



CHIEN KANG

# 說明書

## Operation Instruction

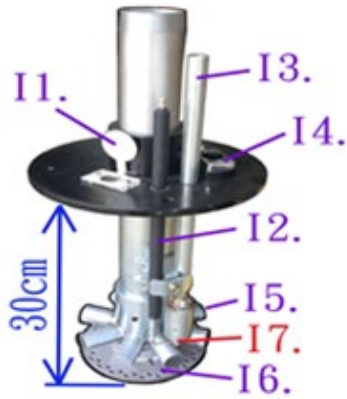


讓世界轉動更順暢

潔康企業有限公司  
CHIEN KANG ENTERPRISE CO., LTD

# CHIEN KANG SAFETY BOILER

## Boiler parts instruction

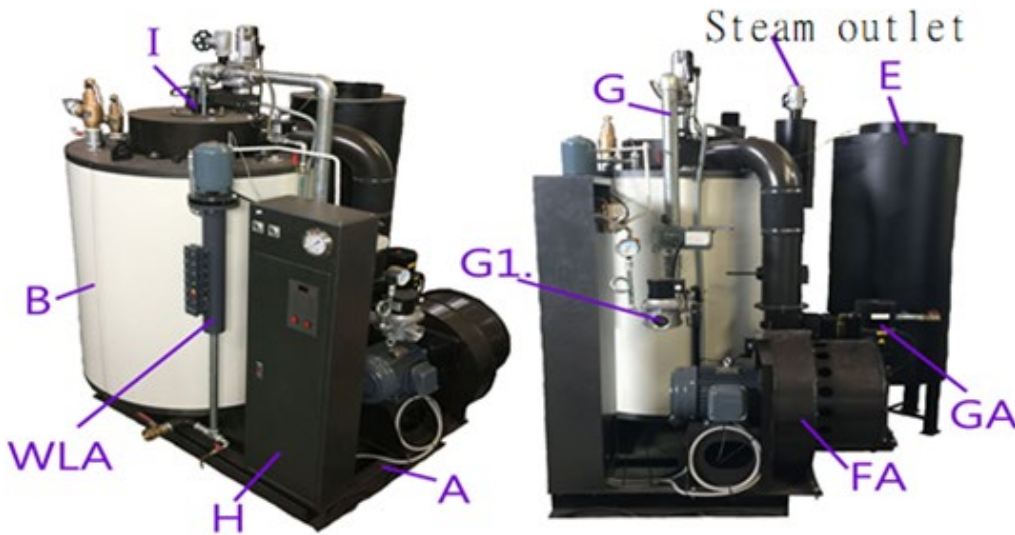


I part details



I7 details

NO.º	ITEMº	NO.º	ITEMº
Aº	Baseº	Iº	Ignition systemº
Bº	Boiler bodyº	IIº	Observe mirrorº
Eº	Fuel saverº	II2º	Ignition rodsº
FAº	Bower systemº	IIIº	Main fire systemº
GAº	Water supply systemº	IVº	Electric eye º
Hº	Electricity control boxº	Vº	Gas outlet (8 claws)º
WLAº	Water level gaugeº	VIº	Wind flow plate º
Gº	Gas pipe systemº	º	º
G1º	Gas inputº	º	º

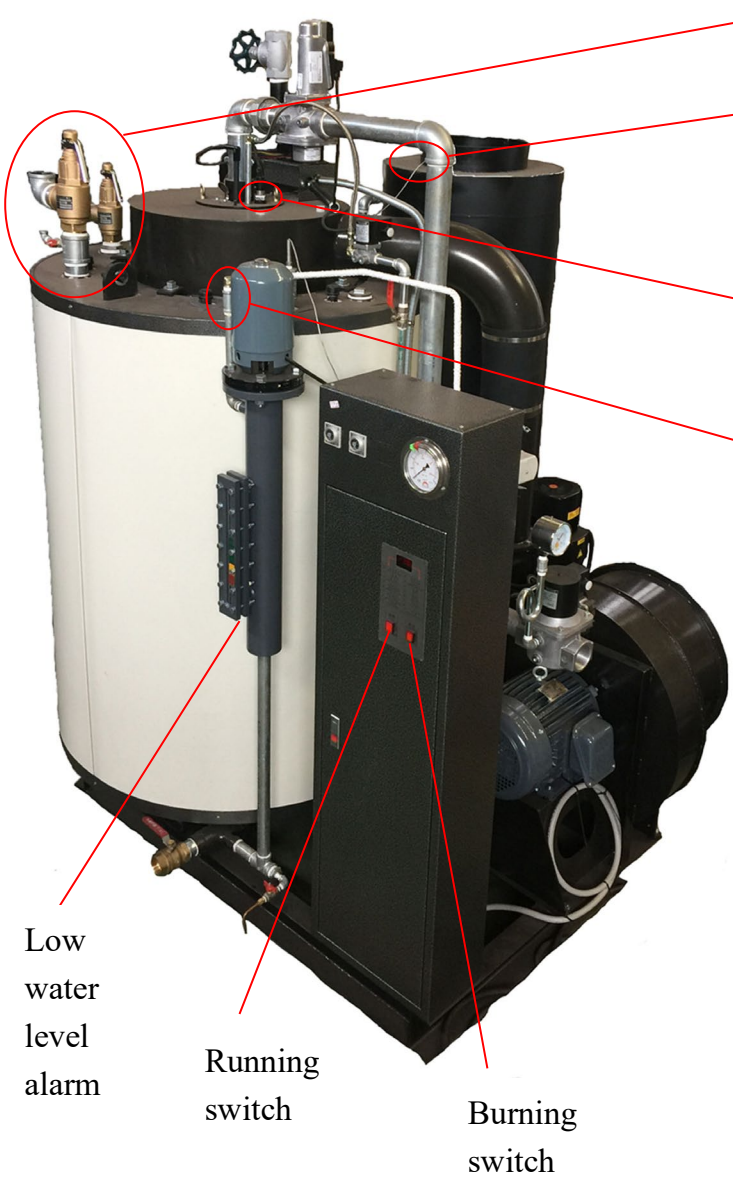


### CK-750~2500kg

Gas Boiler photograph



# CHIEN KANG SAFETY BOILER



- Safety valve (for the over pressure)
- Over temperature detective meter for waste air
- Electric eye (for detecting No fire and trigger alarm)
- Over boiler-body temperature detection



Protection for motor over-load

**CK-750~2500kg**

**Boiler parts instruction**



# CHIEN KANG SAFETY BOILER

[1]

## 【1】 START :

- 1-1 Electrification input.
- 1-2 Open the running switch.
- 1-3 Confirm the water level from the water level gauge.
- 1-4 Open the burning switch , when water level reach the right level , the blower will start to blow to get rid of the dirt.
- 1-5 After 10-16 second, it will enter low-burning situation then high-burning in 20 seconds. It will automatically adjust its pressure to maintain the vapor pressure inside the boiler body.

