an exceedingly small stroke, operate the electrode rod and listen hard to its sound to confirm whether the built-in switch is operating without fail.

For welding a thick material, welding force can be strengthened by applying intense pressure.

Turn clockwise the electrode applied pressure adjusting screw to strengthen the electrode applied pressure.





- (4) Locate the welding object on the welded material. Put the electrode rod of the weld head on the welding object and apply pressure to an arrow '↓' direction. The weld switch operates and the weld current automatically flows to the electrode rod. See the welded finish of the welding object. Adjust the weld energy variable knob to obtain the preferable welding condition. For setting the weld energy, see the "Plate Thickness and FINE Volume Reference Table" on the GW-3C rear.

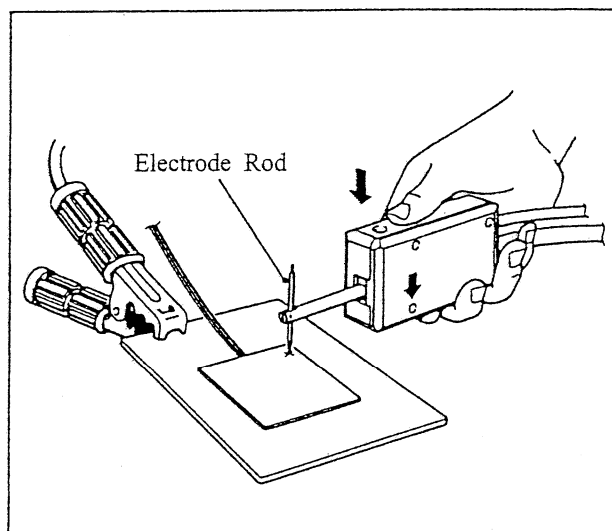


Plate Thickness & FINE Volume Reference Table

Stainless Plate Thickness (mm)	COARSE	
	LOW	HIGH
	FINE	
0.1	2	1
0.2	6	3
0.3		
		6

**Caution**

- Do not set the weld energy to a large value from the initial step. Or the electrode rod or welding object may be damaged due to excessive heat.
- When the range switching knob [COARSE] is switchovered, wait approximately 3 second before welding.
- Tightly fix the [OUTPUT] terminals and electrode rod with screws.
- Always clean the surface of the welding object and electrode rod. Or excessive spark may be seen and heard to damage the electrode rod.
- Remove dirt, dust, or scars from the electrode rod and polish with sand paper, if required.
- For replacing, loosen an electrode fixing screw.
- The GW-3C is not applicable for a long-term continuous welding by installing to automatic machines, etc.
- Do not forget to wear safety goggles while welding for safety.

## CHAPTER 4. EXAMPLE OF APPLICATIONS

### 4-1 WELD CONNECTING 2 PILED THIN STAINLESS PIECES

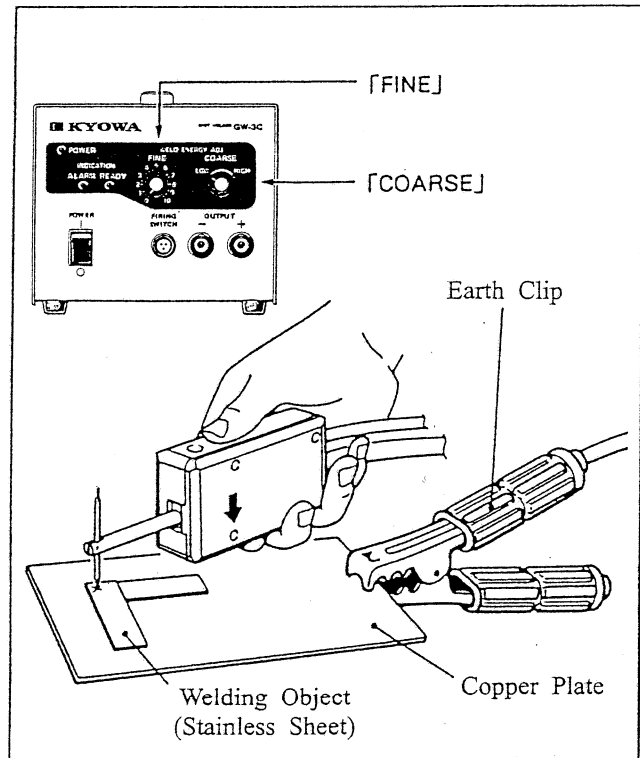
Put one welding object (stainless piece) on the other one and locate them on a copper plate as shown on the right figure. Then, connect an earth clip to the copper plate.

