



**FENGHUO**

**SCR SEMI-AUTO MIG/MAG  
GAS-SHIELDED WELDER  
FENGHUO-AUTO NBR**

**NBC--** 250  
350 **R SERIES**  
500  
630

**MANUAL INSTRUCTION**

- ✧ Thank you for choosing FENGHUO!
- ✧ Please read carefully before operating the equipment
- ✧ Please restore this manual for checking.

Guangzhou FENGHUO Industrial Co., Ltd

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# 1、 GENERAL:

## NBC-R series SCR controlled MIG/MAG semi-auto arc welding machine

### 1) Outstanding craftsmanship and performance

- Adopting imported elements for the main which provides outstanding quality.
- New model appearance enhances the dust defending capacity which enlarges the available scopes of welding machine.
- Because working current and voltage can be adjusted respectively/unified, both tenderfoots and practitioners can use it with facility.
- Arc extinguishing makes it possible to get elegant shape of seam.

### 2) Main characteristic:

- Main transformer supplies simple and steady voltage for in-phase circuit.
- Outstanding capacity against power fluctuation.
- With no-load energy saving function: After released welding torch switch for 2 minutes, AC contactor would break off automatically to save energy usage.
- FTT is offered: Wire feeding would stop ahead of welding current, which eliminates melting ball at the end tip of wire and would be propitious to next arc ignition.
- Excellent arc ignition capacity: high-voltage and slow wire feeding speed assure the welding machine with excellent are ignition capacity.
- Preset function could server the purpose of MAG welding (welding with aluminum electrode)

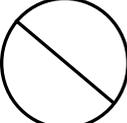
## 2. Safety Cautions!

For your safety please operate according to the following rules and read this manual thoroughly.

identifiers	warning	contents
	Extremely danger!	Mis-operation may lead user to extremely danger situation, may cause user or others Grievous Bodily Harm even death.
	Danger	Mis-operation may lead user to danger situation, may cause user Grievous Bodily Harm even death.
	Note	Mis-operation may lead user to danger situation, may cause harms to the user and others.

- ✧ The identifier of 'Note' refers to normal situation.
- ✧ Grievous Bodily Harm refers to ablepsia, trauma, scald, electric shock, fracture, toxicosis, etc, which may cause operations and sequelae. Loss in material refers to damnification of property caused by damage of machine.

Further more, during the operation there are some identifiers indicating some 'compelled actions' and 'forbidden actions'.

	compelled actions	The preparation actions, such as connecting the ground cable.
	forbidden actions	The actions and things that can not do.

- Identifiers refer to the normal situations.

## Safety Cautions! (Continuous)



**Danger!** To prevent the hazard, please follow the directions below:

### Read carefully before using

- 1) Many safety factors are considered when designing the machine, so please comply with this manual instruction when operating.
- 2) Make sure the power supply, working location setting, high pressure gas usage and storage as well as welding piece storage are complied with related regulations and you company's internal standard.
- 3) Do not allow other people to enter working area.
- 4) People who use heart pacemaker do not approach to working welding machines unless with grant from doctors. As the magnetism surrounding the machine could cause side effects.
- 5) Highly recommend to hire professionals to install and maintain.
- 6) For your safety , please read this instruction thoroughly and operate with professional or people with welding knowledge.
- 7) Do not use welding machine for any other purpose
- 8) Strictly forbid using welding power to the thaw of conduit!

### **DANGER! ELECTRIC SHOCK CAN KILL!**

- 1) Do not touch live electrical parts
- 2) Be insulated from work and ground using dry insulation mats or covers big enough to prevent any physical contact with the work and ground. Wear dry, hole-free insulation gloves and body protection.
- 3) Before connecting the cables please make sure they are insulated.
- 4) Do not use undersized, worn, or damaged cable. Do not use the cable with bared wiring.
- 5) Disconnect input power or stop engine at least for 5 minutes before installing or servicing this equipment.
- 6) Properly install and ground this equipment according to its user's manual.
- 7) Clearly verify the supply ground – check and be sure that input power ground cable is properly connected to ground terminal in disconnect box and that cord plug is connected to a properly grounded receptacle outlet.
- 8) Do not remove any panel or cover when working.
- 9) Use safety and qualified electric network when working in high altitudes
- 10) Do not touch electrode if you are physically contact with the work piece, ground or other electrode from other machine.
- 11) Keep ground clamp from other metal when not connected to work piece.

- 12) Use well-maintained equipment, repair and replace parts once damaged.
- 13) Turn off the machine when not in use

**NOTE! FUMES AND GASES CAN BE HAZARDOUS!**

- 1) Ventilate the fumed area by exhaust or use respirator to prevent hazardous.
- 2) Wear air-supply respirator when working inside container, boiler or ship bottom, as CO<sub>2</sub> and Argon are heavier than air, it is dangerous in these surroundings.
- 3) Wear air-supply respirator if welding plated or coated steel
- 4) Do not weld in locations near degreasing, cleaning or spraying.

**NOTE! ARC RAYS CAN BURN EYES AND SKIN**

- 1) Wear a welding helmet with proper shade of filter to protect your face and eyes when welding or watching.
- 2) Wear approved safety glasses with side shields under your helmet
- 3) Wear oil-free protective garments such as leather gloves, heavy shirt, leather apron and high shoes.

**NOTE! BE CAREFUL!**

- 1) Do not approach your hand, hair or clothes close to the fan.
- 2) Dust can cause insulation worn out, please test and maintain every month.
- 3) Highly recommend to use dry fan to clean equipment inside



- 1) Keep yourself from flying sparks and hot work piece
- 2) Connect work cable to the work piece as close to welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire.
- 3) Do not weld on container with flammable material
- 4) Do not weld on closed containers such as tanks, drums or pipes which can cause blow up.
- 5) Make sure there is no flammable material or gas in working place.
- 6) Keep welded work pieces from any flammable.
- 7) Before welding the ceiling, ground or wall, clear up all flammable behind them.
- 8) Always store fire extinguishers in working place.
- 9) Please clear up work place, to prevent spatter and other powder entering power source, which can cause fire hazard.

