



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



◆Boiler partial indication :



CK-600~2000kg
【heavy 、 diesel oil】



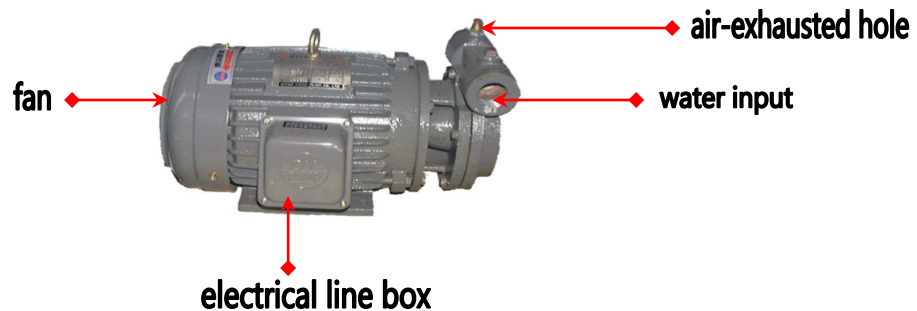
operation:

1. Air-exhausted from the pipes in operating:

【1】 Air-exhausted from the water pipes

Open the feed-water pump's air- exhausted valve, waiting the water flowing, the operating feed-water pump to proceed air- exhaustion thoroughly, then pump to proceed Air- exhaustion thoroughly, then close down the air - exhausted valve.

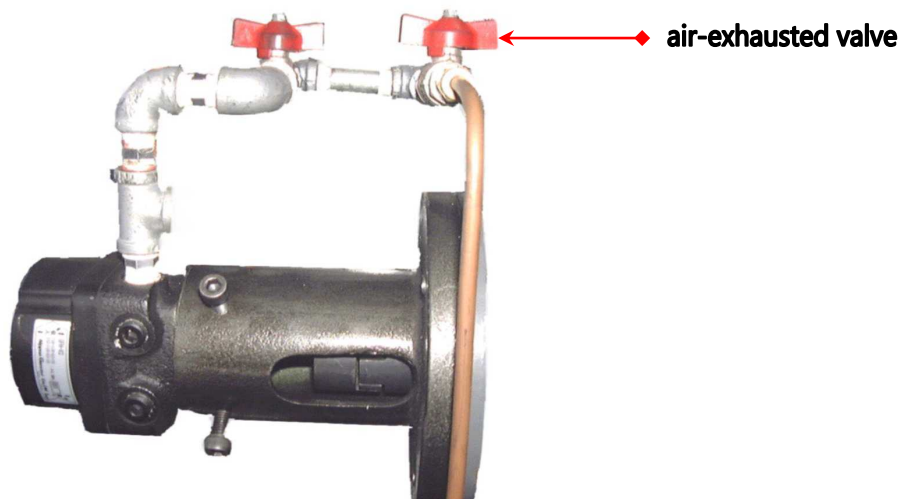
【At the mean time you have to check the pump's fan turning in the clock wise】



【2】 Air – exhaustion from the feed – oil copper pipe

Open the air – exhausted vable in the feed – oil copper pipe, and operating the feed – oil pump to proceed air - exhaustion , then close the valve down ◦

【After the action finished then able to proceed burning】





【3】 START :

- 3-1 Electrification input.
- 3-2 Open the running switch.
- 3-3 Confirm the water level from the water level gauge.
- 3-4 Oil heater runs when its light is on (Diesel oil system has no this item).
- 3-5 Open the burning switch, when water level reach the fix level, the blow will start to blow to Get rid of dirt.
- 3-6 After 10~16 seconds will ignite. It will enter low-burning situation then high-burning in 20 seconds it will automatically adjust its pressure in pressure limitation to maintain the vapor pressure.

【4】 Notes in running :

- 4-1 Check the running sound abnormal or not the blower, the feed-water Pump and injection pump.
- 4-2 Check the oil-pressure gauge to see if maintain in the fix limitation (heavy oil-20kg/cm², diesel oil 8~11kg/cm²).
- 4-3 If the chimney smokes.
- 4-4 If the chimney smokes.
- 4-5 Open up the main steam valve slowly one to two turns.

【5】 Stop :

- 5-1 Shut down the burning switch and the running switch.
- 5-2 Turn off the main power switch.
- 5-3 Turn off the feed water system, burning system, and main steam valve.

【6】 Preservation while stop for a long period :

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

◎ Here is the method to maintain the boiler cans :

- 6-1 Water-filed way : Get rid of O₃ the contains in the water , and keep the ph 11-12.
- 6-2 Dry way : keep boiler cans within in dry condition.

