



鼎益科技

Top-In Technology Co.,Ltd.

TPFT Boiler Operation Manual

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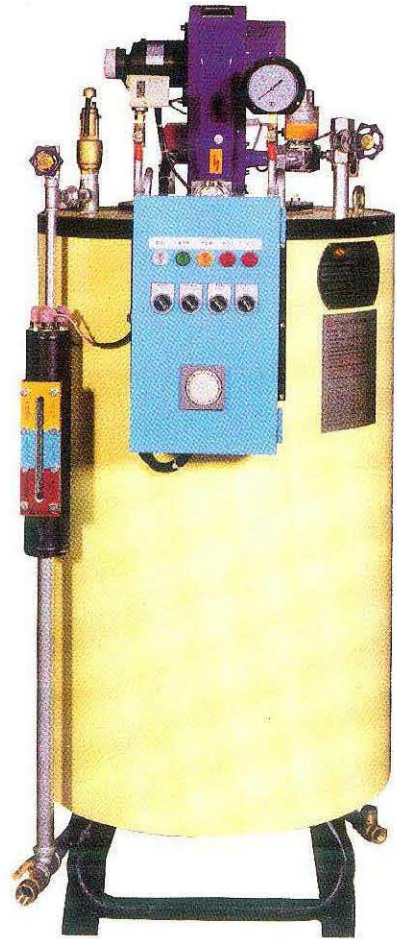
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500-2000 Kg/hr



150-350 Kg/hr

操作說明書

(TPFT-貫流式全自動蒸氣鍋爐150-2000Kg/hr)

Our company has put years of research and combine the best technologies possible from home and abroad, with our professional boiler manufacturing experience we developed the TPFT-BOILER. It is light weighted, compact and highly efficient. It only takes few minutes from start to creating steam.



(I) Boiler operating instructions : **(Valves and fittings position, please refer to the system diagram)**

1. Prepare for operation :

- (1) Check water supply, make sure the boiler water tank has enough soft water, open soft water supply valve.
- (2) Check gas tank has enough gas, open gas supply valve, adjust gas pressure relief valve till the gas micro- pressure gauge pointer pointing at approximately 300 mmaq. Please note that gas electromagnetic valve's maximum working pressure is 500 mmaq, if the pressure is over the electromagnetic valve will be lost function.
- (3) Check boiler body water release valve is closed.
- (4) Check air hole valve is closed.
- (5) Check steam outlet valve is closed.
- (6) Check boiler power supply and the voltage is matching and supply power.
- (7) Check boiler surroundings are safe, chimney cannot be close to flammables otherwise need to be isolated.
- (8) Check boiler chimney baffle is in 45o position or above, the actual position is according to on-site gas pressure.

Note: Prior to delivery our factory has adjust and set the boiler by our technicians, if the settings needs to be changed please contact us or read the operation manual carefully.

2. Operation Start (Prior to operation and power supply please check all the circuit control switches are in **OFF** position.)

- (1) Turn the power switch to ON position, power light on, release the water till the low water level light on, refill the water to normal water level and the burner will operation automatically.
- (2) Open feed water pump switch to Auto position, feed water pump light will be on, the water will be filled automatically and stop, water level can be see on the water level meter.

✳Boiler starting precautions

If it is not first time starting the boiler (There should be water left in the boiler and the water level should be above low water level) , please follow step 2 and turn the alarm switch to ON position, open boiler body water release valve to release water to the low water level alarm sounded, and close boiler body water release valve. If encounter power outage or power shutdown the above procedure needs to be conducted again otherwise the burner will not be able to operate.

- (3) Open burner switch to ON position to start burner, after the first air delivery conduct ignition, burner light on. if the fuel is not ignited the fuel valve will shut automatically and stop function, flameout light ON.

- (4) Turn the alarm switch to ON position, during operation if any abnormal conditions occur the alarm will sound the indicator light will be ON, it could be low water level or flame out indicator.