Set the weld energy as follows to allow welding of the 2 piled stainless pieces.

- When both stainless pieces have 0.1mm thickness  
[COARSE] ..... "LOW"  
[FINE] ..... "2"
- When one stainless piece has 0.3mm thickness and the other, 4mm  
[COARSE] ..... "HIGH"  
[FINE] ..... "6"

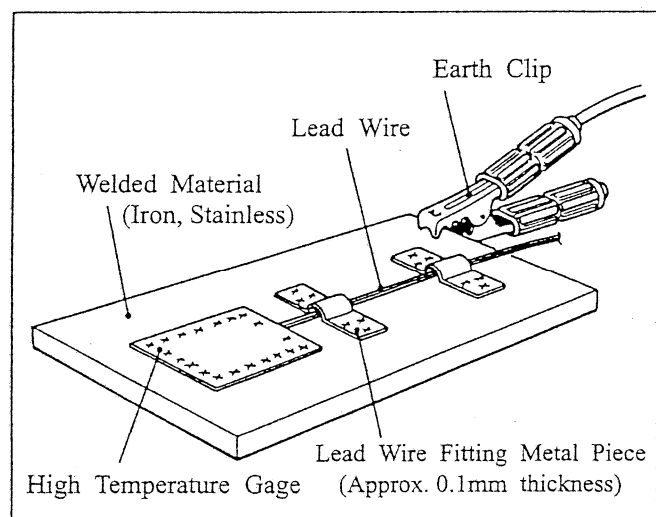
In this case, take special care that no dirt is found on the copper plate that acts as the '-' electrode.

In addition, do not use iron or stainless plate as the '-' electrode in place of the copper plate. Or, the welding object is welded to the '-' electrode.



### 4.2 WELDING HIGH TEMPERATURE GAGE

To weld a high temperature gage to iron, steel, etc. that has comparatively high specific resistance, connect an earth clip to the welded material to allow welding as shown on the right figure.



### 4.3 FIXING LEAD WIRE

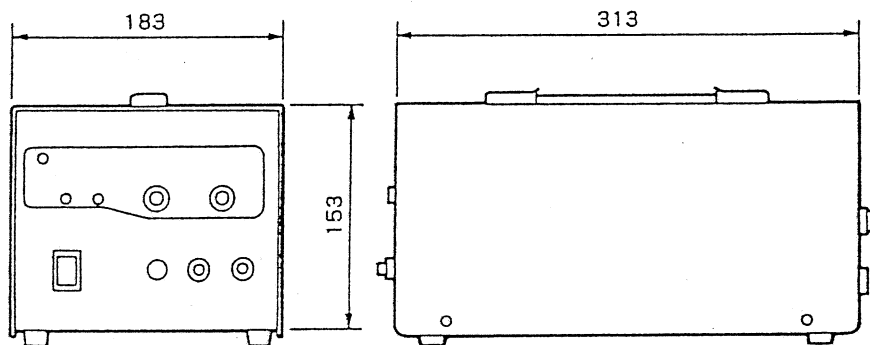
A lead wire of the gage is fixed using lead wire fixing metal pieces that are composed of approximately 0.1mm-thick stainless pieces as shown in the figure in "4. 2."