※ **Water-filed way is more convenient to practice, but if afraid of frozen should choose the dry way. If you want to stop boiler in a long period, please inform us to direct the correct way to take.**



【7】 Water management :

Transparent clean water seems no within it, but in fact there are many minerals contained.

Inclusion Ca, Boiler make a lot of water evaporate, so that will be much scale and dirt left in the can bottom. That would not only reduce the boiler's heat efficiency, but also cause the water pipes inflation or broke shorten its life. Therefore, it's very hard to observe it is too late to solve. so we must pay attention to it in daily life.

We CKSB have an eye on that, the water softener and chemical feeder affiliated in order to control the water.

7-1 Water Standard

In order to prevent the scale and corrosion, please maintain the water standard as follows :

Feed-water	PH(25°C) Hardness CaCO ₃ Oil Oxygen	7~8 2.5 mg/1 以下 under 5ppm near0 under 0.5 mg/1
Can water	PH(25°C) Electric Conduction Rate M – Hardness Ca CO ₃ P –Hardness Ca CO ₃ Cl ⁻ ion PO ₄ ³⁻	9~10.5 under 3300MS/cm 500~1000 mg/1 300~800 mg/1 400 mg/1 以下 40~80 mg/1

※ **When the feed-water's ion is over 40 mg/1, please draw the boiler – compound in the Soft- water-tank to prevent corrossions**

【8】 Auto water- Softener. Auto Chemical Feeder Pump :

8-1 Auto water softener

The device is signed to rid of Mg, Ca that would cause the water scale, and provide the soft water

That satisfies water hardness standard, the device can resin automatically to provide soft. But please check the procedure first.

8-1-1 Check the boiler-water before starting the boiler by using the hardness test medication to test boiler water form the boiler test-water-valve.

8-1-2 Everyday resupply the salt in the water softener's salt-tank for provision to resin. Besides, look the operation instruction to know the details.

8-2 Auto Chemical Feeder Pump

The device is used to adjust the can-water PH value and get rid of Oxygen, by continuously pour Into the boiler compound the device will pour de-scale, De-Oxygen into soft-water tank.

8-2-1 Check if boiler compound has the enough quantity to the everyday. The quantity can be adjusted depends on the degree of water softening.



8-2-2 If the compound reduce to less, please resupply soon.

8-2-3 Please fill with water if the compound tatty gone to prevent air inputting.

【9】 De-scale, De-oxygen chemicals (boiler compound)

9-1 please use the chemicals that our company pointed.

9-2 please discuss with us about the kind and the quantities.

9-3 please supply the compound by the directions when tank’s compound only 10 liters left.

【10】 Blow

The soft water has help for scale but it cannot to rid of impurities. That will have sediment and collection of impurities. Therefore we must do the “**Blow**”, to get rid of scale.

10-1 Intermittence emission

When the boiler works over 8 hours, the water condense in a fast rate. So we should do the intermitten emission (when the boiler still has steam pressure about 1~2 kg/cm²) everyday do 3 times.

10-1-1 Keep water while boiler no used.

10-1-2 Please notice us if has any need.

10-2 Fully emission

After a whole week work, please do the fully emission before start next week.

【11】 SCHEDULE CHECK AND ADJUSTIONS OF ALL PARTS

11-1 A table of schedule check

Period	
Every day	<ul style="list-style-type: none"> ★ Check the soft water Test the liquid electrodes Feed-water Pump On-off burner’s on-off switch ★ Check the low water level ★ Check the oil pressure ★ Check the pressure switch ★ Check auto feed-chemical pump
Once a week	<ul style="list-style-type: none"> ★ Clean the fuel filter ★ Clean the burner around ★ Clean the glass under CDS
Once a month	<ul style="list-style-type: none"> ★ Clean the feed-water filter ★ Clean the fuel injection pump ★ Blow off the water from the oil tank ★ Clean the water tank ★ Check the safety valves
Once per 3 month	<ul style="list-style-type: none"> ★ Water analysis ★ Check the quantity of the auto feed-chemical pump ★ Clean the liquid electrodes ★ Watch the scale from the can check hole ★ Clean the oil heater
Once a year	<ul style="list-style-type: none"> ★ Clean all ports of the boiler, check the actions, and compounds washing

◎ The standard above is normal, but checking and cleaning should increase if the fuel with too many Impurity or worse feed-water



©Final check should change depend on practically using °

【12】 Cleaning, checking, and adjusting of parts :

12-1 Around the burner

12-1-1 Take apart the screw nuts in the upper of the burner, and take the ignition electrodes (Take apart the plug of the CDS, electrodes, and electrical valve as well).

