Thank you for choosing Geil Kilns

You have purchased the finest Ceramic Kiln on the market. Geil Kilns requests you fill out this registration form provided, so we may assure you of ongoing service over your warranty period. Your registration will be on file with Geil Kilns. In the event of any warranty claim, please refer to your Model No. and Serial No.

GEIL KILNS

WARRANTY REGISTRATION

IMPORTANT!! IMPORTANT!! IMPORTANT!! IMPORTANT!!
PLEASE FILL OUT AND RETURN WITHIN THE NEXT 10 DAYS

(X) Mr. ( ) Mrs. ( ) Ms. ( ) Miss

Person in charge of kiln operation.

First Name | **Initial** | **Last Name**

James | T | Yoder

Company Name or Institution

Art Centrics

Location where kiln is installed

Street

1452 W. Orchid Ln

City | **State** | **ZIP Code**

Fold Chandler | AZ | 85224 Fold

Phone

480 209 6965

Date of Purchase: Month 02 | Day 15 | Year 05

Model No. 802 Mid

Serial No. 802052521H

If purchased from dealer

Dealer Name

Geil

Date of birth of person Whose name appears above: Month 10 | Year 1965

Please indicate type of firing you will be doing:

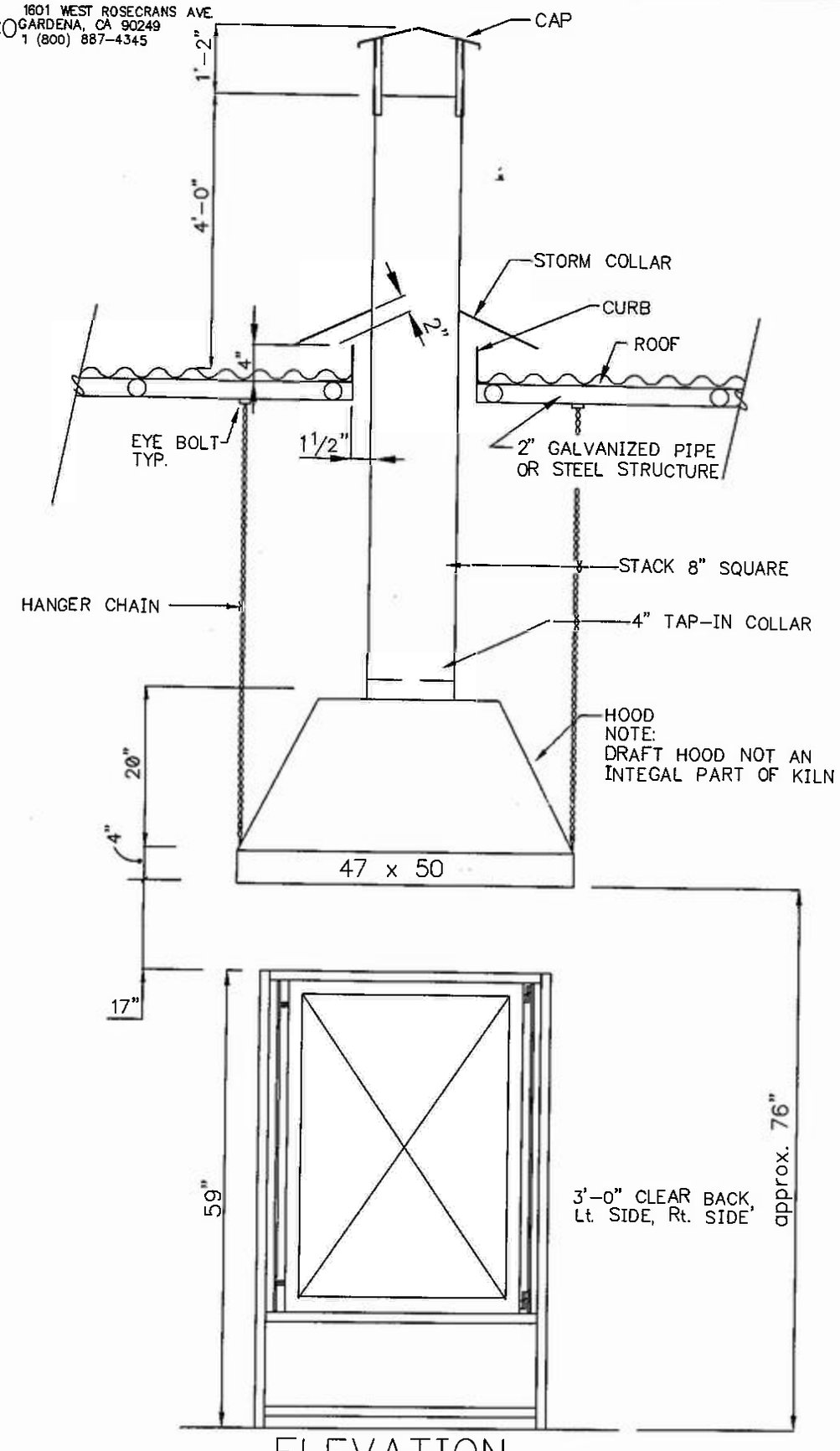
- [X] Cone 10 Oxidation/Reduction
- [ ] Cone 5 Oxidation/Reduction
- [ ] Cone 6 Oxidation
- [ ] Other please indicate: _____

Geil Kilns
7201 CLAY AVE.
HUNTINGTON BEACH, CA 92648
(800) 887-4345

wrntform.msw

GEIL KILNS CO

1601 WEST ROSECRANS AVE.
GARDENA, CA 90249
1 (800) 887-4345



ELEVATION

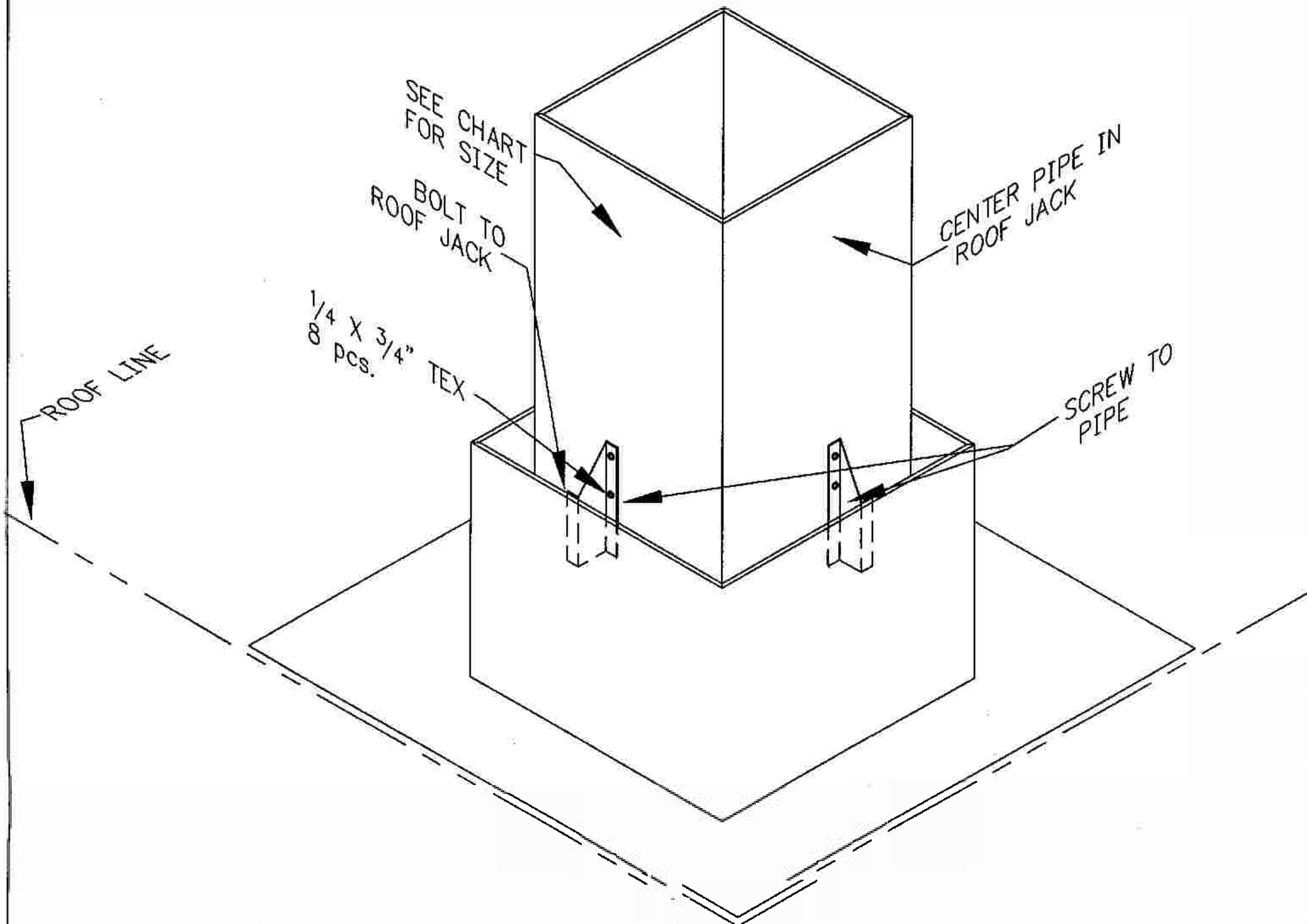
NON-COMBUSTABLE

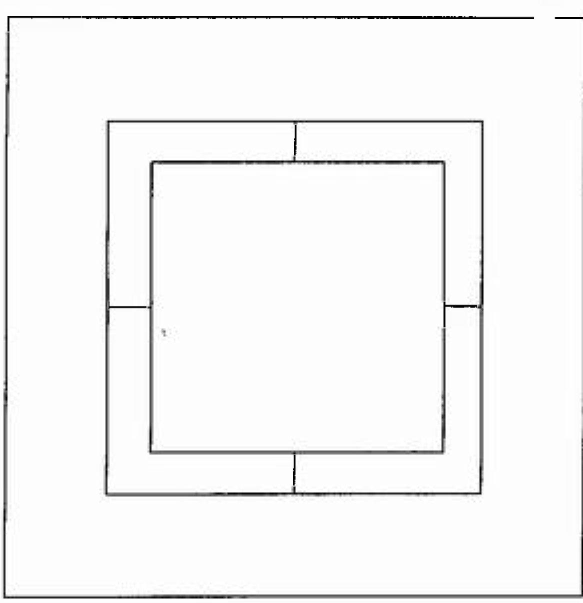
APPROVALS	DATE	802 M.D. KILN	
DRAWN VIDAL V.	JUN93	VENTING DIAGRAM	
CHECKED		DWG. NO. 802HBYS4	REV. 0
ISSUED		SHEET OF	

802HBYS4.DWG

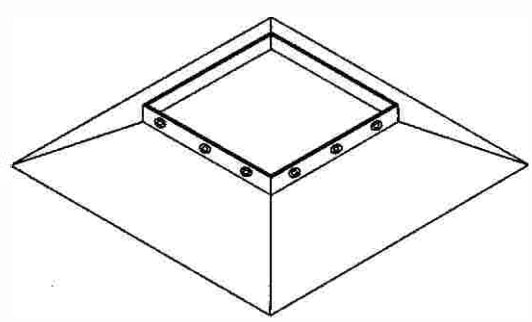
Apr 11, 1999 - 16:56:13

802HBYS4 DWG NO. SH REV. 0





STORM CALLAR DETAIL



NON-COMBUSTIBLE

TOP VIEW

-1/4 X 3/4" TEX 8pcs.