## 【2】 Notes in running :

- 2-1 Check is there the abnormal sound in the blower, the feed-water ump or injection pump in running.
- 2-2 Check the gas-pressure gauge to see if maintain in the fix limitation (300-450mmAq).
- 2-3 Check the chimney if the smoke comes out.
- 2-4 Check the water level gauge if the water level change rapidly.
- 2-5 Open up the main steam valve 1~2 turns slowly.

## 【3】 Stop :

- 3-1 Shoot down the burning switch and the running switch.
- 3-2 Shoot down the main power switch.
- 3-3 Turn down the feed water system, burning system, and main steam valve.

## 【4】 Preservation while stop for a long period :

It's important to manage the boiler cans if will stop over one week. If the roughly management or the wrong rmethod will probably cause boiler cans corroded.

◎ Here is the method to maintain the boiler cans :

- 4-1 Water-filled the Boiler Cans: Get rid of O<sub>2</sub> containing in the water , and keep the HP value during 11-12.
- 4-2 Dry way the Boiler Cans : keep boiler cans within in dry condition.

**Water-filed way is more convenient to practice, but considering of frozen should take the dry way.**

**If you want to stop boiler for a long period, please inform us to direct the correct way to take.**

## ※ Safety function of gas boiler:

- (1) When the combustion system does not ignition, the power supply is automatically cut off to prevent gas explosion.
- (2) When the combustion system delays ignition, the gas program control system will stop the ignition, first force to blow the air to remove the residual gas in the boiler, and then perform the ignition action to prevent the gas explosion.
- (3) When the gas leaks, the automatic detection system will cut off the power and sound an alarm.
- (4) When the vapor pressure arrives the limit, the combustion will stop. Then the system will secondly force to blow the air automatically, and the unburned gas will be drained to ensure safety.
- (5) Three-stage ignition system, our company adopts the most sophisticated German imported (Siemens) electromagnetic switch system. This Siemens system is an internationally recognized excellent product, and can effectively and accurately control the gas switch to ensure the safety of the product. .
- (6) Computer program control equipment, using (electronic) leakage automatic power-off system, to prevent the gas leakage caused by electricity leakage.



# CHIEN KANG SAFETY BOILER

## [2] Gas burner starting procedure

(1) Electrical function test:

The power supply must be properly installed in accordance with the coil. Note: It must be grounded. (Fire line (L) and ground line (N) are not interchangeable)

First turn off the gas switch and temporarily short-circuit the low-pressure safety switch (Note 1).

After the power is turned on, the burner motor starts after about 8 seconds, and the damper servo motor turns the burner flap to the lower section location, then the air blow starts. The blowing procedure lasts for about 30 seconds, following the electrodes are energized with a transformer for ignition.

The electrode generates an arc and the ignition process begins. Under normal conditions, the low-end coil of the solenoid valve is energized, and the gas burner valve opens and then starts burning. But during an electrical functional test is performed, since the gas switch has been turned on, the solenoid valve cannot output the gas. After about 3 seconds, the controller does not receive the transmitted flame signal, and the burner stops operating. The fault light is lit. The purpose of this test is to test whether the burner is operating correctly in the blowing and ignition procedures. The important thing is that when the flame signal is not received, the controller can stop the operation of the burner and ensure safety.

After the test is completed, turn off the power and remove the short-circuit wire from the low-pressure safety switch.

(Note 1) The burner is equipped with a low-pressure safety switch, which cannot be started without gas supply, so the low gas pressure must be forced to temporarily short-circuit before performing electrical function tests.



# CHIEN KANG SAFETY BOILER

**[3] After the above procedures are completed, the burner can be prepared for official start. Please note the following before starting:**

- (1) For example, if there is a thermostat control, please pay attention to whether it has been properly adjusted.
- (2) If the chimney has a chimney door, please note that it has been properly opened. In some ovens, if there is a fan, please note does the fan start?
- (3) After electrical function testing, please note:
  - (a) Have the gas switch been turned on again?
  - (b) Has the temporary short-circuit wire on the low-gas safety switch been removed?
  - (c) Have you pressed the fault light button on the controller?

After all checks are in place, the power is turned on, the blowing process begins later, followed by the ignition procedure, and the burner should immediately ignite the flame and begin to burn at a low level of fire. The fire of the burner always starts with low-level firepower, and it takes about 8 seconds to convert the high-level firepower.

After the first flame is fired, the burner should be adjusted to match the combustion in the low stage fire and high stage fire. After proper adjustment, the burner should be adjusted to match the combustion in the low-stage firepower and high-stage firepower after the first flame is sprayed out. After a suitable adjustment, the burner is officially operated, and the firepower conversion can be performed manually or with a thermostat controller. The firepower conversion damper servo motor will also automatically switch the position of the damper flap of the burner to match the combustion.



# CHIEN KANG SAFETY BOILER

## [4] When the first flame is burned, the following adjustments should be made:

### (1) Overview

- 1-1 The adjustment of solenoid valve flow (including adjustment of starting gas volume).
- 1-2 Gas pressure valve pressure regulation.
- 1-3 The adjustment of the flame position.
- 1-4 The adjustment of the damper servo motor.
- 1-5 To extract the chimney exhaust air for analysis.
- 1-6 Pressure regulation of low wind pressure safety switch.
- 1-7 Low gas pressure safety switch regulator.

(Note) If the combustion does not start normally, it does not necessarily indicate a malfunction, which may be due to the following reasons:

- (a) The air in the air supply duct is not exhausted thoroughly.
- (b) If liquefied gas is used and only several cylinders are connected, special attention should be paid to whether the amount of gas supplied is sufficient to burn.
- (c) Before the flame is sprayed, the burner can only be roughly adjusted. The flame should be sprayed smoothly during the test, but there may be individual exceptions. If the flow rate of the solenoid valve or the starting air volume adjustment is too small, or the gas pressure valve is too low, or the adjustment of the damper servo motor is not suitable, etc., it will affect the burner not to smoothly eject the flame during the test combustion.

### (2) The departments are adjusted as follows:

The burner can adjust the firepower according to different needs within the power range. If you want to enhance the firepower, you can adjust the damper servo motor to output a large amount of gas, or adjust the gas pressure valve to a higher pressure, or both. If you want to weaken the firepower, do the opposite way.