### 3、 Technical Specifications:

Style Parameters	NBC-250R	NBC-350R	NBC-500R	NBC-630R
Rated Input Voltage /Phase	AC380V/3Phase			
Frequency(HZ)	50HZ			
Rated Input Capacity (KVA)	14.0KVA	18.1 KVA	31.9 KVA	47.3 KVA
Rated Duty Cycle (%)	50%			
Rated Input Current(A)	21.1	27.6	48.4	71.8
Maximal Effective Input Current (A)	14.2	19.6	34.4	51
No-load Voltage (V)	DC49V	DC52V	DC64V	DC75V
Output Current (A)	DC50~315A	DC50~350A	DC60~500A	DC80~630A
Output voltage (V)	DC16~30V	DC15~36V	DC16~44V	DC17~44v
Diameter of Wire Electrode(mm)	Mild Steel: solid wire Ø0.8 Ø1.0 Ø1.2 Flux cored wire: Ø1.2		Mild Steel: solid wire: Ø1.2 Ø1.4 Ø1.6 Flux cored wire: Ø1.2 1.4 1.6	
Insulation Degree	F	F	F	F
Cover Protection Degree	IP21S			
Exterior Dimension (mm)	740×410×770		840×460×810	
Weight (kg)	105	132	172	220

# 4、 The Rated Duty Cycle

About Rated duty cycle:

	<b>Note</b>	Please use under rated duty cycle, or it may cause harm to the welding machine.
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The rated duty cycles are shown as followed:

NBC-350R: 350A 50%

NBC-500R: 500A 50%

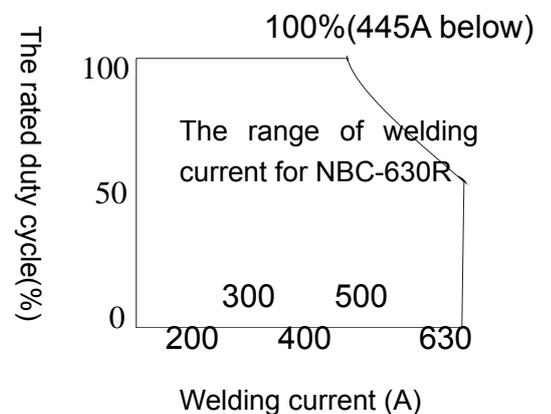
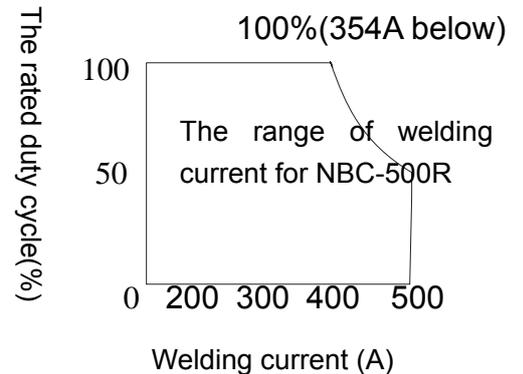
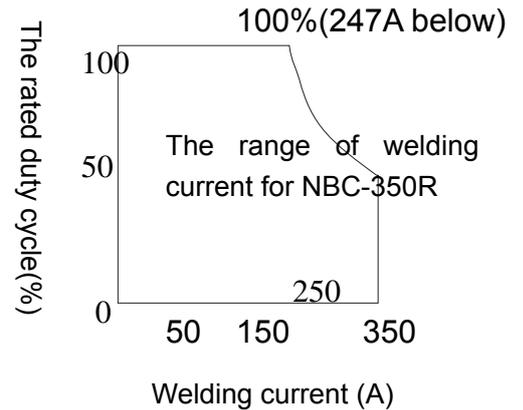
NBC-630R: 630A 50%

For example: If rated duty cycle is 30%, it means that setting 10 minutes as one cycle, the machine can continuously run for 3 minutes at rated current, then stops for 7 minutes.

- If the machine is used over rated duty cycle, It could cause thermal overload and damage the machine.

- Please operate under rated duty cycle and the corresponding welding current.(according to the drawing on the right)

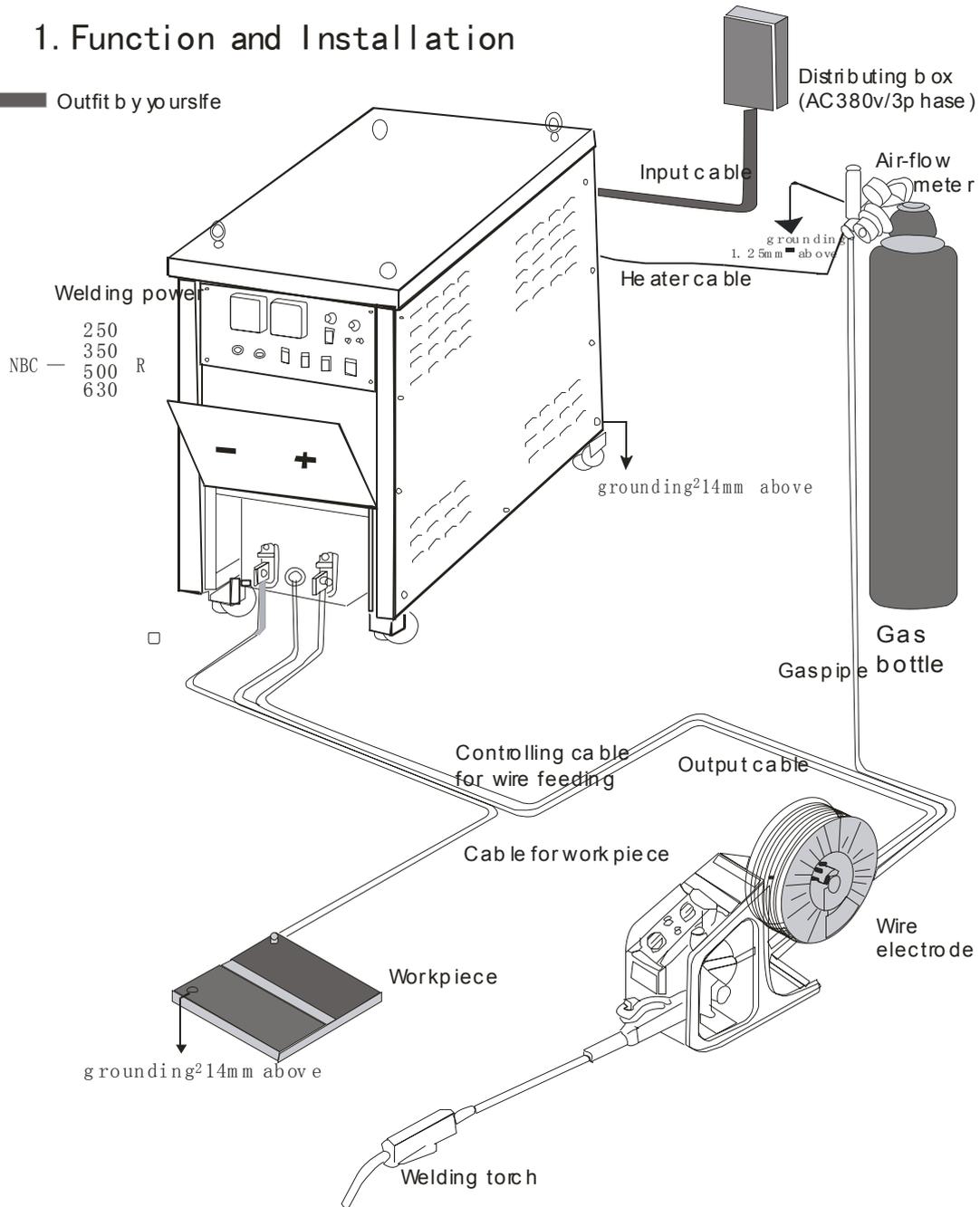
- Owing to limitation of the rated duty cycle of welding torch and other spare parts, please consult to minimum rated duty cycle for using.