DRAWN	VIDAL V.	DEC89
CHECKED		
ISSUED		

802 SQUARE

ROOF JACK LAYOUT

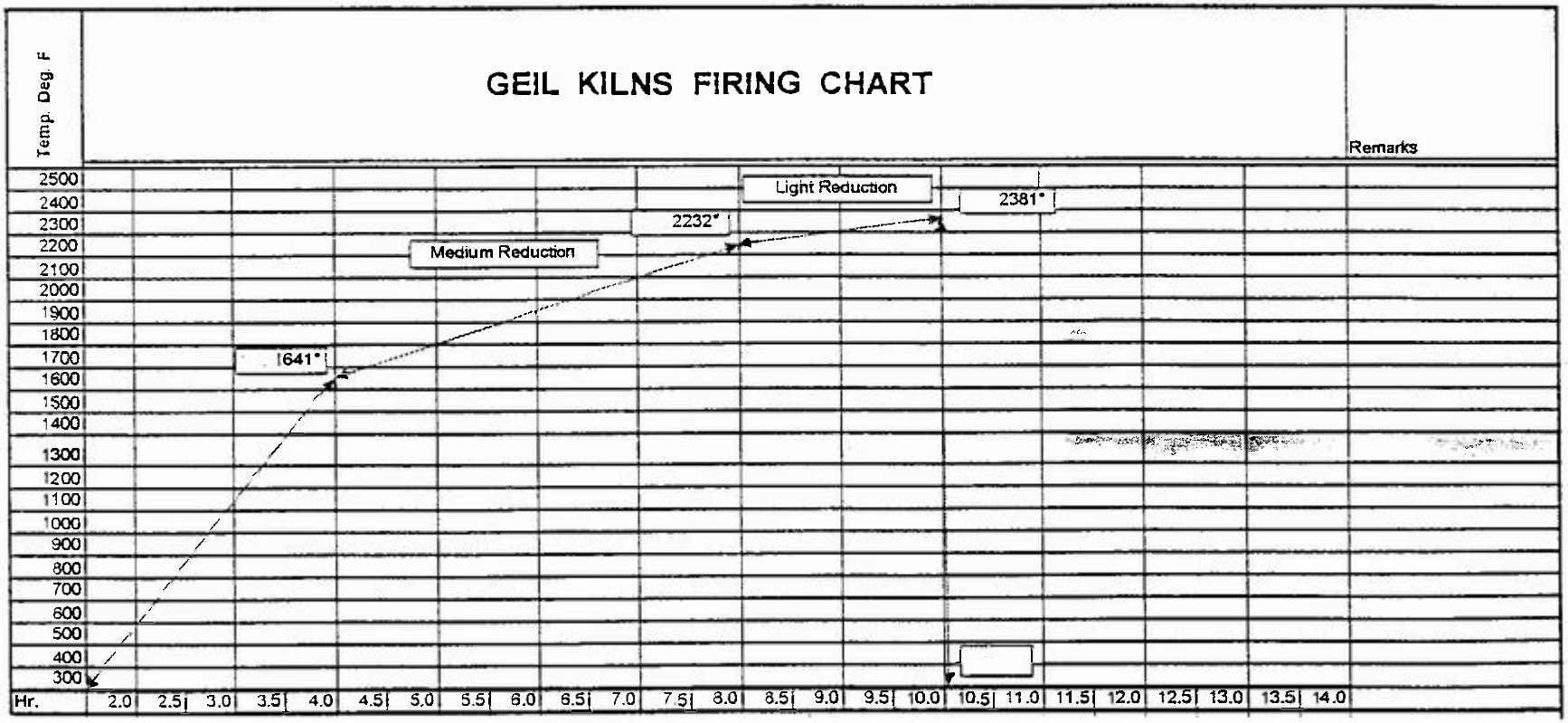
DWG. NO. ROOF JACK SQR802 REV. 0

SHEET OF

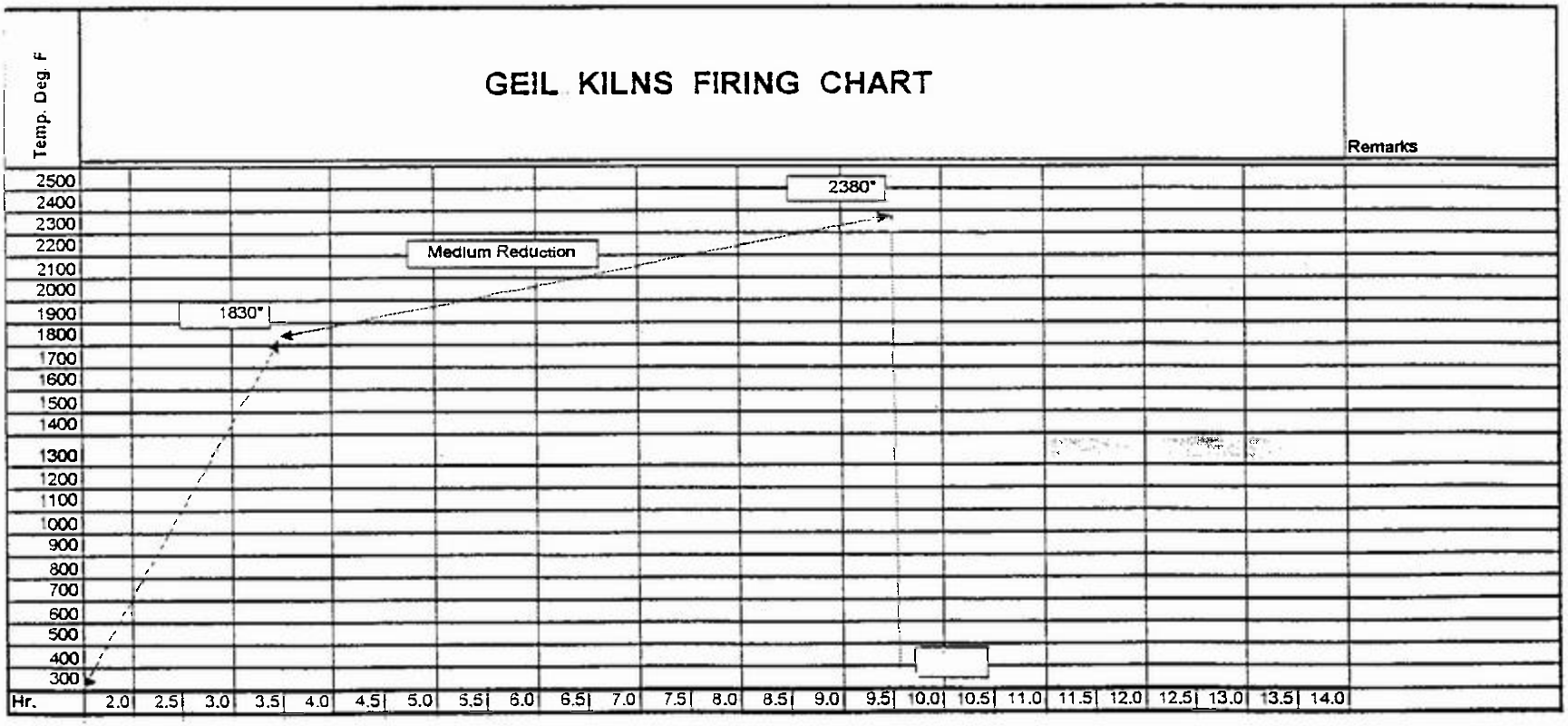
ROOF JACK SQR802.DWG

DWG. NO. ROOF JACK SQR802 SH REV. 0

Cone 10 Reduction (Porcelain Copper Red)



Cone 10 Reduction Stoneware



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200														
100														
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
GAS PRESSUR														
DAMPER SETTING														

FIRING SCHEDULE: GEIL DOWNDRAFT KILN

MODEL NO. _____ DATE _____ CONE _____ REDUCTION ____ NEUTRAL ____

DURATION _____ START TIME _____ END TIME _____

REMARKS:

REDUCTION FIRING

REDUCTION FIRING

Reduction firing is the lack of oxygen in the fuel air mixture in the kiln.

Reduction firing is used to produce special effects from certain glazes. The glazes mostly affected are those containing metallic oxides such as iron and copper.

To produce reduction atmosphere, simply cut back the air intake to the kiln chamber by means of the flue damper. Or if the kiln is firing in a neutral atmosphere and the gas is increased, the kiln will go into reduction.

Remember the damper controls both the primary and the secondary air entering the kiln. The difference from neutral to a reduction atmosphere is only about 1/8" movement of the damper blade.

The amount of reduction is measured by the size of flame burning out of the top and bottom peep holes. The larger the flame, the heavier the reduction.

See the two basic schedules back pages.

FIRING THEORY

The kiln will not fire on its own, this factor is important to remember. It must be maintained and adjusted throughout the firing cycle. For a smooth and even temperature rise, two adjustments are required. (1) The main gas valve that regulates the flow of gas into the burners and (2) The flue damper that regulates the exhaust and flow of hot gases throughout the kiln chamber. Both factors work proportionately with one another. The amount of GAS/AIR mixture and the exhaust flue work opening work together to form the atmosphere within the kiln chamber. Air enters the kiln in two places. The first is known as PRIMARY AIR, entering through the air shutter openings at the base of the burner. The amount of PRIMARY AIR can be controlled by means of air shutter adjustment and by the flue. The SECONDARY AIR source enters the kiln around the burner flame tube, controlled by the flue damper only. Usually, the damper is the only adjustment required for the PRIMARY and SECONDARY AIR during the firing. The air shutters are generally set at the beginning of the cycle.

To increase the temperature in the kiln, we must obviously burn more fuel, and burning more fuel consumes more air. To accommodate this change we must adjust the damper accordingly. The perfect atmosphere for the most efficient heat rise is the correct mixture of gas and air. Optimal performance is achieved with good circulation. Thus, as the gas is increased, the damper will also need to be opened proportionately. On the other hand, if a reduction atmosphere is desired, you may purposely increase gas pressure and/or close the damper to form a REDUCTION atmosphere, which is simply a disproportionate mixture of more gas to air.

In a NEUTRAL atmosphere, there is a complete burning of fuel, thus producing a clean atmosphere. To obtain a NEUTRAL atmosphere, without over-oxidizing, one must start with some form of REDUCTION or noticeable overabundance of fuel. An overabundance of fuel can easily be recognized at low temperature by the noticeable smell produced by raw gas escaping from the kiln or a sluggish sound produced by the burners. At high temperatures, this excess gas escaping from the open peep holes or the flue will ignite as it reaches the outside atmosphere, thus producing a flame. A simple indication of the intensity of the reduction is the size of the flame. The larger the flame, the greater the reduction, likewise, at low temperatures, the stronger the smell, the heavier the reduction.

Once the reduction atmosphere is noticed, simply open the damper 1/8-1/4" at a time all noticeable signs of reduction have disappeared.

NOTE: There should be an approximate 30 second delay between each 1/8-1/4" increment allowing the atmosphere in the kiln to stabilize before each subsequent setting.

Over-oxidizing is one of the most frequent causes of uneven heat distribution in the kiln, in that cool air is being drawn directly from the burning ports to the flue opening, producing a cooling effect at the bottom of the kiln.

The kiln is always started at the lowest gas pressure possible. Thermal shock will break ware if the kiln is fired too rapidly. Therefore caution must be taken when increasing pressure over 1" in brick models and ½" in fiber models at any one time. The flue damper is extremely sensitive. A 1/8 inch movement of the damper may mean the difference between a NEUTRAL and REDUCTION atmosphere. Thus, care should be taken to move the damper in small increments only.

The firing time will vary for each kiln. Many variables affect a firing including geographic location, weather, clay bodies, ect. You must learn your own kiln! The STEP-BY-STEP firing schedule provided will help you with the first few firings. After you have learned the kiln you may want to experiment with your own firing schedules.

Your first firing should be a bisque firing to break in the kiln. (Fiber kilns do not require this initial break in) The kiln should be candled all night and fired very slowly. Follow bisque firing steps of only increasing gas pressure ½" per hour for the entire bisque firing AND DO NOT EXCEED. The cooling off period should be from 12-20 hours. The kiln door may be opened at 350 deg. F or lower.

Due to thermal expansion and contraction of firebrick, cracking of bricks may be noticed. This is a normal occurrence in brick kilns.

REDUCTION ATMOSPHERE

A reduction atmosphere simply means there is an absence or lack of sufficient oxygen to burn the fuel completely. This atmosphere is obtained by closing off some air which enters the kiln chamber. At temperatures above 2000 degrees F reduction is quite apparent. A flame will appear out of the top and bottom peepholes and possibly the flue. The larger the flame, the heavier the reduction. A Medium Reduction is all that is needed for Copper Red Glaze (use the Firing Charts on the following pages). To check for Medium Reduction below 2000 F, use a white piece of paper; bring the paper slowly up to the BOTTOM peephole, if the paper shows browning or scorching approximately 1" from the hole you have a Medium Reduction. Above 2000 F you will see a small1" flame burning out of the BOTTOM peephole, this indicates a Medium Reduction.

CAUTION: Always wear dark safety glasses when looking through the peepholes.

STEP-BY-STEP REDUCTION ATMOSPHERE

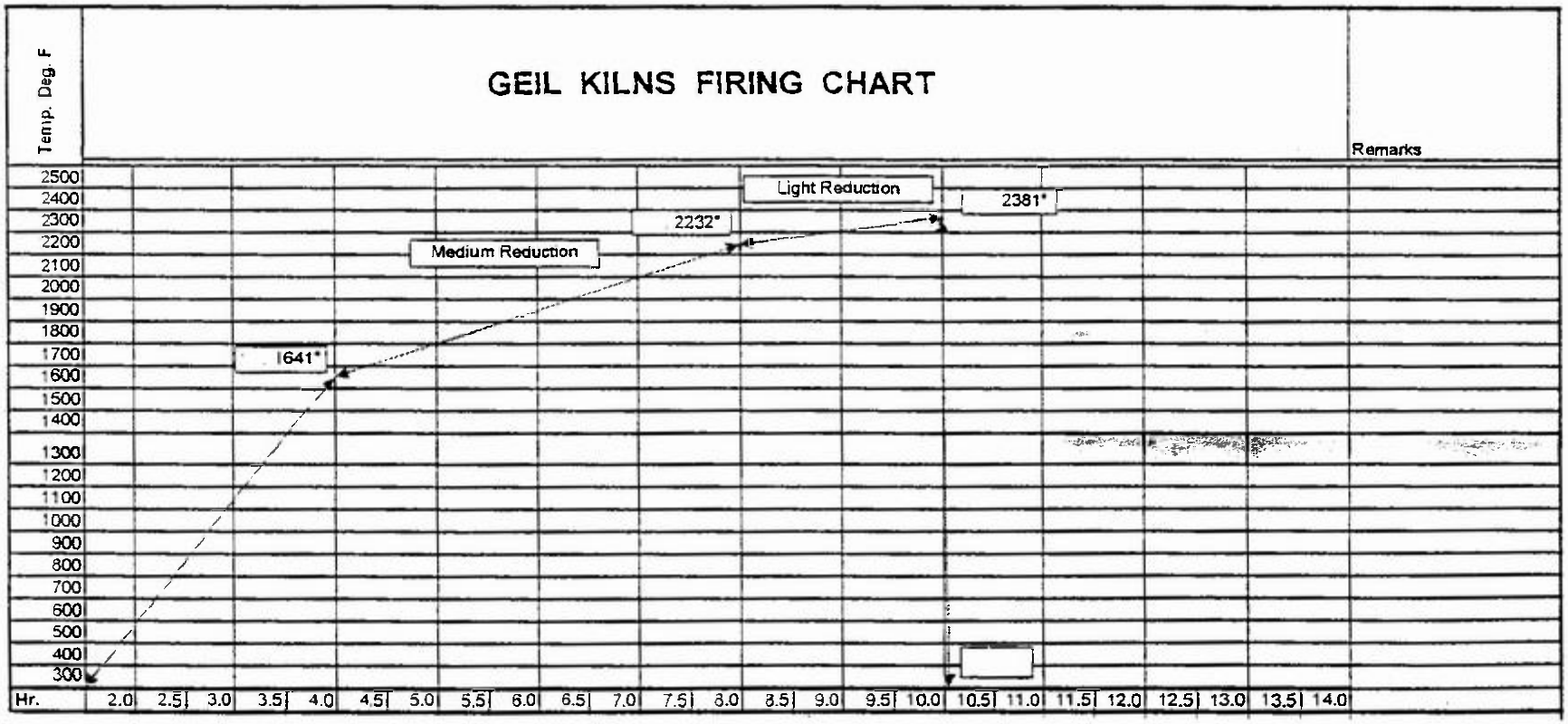
1. Remove Bottom peephole plug.