## CHAPTER 5. SPECIFICATIONS

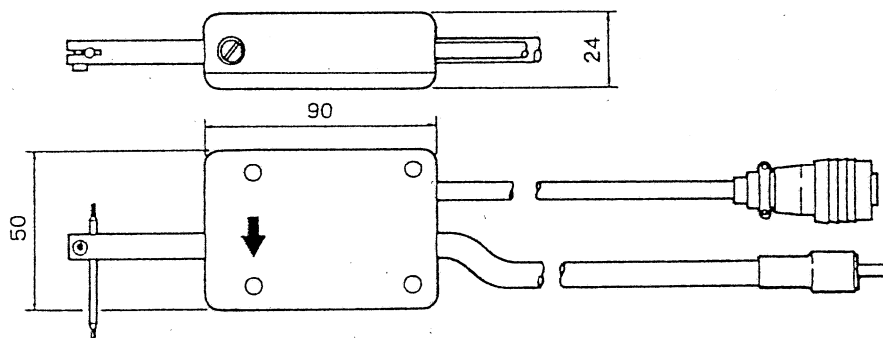
Weld Energy	[LOW] 0 to 25Ws Continuously variable [HIGH] 0 to 50Ws Continuously variable	
Welding Speed	1Ws	150 times/min
	5Ws	120 times/min
	10Ws	80 times/min
	20 Ws	60 times/min
	50Ws	30 times/min
Operating Temperature & Humidity Range	0 to 40 °C, 85% R/H. or less	
Storage Temperature Range	-10 to 60 °C	
Power Supply	Conforming to customers' specifications.	
Dimensions	183 (W) × 153 (H) × 313 (D) (Protruded portions not included.)	
Weight	Approx. 8. 2kg (Only the GW-3C chassis)	