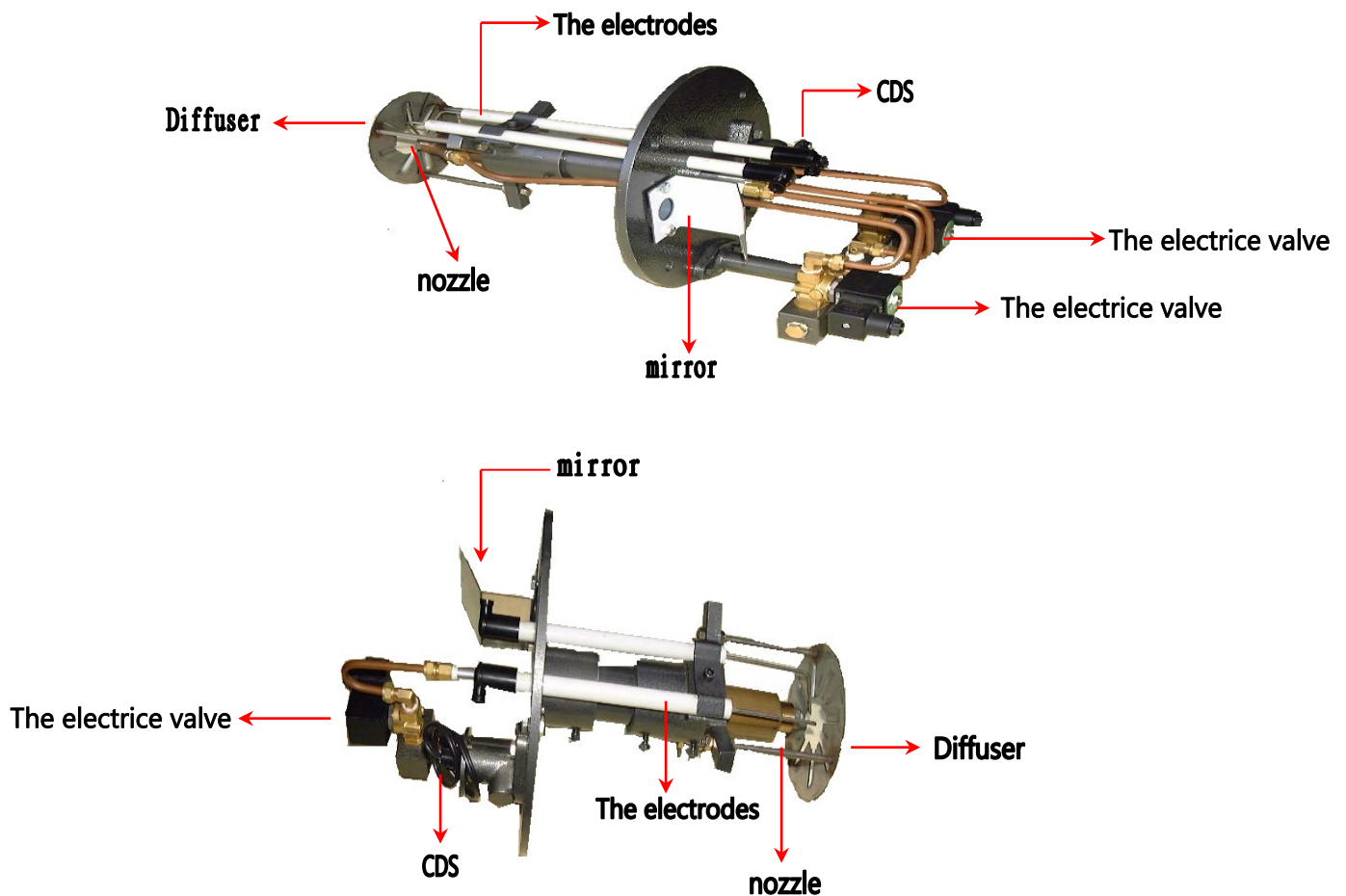
12-1-2 Use a piece of clothes to clean the electrodes, and sandpaper the carbon of the tips of the electrodes.

12-1-3 Clean the carbon of the rectification board.

12-1-4 Take apart the nozzle and clean the nozzle's filter.