# 5、 Installation and Connection:

## 1. Function and Installation

■ Outfit by yourself



Standard Equipment

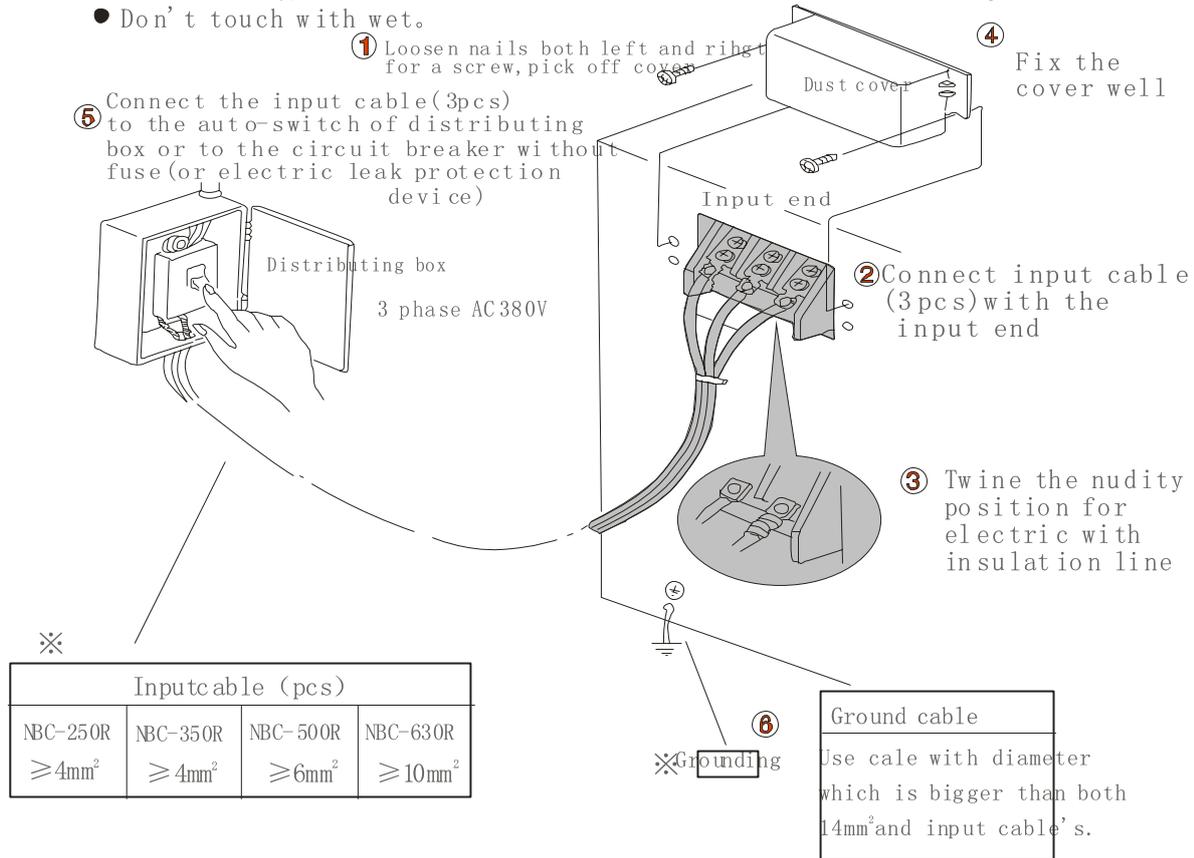
Welding power	Wire feeder	Welding torch
NBC250R	SJ-25R	QTB-200K
NBC-350R	SJ-35R	QTB-350K
NBC-500R	SJ-50R	QTB-500K
NBC-630R	SJ-63R	QTB600K

# 5、 Installation and Connection (Continuous)

## 2、 Connection of grounding input end of power source

To avoid electric shooting or other accident, please obey the rules as follow

- To ensure safety, the connection of electric is allowed after switch off distributing box
- Don't touch with wet.



# 5、 Installation and Connection (Continuous)

## 3. Connection of power output, cable for work piece and welding torch

① Switch off the power supply

② Remove the two nails from cover

③ Overturn the cover above, connect the Controlling cable for wire feed the socket (6chip) according to the picture on right while finished Connection of output. bring the cover to its own position.

④ Use auxiliary bolt to joint one end of cable for work piece and terminal (-) together