The solenoid valve is opened slowly, that is to say, only part of the gas is output at the beginning, and then all the pre-adjusted low-stage gas is output immediately. The advantage is that the burner can still be stabilized when used in a boiler with a higher internal pressure. And the burning is smoothly going, the amount of gas at the start is adjusted according to the actual environment inside the boiler. In general, if the burner can spurt the flame stably and smoothly during the fire, the adjustment of the starting air volume is generally appropriate.



# CHIEN KANG SAFETY BOILER

## [5] The last step before using the burner formally

- (1) Check that all the protective covers have been replaced, and that the test nozzles or fixing screws that have been loosened have been retightened.
- (2) Repeatedly start the burner to see if the low-level fire is on fire and the high-end firepower is smooth.
- (3) Gradually close the gas switch to see if the operating burner can be stopped when the gas pressure of the low-pressure safety switch is lowered.  
After the test is completed, the gas switch is turned on again and the burner can be resumed.
- (4) Remove the hose connected to the low air pressure safety switch and see if the safety switch is operating normally. After removing the leather tube, the burner should stop operating and light up the fault light. After the leather tube is replaced and the fault light button is pressed, the combustion can be resumed.
- (5) Register the previous test for future reference.
- (6) Explain the items that should be paid attention to the employees responsible for daily use, and place the instructions in a conspicuous place in the boiler room.
- (7) Employees in daily use should always pay attention to whether the burner is operating normally. If any abnormality is found, it should be notified to qualified personnel. The burner repair persons should also be carried out by qualified personnel.

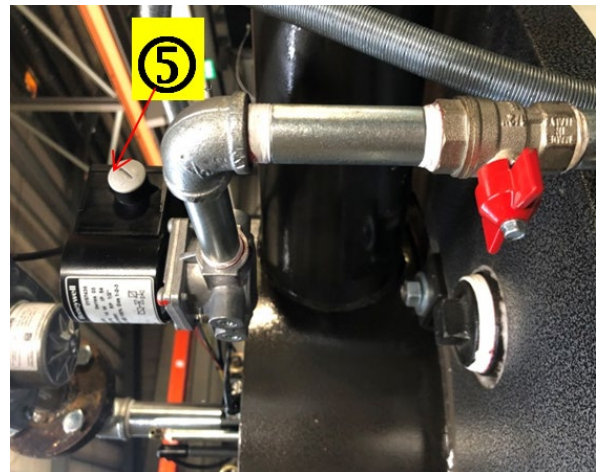
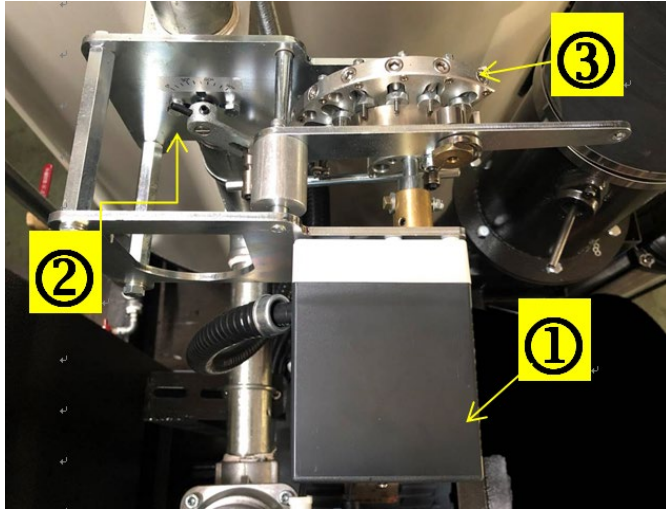




# CHIEN KANG SAFETY BOILER

## [7] Damper Actuator Instructon

### (1) Components of Damper Actuator



1. Damper Actuator Synchronous Motor
2. Gas Amount
3. Fine-tuned Air Amount
4. Air Amount
5. Burning Solenoid Valve
6. Air Amount Switch



# CHIEN KANG SAFETY BOILER

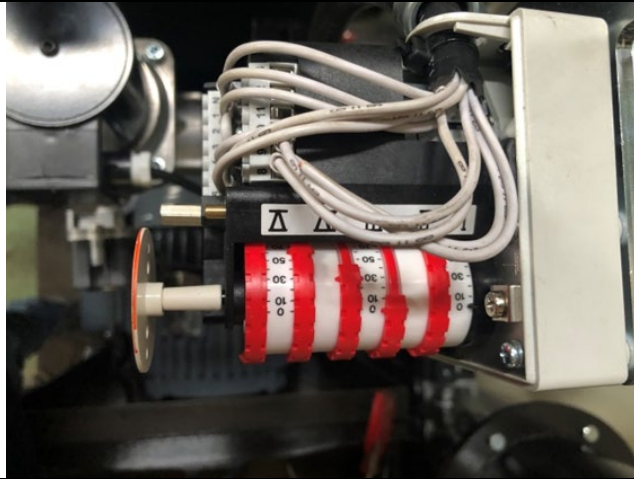
## ( 2 )How to adjust

1. Make sure that gas and air amount return to zero

2. Turn on the Light Solenoid Valve

3. Adjust Damper Actuator Synchronous Moto

I.	Air Amount for high burning	40
II.	Air Amount for beginning burning	10
III.	Zeroing	15
IV.	Air Amount for low burning	20



4. Using the gas analyzer to analysis the emissions from boiler.

5. Using Allen key to adjust Fine-tuned Air Amount 微調風門.

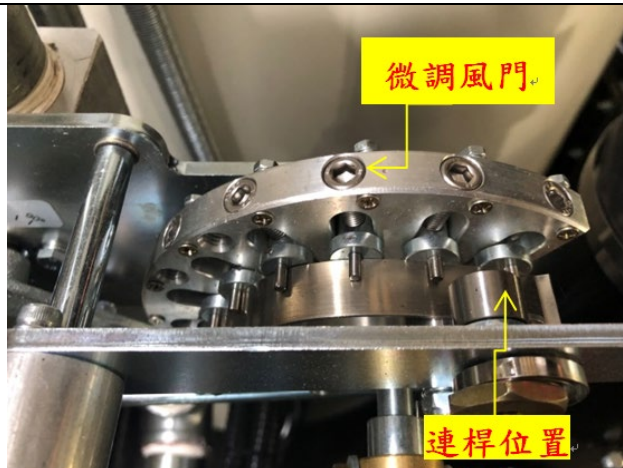
6. 微調風門

◎Counter clockwise- Air

Amount turns to  
small-less wind.