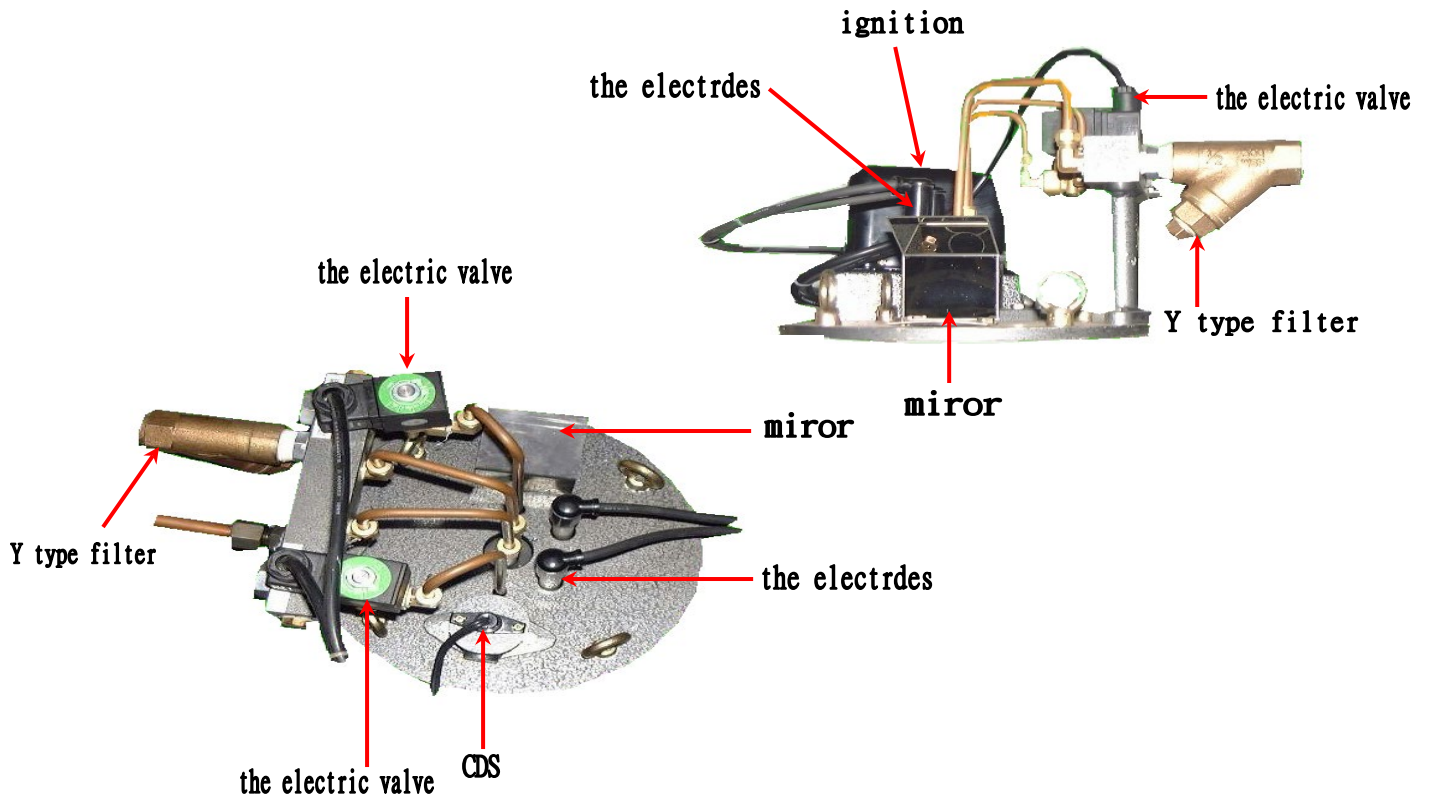
12-1-5 Adjust the sites of the nozzle, rectification board, and the tips of the electrodes.

12-1-6 Use a piece of tender clothes to clean the CDS glass and its protection grass.

