

SUBJECT   CONTINUOUS FIRING  
          In Hydrogen Atmosphere

SUPERSEDED DATE

## 1. EQUIPMENT

Continuous Hydrogen Furnace-Hayes Type LAC-210.

## 2. OPERATION INSTRUCTIONS

a. Cold Start-Up (All valves closed and power off)

- (1) Open wide 6 ft. 6 in. water valve.
- (2) Open wide 6 ft. 6 in. low pressure air valve. Check to assure that thermocouple air-clean device is operating. Air supply should exhaust at rate of three (3) bubbles per second.
- (3) Close main power switch.
- (4) Close belt drive motor switch.
- (5) Set automatic current input regulator (automatic temperature control) toggle switch in "Off" position.
- (6) Set Brown Potentiometer Temperature Control at 800°C.
- (7) Set Wheelco Limitrol at 810°C.
- (8) Open Wheelco door and tip mercury switch down. The furnace will now start to heat up.

NOTE: Do not turn on hydrogen until furnace temperature reaches 800°C.

- (9) Open 6 ft. 6 in. hydrogen valve slowly until wide open. Hydrogen entering firing chamber will now ignite and burn out all the oxygen. Flame may be seen through sight glass at load end of furnace.
- (10) Adjust hydrogen flow gauge inlet valve until a flow of 200 cu. ft. per hr. is obtained.

NOTE: Never open inspection door at load end of furnace while furnace contains hydrogen atmosphere.

- (11) Allow furnace to purge with hydrogen at 200 cu. ft. per hr. for at least one-half hour.
- (12) Reduce hydrogen flow to desired rate, 90 to 100 cu. ft. per hr., by again adjusting hydrogen flow gauge inlet valve.
- (13) Set Brown Potentiometer at desired work temperature, keeping Wheelco Limitrol about 10 deg. above Brown Controller setting.
- (14) Set automatic current input regulator (auto. temp. control) toggle switch to "On" position and adjust per cent input as found necessary for even temperature regulation.
- (15) Adjust belt drive to desired speed.
- (16) Keep doors at each end of furnace as low as possible, consistent with work going through.

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## 2. OPERATION INSTRUCTIONS (Cont'd)

b. Idling (Over night or weekends)

- (1) Set Brown Potentiometer to 500°C.
- (2) Set Wheelco Limitrol to 510°C.
- (3) Set automatic input regulator (auto. temp. control) toggle switch in "Off" position.
- (4) Adjust hydrogen flow gauge to 70 cu. ft. per hr.

c. Idling Start-Up (Bringing back to operating conditions)

- (1) Set Wheelco Limitrol 10 deg. above desired temperature.
- (2) Set Brown Potentiometer to desired control temperature.
- (3) Set automatic input regulator (auto. temp. control) toggle switch on "On" position.
- (4) Adjust hydrogen flow gauge to desired rate of 90 to 100 cu. ft. per hr.

d. Complete Shut-Down

- (1) Close hydrogen 6 ft. 6 in. valve.
- (2) Open main power switch.
- (3) Leave 6 ft. 6 in. water and low pressure air valves open until furnace has cooled down.

NOTE: Use of Nitrogen

Nitrogen 6 ft. 6 in. valve should be opened IN EMERGENCY ONLY.

Close hydrogen valve and open nitrogen valve--

- (1) in case of hydrogen failure.
- (2) In case hydrogen should catch fire at load or unload end of furnace.

## 3. FIRING SCHEDULES

<u>Pointer Setting</u>	<u>Time in Heat Zone (minutes)</u>	<u>Conveyor Belt Rate of Speed (Inches/minute)</u>
1	2.5	14.4
2	3.3	10.9
3	4.4	8.2
4	6.0	6.0
5	8.6	4.2
6	11.6	3.1
7	14.6	2.5

STANDARDIZING SECTION  
ENGINEERING DEPT.

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