2. Close flue 1/8". Wait for 30 seconds. Use your paper to detect Reduction below 2000 F. above 2000 F a 1" flame will appear. If No reduction atmosphere exists, Close the flue by 1/8" increments until you detect Reduction. Remember to wait 30 seconds between each damper change.

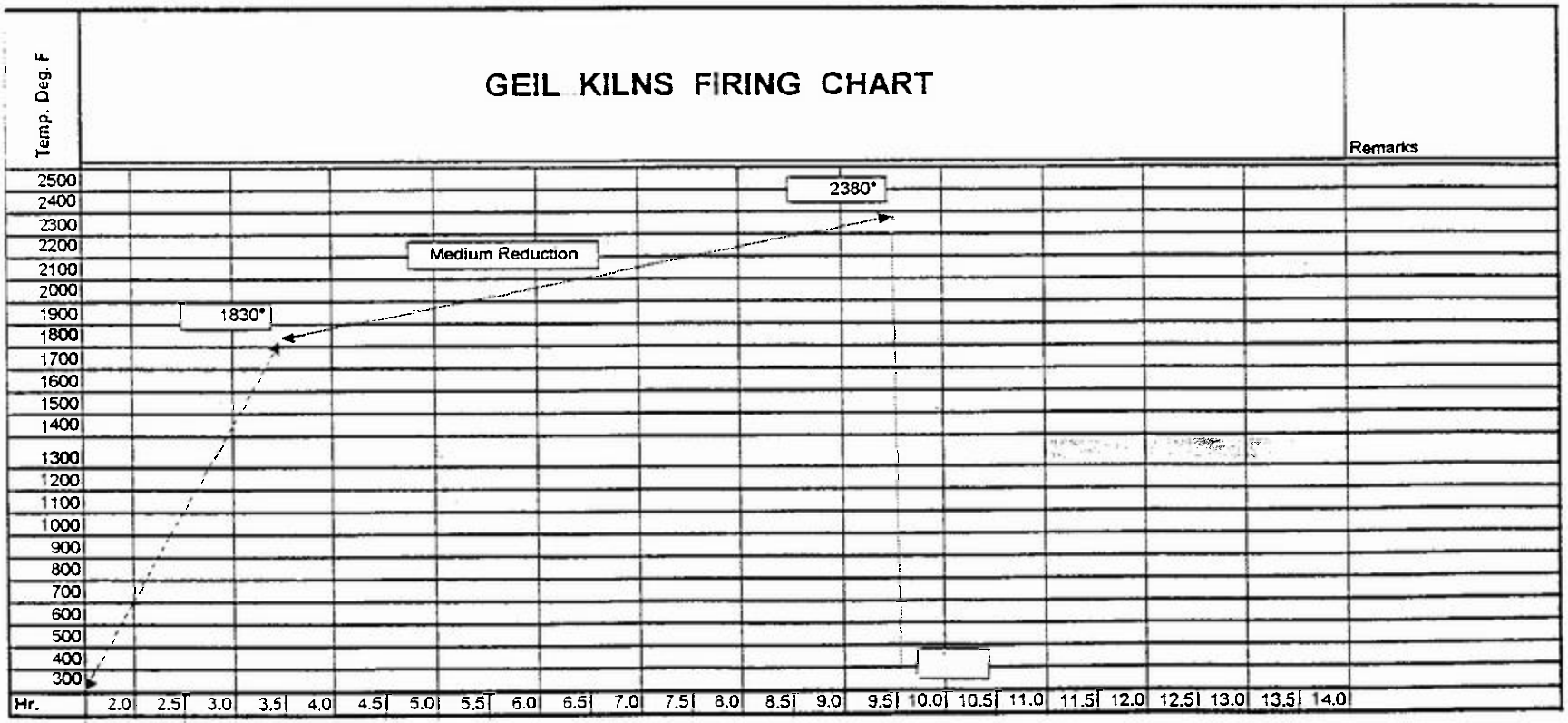
3. **DO NOT** close flue less than a 1" setting.

4. Replace peephole plug when finished.

Cone 10 Reduction (Porcelain Copper Red)



Cone 10 Reduction Stoneware



STEP-BY-STEP FIRING - CONE 10

1. Light the kiln according to the given instructions for your particular kiln model.

2. Open all burner air shutters to 1/4" -1/2".

3. Damper blade should indicate a flue opening of 1" for all hobby kilns.

4. Open main gas valve so that pressure gauge reads first line setting.

5. During the second hour of firing, open the gas valve to increase the pressure gauge reading to the second line for all fiber kilns.

6. During the third hour, open the gas valve to increase the pressure gauge reading to the third line for fiber kilns.

7. Upon entering into the fourth hour, open the gas valve to increase gas pressure by 1/2" for all fiber kilns. Adjust damper to a neutral atmosphere.

8. During the fifth hour, open the gas valve to increase pressure by 1/2" for all fiber kilns. Adjust damper for a neutral atmosphere

9. During the sixth hour, open gas valve to increase pressure by another 1/2" for fiber kilns. Adjust damper for a neutral atmosphere.

10. Seventh hour, open gas valve to increase pressure by 1/2" in fiber kilns.

11. During the eighth hour, open the gas valve to increase pressure by another 1/2" for fiber kilns. Adjust damper to a neutral atmosphere.

CONTINUED ON NEXT PAGE

After the eighth hour, begin to watch the cones closely, particularly while they are falling. The kiln should be in a neutral atmosphere

After the eighth hour, begin to watch the cones closely, particularly while they are falling. The kiln should be in a neutral atmosphere for at least 45 minutes at the end of each firing cycle to clean up any imperfections in the glaze left by reduction.

When cone 10 has fallen and proper cleanup is accomplished,
SHUT OFF THE KILN FOLLOWING THE LIGHTING INSTRUCTIONS.

12. After the gas has been turned OFF, Close the flue damper immediately. This is very important. If the damper is not closed immediately after the gas is turned off, the flue will draw cold air through the burners. This cold air will cause damage to the pottery and shelving.

INSTRUCTIONS

OWNER'S MANUAL

INSTALLATION
OPERATION &
MAINTENANCE

FOR YOUR SAFETY
Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

WARNING
Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the instruction, operating and maintenance instructions thoroughly before installing or servicing this equipment.

DESIGN AMERICAN GAS ASSOCIATION CERTIFIED

GEIL DOWNDRAFT KILN

SERIAL NUMBER

model 802052 52 H

PLEASE RETAIN THIS MANUAL FOR FUTURE REFERENCE

Model 802 (Medium)

Purchased 9/9/04 Received 2/15/05

TABLE OF CONTENTS

KILN PLACEMENT AND SET-UP

It is important that your kiln be located on a sound and level foundation. A 3-1/2 inch thick concrete slab in a clean, dry area is recommended. If the surface selected is not level, appropriate steps should be taken to insure that the kiln is as level as possible.

If the kiln is installed in an enclosed area, venting is mandatory (See Fig 1 or Pg. 2). In order to vent safely and properly, check with your local building department for city requirements regarding proper venting. If a site has been chosen outdoors, care must be taken to provide protection from the elements. Rain and snow can seriously damage a kiln.

When selecting an area for the kiln, please bear in mind that a three (3 ft.) foot clearance to combustibles and non-combustibles constructions back, left side, and right side. Accessibility at the rear of the kiln must be maintained for damper adjustments.

GAS HOOK-UP

A sufficient supply of fuel to the kiln is of utmost importance for proper firing. Therefore the system supplying the fuel must be carefully installed (See Pg. 1A). The requirements for installing gas lines vary depending on the size of the kiln, the distance from the meter (or Tank) to the kiln, and the number of bends in the line between the meter and the kiln. Your local gas company or plumbing contractor has information to determine what size of gas line you will need to accommodate your particular installation. The gas line should be completely and thoroughly flushed free of air and debris prior to the final connection. Failure to flush the line may result in firing difficulty.

ELECTRICAL REQUIREMENT

120 V. 10 AMP. Power source is required for all DL MODEL KILNS. ALL DL MODELS are equipped with a 6 ft.. powercord.

- Avoid locating gas control where exposure to corrosive chemical fumes or dripping water are likely.

Locate the gas control in the appliance vestibule on the gas manifold. In replacement applications, locate the gascontrol in the same location as the old gas control.

Install Piping to Gas Control

All piping must comply with local codes and ordinances or with the National Fuel Gas Code (ANSI Z223.1 NFPA No. 54), whichever applies. Tubing installation must comply with approved standards and practices.

1. Use new, properly reamed pipe free from chips. If tubing is used, ensure the ends are square, deburred and clean. All tubing bends must be smooth and without deformation.

2. Run pipe or tubing to the gas control. If tubing is used, obtain a tube-to-pipe coupling to connect the tubing to the gas control.

3. Install sediment trap in the supply line to the gas control. See Fig. 2.

Install Gas Control

1. Mount the gas control 0-90 degrees, in any direction, from the upright position of the gas control knob, including vertically.

2. Mount the gas control so gas flow is in the direction of the arrow on the bottom of the gas control.

3. Threadpipe the amount shown in Table 4 forinsertion into the gas control or adapter. DO NOT THREAD PIPE TOO FAR. Valve distortion or malfunction may result if the pipe is inserted too deeply into the gas control.

TABLE 4—NPT PIPE THREAD LENGTH IN INCHES.

PIPE SIZE	THREAD PIPE THIS AMOUNT	MAXIMUM DEPTH PIPE CAN BE INSERTED INTO CONTROL
3/8	9/16	3/8
1/2	3/4	1/2
3/4	13/16	3/4

4. Apply a moderate amount of good quality pipe compound (DO NOT use Teflon tape) to pipe only, leaving two end threads bare. On LP installations, use compound resistant to LP gas. Refer to Fig. 3.

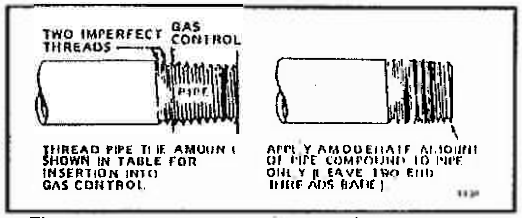


Fig. 3—Use moderate amount of pipe compound.

5. Remove seals over gas control inlet and outlet if necessary.

6. Connect pipe to gas control inlet and outlet. Use wrench on the square ends of the gas control. If an adapter is used, place wrench on adapter rather than gas control. Refer to Figs. 4 and 5.