✳ Water Release Precautions:

When releasing boiler water please pay special attention to pressure gauge's pressure value, if there are no pressures indicates, please open the air valve above the water level meter to help with discharge rate, when the water level is fill till normal water level please close the air valve, on the other hand if there are pressure indicates than the air valve cannot be opened, if the pressure is more than 1.5 KG/CM^2 , the water release valve should open and close slowly (During high pressure water release, when the pressure is 3 KG/CM^2 or above), the water release valve cannot be open more than 30°)

- (5) When the pressure is rising above 3 KG/CM^2 , open the steam outlet valve slowly till full open and it do not need to be close again.
- (6) If need to take breaks during operation, the boiler do not need to be shutdown, only need to turn the burner switch to OFF position for the boiler to be in standby mode, to restart operation please turn the burner switch to ON position.
- (7) If flameout during combustion process, please open the control box, and press control box's internal combustion process's red (black) reset button for 40 to 50 seconds to restart burner.

3. Shutdown

- (1) Turn burner switch to OFF position, wait till the pressure to drop to 2 KG/CM^2 or below and open water release valve to 30° , release water till the low water level alarm sounded for 5 seconds and close water release valve, fill the water to its normal water level and turn the operation power till OFF position.
- (2) Turn the feed water pump and alarm to OFF position.
- (3) Turn OFF soft water supply valve.
- (4) Turn OFF gas supply valve.

4. General maintenance and precautions

- (1) Every week prior to restarting boiler, please release all boiler water once.
 - (2) Every week clean gas micro-pressure gauge and pressure gauge mirror and check it.
 - (3) Every week take out 5 mL of soft water tank's water, check the water softening quality.
 - (4) Every week fill industrial salt into salt barrel one time, and adjust softening machine timer.
 - (5) Clean up external part of boiler regularly.
- * (6) If boiler continuously operating for 4 to 6 hours, please conduct intermittent emissions, regardless of pressure please open the releasing valve slightly to release water, do not release the water till low water level. The recommend releasing time will be 5~10 seconds.

5. Feed water and boiler water management

It is harder to find out if the boiler is been damaged by feed water quality, and it is easier to see if the burner or auto control is not working. The untreated water or mistreated feed water will cause harm to boiler slowly, the water scale can be formed, and it can lead to corrosion, carry over ... etc. These will lower the heat efficiency and even over heat expansion, pipe rupture and cause serious boiler accident and the operation needs to be stopped. To avoid these things happen is boiler operator's duty; please look into the following information carefully.

(1) The feed water and boiler water standard

The raw water needs to be treated to the following standard

Feed water standard: Hardness needs to below 2.0 ppm (0.11Dh)

PH needs to be 7.0 ~ 9.0

Suitable amount of boiler water needs to be released and the release time and amount needs to be calculated.

Boiler water standard: A whole dissolved solids need to be below 2.000 ppm.

PH needs to be 11.0~11.8

6. Automatic water soften system

The boiler feed water is originally from tap water or underground water, these raw water contains calcium and magnesium compounds which will cause water scales to be formed to remove these compounds the water soften system is required. The auto water softener has salts and resin and with necessary boiler treating agents the water will be soft and safe for boiler to use.

7. TP-DWCA- Deoxidizing and water cleaning agent

Description: This product is mixture of water cleaning agent and deoxidizing agent, it has both of their functions to protect the boiler. This will prevent the calcium & magnesium to form into solid state and with water discharge it will be released from the boiler, and can also remove dissolved oxygen from the water to prevent corrosion.

8. Release boiler water

Every day before boiler start operating, release all the boiler water so all the precipitate dirt can be released, during boiler operating the A whole dissolved solids will be too concentrated and cause saponification or carry over, low water alarm could be covered by water scale and the alarm can sound, the PH level could rise all of these could happen, to open discharge valve to conduct continuous emissions for 8~10% of the boiler water is most appropriate action to conduct.