### Dimensions

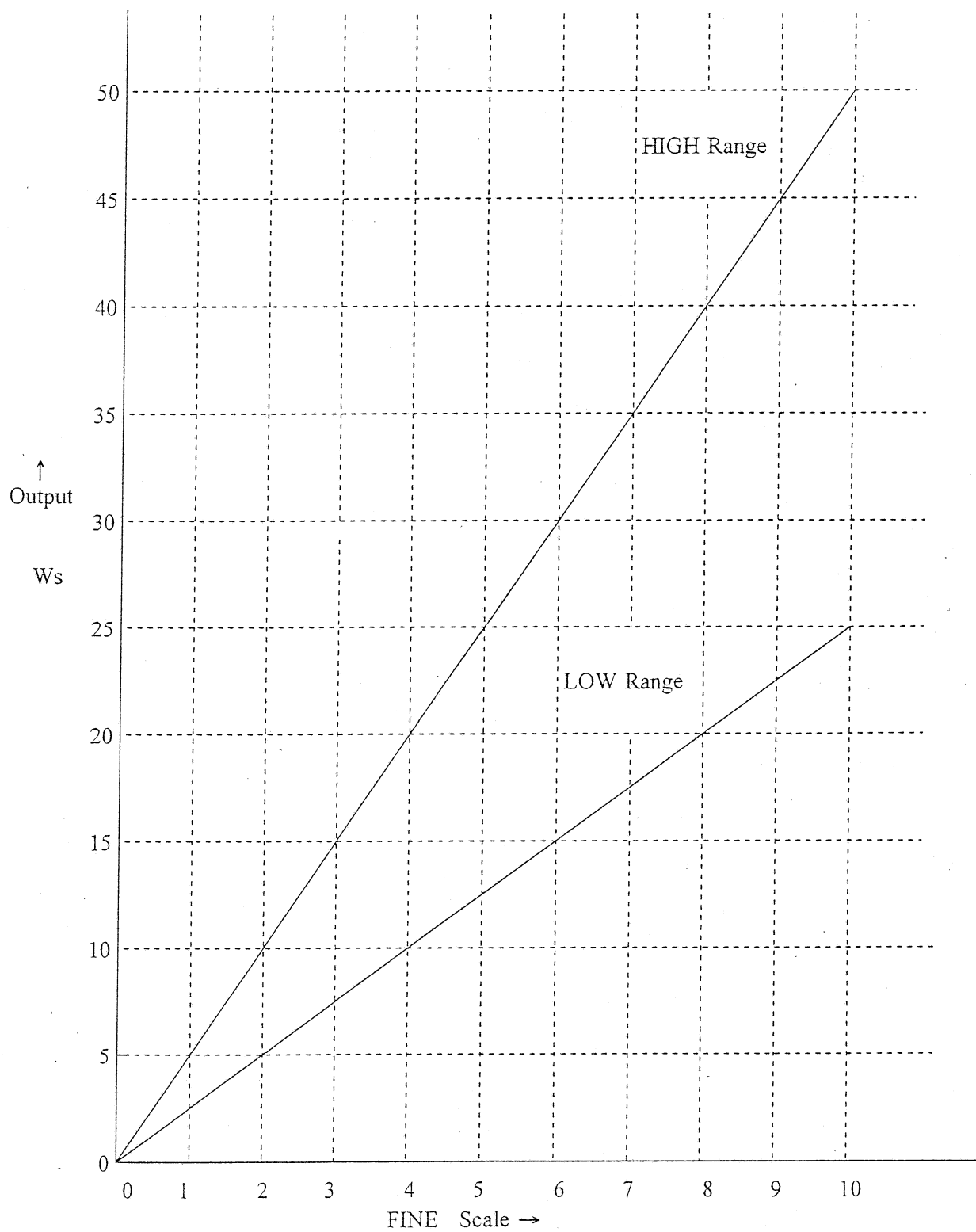
#### GW-3C Chassis



#### Square Type Weld Head



## CHAPTER 6. WELDING ABILITY TABLE



## CHAPTER 7. TROUBLESHOOTING

	Phenomenon	Cause and Countermeasures
1	A power cable is connected and the power switch is turned ON but no [POWER] lamp lights up.	<ul style="list-style-type: none"> <li>• Fuse is exhausted.</li> <li>• Check the cause and replace the fuse.</li> </ul>
2	The [POWER] lamp is lit but no welding is allowed.	<ul style="list-style-type: none"> <li>• No terminal plug is fixed to the OUTPUT terminal. Tightly fasten the screw with an M3 screwdriver.</li> </ul>
3	[ALARM] lamp is lit.	<ul style="list-style-type: none"> <li>• A charging circuit is faulty. Turn OFF the [POWER] switch and contact KYOWA's service shop or representative.</li> </ul>
4	Welding finish is insufficient.	<ul style="list-style-type: none"> <li>• Re-adjust the weld energy variable knob.</li> <li>• If the welded portion is dew-condensed, wipe off with a dry cloth and conduct welding once again.</li> <li>• If the electrode rod tip is not pointing at the end, sharpen with the attached metal file.</li> </ul>
5	Occurred welding explosion. Explosion : Spark is seen and heard on the welded portion causing exceeding damage to the welding rod.	<ul style="list-style-type: none"> <li>• If the pressure applied to the electrode of the square type weld head is weak, weld explosion may generate. Adjust with the electrode pressure adjusting screw and strengthen the electrode pressure. The apply pressure is set to approx. 2f-cm prior to shipment .</li> <li>• Since the weld energy is intense, readjust the weld energy.</li> </ul>
6	No [READY] lamp is lit.	<ul style="list-style-type: none"> <li>• If no [READY] lamp lights up approx. 3 seconds after the [POWER] ON, a charging circuit is faulty. Contact KYOWA's service shop or representative.</li> <li>• If welding is continuously conducted within a short period of time, the charging circuit becomes "OFF" to protect the charging circuit and no [READY] lamp lights up. Turn OFF the [POWER] switch and after approx. 20 minutes, turn ON the [POWER] once again. When 4-minute welding is continuously conducted at an interval of 1 second in "HIGH" mode and in [FINE] set to "5," or when 10-minute welding is continuously conducted at an interval of 1 second in "LOW" mode and in [FINE] set to "5," the above state appears.</li> </ul>