⑦ Connect the other end of cable for work piece with work piece

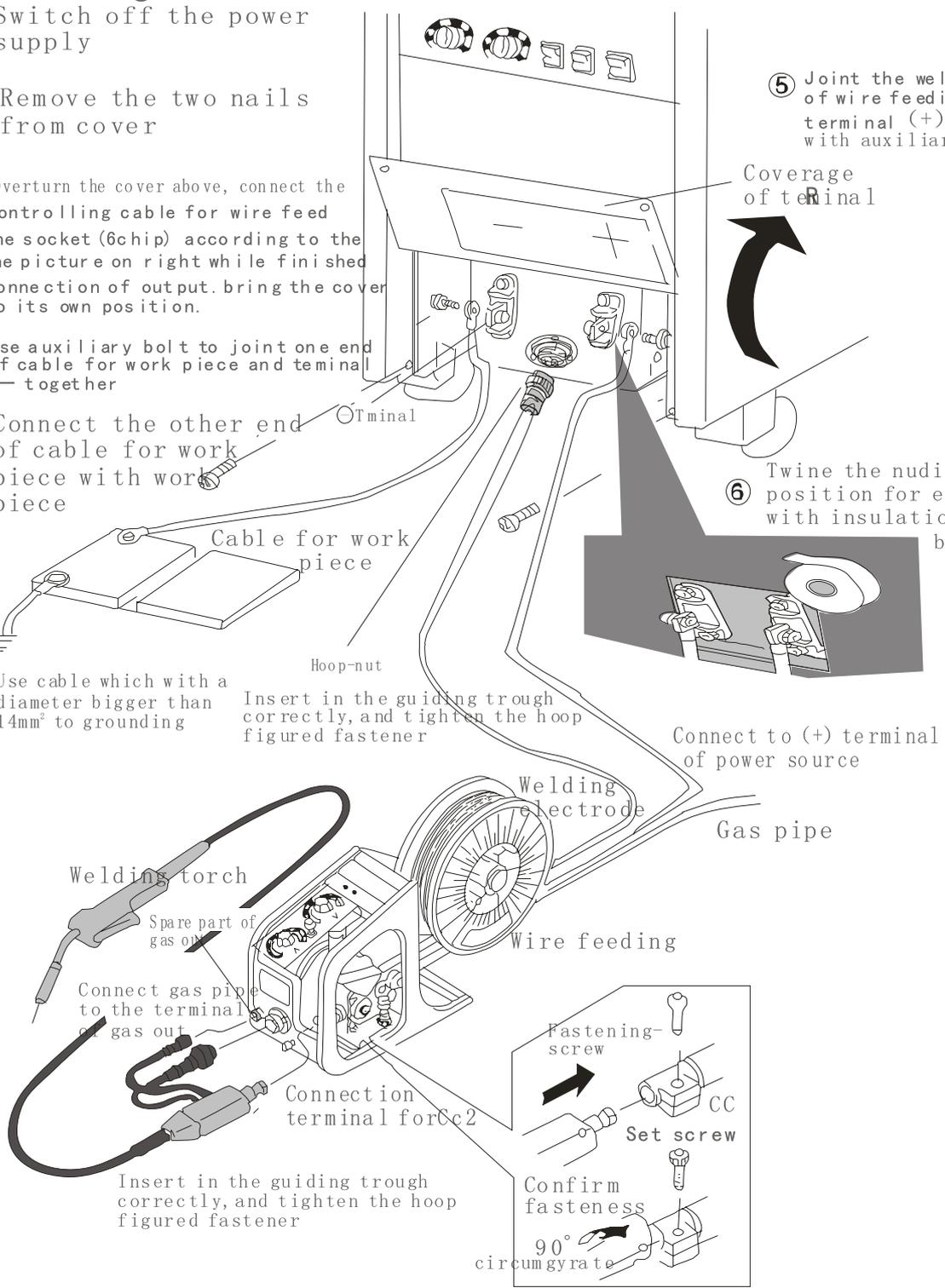
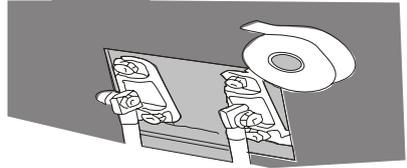
⑧ Use cable which with a diameter bigger than 14mm<sup>2</sup> to grounding

⑤ Joint the welding wire of wire feeding and terminal (+) together with auxiliary bolt

Coverage of terminal

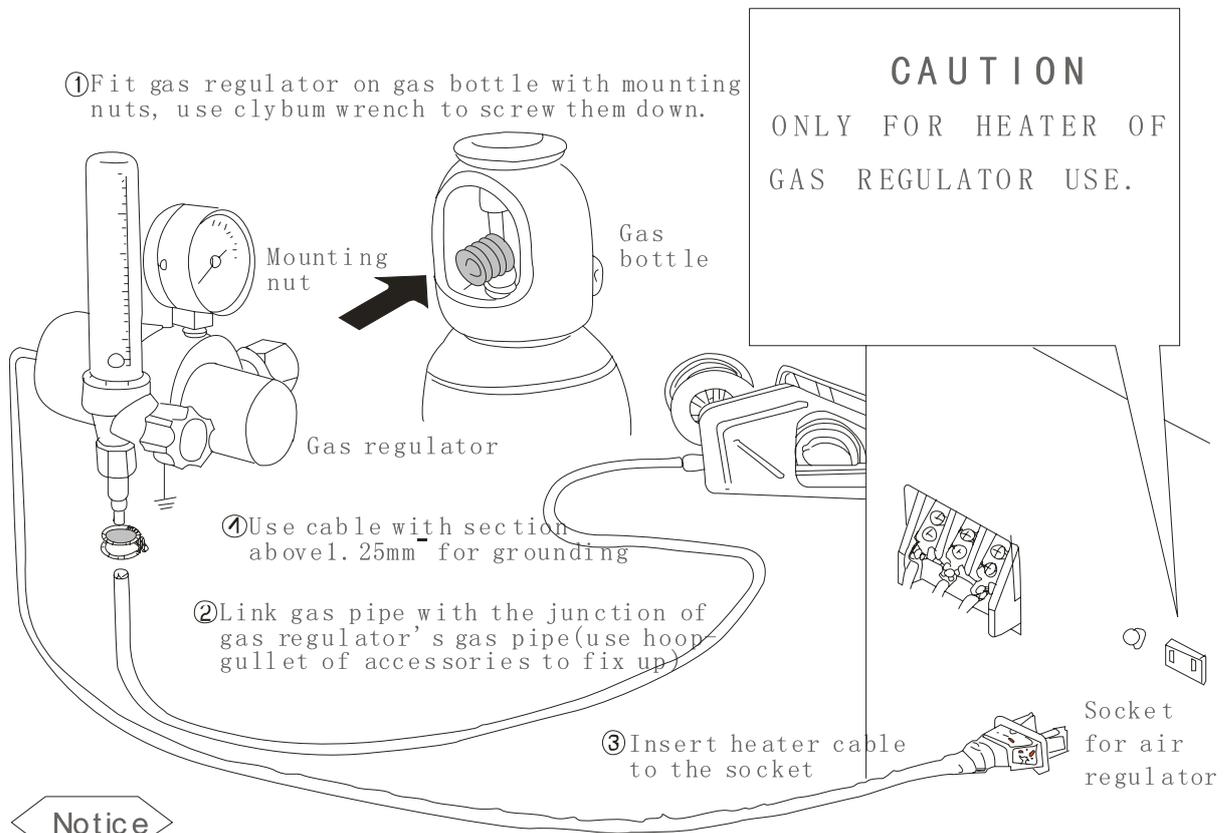


⑥ Twine the nudity position for electric with insulation plast belt.