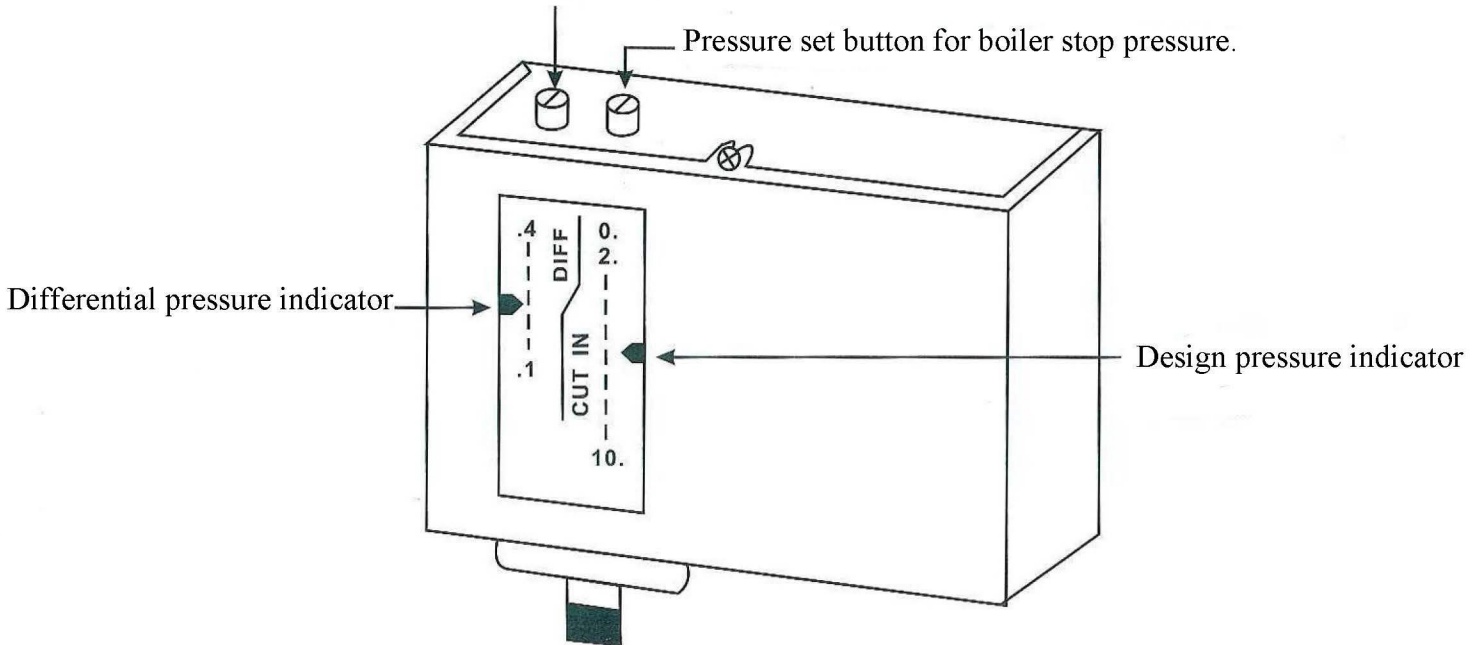
9. Malfunction cause and solution

- (1) Control supply power lost function:
Cause: Fuse inside control box blows.
Solution: Change fuse.
- (2) Feed water pump cannot start:
Cause: Feed water solenoid valve overloaded or short circuit on water level control electrode bar.
Solution: Open control box and press reset latch switch.
- (3) Burner start repeats, flameout, or cannot be started
Cause: Insufficient gas pressure or flow is unstable.
Solution: Check gas supply, and visually inspects gas micro pressure gauge to check it the value is too low, inspect carefully to check it the gas needs to be refill or adjust.

(II) Pressure controller and furnace overheating controller diagram

1. Pressure controller

Pressure gap control button, adjust the gap with design pressure is the starting pressure. (If the design pressure is 7kg / cm² the pressure gap is set to be 2kg / cm² then the starting pressure will be 7-2 = 5kg / cm²)



Note: (1) The Maximum set pressure cannot be over boiler' maximum pressure.

(2) Pressure set point is subject to pressure gauge pointer.