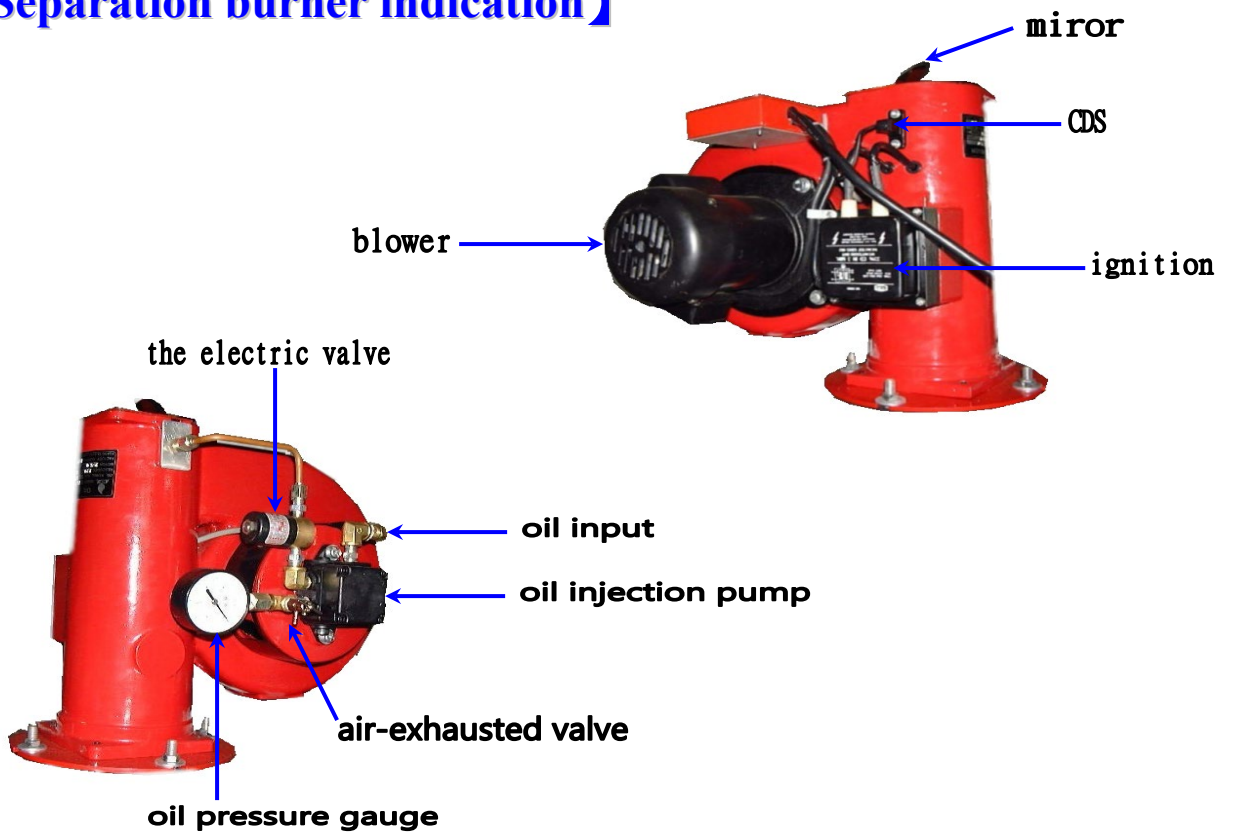




PIC A 【Diesel burner indication】



PIC B 【Separation burner indication】



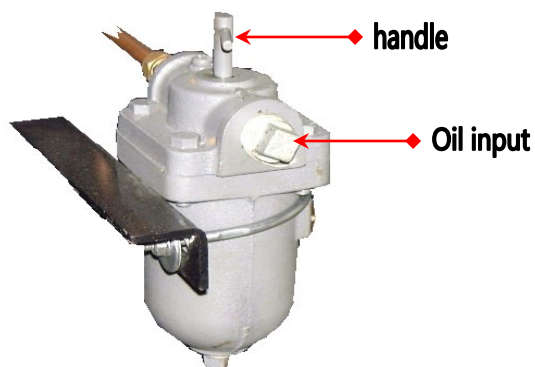


12-2 Clean the oil filter

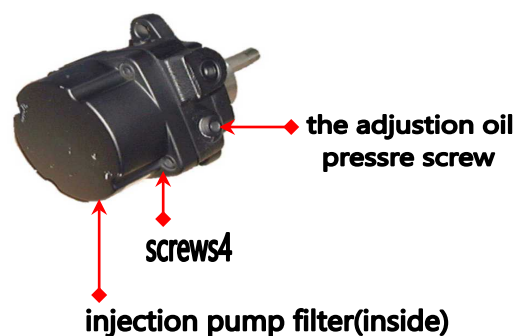
12-2-1 Take apart the feed-water filter's stopper (Y type) pull out the wire Netting and clean it.

12-2-2 Turn the handle of the feed-oil filter 6-7 times, then open the stopper in the bottom to rid of impurities.

12-2-3 Use a hexagonal wrench to take apart the 4 screws, take the filter and clean it.



PIC A 【fuel filter】



PIC B 【injection pump】

12-3-1 Take apart the cover of the compound tank, take filter and clean it.

12-3-2 Put the filter in horizontal way in the compound tank.



PIC B 【feed- compound system】



12-4 Dismantle and check port :

12-4-1 Take apart the cover of the check port in the can after the boiler water blow off at all and check inside.

12-4-2 If the water management is so proper that near no scale and corrosion it, If the thickness is over the 1mm or the mud over 10mm or the corrosion please communicate with us soon.