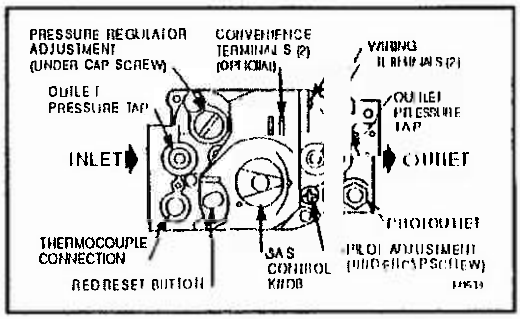


Fig. 4—Top view of gas control

Connect Pilot Gas Tubing

1. Cut tubing to desired length and bend as necessary for routing to pilot burner. Do not make sharp bends or deform the tubing. Do not bend tubing at gas controlor pilot

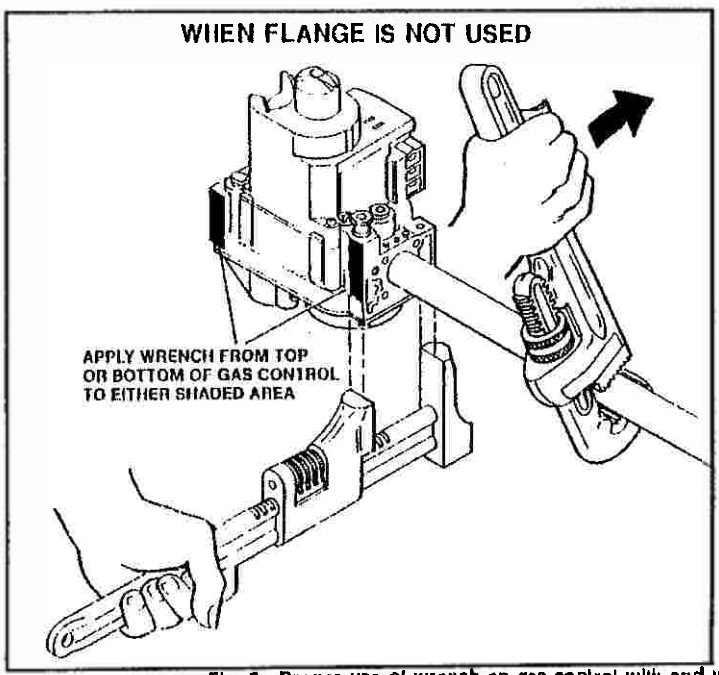
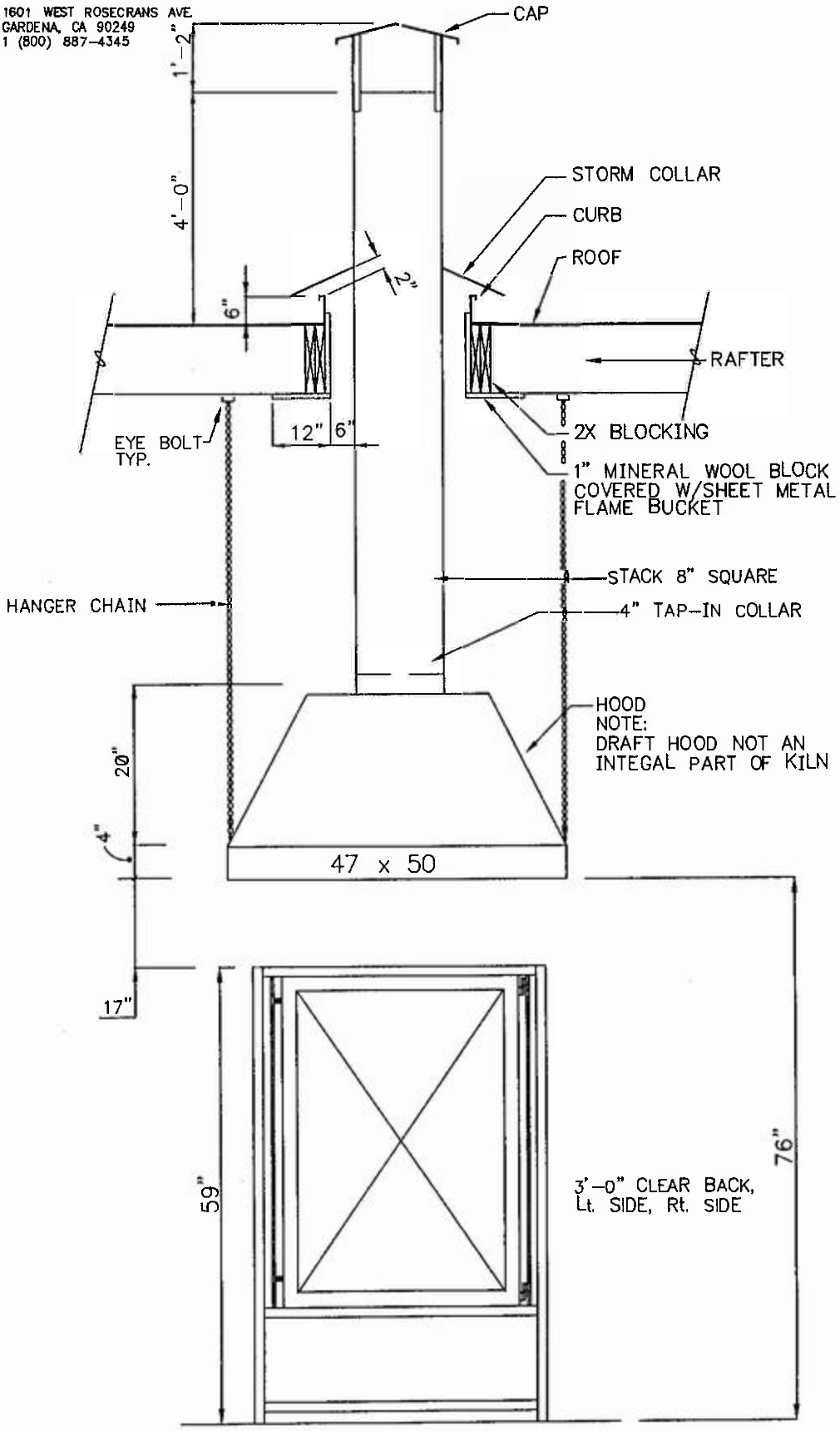


Fig. 5—Proper use of wrench on gas control with and without flanges.

EIL KILNS CO. 1601 WEST ROSECRANS AVE.
GARDENA, CA 90249
1 (800) 887-4345



TYPICAL VENTING ENCLOSED AREA FIG.1

THIS DIAGRAM IS TO BE USED FOR REFENENCE ONLY. WHEN SETTING UP YOUR GEIL DOWNDRAFT KILN, CHECK YOUR LOCAL BUILDING CODES.

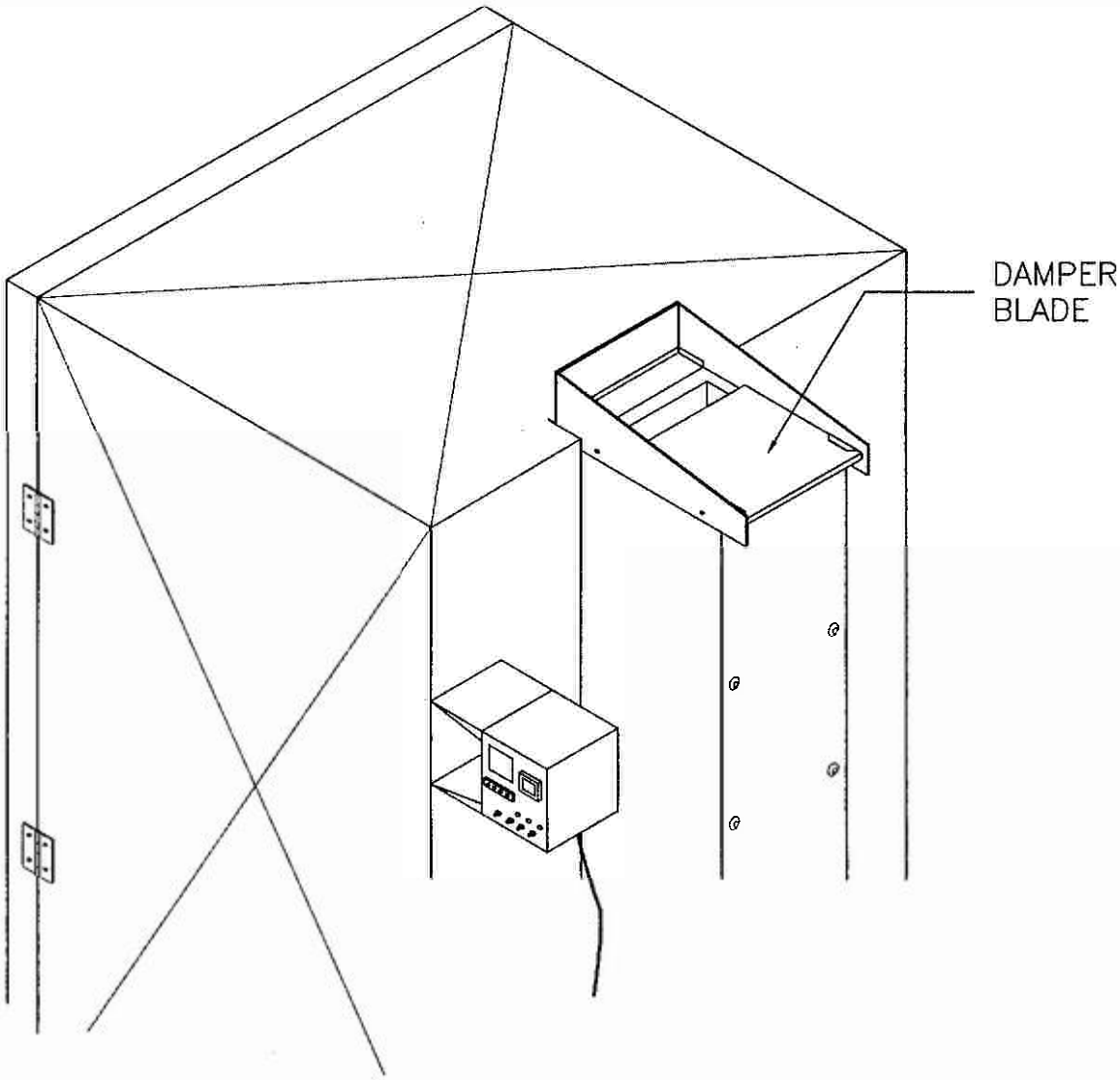
DAMPER BLADE PLACEMENT

802 MODEL

On the 802 model the damper blade sets directly on the top of the flue opening. Adjustments are made by sliding the damper blade over the opening of the flue.

See next page for diagram. (DAMPER CONTROLS)

DAMPER SYSTEM FOR
MODEL 802



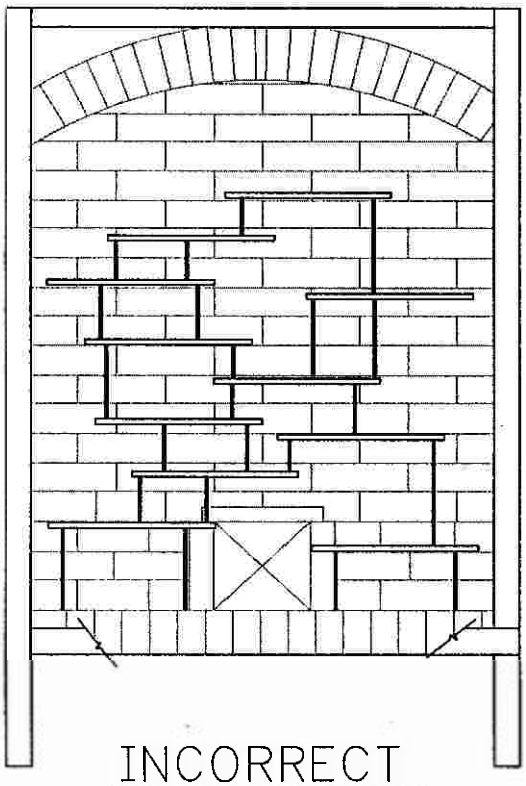
LOADING AND SHELF PLACEMENT

CAUTION: Care must be taken when loading and unloading your kiln, particularly Ceramic Fiber Kilns. Fiber is a softer insulator and is damaged easily.

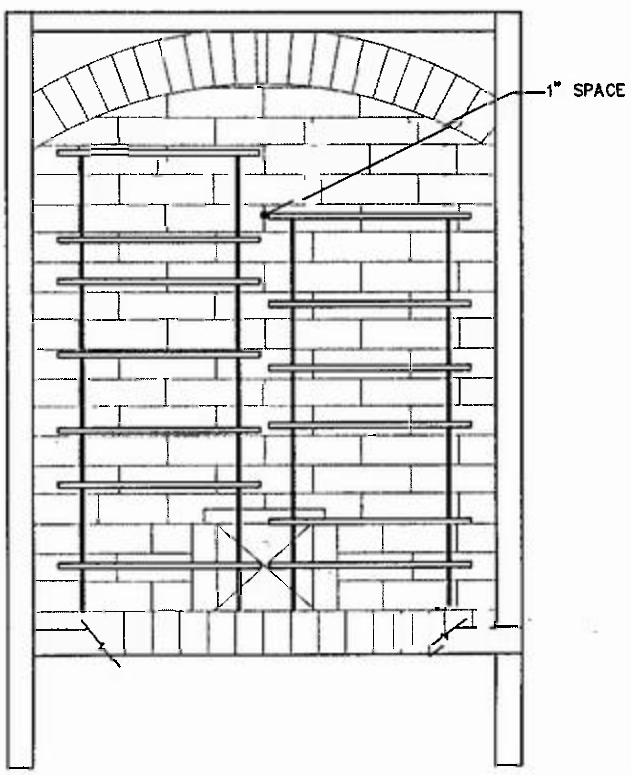
NOTE: Before attempting to load your kiln make sure all burner ports are completely free of debris or broken ware from the previous firing. Any obstruction to the burners will effect the firing adversely.

Each particular Geil Kiln model has been designed to fire properly utilizing specific shelf sizes and proper spacing. These sizes and spacing requirements are listed on page 7. For best results we recommend these be closely followed. For proper shelf alignment begin by stacking the first set of shelves directly on the kiln floor. To facilitate even heat distribution, we recommend that the shelving height be staggered as diagrammed on page 6, and the ware should be staggered as evenly as possible. When stacking shelving, remember to keep the specific clearances up the side and back walls. Combustion occurs in the side wall areas and any ware overhanging the shelf edge may be flashed. It is also important to keep the mouth of the flue completely free of ware for good circulation. A semicircle within 6" of the flue opening should be left clear as illustrated in Figure 2 on page 7. Failure to leave this clearance will result in a "choking effect". The gases will not circulate freely and completely. A fully loaded kiln is desirable although avoid overloading and choking the kiln. Avoid contact between glazed ware when stacking as the glaze will liquefy during the firing and may stick to the contacting piece upon cooling.