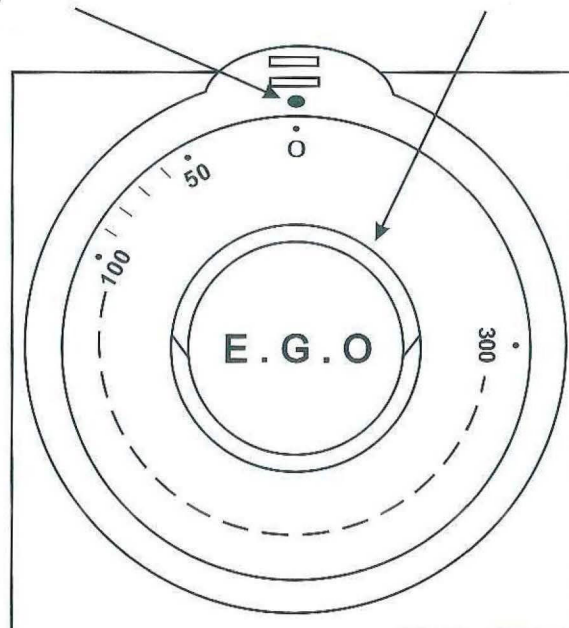
(3) 500 KG/HR or above boilers has two pressure controllers, one is for high combustion switch the other one is for starting and stopping (Low combustion)

2. Furnace overheating controller (E.G.O)

Temperature setting reference

Overheating setting knob

(1) Design 230 °C



Note : Boiler overheating set point cannot be lower than maximum pressure's temperature.

III. Water Softener Drawing 220 VAC / 60HZ

Procedure for control head after installation

1. Adjust regeneration time

Put power supply to control head the regeneration time will take 110 mins, to avoid regeneration time clashed with water using time, please set the regenerate time ahead of water using time, if the power system shut down than the regeneration time needs to be reset.

Note: When adjusting time please pull up time adjustment gear wheel, when put down all the gear needs to be down. Pay special attention to sec latch.

2. Adjust regeneration Day

Push down the regeneration day's iron sheet buttons to set the regeneration day, for example if today is Monday and water softener needs to regenerate every two days, than Monday, Wednesday and Friday's button should be pushed.

3. Release air in the resin barrel

During water testing insert a flat tip screwdriver and turn the black button counterclockwise to Brine / Slow Rinse to release the resin barrel's air, wait for the water outlet port has water come out and turn to conditioned water.

*** During regeneration the feed water pressure needs to be 1.5KG~2KG

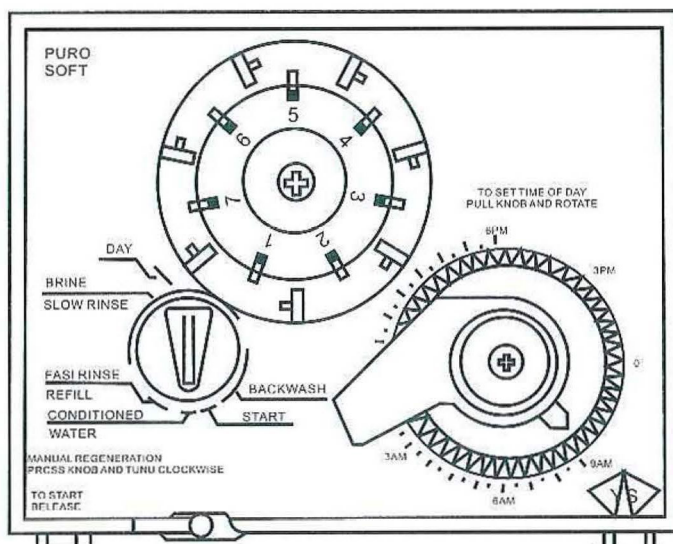
*** When use for the first time, please add 1/3 water to salt barrel.

4. Test water softening degree: take 5 CC as sample water, add two drops of solution

Blue: It is completely softened and ready to use.

Purple: It is not completely softened (It's ok to use)

*RED: It is not softened (Need to conduct regeneration immediately) Please inform us to solve this situation.