12-5 Tie the water level glass

12-5-1 Owing to the corrosion of the packing of the water level gauge make the steam leak out, cause the glass corrupted, So there are many chances to replace that. About a week after starting running, please make screws tie. If in vain, please exchange the packing and the glass.

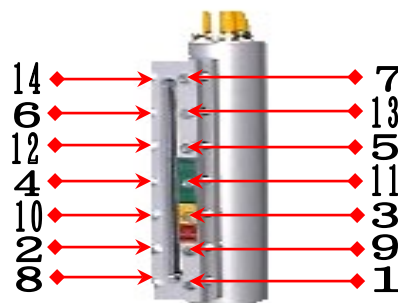
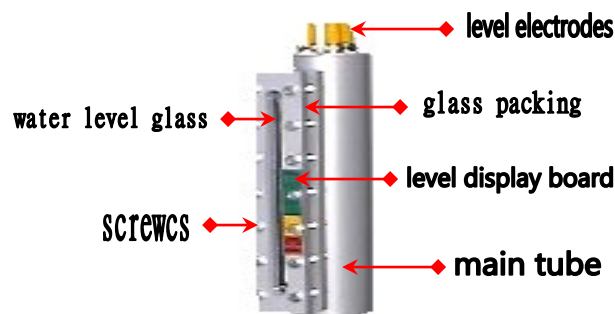
12-5-2 Steps to tie the screws please follow the turns by the pictures, screwing slowly to mostly tided, if it's really tided dot in vain. You have to exchange the packing and the glass.

12-5-3 Exchange the glass

12-5-3-1 Stop the running of boiler, after its pressure become 0kg/c m², blowing the water until you cannot see the water from the water level gauge.

12-5-3-2 Take apart the tied screws.

12-5-3-3 Cleaning the front of the packing, Replace the new glass and packing, screwing them by the



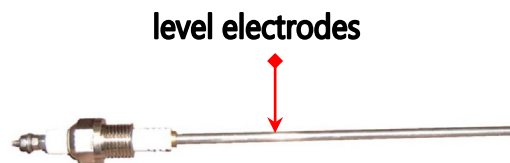
12-6 Adjust the water level

12-6-1 the water level is controlled by the electrodes. If the length of the electrodes changes the water level will not able to adjust . Unless the technician's indication do not change them at will.

12-6-2 Check the water level's action, clean their surface with sandpapers, and confirm their isolation.

12-6-3 Check the actions

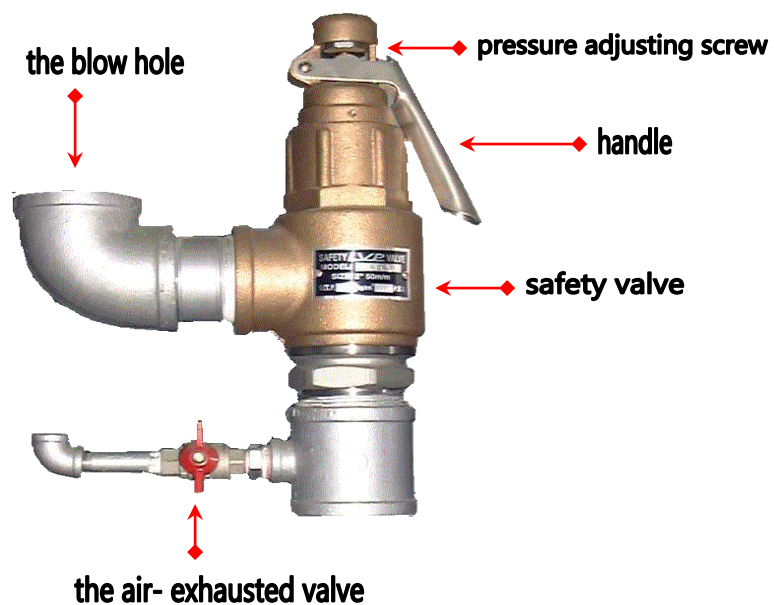
Water switch will not react if the water level electrode covered with scale. So the scale should be removed in a period. Besides , every electrode at random. At last, do not put the wrong in each electrodes.



12-7 Check the safety valve

Safety valves (PIC A) are able to exhaust a big amount of steam immediately when the pressure

In the boiler can get high abnormally caused the broken pressure switch.