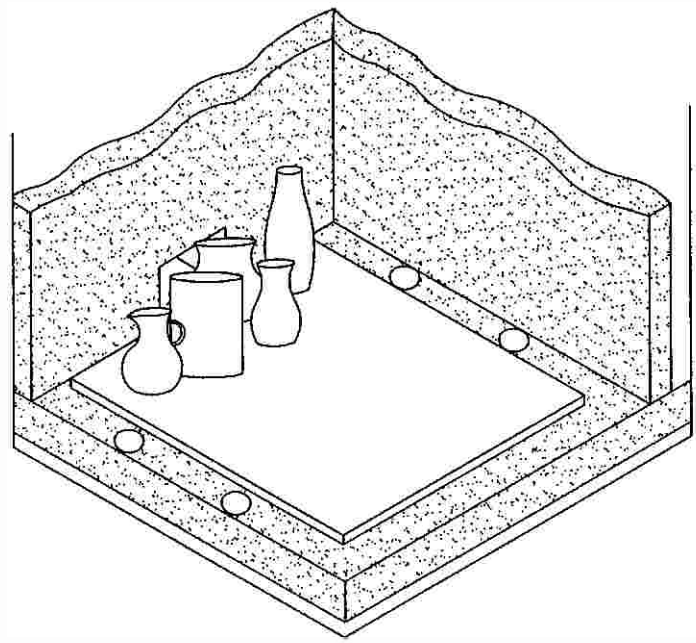
When utilizing ceramic cones for temperature indication, position them so that they may be clearly visible through the peep holes. If clay is used as a base for the cone, make sure the clay is sufficiently dry before firing. Wet clay will explode if firing too fast, cones will fall and pottery will be damaged. At higher temperatures, always wearing dark glasses when observing the cones.



INCORRECT

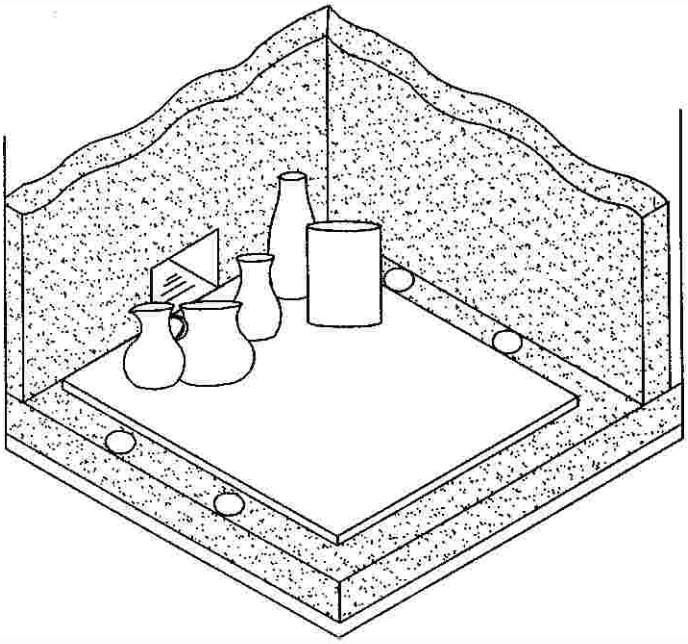


CORRECT



INCORRECT–FLUE CLOGGED

FIG.1

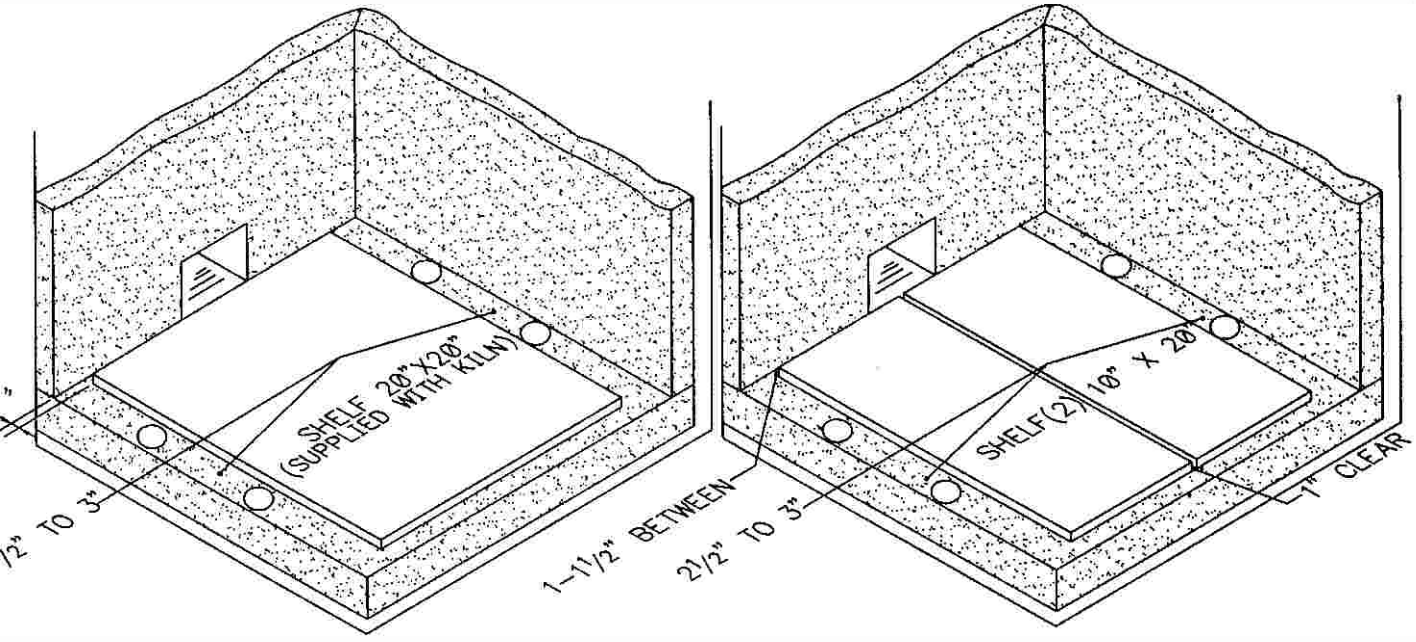


CORRECT

FIG. 2

SHELF SIZE:

8 CU. FT. 20"X20" – 10"X20"



802 H.B.

PRINCIPLES OF OPERATION

ELECTRONIC PILOT SAFETY SYSTEM

Sensing Methods

With standing pilots, heat is a necessary ingredient for proper thermocouple operation. This is not the case when flame conduction or rectification is used. To better understand the principles of flame conduction and rectification, we must first understand the structure of a gas flame (see fig. 1). With the proper air-gas ratio to give a blue pilot flame, three zones exist.

Zone 1

An inner cone that will not burn because excess fuel is present.

Zone 2

Around the inner, fuel rich cone is a blue envelope. In this area is a mixture of vapor from the fuel rich inner cone and the secondary, or surrounding, air. This is where combustion occurs.

Zone3

Outside the blue envelope is a third zone that contains an excessive quantity of air. Of concern is the second, or combustion area. This is where the burning occurs and is the area that is of prime importance for good flame sensor location.

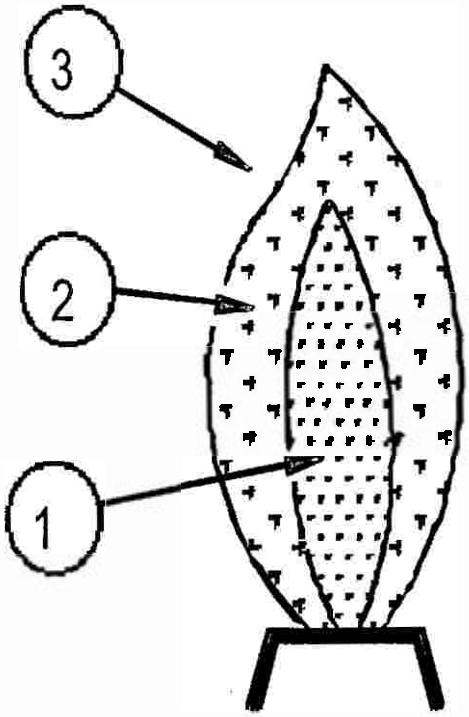
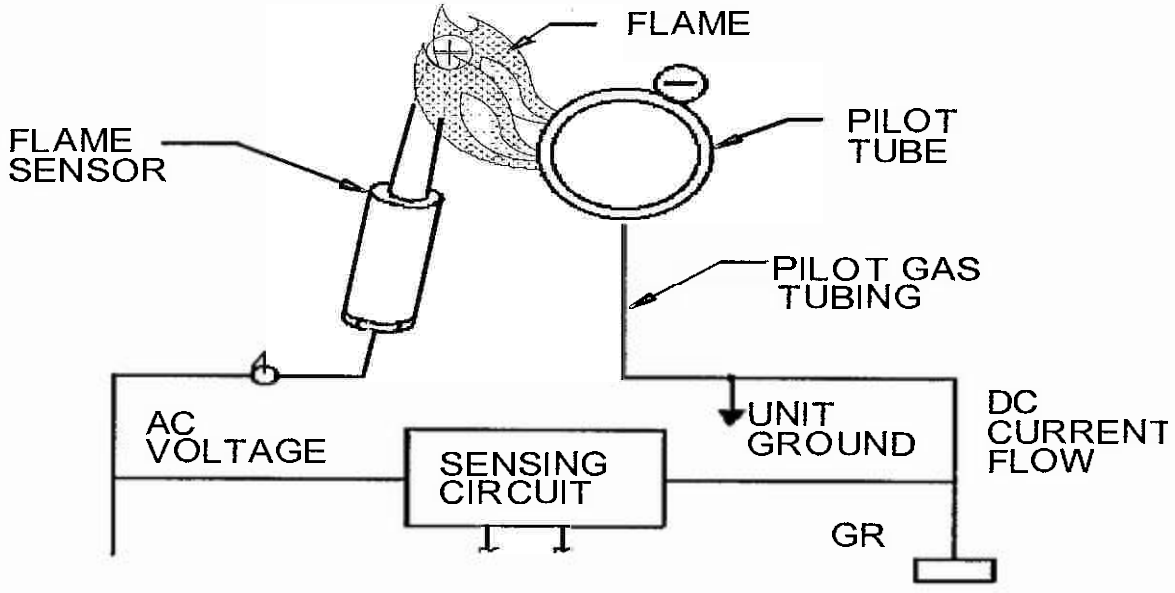


FIG.1

A flame is a series of small controlled explosions that, causes the immediate atmosphere to become ionized. This ionization causes the atmosphere to become conductive. This conductive characteristic is used in flame conduction.

The flame can be thought of as a switch. This "switch" is located between the pilot tube and the flame sensor. When there is no flame between the pilot tip and the flame sensor, the switch is open. When a flame is in contact with the pilot tip and the flame sensor, the switch is closed. In

figure.



After the pilot is ignited, a DC current flow of 0.2 micro amps or more is conducted through the flame, from the flame sensor, (the positive probe) to the pilot tip, (the negative probe). The pilot tube acting as the negative probe, completes the circuit to ground. The sensing circuit uses this DC current flow to energize a relay and open the main burner gas valve. If the flame sensor is grounded, the sensing circuit detects AC current preventing the gas valves from opening.

Voltage

The supply voltage to the ignition controls should be within 24VAC controls -- 21 to 26.5VAC

Gas Pressure

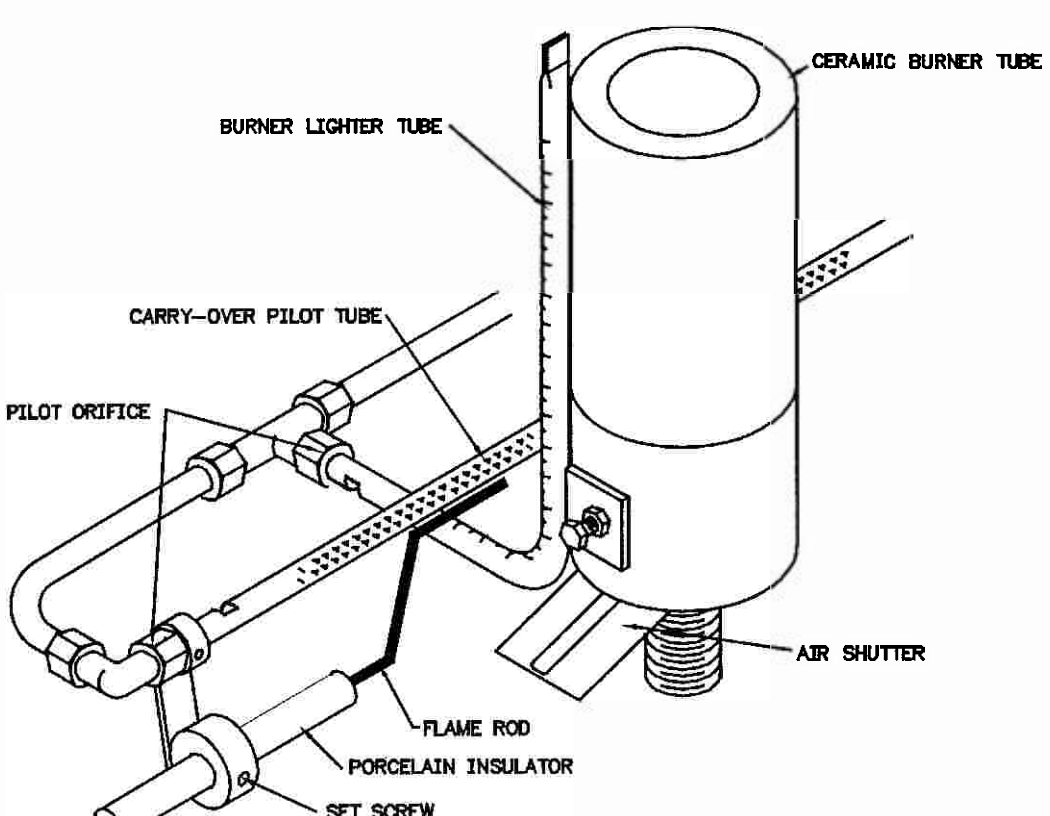
Natural gas pressure should be 7" W.C.P. Maximum inlet pressure for natural gas applications should be limited to 10.5" W.C.P. On LP applications, the inlet pressure should be limited to a maximum of 14" W.C.P.