## 5、 Installation and Connection (Continuous)

### 4、 Picture of connect gas bottle and gas regulator with power source

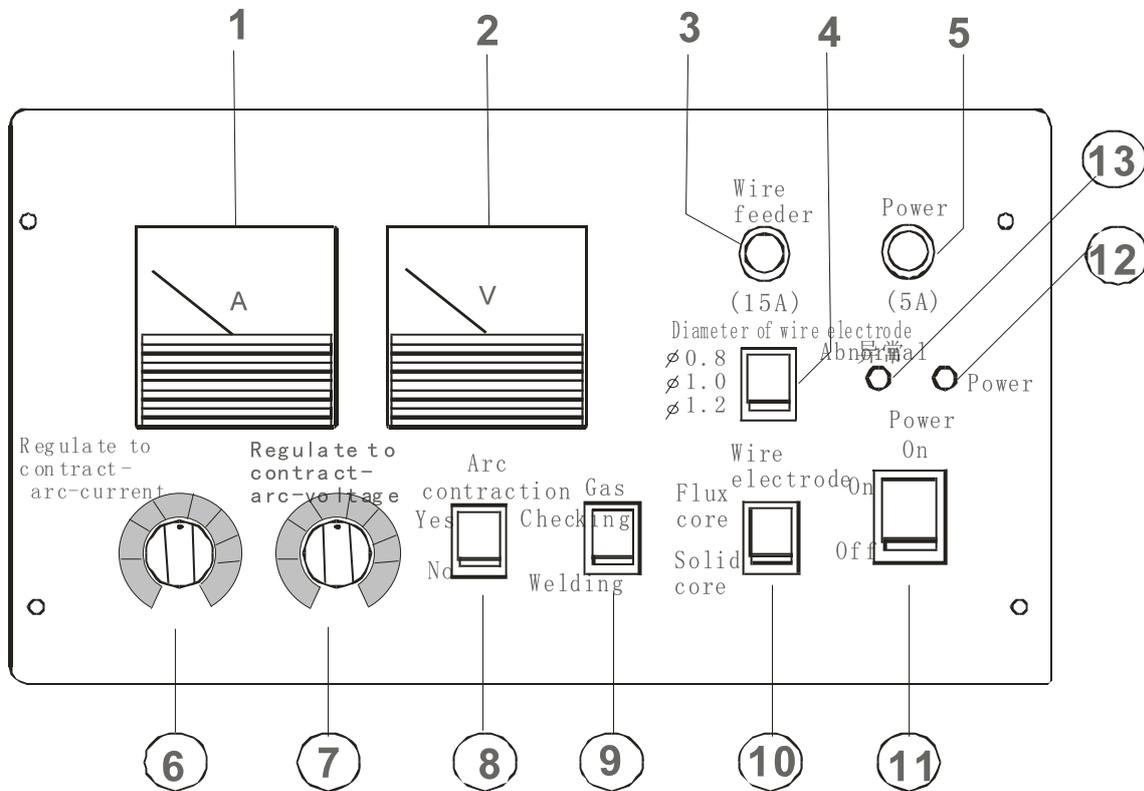


### 5、 Note of installation:

- Place the welding power prevent from direct shine of sun, raining, and with less wet and dust.
- Install a welder away from wall and other welders at least 30CM.
- Fit the gas bottle to its special shelf.
- If the welding power was placed on a inclined plane, pls forestall it topple over. (the slop up inclination angle of incline plane and horizontal level:  $\leq 10^\circ$ )
- Don't put any heavy on the welder
- Don't plug the intake of welder up.
- Brake the wheel of welder after set the welder well.

## 6、 Name and Function :

### 1. The front panel:



- ① Amperage meter----shows welding current
- ② Voltage meter-----shows welding voltage
- ③ Wire feeder fuse
- ④ Switch for selecting the diameter of wire electrode
- ⑤ Power fuse----installed in controlling circuit, used for protecting power source.
- ⑥ Regulator of arc extinguishing current ----switch on the “arc extinguish and regulate the arc extinguishing current
- ⑦ Regulator of arc extinguishing voltage----- switch on the “arc extinguish and regulate the arc extinguishing voltage.(note: If the welder was set to unified mode, this switch could be as a micro-adjuster of arc extinguishing current. )

Since welding specification has some infection with welding position, kind of wire electrode and length of lengthened cable, the welding voltage would not be suitable even though the regulator was set at “standard” for unified regulating. If so, you can left turn the regulator to get lower voltage and right turn to get higher voltage.

⑧ Switch for arc extinguishing selection---- “Yes/No”

## 6、 Name and Function : (Continuous)

⑨ Switch of gas checking

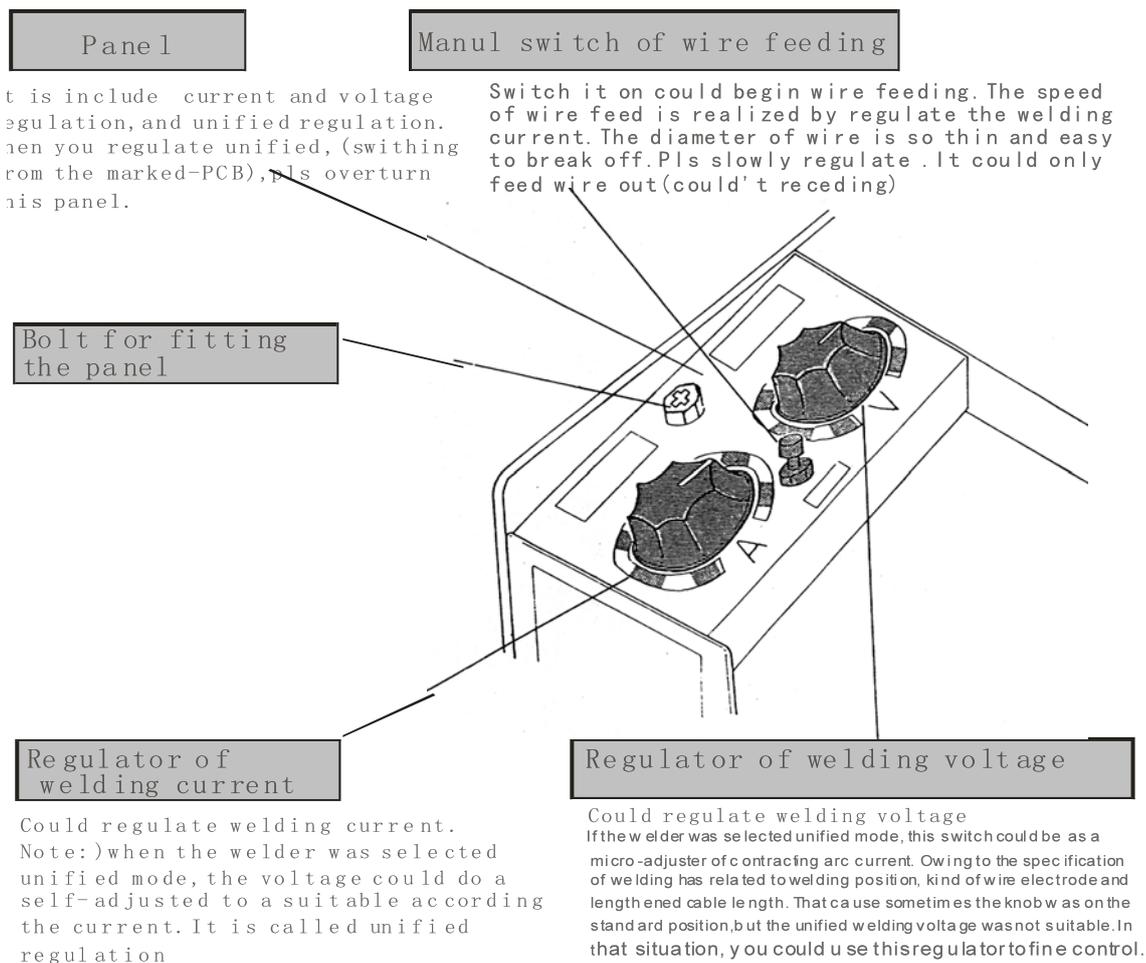
⑩ Switch of wire electrode selection----choose the kind of wire electrode according to your need: flux cored wire or solid wire?