PIC A 【Safety - valve】



12-8 Adjust the steam pressure regulator

The steam pressure regulator would has one or two :

12-8-1 Boiler burning on-off pressure switch

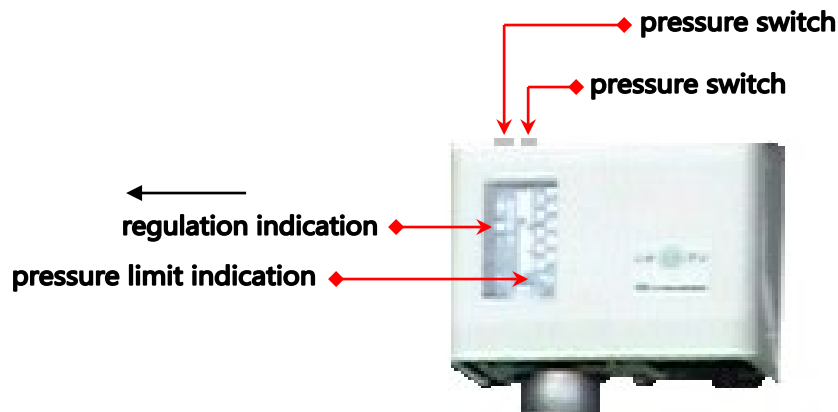
12-8-2 Boiler burning on-off pressure switch range is in 6-8 kg/cm², setting value is 7 kg/cm², and on -off is in 2kg/cm². Boiler high- low burning pressure regulator is in 5-7kg/cm², setting

value is 5 kg/cm², and on –off is in 1kg/cm², picture blew :

When steam pressure is over 5kg/ cm² the boiler would be in low-burning situation

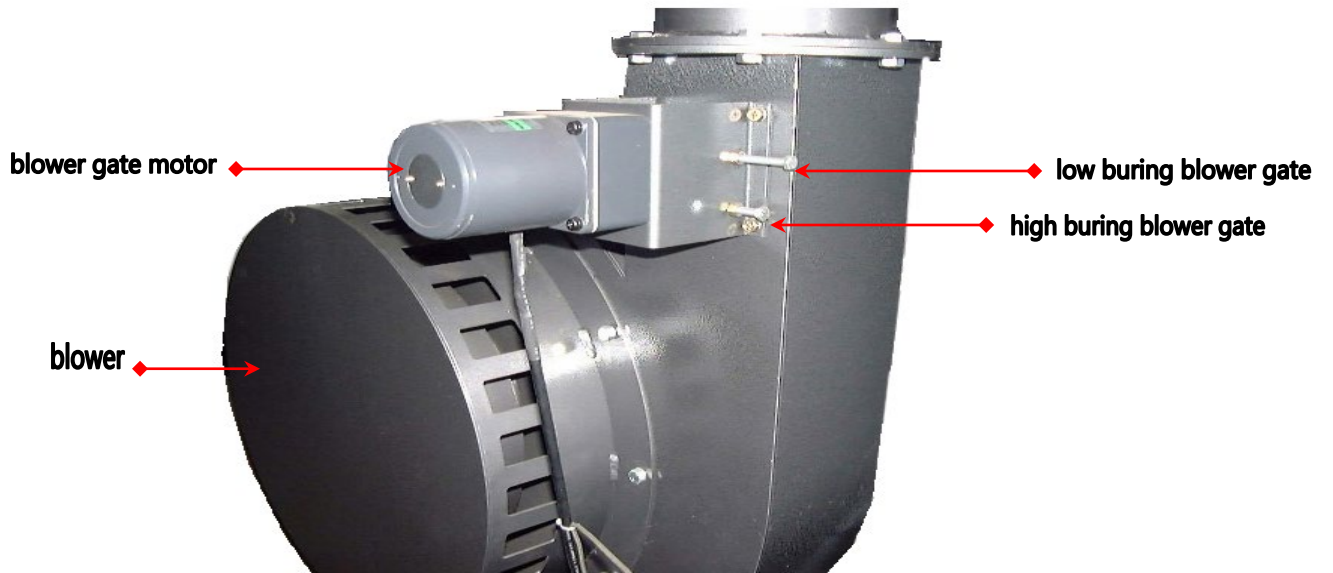
When steam pressure below 4kg/ cm² then switches to high – burning when steam

Pressure meets 7kg/ cm² then the boiler will not burn until the steam pressure below 6kg/ cm².