The pilot flame must make contact with the pilot tip and surround the flame sensor probe. A microammeter is necessary to verify that the proper amount of current is being maintained through the pilot flame. If the proper current is maintained, a minimum of 0.2 micro amps will be present. If the minimum signal is not being maintained at all times, rapid short cycling of the main burner or "no main burner on" conditions can exist. Rectification based ignition system respond in less than 0.8 seconds

to a loss of flame. Any deflection of the pilot flame away from the sensor, or pilot tip, could result in rapid cycling (chattering) of the main burner gas valve, or prevent the main burner from coming on. Other conditions that can cause the failure of the main burner to come on rapid chattering of the main burner are: (1) pilot flame is too small or, (2) gas pressure is too low for proper pilot flame impingement on the flame sensor. In these cases, the pilot may ignite, but the main burner gas valve will not be energized. It is also possible for drafts or unusual air currents to deflect the pilot flame away from the flame sensor. Deflection of the pilot flame may also be caused by main burner ignition concussion or roll out of the main burner flame.

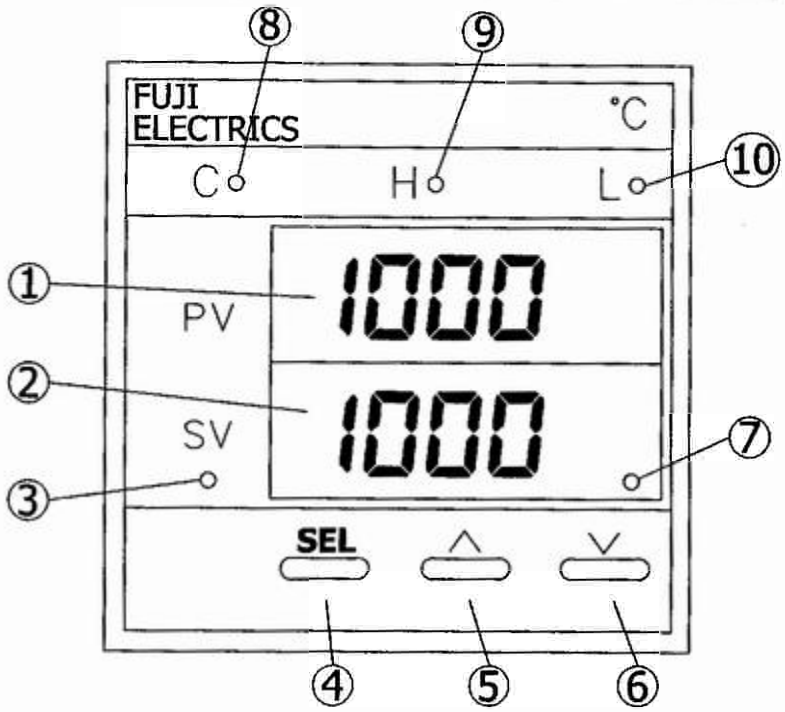
An additional point to be considered is the condition of the pilot flame. If the pilot flame is hard and blowing, the grounding area of the pilot is reduced to a point where the necessary current is not being maintained, and a shut down of the system will result.

The positioning of the flame sensor is also critical in the pilot application. Positioning of the flame sensor should be such that it will be in contact with the second, or combustion area of the pilot flame. Passing the flame sensor through the inner cone of the pilot flame is not a recommended procedure.



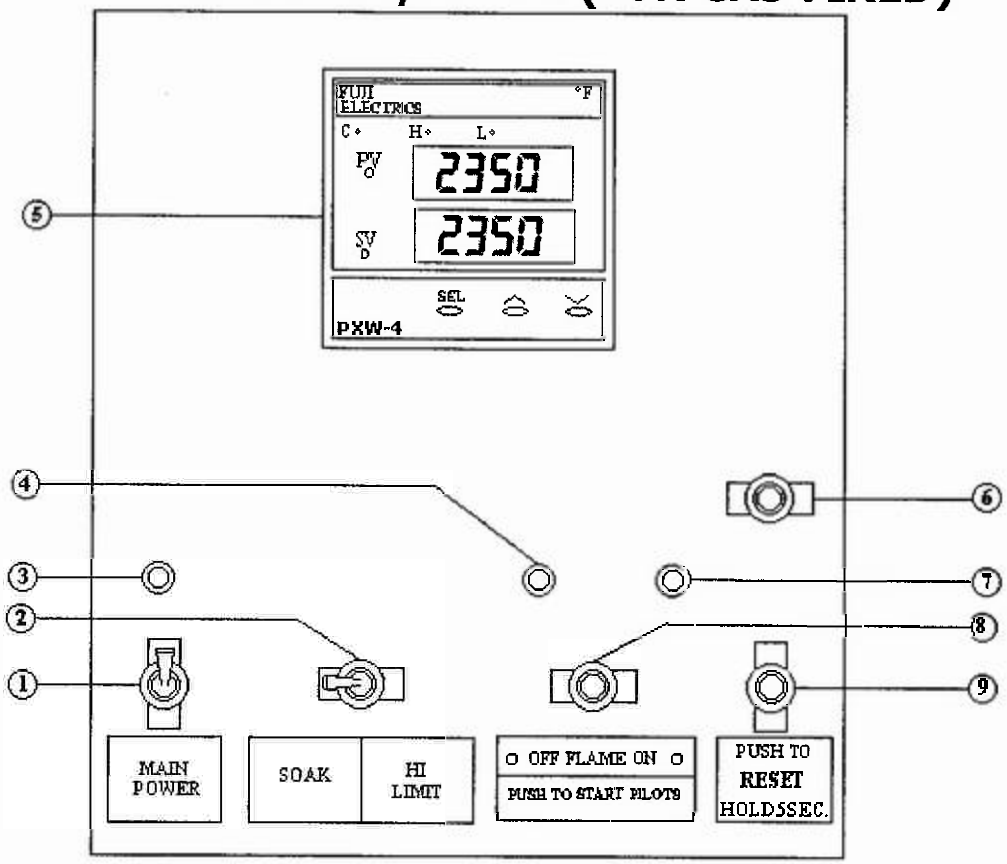
DIRECTIONS FOR SETTING PXW4 CONTROLLER

Press up ∧ key under the number you wish to raise. Press down ∨ key under the number you wish to lower. New setpoint is now entered.



NAME:	FUNCTION:
1. Measured Value (PV) display	Displays the measured value (PV).
2. Set value (SV) indication lamp	Stays on while a set value is on the display.
3. Set value (SV) and parameter display	Displays set value (SV), or parameter symbol or code when setting various parameters.
4. SELECT key	Key for switching between the parameter blocks and for moving within the block.
5. UP key	For incrementing the numerical value or scrolling up the menu. Numerical value changes continuously when held.
6. Down key	For decrementing the numerical value or scrolling down the menu. Numerical value is decremented continuously when held pressed.
7. Auto-tuning indicator	The indicatorblinks while the PID auto-tunning is being performed.
8. Control Output indication lamp	C;(for PXW4) Stays on while control output is ON C1: Stays on while control output 1 is ON. C2: Stays on while control output 2 is ON.
9. Upper limit alarm indication lamp (optional)	Comes on when the upper limit alarm is activated. Blinks while the alarm value is being set.
10. Lower limit alarm indication lamp (optional)	Comes on when the lower limit alarm is activated. Blinks while the alarm value is being set.

DIGITAL ELECTRONIC CONTROLLER
MODEL DD-1 W/PXW-4 (FOR GAS FIRED)



1. MAIN POWER SWITCH, (KEY SWITCH OPTIONAL).
2. CONTROLLER FUNCTION SWITCH, SOAK OR HI-LIMIT.
3. PURGE TIME, AMBER INDICATING LIGHT (OPTIONAL).
4. PILOT FLAME OFF, GREEN INDICATING LIGHT.
5. PROCESS CONTROLLER. PXW-4
6. SILENCE ALARM BUTTON (ONLY WITH ALARM BELL OPTION).
7. PILOT FLAME ON, RED INDICATING LIGHT.
8. START PILOT PUSH BUTTON.
9. REST PUSH BUTTON FOR HI-LIMIT FUNCTION.

LIGHTING THE KILN

MODEL 802 ELECTRONIC SAFETY

ONLY AUTHORIZED PERSONNEL MAY OPERATE KILN- READ ALL FIRING INSTRUCTIONS PRIOR TO ACTUALLY FIRING THE KILN

1. OPEN the kiln door and damper. Adjust damper 1" to 2".

2. Turn the MAIN GAS VALVE and SAFETY VALVE (Blue Knob) to OFF position, WAIT 5 MINUETS.

3. Turn SAFETY VALVE (Blue Knob) to ON Position.

4. Turn ON MAIN POWER Switch. Green light will appear.

5. Hold down start button. Continue holding until Green light goes off and Red light appears. At this time the pilots are established, release the start button.

Note: If pilots are not proven within approximately 15 sec. a lock-out will occur TURN MAIN POWER SWITCH OFF, WAIT 5 MINUETS. Repeat step no. 5.

6. Open the MAIN GAS VALVE just far enough to ignite burners. Check burners for proper burning.

7. Slowly close the kiln door and check damper for proper 1" - 2" setting. The firing cycle can now begin. See "Step-by-step Firing" Pg. 17-20

TO TURN OFF KILN

1. Turn MAIN GAS VALVE to OFF position.

2. Turn MAIN POWER to OFF position.

3. Close damper IMMEDIATELY After the gas is turned off.

NOTE: CONTROLLER FUNCTION

The controller is a solid state temperature controller having two (2) functions: SOAK or CYCLE, and HI-LIMIT. The controller reads the temperature of the kiln by means of a TYPE-K 14 GAUGE THERMOCOUPLE. The chamber temperature is shown on the red portion of the display (PV). The desired set point is shown on the green portion of the display (SV).

The controller turns the solenoid valve on or off to maintain the desired temperature. If the upper red display is higher in valve than lower green display then HI-LIMIT function will not stay on when the reset button is pushed.

4. Select control function SOAK OR HI-LIMIT
   - SOAK function will cycle the kiln in an on/off mode holding the temperature at approximate +/- 5 degrees range from set point. Controller will cycle the main burners and pilots will not shut down.

   - HI-LIMIT function will shut down the entire kiln (main valve and pilot) when set point is reached.

NOTE: If HI-LIMIT mode is selected push reset button and hold for approximately 5-10 seconds. Until the instrument is **on**.

5. **REMEMBER-THE KILN MUST BE MANUALLY OPERATED AT ALL TIMES. NEVER LEAVE THE KILN UNATTENDED WHILE FIRING.** To fire the kiln the gas pressure must be adjusted by the operator. The DD-1 Controller will not adjust the gas pressure.

6. To secure the kiln when the firing cycle is complete, turn all switches to OFF position. Close the main and, close damper immediately after the gas has been turned off.

FOLLOW YOUR KILN MANUAL CLOSELY. THIS WILL HELP TO INSURE SUCCESSFUL FIRINGS.

ERROR MESSAGES

Error Indication	Cause	Control Output
UUUU	1: Thermocouple break with Upscale Break Protection 2: RTD (PT100)Break with Upscale Break Protection	Reverse Acting: Off or less than 4mA dc Direct Acting: On or greater than 20mA dc
LLLL	1: Thermocouple Break with Downscale Break Protection 2: RTD (PT100) Break with Downscale Break Protection 3: Short across a RTD (PT100)	Reverse Acting: On or greater than 20mA dc Direct Acting: Off or less than 4mA dc
UUUU	1: Process Variable (PV) is greater than P-SU by more than 30% of full scale.	Normal Control Output for both Reverse and Direct Acting Applications
LLLL	1. Process Variable (PV) is less than P-SL by more than 30% of full scale	Normal Control Output for both Reverse and Direct Acting Applications

CANDLING YOUR KILN - ALL MODELS

To preheat or candle your kiln, light the kiln according to the given instructions. Set main gas valve closed. Sufficient heat for candling a bisque firing can be obtaining from the pilot system alone. If more heat is required, the burners may be turned on at very low setting. When using the burners for candling, the flame should be no more than 3-4" high at most. At this low setting the gas pressure gauge may NOT show a reading.

The flue should be opened approximately 1". If the ware is slightly damp, the kiln door may be left ajar for the first 2 hours of the candling to facilitate the removal of moisture from the ware. Before closing the door for firing, remember to set your cones in the proper position for later viewing.

The candling period will vary depending upon the moisture content with the ware. An 8-10 hour candling period is generally sufficient.