(11) Power switch ---- switch on and off the power.

(12) Power source of indicator light

(13) The thermal overload indicator light---If the rated duty cycle and rated output power are overloaded, or the temperature inside welder exceeds rated requirement, the temperature controller would start working, which results in the working of thermal overload indicator light.

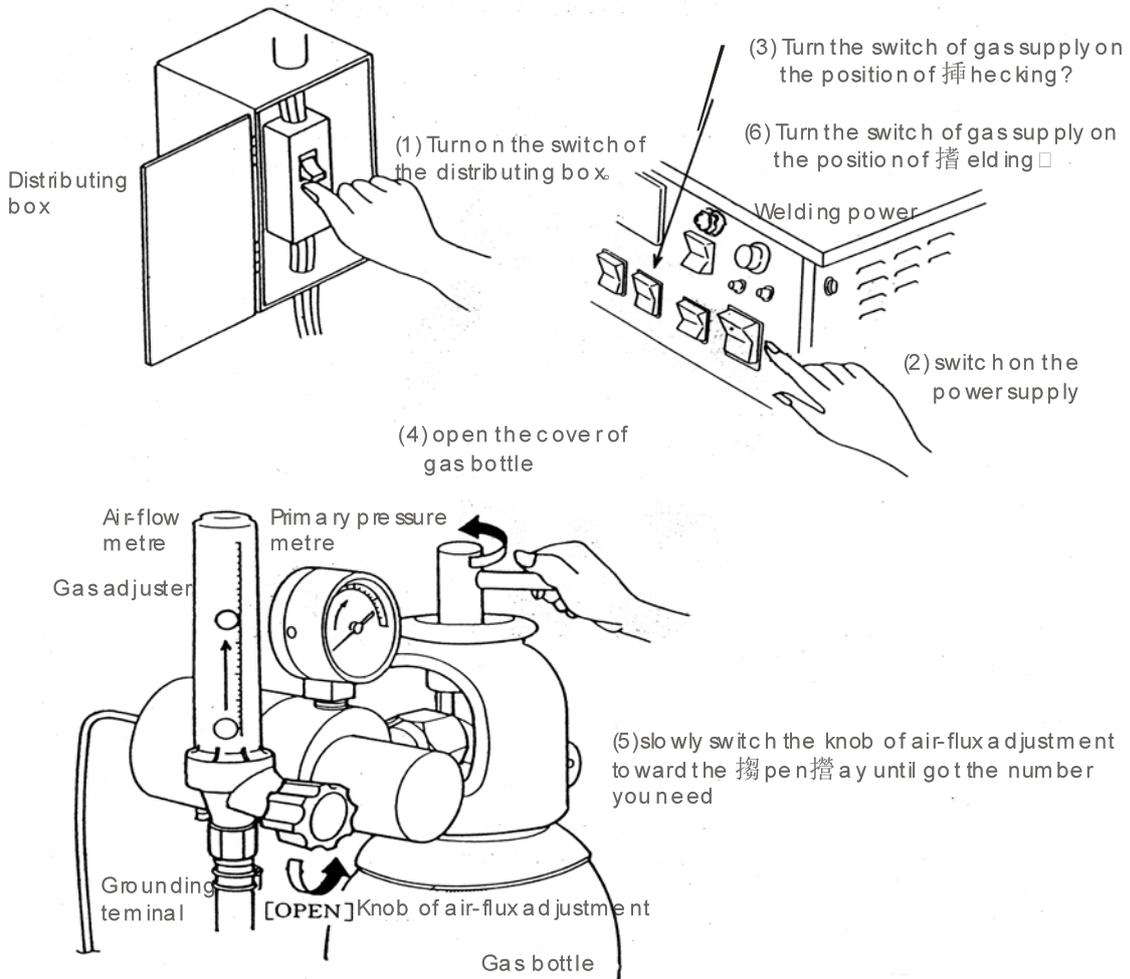
### 2. The remote-controller:



# 7、Welding Operation

## 1、Ready for welding operation

### 1、1 Switch operation and the adjustment of air flux

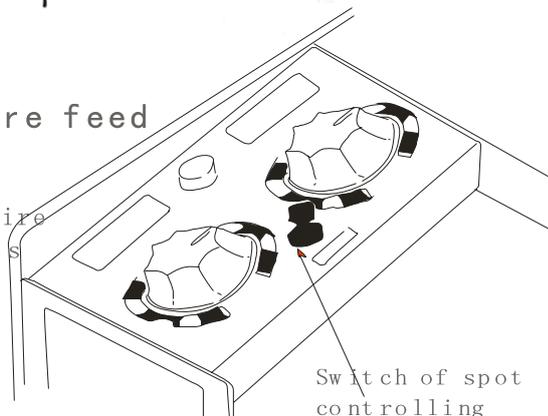


### 1、2 Spot controlling of wire feed

Press on the spot switch could begin wire feeding, and don't loose until there is 15-20mm wire out from the top of torch