◎Clockwise- Air

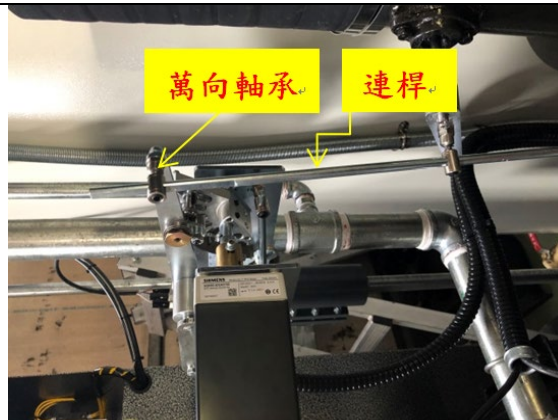
Amount turns to  
large-more wind.



7. Accroading the bar link(連桿位置) to adjust hex head bolt and hex socket head cap screws.

8. Can using bar link to position the Air Amount first, after that the Air Amount can be fine-tuned

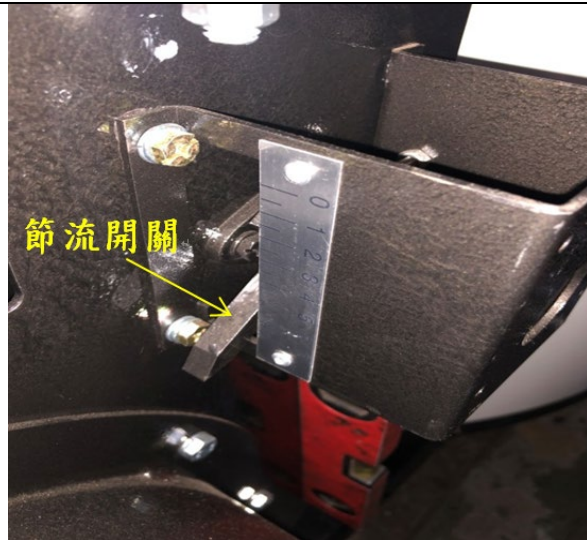
9. Loosen the hex socket head cap screws in universal joint bearing(萬向軸承) and started to adjust the bar link(連桿).





(3)Warning

1. Make sure Air Amount Switch(節流開關) is opened.

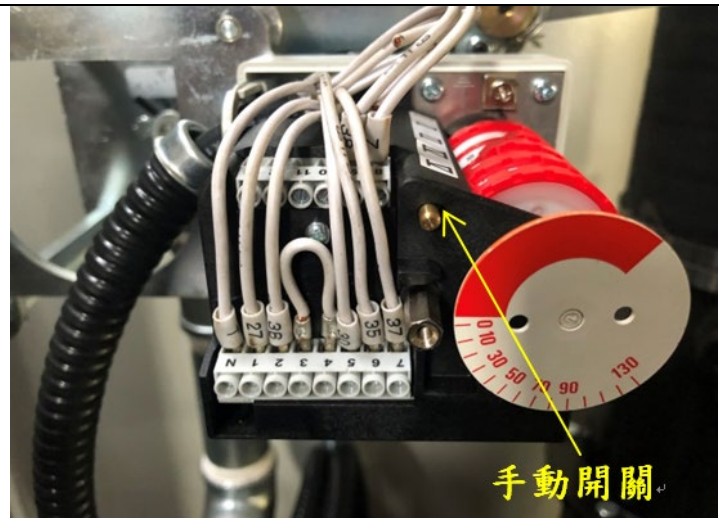


2.The spring leaf under Fine-tuned Air Amount which must be keepong curvy.

3. Make sure the gas valve is working.

4.Make sure the Air Amount is working.

5.Do not press down Damper Actuator Synchronous Motor during adjusting.



6.Pressure gauge keep in 400mmAq when boiler is in quiescent condition.



7.Make sure screws and bolts of all components are locked.



# CHIEN KANG SAFETY BOILER

## [7] If the burner has some problems, here are some possible reasons:

(1) Condition characteristics: The burner does not start, but does not light up.

Possible causes:

- (a) It may be a small problem, such as the power is not turned on, or the gas is not turned on or the supplied gas pressure is insufficient.
- (b) Please check if the controller is properly plugged into the socket, and check if the power cable is loose.
- (c) Check the fuse of the power supply and check if the temperature adjusted on the thermostat is proper.
- (d) It may be a problem with the controller; it may also be that the contact points on the wind pressure cutout are fused together before starting.
- (e) The controller has a low voltage protection function that does not start when the voltage drops to 140-160 volts.

(2) Condition characteristics: The burner does not start, and the fault light is illuminated.

Possible causes:

- (a) May be a problem with the controller.
- (b) It may be that the burner motor cannot be started. The reason why the motor cannot be started is that the motor coil or capacitor may be damaged, which may be a bearing problem. It is also possible that the air inlet of the burner sucks in foreign matter and the motor is stuck. Please note that if the fault light is illuminated by some faults in the previous operation of the burner, other causes of failure must be considered.

(3) Conditional features: The burner is interrupted during the blowing process and the fault light is illuminated.

Possible reasons:

- (a) The wind pressure may not be detected due to the low wind pressure safety switch or the wind pressure is too low. This may be a problem with the low air pressure safety switch. Perhaps the vent of the burner is sealed by paper. Or because the burner fan accumulates too much dirt, causing the wind pressure to drop, or the hose connected to the low wind pressure safety switch is broken or loose.
- (b) It may be a problem with the controller.





# CHIEN KANG SAFETY BOILER

(4) Condition characteristics: After the blowing procedure, the ignition program should start, but no arc is generated at the front end of the ignition electrodes.

Possible causes:

- (a) The ignition transformer is damaged, or the wire connecting only the ignition electrodes is broken or the wire plug is loose.
- (b) It may be that dirt accumulates near the ignition electrode and becomes a short circuit.
- (c) It may be a problem with the controller, and there is no transformer for voltage supply ignition.
- (d) It may be that the input wire of the ignition transformer is loose in the controller socket.

(5) Condition characteristics: After the ignition program starts, the burner cannot emit flame, and the fault light will light up.