BISQUE FIRING

The bisque firing is a low temperature firing of greenware, usually around cone 07 to cone 05 (1800 Degrees. F-1900 Degrees. F) For cone 10 stoneware. This firing will strengthen the ware to protect against damage during glazing. Breakage of greenware in the bisque firing is usually caused by insufficient drying time, firing too fast, or air holes in the clay. Bisque firings will approximately 6 hours.

STEP-BY-STEP BISQUE FIRING

1. Light the kiln following the lighting instructions given for your particular kiln model.

2. Open all burner air shutters to 1/4"--1/2".

3. Damper should indicate a flue opening of 1" for all 802 models.

4. Open main gas valve to the first line increment on the pressure gauge.

5. During the second hour, open gas valve so that pressure gauge reads 1/4" setting for all fiber kilns.

6. During the third hour, open the gas valve to 1/2" setting for all fiber kilns.

NOTE:
If a raw gas smell is noticed, this indicates incomplete burning of gas or a low temperature reduction is occurring. If this occurs, open the damper at 1/8-1/4"" intervals, waiting 30 seconds between each interval until the smell disappears.

7. During the fourth hour, open the gas valve so that the pressure gauge reads a 1" setting for fiber kilns.

8. After the fourth hour, watch the cones closely. Each subsequent hour, increase gas pressure by 1/2" intervals for all fiber kilns.

CONTINUED ON NEXT PAGE

WHEN FIRING IS COMPLETE, SHUT OFF THE KILN FOLLOWING THE LIGHTING INSTRUCTIONS

9. AFTER THE GAS HAS BEEN TURNED OFF, Close the flue immediately. The flue will draw cold air in through the burners. This cold air will cause damage to pottery, and shelving.

WHEN FIRING IS COMPLETE, SHUT OFF THE KILN FOLLOWING THE LIGHTING INSTRUCTIONS

9. AFTER THE GAS HAS BEEN TURNED OFF, Close the flue immediately. The flue will draw cold air in through the burners. This cold air will cause damage to pottery, and shelving.

STEP-BY-STEP FIRING - CONE 10

1. Light the kiln according to the given instructions for your particular kiln model.

2. Open all burner air shutters to 1/4" -1/2".

3. Damper blade should indicate a flue opening of 1" for all hobby kilns.

4. Open main gas valve so that pressure gauge reads first line setting.

5. During the second hour of firing, open the gas valve to increase the pressure gauge reading to the second line for all fiber kilns.

6. During the third hour, open the gas valve to increase the pressure gauge reading to the third line for fiber kilns.

7. Upon entering into the fourth hour, open the gas valve to increase gas pressure by 1/2" for all fiber kilns. Adjust damper to a neutral atmosphere.

8. During the fifth hour, open the gas valve to increase pressure by 1/2" for all fiber kilns. Adjust damper for a neutral atmosphere

9. During the sixth hour, open gas valve to increase pressure by another 1/2" for fiber kilns. Adjust damper for a neutral atmosphere.

10. Seventh hour, open gas valve to increase pressure by 1/2" in fiber kilns.

11. During the eighth hour, open the gas valve to increase pressure by another 1/2" for fiber kilns. Adjust damper to a neutral atmosphere.

CONTINUED ON NEXT PAGE

After the eighth hour, begin to watch the cones closely, particularly while they are falling. The kiln should be in a neutral atmosphere

After the eighth hour, begin to watch the cones closely, particularly while they are falling. The kiln should be in a neutral atmosphere for at least 45 minutes at the end of each firing cycle to clean up any imperfections in the glaze left by reduction.

When cone 10 has fallen and proper cleanup is accomplished,
SHUT OFF THE KILN FOLLOWING THE LIGHTING INSTRUCTIONS.

12. After the gas has been turned OFF, Close the flue damper immediately. This is very important. If the damper is not closed immediately after the gas is turned off, the flue will draw cold air through the burners. This cold air will cause damage to the pottery and shelving.

SLOWING YOUR KILN

Slowing the kiln is achieved by minimizing the temperature gain and may be necessary in order to stabilize the temperature variation between top and bottom, which may have been caused by firing too fast.

STEP-BY-STEP SLOWING

1. To slow your kiln, cut your gas pressure by 1 1/2" to 2".

2. Slowly close the damper until slight reduction is achieved.

3. Once reduction is apparent, open the damper at 1/8"-1/4" intervals until a neutral atmosphere is reached, or until all signs of reduction have disappeared. This procedure will slow your kiln considerably.

4. Further adjustment may be necessary to maintain the temperature at an idle. If the temperature drops, increase the gas pressure accordingly, repeat steps 2 and 3.

NEUTRAL ATMOSPHERE

The neutral atmosphere contains the correct mixture of gas to air and results in a complete burning of gas. This is the most efficient atmosphere for the maximum temperature gain in the kiln. Care must be taken, not to over-oxidize. Over-oxidizing will result in a very slow temperature gain.

Oxidizing is very important to the texture of a glaze. At temperatures above 1800 degrees F the lack of a flame out the peephole indicates that a neutral or oxidizing atmosphere exists. For temperatures below 1800 degrees F take note of the following:

SMELL: There should be **no** raw gas smell.

CLEAR: The kilns interior and the ware should appear clear and distinct when looking though the peephole.

BURNERS: The burners should have a smooth, flowing sound.

STEP-BY-STEP NEUTRAL ATMOSPHERE

1. Remove top peephole plug.

2. Close the flue 1/4" at a time, waiting 30 seconds between each movement, until a small flame appears from the peephole. If a flame already exists, proceed to the next step.

3. Open the flue 1/8"-1/4". Wait for 30 seconds until the flue acts on the kiln's circulation. Check the peephole - if there is still a flame visible, repeat the procedure until the flame is no longer than 2". You now have a neutral atmosphere.

4. Replace peephole plug when finished.

SOME COMMON TROUBLES IN FIRING

I. Kiln does not reach high temperature.

The kiln should reach Cone 10 (2385 deg.F) in a normal firing in approximately 8-10 hours. If the kiln does not reach Cone 10 in this amount of time, check the following:

1. Check gas supply line for proper size. The kiln may not be getting a sufficient supply of gas.

2. Make certain the damper is set correctly. Always check the damper setting when firing the kiln (follow NEUTRAL ATMOSPHERE instructions on page 22).

3. For propane gas users, check your regulator for proper output. (Propane regulators should register 10-11 inches of water on the pressure gauge at full pressure.)

II. Pilot will not light.

1. See page 8 (Principles of Operation).

2. Check small air inlet at the end of the pilot tubes. This small perforated tube runs along each burner. Many times, particularly when the kiln is outdoors, spiders and small insects make nests inside these tubes, that restricts the gas supply. Clean out the tube by simply running a wire inside the tube extracting any foreign material.

III. Top of the kiln is hotter than the bottom.

1. If the top cones are bending before the bottom cones, your damper setting may be incorrect.(See Pg. 21) To correct this problem, slow the kiln. This should even out any temperature variation between top and bottom.

IV. Bottom of the kiln is hotter than the top.

1. Shut off the two front burners (Red handle valve). This increases the velocity of the two back burners forcing more heat to the top of the kiln. Adjust for neutral atmosphere.

2. Wait until the Top and Bottom temperature equalizes and then turn the two burners back on if necessary.

3. Slow the kiln.

MAINTENANCE

To ensure safe and successful firings proper maintenance procedures must be followed.

AFTER EVERY FIRING CHECK THE FOLLOWING

1. Make sure all burners and burner ports a clear of debris such as broken pottery. Most pieces may be vacuumed out with a shop vac, larger stuck pieces may have to be taken out by removing the ceramic burner tip (See burner detail Page 26). Care must be taken not break this ceramic burner tip.

ANNUAL PROCEDURES

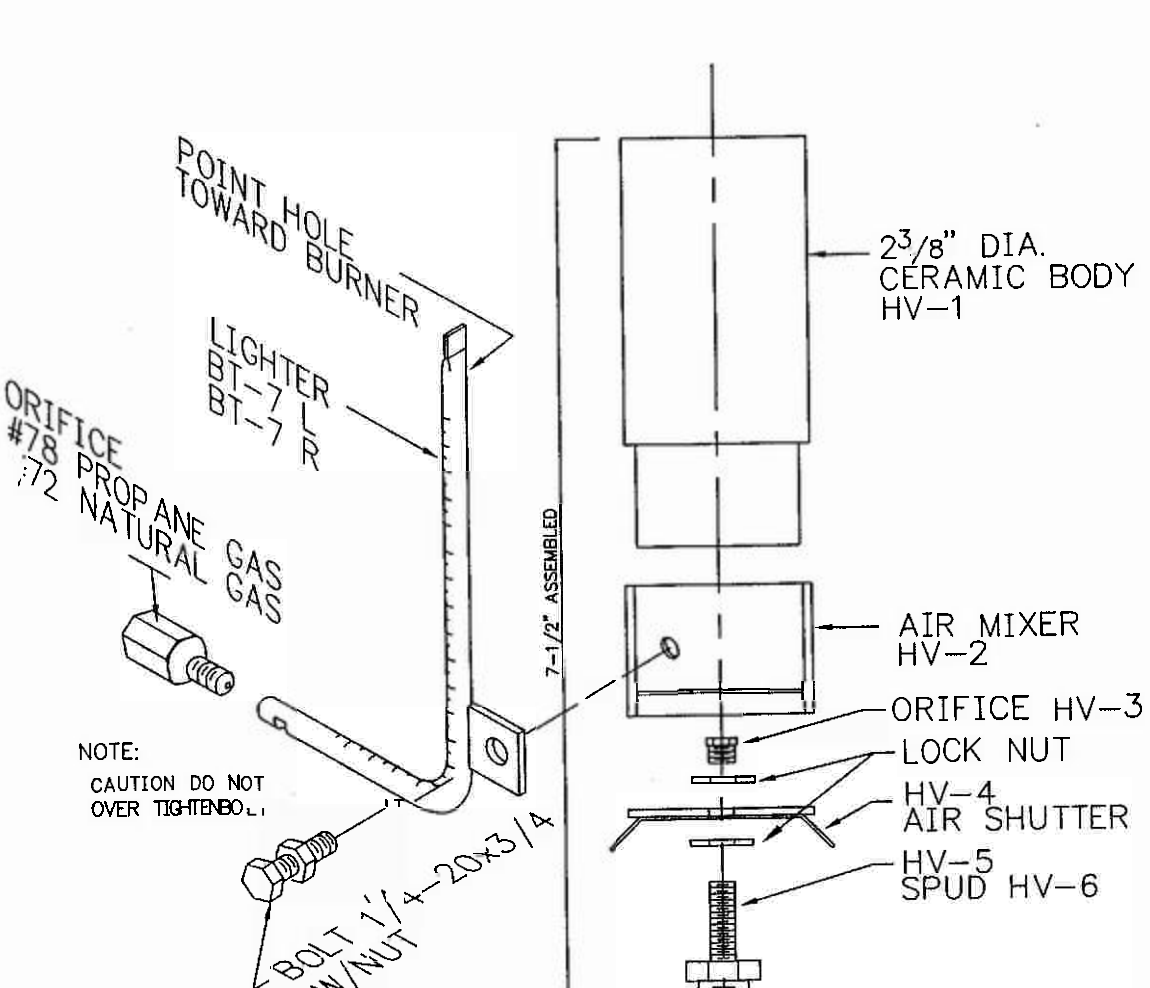
1. If the kiln has not been in use for any extended time period Check the pilot ring primary air inlet for possible obstruction such as spider webs. Clean with a piece of wire by inserting in the air inlet to break up the web.

2. Check the pilot ring for proper burning. The break down of the stainless steel over-time may cause the small holes the become blocked. Using a small brass wire brush gently clean the tubing. Care must be taken not to break the tubing **DO NOT HIT THE TUBING** over time the stainless becomes brittle and will break easily

3. Check the Thermocouple (See page 27) Replacement is necessary If the wire looks cracked and corroded.

CAUTION

IT IS DANGEROUS TO USE ANY FUEL BURNING EQUIPMENT UNLESS IT IS EQUIPED WITH SUITABLE FLAME SENSING DEVICE(S) AND AUTOMATIC FUEL SHUT-OFF VALVE(S) THERMOCOUPLE FLAME MONITORING MUST NOT BE USED ON BURNERS WITH CAPACITIES GREATER THAN 150,000 BUT/HR.