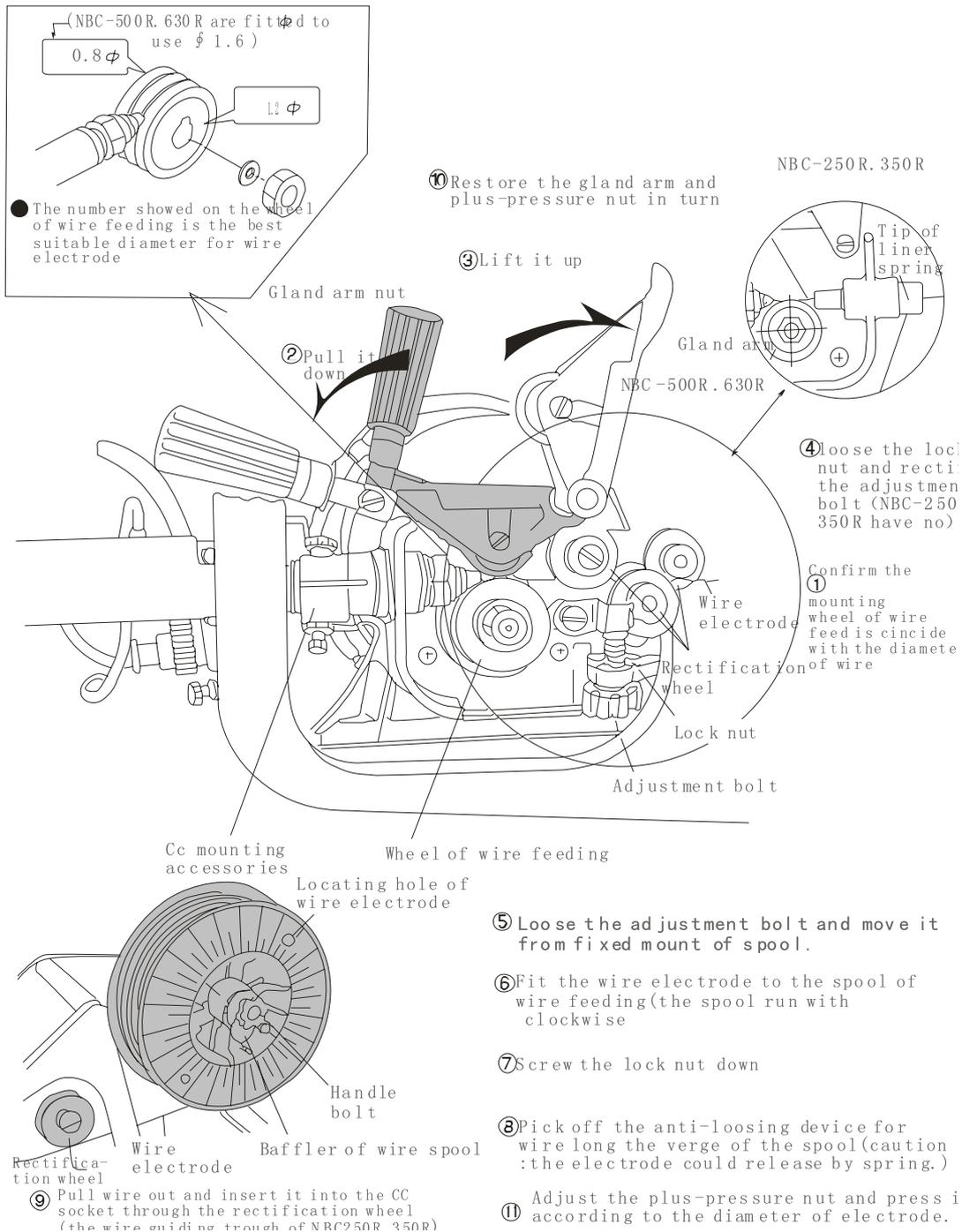
#### Caution

The wire electrode with thin diameter(  $\phi$  0.8) is easy to break off, so please feed the wire slowly



# 7、Welding Operation (Continuous)

## 1.3 Setting of wire electrode



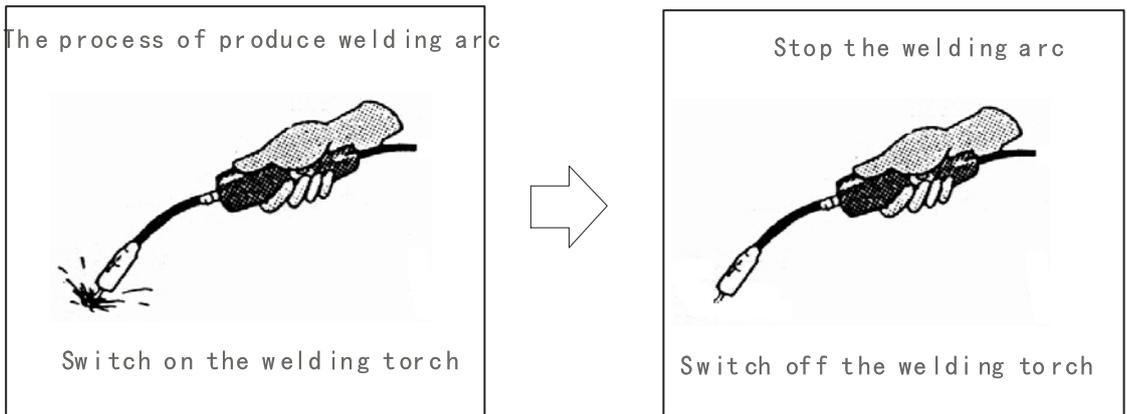
# 7、Welding Operation (Continuous)

## 2、Welding operation without contracting arc (sync operation with the switch of welding torch)

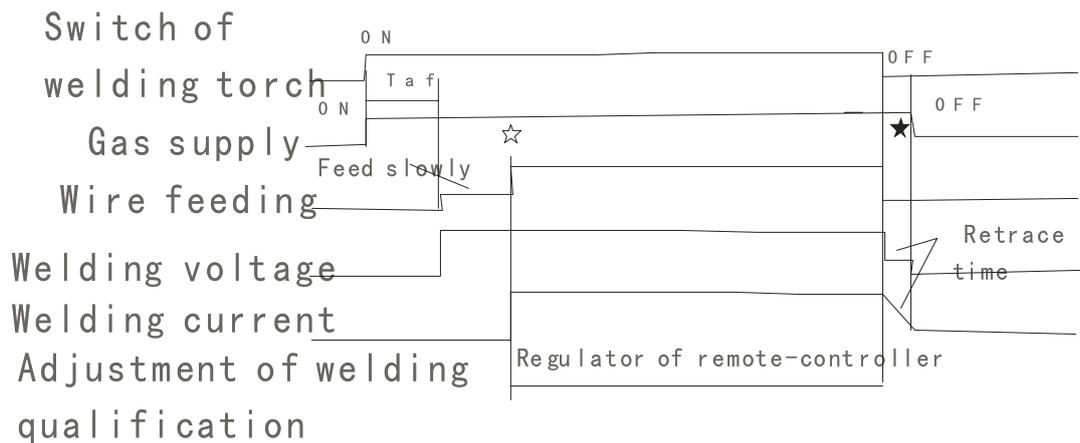
This welding is main suitable for repeated position and instantaneous welding, thin plate jointing