Possible causes:

- (a) The gas cannot output may be caused by the solenoid valve (the valve inside may not open, but this is rare or due to damage to the coil).
- (b) It may be that the flow/starting volume of the solenoid valve or the improper adjustment of the gas pressure valve results in no gas output.
- (c) Or the controller is faulty, there is no voltage supplied to the coil of the solenoid valve.
- (d) If the burner is used for the first time after installation, be aware that the air in the air supply duct has been completely drained.
- (e) It may be that the wire socket that supplies power to the solenoid valve assembly is loose.
- (f) If the burner cannot emit a flame, it is usually not easy to tell whether the ignition electrodes cannot ignite or the solenoid valve has no gas output. It is also possible that there is a gas output but it cannot be ignited. If this is the case, it may be the following:

The position of the lower damper of the damper servo motor is adjusted too large; or the diffusion disk is pushed too far; or the improper adjustment on the electrode valve causes the gas output to be too small; or the ignition arc is too small (may be improper adjustment of the position of the ignition electrodes, or the ignition voltage is partially lost, or the voltage output from the ignition transformer is insufficient, or some of the boilers are filled with a high internal pressure that causes difficult to burning.



# CHIEN KANG SAFETY BOILER

(6) Conditional feature: The burner stops operating shortly after the flame is fired, but the fault light on the controller does not illuminate. Later, the burner restarted itself, and soon after the flame was ejected, the operation was stopped and the procedure was repeated and repeated.

Possible cause: The amount of gas supplied or pressure is insufficient. Although the pressure at the start is sufficient to start the burner, after the burner starts to ignite the flame, the gas pressure drops rapidly to a lower pressure than the low pressure safety switch. The operation is stopped, but the fault light does not illuminate. When the fire is stopped, the gas pressure rises and rises. When the pressure rises above the low pressure safety switch, the burner automatically starts and repeats.

This phenomenon is usually due to insufficient gas supply. If only a few liquefied gas cylinders are connected, it is better to calculate the gas supply amount beforehand. In addition, if the diameter of the gas supply pipe is too small, the gas pressure will drop drastically after the fire.

(7) Status characteristics: low-level firepower has an effect on fire, and the flame is unstable.

Possible cause: The above phenomenon occurs because the gas quantity does not match the combustion air, and the output gas is not ignited in the first time. Please refer to paragraph (f) of the condition feature (5). If the flame is unstable and leaves the diffusion disk, the flame will not burn the ionization bar, and the combustion opportunity will not continue.

(8) Conditional feature: The burner stops operating shortly after the flame is ejected, and the controller lights up the fault light.

Possible reasons: Due to the situation in the boiler, it may not be clearly visible. The condition features (4), (5) and (8) are not easy to distinguish because the fault light is on shortly after everyone is ignited. However, if the flame is normal when the burner starts to fire in the observation hole of the boiler, the cause of the failure may be the following:

(a) No flame signal is returned to the controller, or the signal returned is too weak. The possible reason is that the position of the ionization rod is incorrect, the front end is not burnt by the flame, or between the ionizer and the burner (short circuit or due to dirt accumulated on the ionization rod, if the fuel is liquefied gas) Note), or the current delivered by the ionization bar is too weak. For the method of measurement, please refer to the following section "How to measure the current from the ion bar".

(b) The burner is not grounded or has poor grounding.

(c) When connecting the power supply, the live (L) and neutral (N) wires must be connected to the correct position as indicated by the coil. This conditional feature occurs if the live and neutral lines are interchanged.

(d) The position of the ignition electrodes is incorrect and the arc of the ignition affects the transmission of the flame signal. If the problem has not been solved after re-adjustment, the two input wires that are connected to the ignition socket by the ignition transformer can be interchanged (that is, the original connection (7) and (N) are changed to the connection (N). And (7) or permission to solve the problem, but such a situation rarely occurs.

(e) It may be a problem with the controller.

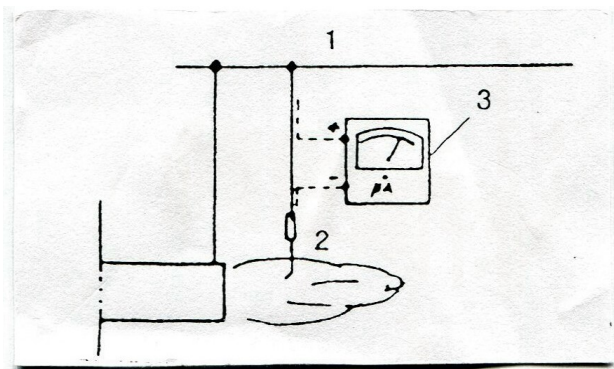


# CHIEN KANG SAFETY BOILER

"How to measure the current from the ionization rod"

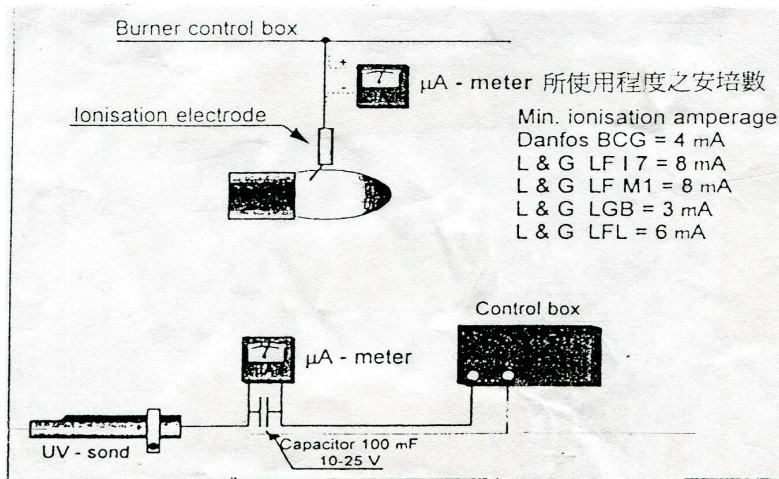
The controller has a flame monitoring capability that ensures that the gas output from the solenoid valve can be ignited so that unburned gas continues to accumulate in the boiler. This flame monitoring system is an ionization bar that works with the controller. During normal operation, the ejected flame burns to the front end of the ionization bar and produces a weak current that is transmitted as a flame signal back to the controller to continue the operation of the burner. However, if for some reason the controller solenoid valve does not receive the flame signal within three seconds of starting to output the gas, the operation of the burner will be stopped and the fault light will be illuminated. In the subsequent combustion process, if the flame signal suddenly disappears, the burner will immediately stop operating and light the fault light. If the fault is suspected because the current delivered by the ionization bar is too weak to allow the controller to continue the operation of the burner, the current measured by the ionization bar at the time of combustion can be used as shown in the figure below. 3 microampere can maintain the normal operation of the burner. If the measured current is lower than this value, there may be the following reasons:

The grounding is good, or the position of the ionizing rod is incorrect, or the accumulated carbon scale causes the current delivered by the rod to be lost.