PIC A [Blower gate adjustor for two stage burner]



PIC B [Blower gate adjustor for one stage burner]





13. Deal with the breakdown.

13-1 (*) means "contact with us service technicians"

13-2 A table dealing with breakdown

Situation	Check Items	Cause To Breakdown	Dealing Method	
1. Can't burn	1. fuel any water in fuel ?		Confirm fuel enough get rid of water. Open the valves	
	2. is the fuel valves open ? Is filter OK ?		Clean it Contact us	
		1. fuel injection pump breakdown	Can't electrify or act slowly Renew one. (*)	
		2. A burner's electric valves breakdown	Return to regular site. Refer to 4-2	
		3. The electrodes set apart too far or to contact each other.	Rasp the tips to 60° conical.	
		5. There are oil and carbon on the electrodes.	Clean it carefully	
		7. The insulator of electrodes breaks.	Renew it.	
		8. plugs of the igniter loose.	Fix it	
		3. Nozzles.	Block	Clean it
		4. CDS	Carbon on it	Clean it
	5. The wire of CDS looses.		Put it in right way	
	6. NO situation above	CDS breakdown	Renew it. (*)	



Situation	Check Items	Cause To Breakdown	Dealing Method
2.Light up But extinguish Right now	1.Oil enough ? Water in it ? 2.The filter of the oil supply pipes. 3.Nozzles 4.CDS 5.The wire of the CDS loose 6.No situation above	Block Block Carbon on it	Supply the oil Get rid of water. Clean it Clean it Clean it Put it in right way (*)
3.Ignite slowly	1. Oil pressure 2. The power voltage. 3. The ignition electrodes 4. The air gate	Abnormal high or low. Low voltage. The site wrong.	Recover it Recover it Recover it Adjust it
4.Black smoke	1. The temperature Of the boiler room. 2. Oil pressure 3. The air gate 4.No situation above	Too high Too high Has moved Nozzle worse or Bad fuel quality.	Lower down under 40°C Lower down to the regular. Adjust to normal (*) Renew it
5.The burner stops sometimes.	The power voltage	Lower down	Fix it
6.White smoke	1. The high burning Electric valve can't Electrify. 2. The high burning Electrify. 3.Oil pressure 4.Nozzles.	The wire loose or break The valve blocks. Too low Block	Put it in right way Renew it. (*) Clean it Adjust it Clean it
7.Backfire	1. The power voltage 2. The ignition electrodes. 3. The length of chimney no enough	Lower down The site wrong	Fix it Adjust it Adding



13-3 The fuel injection pump and the oil pressure

Situation	Check Items	Cause To Breakdown	Dealing Method
1. The pump is noisy and oil pressure high.	Air in it ? The pump's filter block ? The site of the oil tank too low ? Is oil pressure increaser setting ?	Block.	Exhaust the air Clean it (*)
2. The Pump is working, but oil pressure can not rise.	The filter The oil pipe valves The oil pipe drops The oil pump drops No situation above	1. Air in it. 2. On open 3. 4. The pump seal worn. 5. The screw (adjust oil pressure) loosed. 6. The pump worn out.	Exhaust the air Open it Fix it Renew it (*) Adjust it Renew it (*)
3. Oil pressure too high.	The oil pipe	Block badly adjust oil pressure gauge breakdown	Clean it Adjust it Renew it (*)
4. The fuel injection pump can't run.	1. Fuses. 2. Only motor run. 3. Motor can't run. 4. No situation above.	The shaft-coupling breakdown. A little impurities block it. Protection relay breakdown	Renew it Renew it (*) Clean it (*) Renew it (*)



13-4 Feed-water and auto chemical feeder

Situation	Check Items	Cause To Breakdown	Dealing Method
1. The feed-water pump abnormal	1. The feed-water valves. 2. The feed-water filter. 3. The temperature of feed water too high 4. Air in it ? 5. The voltage of power normal ? 6. One –way valve 7. Overload relay 8. MS abnormal	Closed Block . Back flow.	Open them Clean it Arise the water tank Or add to a pressure increasing pump(*) Exhaust the air Renew it Renew it Reset Renew it.
2. The pump runs but water level can't rise			Refer to above
3. The pump can't 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 rum (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 electrodes 2. The wires of the electrodes plug in wrong.	Badly contact	Restore it Restore it



13-5 Auto water- softener

Please refer to” the instructions of the auto water softener”

13-5-1 The others:

Situation	Check Items	Cause To Breakdown	Dealing Method
1. The safety valve bursts out steam	The pipe of the pressure switch no situation above	Block The pressure switch settings badly	Clean it Adjust it or renew it
2. The abnormal On-off when burning	1. If can't ignite ? a. Can't ignite b. Only blowing and then stopping abnormally. 2. Fuses 3. The temperature of the boiler room. 4. All kinds of motors and the terminals screws of the power switch loose ? 5. The power voltage 6. Motors ability got problem ?	Breakdown. CDS bad Loose Too hot Loose Lower down The MC bad.	Refer to 13-2 “Can't burn” Renew it Screw it Lower it down Screw it Fix it Check the injection pump blower feed- water pump
3. Push “start” but no running	1. Low water level ?		Refer to 13-4 “feed-wafer pump”
4. Cannot start	1. Check all the security installations.		

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