Sequential operation:

- Turn the switch of contracting arc to the position of "without contracting arc", turn on/off the switch of welding torch, the welding arc come into be disappearing.



Picture about work time



T a f=Gas pre-flow time  
 ☆ = the moment of arc bring  
 ★ = the time of arc disappear

# 7、Welding Operation (Continuous)

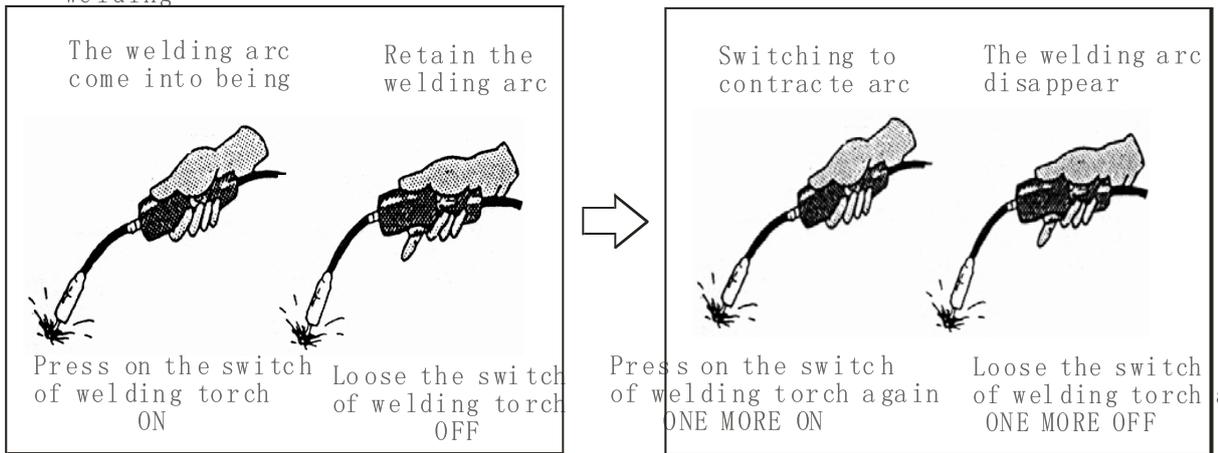
## 3. Weldin operation with contracting arc (self-lock and contracting arc)

This welding is main use to fill the sunken up fill after finish welding, and suitable for median or thick plate jointing

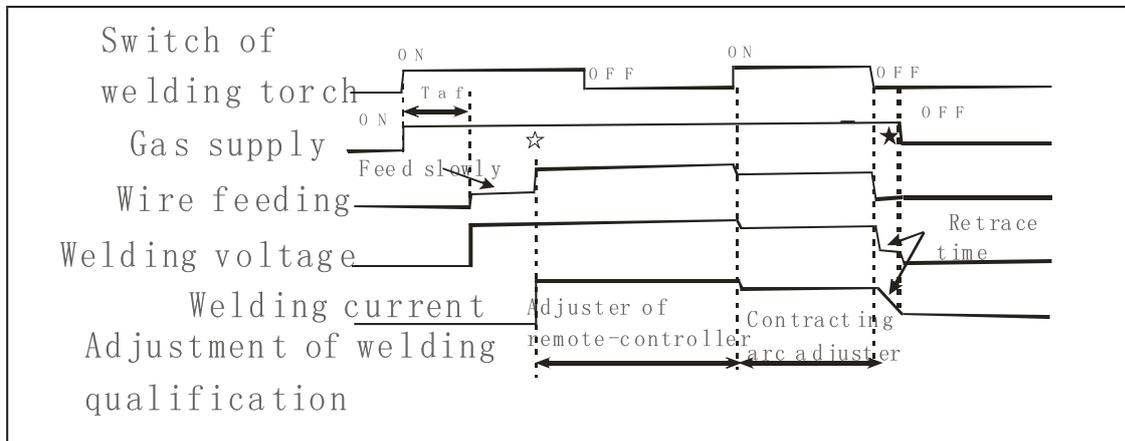
Sequential operation:

Turn the switch of contrating arc to the position of "with contracting arc".

- Successively two times for switching on/off welding torch to begin/finish welding



Picture about work time



T a f= gas pre-flow time  
 ☆= the moment of arc bring  
 ★= the time of arc disappear

Showed as above, the welder could self-lock by operate on the switch of wel. When finish welding, the current decreased, the welder could contracted ar

## 8、 Application enginery:

### 1、 The switching of all switches on the marking PCB

#### 1.1 Switching terminal Sw4

(air pre-flow --with/without).....factory-adjusted:without

- Set "without".....set it under the condition of no air pre-flowing.
- Set "with".....set it under the condition of air pre-flowing(0.6s)

#### 1.2 Switching terminal SW6 (the qualification of primary contracting arc is attached).....factory-adjusted:without)

- Setting of "SW6.....there is a same output between the qualification of primary welding and contracting arc welding.

**Precondition** The switch of contracting arc was on the position of "with"

#### 1.3 Switching terminal SW10(unified/normal).....factory-adjusted:normal

- Set normal.....separate set current and voltage on"noemal""
- Set unified.....It could be set by adjust suitable current and voltage on the output adjuster of the remote-controller.

Notice

In the process of using special wire electrode or flux cored wire, owing to they have different kind and quality, sometimes it is hard to realize by unified of stable welding condition (Although adjust it through the knob of welding voltage adjuster)You should do this:The welding voltage could be set free after switching the setting to"normal", the regulation range could enlarge by it.Or make it meeting your need by adjust Vr8 of P board

#### 1.4 Switching terminal Sw11 ( FTT controlling: with/without).....factory-adjusted: without

- Set "without".....have no FTT controlling
- set "with".....have FTT controlling