In the middle of the connection of the ionization bar to the control wire, a current meter is used to measure the current delivered by the ionization bar during combustion.

The current intensity and amperage of the program controlled by the ion bar and LV electric eye



# CHIEN KANG SAFETY BOILER

(9) Condition characteristics: The burner cannot convert high-level firepower.

Possible reasons:

- (a) Please pay attention to whether the firepower selection stays in the high position.
- (b) It may be a problem with the controller.
- (c) It may be a problem with the damper servo motor.
- (d) If the high-range flow adjustment of the solenoid valve is too small and the relatively high-range damper is adjusted too much, the flame will be extinguished when the high-stage fire is converted.

(10) Conditional characteristics: It has an effect when the low section converts the high section firepower.

Possible cause: The high-range flow adjustment of the solenoid valve is too small. The adjustment of the high-stage damper is too large, and the gas output when the high-stage fire is replaced is not ignited for the first time.

(11) Conditional features: The burner often stops operating for no reason.

Possible causes:

(a) If the fault light does not illuminate, most of it is not due to the burner failure, but it may be: the gas pressure is not enough, or the power supply wiring is loose or poorly contacted, or the controller is not properly plugged into the socket. , or may be a thermostat problem, providing a wrong signal, because the controller has a low voltage protection function, when the input voltage is as low as 140-160 volts, the controller will automatically stop the operation of the burner, but not The fault light is lit. When the power supply returns to normal later, the burner restarts itself.

(b) If the fault light is on, it may be:

The flame signal returned by the ionization bar is too weak. Please refer to the condition feature (8), or the controller's fault, or if the ambient temperature is too high or too humid, it will affect the normal operation of the controller, or maybe the wind pressure signal. Please refer to paragraph (a) of the conditional feature (3). In addition, if the wiring of some components is loose or poorly contacted, or the soldering port of a component in the component is not strong, the phenomenon of the characteristic (11) may occur, the fault may be lit, or may not be lit, and the check is the components are out of order.



CHIEEN KANG SAFETY BOILER



**[8] Water quality management:**

Transparent and clean water, at first glance, does not seem to contain impurities, but in fact it contains calcium, magnesium, iron, cerium oxide and other inorganic substances and oils, other organic substances, oxygen, carbonic acid and other gases, boilers can make a lot of water. Evaporation will leave impurities and scales on the bottom of the pot, and will accumulate more, which not only reduces the thermal efficiency of the boiler, but also causes excessive expansion or rupture of the water pipe. Oxygen dissolved in tank water also corrodes the boiler and shortens its life. However, the failure caused by the water quality of the boiler is difficult to detect from the outside, so if it is neglected in these management operations, it will not be saved until it is detected. Therefore, users of boilers must pay attention to the usual water quality management.

The Jiekang Boiler CK is an automatic soft water processor and automatic injector device for this equipment to achieve complete water quality management.

8-1 water quality standard

In order to prevent the adhesion and corrosion of the scale, the standard value of the water quality of the tank water is as follows:

Please check and maintain this value regularly.

In addition, the collected water is

- Raw water: tap water or ground water.
- Soft water: Check valve from automatic soft water processor.
- Tank water: The water check valve from the boiler.

“The water from the water check valve should be carried out without pressure in the boiler. If water is collected during pressure, in order to prevent the hot water from scattering, please open the water check valve slightly and drain it little by little.”

Softened water	PH (25°C) Hardness CaCO <sub>3</sub> Oil Dissolved oxygen	7~8 Under 20 mg/L Almost 0 0.5 mg/L
Water in the boiler body mg/L=ppm	PH (25°C) Electrical transduction rate 25°C (Residue after evaporation) M Alkalinity Ca CO <sub>3</sub> P Alkalinity Ca CO <sub>3</sub> C1- PO <sub>4</sub> <sup>3-</sup>	7~10 1800μS/cm Under 1200mg/cm 80~600 mg/L 100~800 mg/L 400~500 mg/L 40~80 mg/L

**\* When the iron ion of the feed water exceeds 40 mg/L, in order to prevent corrosion of the upper water supply pipe, please put the corrosion inhibitor specified by the company into the soft water tank.**



# CHIEN KANG SAFETY BOILER

## [9] Automatic softening processor, automatic injector:

9-1 The automatic softening processor must use the AC 110V power supply. This device is used to remove the calcium and magnesium that cause the scale in the water, and to supply the soft water that meets the hardness of the water quality standard. The water is supplied to the water for a certain period of time. Regenerate, you can get soft water again. However, please do the following checks and assignments:

9-1-1 Every day, before the start of the boiler, water should be taken from the water check valve, and the hardness test liquid should be used to confirm that the water quality is soft water.

9-1-2 The salt for resin regeneration is exchanged 3 to 5 times a day in a brine tank.

(In addition, please refer to the automatic softening processor operation manual for detailed operation method)

### 9-2 automatic injector

Continuously injecting a tanker, deoxidizer, and equipment for adjusting the pH of the tank water and removing oxygen dissolved in water is to maintain the water quality standard value. This device will inject the clearing agent and deoxidizer (the following liquid) into the water outlet side or the soft water tank. Please pay attention to the following points when using:

9-2-1 Is there a certain amount of medicine injected every day?

9-2-2 Is there any liquid in the liquid storage tank? If the liquid is reduced, please replenish it immediately.

9-2-3 If the supplemental medicine is not available, you can also fill the liquid storage tank with water to prevent the injection of corrosive air.

## [10] Use of clearing tank deoxidizer:

10-1 The CK series of Chien Kang Boiler must use our company's water treatment agent (clearing agent deoxidizer).

10-2 The type and amount of input are determined by the water quality analysis technician who performs the feed water when purchasing the boiler.

10-3 When the remaining amount of the drug solution in the drug storage tank is about 10 liters, please supplement it according to the instructions of the technician.

## [11] Emissions(Blow-off)

The softened water helps to prevent the adhesion of the boiler, but it cannot remove impurities. After a long period of operation, the boiler will precipitate and accumulate impurities at the bottom of the tank. Therefore, the discharge operation can discharge the impurities and concentrated impurities out of the boiler with the tank water, and adjust the concentration of the tank water to the standard value to prevent the accumulation of the pot mud and the adhesion of the scale.