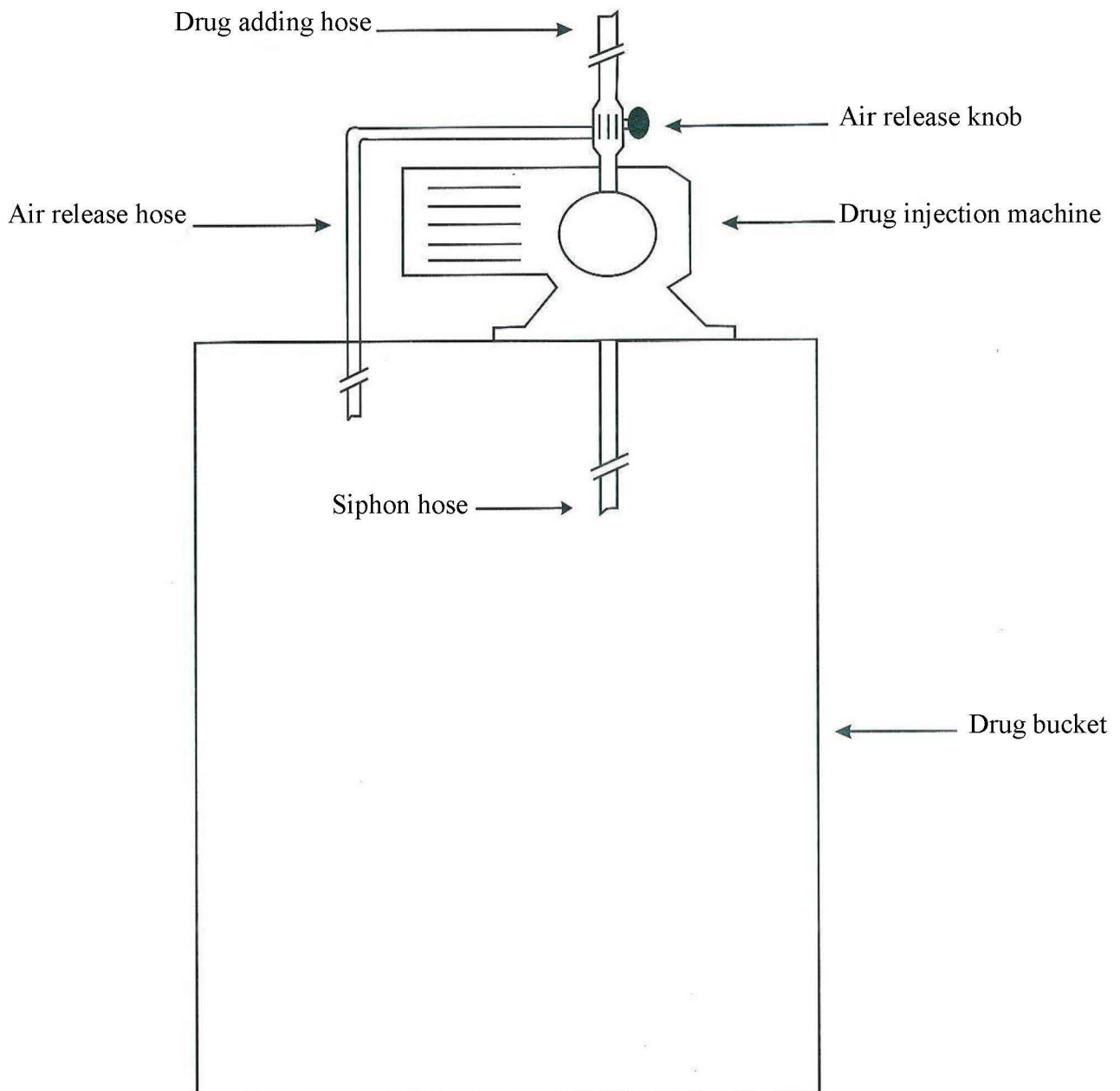


Note: If raw water go through the water softener and after the treatment the water softening degree cannot reach the boiler water standard, then check the water softener operates functionally or the resin needs to be renewed.

- (1) Conditioned Water
- (2) Backwash
- (3) Brine
- (4) Slow Rinse
- (5) Fast Rinse / Refill

IV. Drug injection machine diagram

1. Drug bucket liquid level cannot be less than 3 cm, it may cause the machine to suck air and cause empty operation and lost function.
2. During first operation please use feed water pump to release air, prior to action the air release knob needs to be loosened, and put hand into drug bucket to shake the siphon hose to help with air releasing, when the solution is out of the air release hose the air release knob can be tightened, and the solution will go from drug adding hose to soft water tank.
3. The injection amount is adjusted by the scale knob behind the drug injection machine from scale of 0 to 100.





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