### 11-1 Intermittent Blow-off

After one day of operation, please discharge before, after, and at the pressure of 1~2kg/cm<sup>2</sup> on the next day. When the liquid level control is abnormal, slowly close the valve until the water level rises to the normal water level.

11-1-1: When the boiler is not running, please keep the water from the previous day as usual.

11-1-2: For special use, please follow the instructions of the technician. .

11-2 The pressure is discharged at 1~2kg/cm<sup>2</sup>, please blow off all the water in the boiler body when it stops.



# CHIEN KANG SAFETY BOILER

**[12] Disassembly inspection of tank inspection hole**

12-1 After the tank water is completely drained, remove the helmet from the inspection hole and inspect the inside.

12-2 When the water quality management is appropriate, there will be almost no adhesion or corrosion of the scale. If the scale is attached to more than 1mm or the sludge is accumulated above 10mm, or if there is corrosion, please contact Chien Kang company or contact the dealer.

**[13] Tighten the water meter, change the glass**

13-1 The glass is corroded due to the vapor leakage from the gasket part of the surface meter, and it has to be replaced. About a week after starting the operation, tighten the bolts of the gasket. If it is tight, but it is still leaking out, the gasket and glass must be replaced.

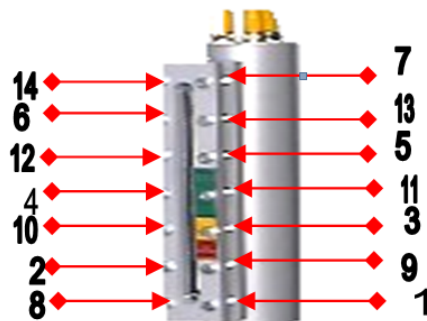
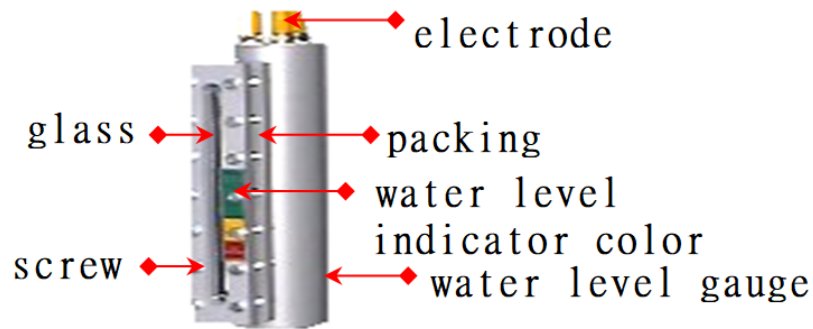
13-2 Tighten the steps: Turn the bolts twice as shown in the order of the numbers to make them nearly tight. If it is tightened, but it is still leaking, the pad and glass must be replaced.

13-3 glass replacement

13-3-1 After stopping the boiler operating pressure to 0k/cm<sup>2</sup>, discharge until the water level is not visible from the water level gauge.

13-3-2 Remove the tightened screws.

13-3-3 Remove the parts and clean the front side of the pad. As shown in the figure, press the new glass and pad the contents of each part. Tighten the bolts in accordance with the tightening procedure.





# CHIEN KANG SAFETY BOILER

## [14] Adjustment of water level adjuster

14-1 The water level adjuster adopts the electrode type. If the length of the electrode rod changes, the water level cannot be adjusted.

[Do not change arbitrarily]

14-2 Checking the operation of the water level regulator and sweeping the liquid level electrode rods to confirm the insulation.

14-3 Action check:

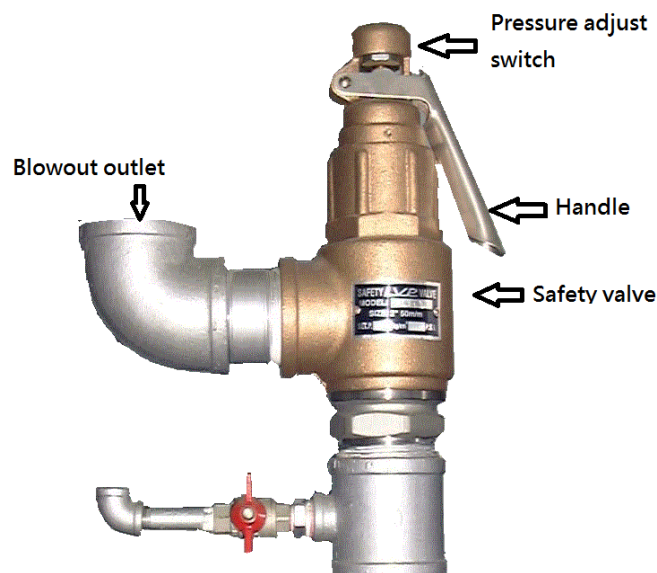
When the scale is attached to the liquid electrode rod, the water level switch will not move, so it should be cleaned regularly. Always use a high-impedance meter with a DC voltage of 500 V or higher for insulation measurement, and the resistance value should be 2 MΩ or more. (If the resistance value after cleaning is still lower than this value, it should be replaced). In addition, the lengths of the electrode rods are different from each other and cannot be arbitrarily changed. Finally, do not make mistake when install the cover caps of these electrodes.

electrode rod



## [15] Inspection of safety valve

The safety valve is a valve that allows a large amount of steam to be discharged when the pressure switch fails and the pressure inside the tank rises abnormally. [Blowout pressure is 10 kg/cm<sup>2</sup>]







# CHIEN KANG SAFETY BOILER

## [16] Adjustment of vapor pressure switch

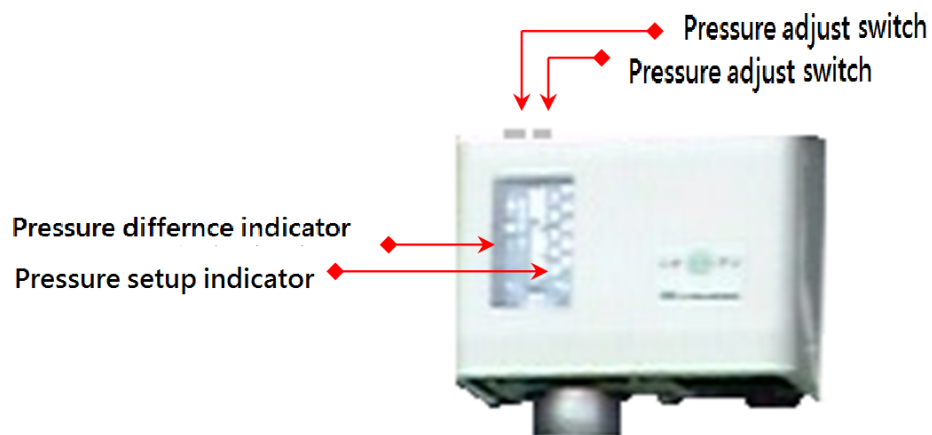
There are two or one vapor pressure switches:

16-1 Boiler Burning ON-OFF Pressure Switch.

16-2 High-combustion-low-burn (HIGH---LOW) switching pressure switch.

16-3 Boiler Pressure Switch Set Pressure Explanation:

Boiler combustion ON-OFF pressure switch operating range is 6-8 kg/cm<sup>2</sup>, its set pressure adjustment is set at 7 kg/cm<sup>2</sup>, pressure difference adjustment is set at 2kg/cm<sup>2</sup>, boiler high combustion-low combustion (HIGH-- LOW) The operating range of the switching pressure switch is 5-7 kg/cm<sup>2</sup>, the set pressure is adjusted at 5 mg/cm<sup>2</sup>, and the pressure difference is adjusted at 1 kg/cm<sup>2</sup>. The illustration is as follows: When the steam passes 5 mg/cm<sup>2</sup>, at this point the boiler is in a low combustion state. When the steam drops below 4 kg/cm<sup>2</sup>, it is converted to a high combustion state at this time. When the steam reaches 8 kg/cm<sup>2</sup>, the combustion of the boiler is stopped until the pressure drops below 5 kg/cm<sup>2</sup> then it will restart to burn.





# CHIEN KANG SAFETY BOILER

## [17] The way to repair the feed-water pump

Phenomenon	Check Items	Cause To Breakdown	Dealing Method
The running of 1. The feed-water pump abnormal	1. The feed-water valves. 2. The feed-water filter. 3. Hot water ?  4. Air in it ? 5. The power voltage normal ? 6. Water pH number.  7. One-way valve	Closed  Block  So hot that produce steam.  The wings of The pump corrosion Back flow.	Open them (very common) Clean it  Arise the water tank Or add to a pressure increasing pump  Renew it  Renew it
2. The pump runs but water level can't rise			Refer to above
3. The pump can not run when the water level under the normal site.	1. Fuses. 2. Rust on the electrodes ? 3. Bad water quality ? 4. The others.		Renew them Clean them  Improve it Check if electrodes Electrify ( * )
4. The pump can't stop to run (over the normal water level)	1. Electrodes. 2. The water level controller breakdown	Rut or scale on them	Clean them Renew it
5. The pump stops but the water level still in low position	1. The electrode 2. The wires of the electrodes plug in wrong.	Badly contact	Restore it Restore it



# CHIEN KANG SAFETY BOILER

## [18] The way to repair the breakdown shown on the screen

Phenomenon	Check Items	Cause To Breakdown	Dealing Method
Left No.2	Low water level	The water level in the boiler is lower than E3	Turn on the switch SWL to allow the WP to pump water to a high water level.
Left No.3	High water level	The water level in the boiler is higher than E1	(1) Open the drain valve and implement full discharge. After the water level drops to the low water level, turn the switch SW1 to re-water the feed pump to a high water level. (2) After the boiler is shut down daily, a full discharge should be implemented. To ensure the life of the boiler.
Left No.4	Water level control abnormal	There is no water in the boiler, but the fake water level signal caused by the blocked in the water level gauge.	Clean the water level gauge.
Left No.5	Insufficient water supply	(A) Water pump WP is pumped for more than 2 minutes. (B) The feed pump is idling and is not vented. (C) The water pipe is blocked. (D) Insufficient water supply.	(1) Open the feed pump exhaust valve, and after exhausting, close the exhaust valve. (2) Clearing the water supply pipe. (3) Supplement the water source.
Left No.6	Feed pump abnormal	(A)The water supply overload protector operates. (B)the motor phase loss. (C)The motor is abnormal.	(1) Reset the overload protector of the feed pump. (2) Check the three-phase power supply. (3) Check if the motor coil is burnt (4) Check if the motor shaft is stuck
Left No.7	Blowing motor abnormal	(A) Action of the blowing or the ignition pump or the oil pump overload protector. (B) The motor is out of phase. (C) The feed pump motor is abnormal.	(1) returning windmill or jet pump or oil Pump compensation overload protector. (2) Check the three-phase power supply. (3) Check if the motor coil is burnt.



# CHIEN KANG SAFETY BOILER

## [19] The way to repair the breakdown shown on the screen

Phenomenon	Check Items	Cause To Breakdown	Dealing Method
Right No. 1	Low oil temperature (Low Gas pressure)	(A) TS2 oil temperature and temperature control detects that the oil temperature is too low. (B) Oil heater failure. (C) Oil heater EGO TS3 malfunction. (D) Gas pressure switch detects that the gas is too low	(1) Set the TS2 oil temperature to 80 °C to 90 °C. (2) Set the correct oil temperature value. Normally, the heavy oil temperature TS3 is set at about 90 °C ~ 130 °C. (3) Check if the electric heating pipe is burnt. (4) Check the EGO of the oil heater. Is the setting of TS3 correct or burned? (5) Check if there is gas.
Right No. 6	Ignition fails	(A) The CDS eye is too dirty or malfunctioning. (B) The oil circuit is blocked and not exhausted. (C) The ignition rod is poor or dirty and the spark is too small. (D) Ignition transformer failure, no ignition. (E) Solenoid valve failure, no fuel injection, (F) The injector is blocked.	(1) Wipe the CDS electric eye regularly. (2) Open the exhaust valve, manually press the solenoid valve of the injection pump manually, and exhaust until the pipeline is full of oil. (3) Adjust the ignition rod and wipe it clean. (4) Check the ignition transformer for sparks or burns. (5) Replace the solenoid valve, (6) Check if the injector is blocked. Please inform or replace the injector.
Right No. 7	Burning without water inside	(A) The boiler temperature controller TS1 or the exhaust pipe temperature controller TH detects overtemperature. (B) The air burning caused by the fake water level. (C) The damper is poorly adjusted.	(1) Check the furnace body temperature controller TS1, the set value is usually set at about 180 °C. (2) Check that the set value of the exhaust pipe thermostat is around 280 °C. (3) Adjust the positioning point of the split door motor.



潔康企業有限公司  
CHIEN KANG ENTERPEISE CO.,LTD

彰化縣秀水鄉彰水路一段439號

NO.439,sec.1,Juangshuei RD.,Sioushuei Township,  
Changhua County 504,Taiwani

Tel:04-7681117FAX:04-7682817