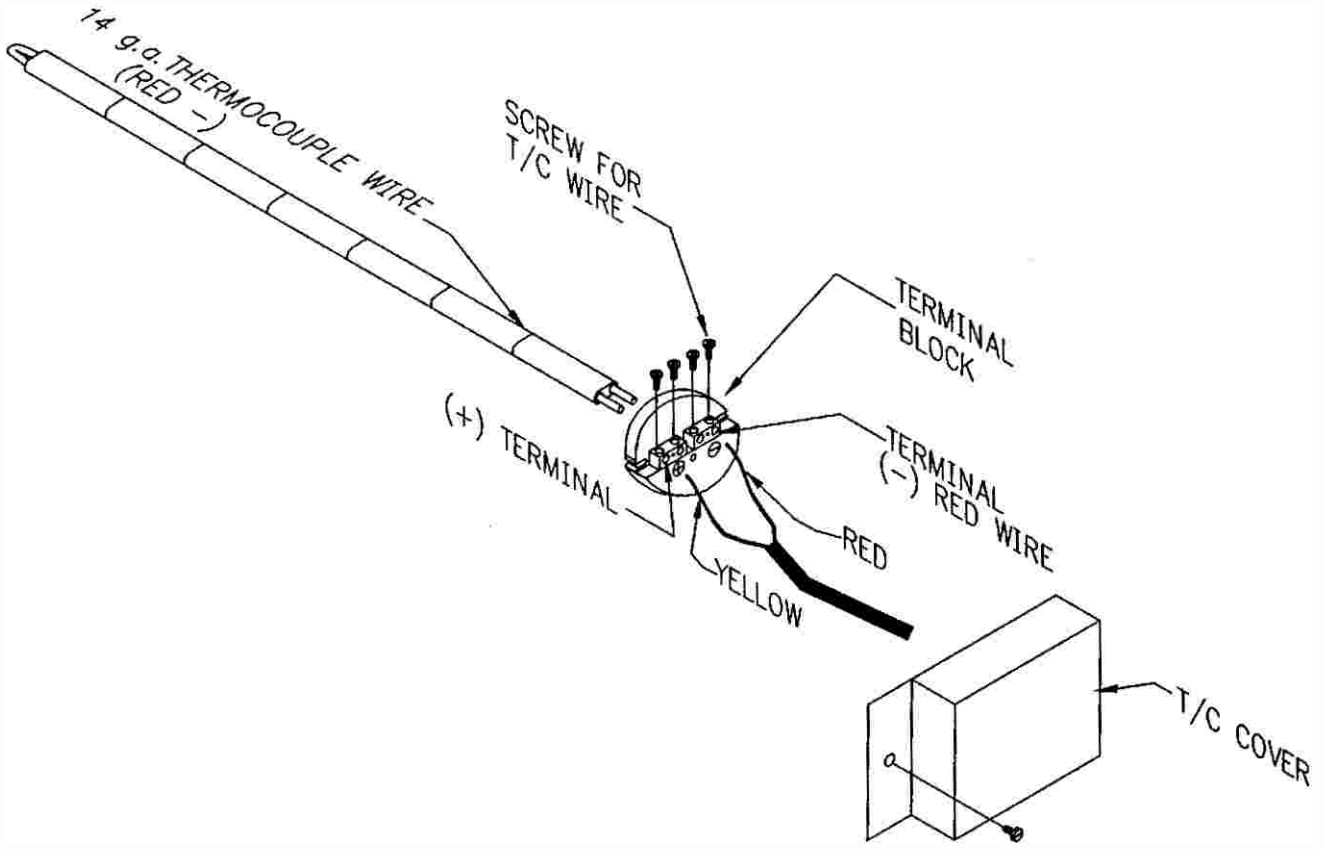


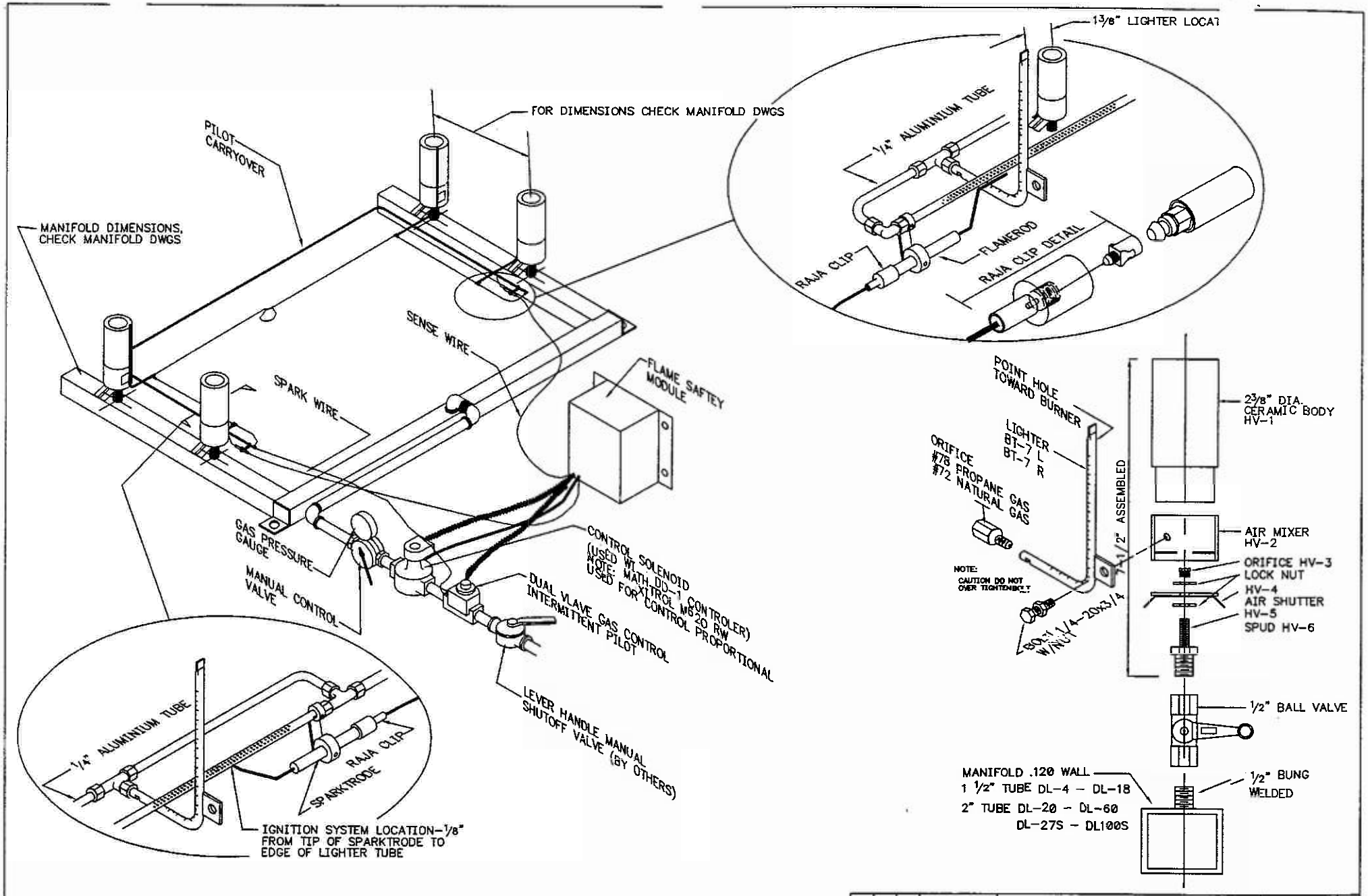
NEW AS OF
JAN.1998

802 HOBBY KILN

14 g.a. THERMOCOUPL (T/C) REPLACEMENT

1. REMOVE COVER (UNSCREW).
2. REMOVE LEAD WIRES FROM TERMINAL BLOCK.
3. LOOSEN TERMINAL BLOCK SET SCREW.
4. REMOVE TERMINAL BLOCK WITH OLD T/C NOTE: OLD T/C MAY BE BROKEN AND IN PIECES. REMOVE ALL OLD PICES FROM PROTECTION TUBE AND CLEAN TUBE.
5. LOOSEN SCREW HOLDING OLD T/C AND REMOVE OLD T/C.
6. INSTALL NEW T/C. NOTE: RED END TO PLAIN TERMINAL.
7. INSERT NEW T/C IN PROTECTION TUBE AND SUNG DOWN SET SCREW. DO NOT OVER TIGHTEN





APPROVALS	DATE	BURNER MANFOLD PARTS
DRAWN VIDAL V	MAY9	LIST FOR DL-06 TO DL-08 MODELS
CHECKED		
ISSUED		DWG. NO. REV. 0
		SHEET OF

F o 2400														
2300														
2200														
2100														
2000														
1900														
1800														
1700														
1600														
1500														
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700														
600														
500														
400														
300														
200														
100														
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
GAS PRESSUR														
DAMPER SETTING														

FIRING SCHEDULE: GEIL DOWNDRAFT KILN

MODEL NO. _____ DATE _____ CONE _____ REDUCTION ____ NEUTRAL ____

DURATION ____ START TIME _____ ENDTIME _____

REMARKS:

ONLY AUTHORIZED PERSONNEL MAY OPERATE KILN- READ ALL FIRING INSTRUCTIONS PROVIDED BEFORE ATTEMPTING TO FIRE KILN

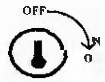
LIGHTING THE KILN

NATURAL DRAFT MODELS

1. OPEN the kiln door and damper. Adjust damper to 2". (NOTE: a damper stop is attached at the 2" mark preventing the flue from being totally closed off.)

2. Turn the MAIN GAS VALVE to OFF position, WAIT 5 MINUTS.

3. Located next to MAIN GAS VALVE is the safety solenoid valve. Extending from this valve is a second smaller valve or valves controlling the pilot gas GREEN HANDLE. See instruction manual for initial pilot setting.

4. Turn ON main power. (key switch some models) 

Note: Amber light will appear on kilns equipped with purge timing, wait for purge cycle to complete and green light to appear. Note: To silence alarm push SILENCE ALARM BUTTON. if applicable.

5. Set controller function, (if applicable). See instructions manual.

6. When green light appears HOLD DOWN start button until green light goes off and red light appears. At this time pilots are established. Release start button.

   Note: If pilots are not proven within approximately 15 sec. a lock-out will occur release the start button, the kiln will automatically go into the purge cycle. Repeat step no. 6.

7. Open the main gas valve just far enough to ignite burners. Check burners for proper burning. See instruction manual.

8. Slowly close the kiln door and check flue damper set at 2" to start firing. The firing cycle can now begin. See instruction manual for firing procedures.

TO TURN OFF KILN

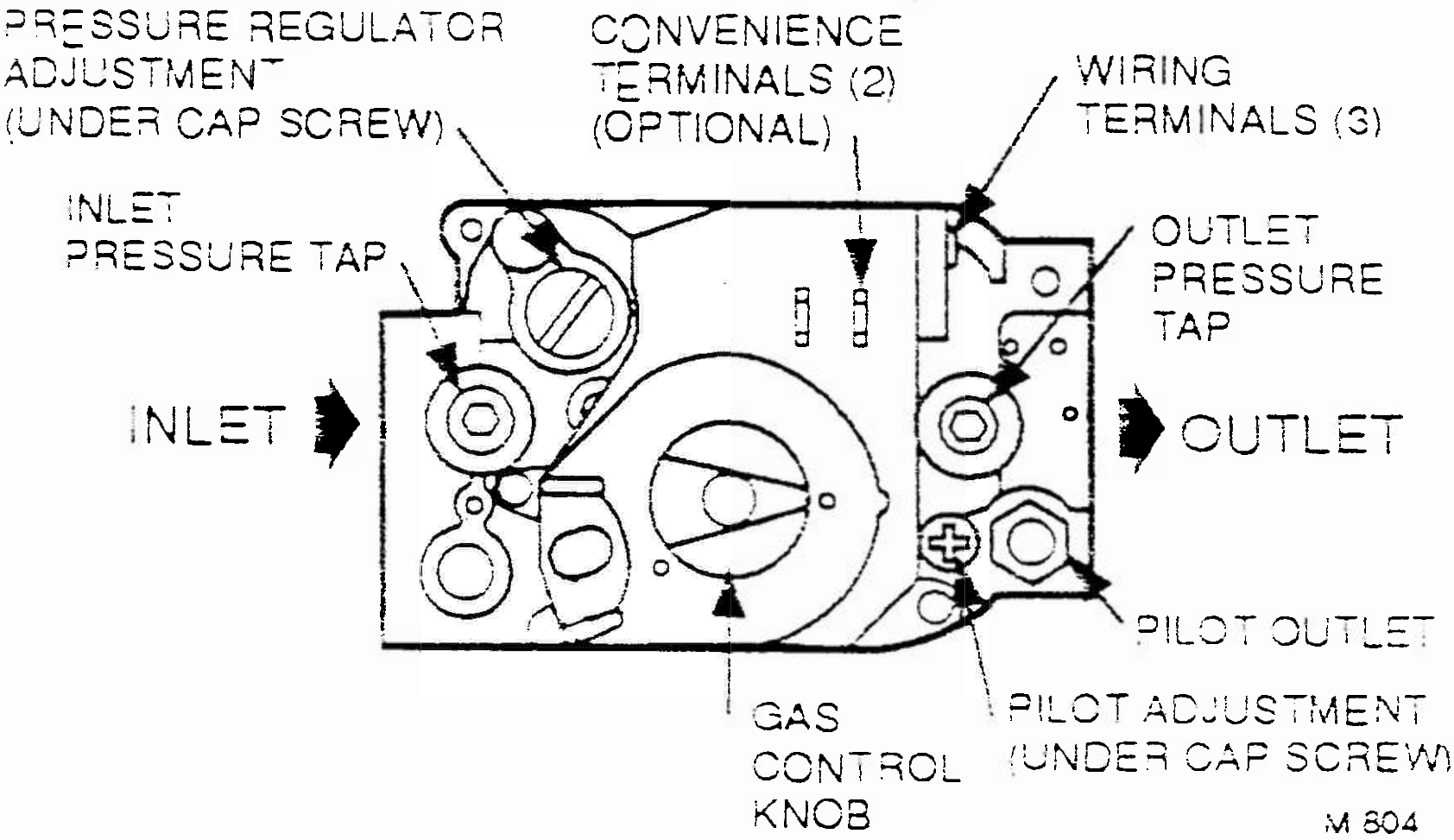
1. Turn MAIN GAS VALVE to OFF position.

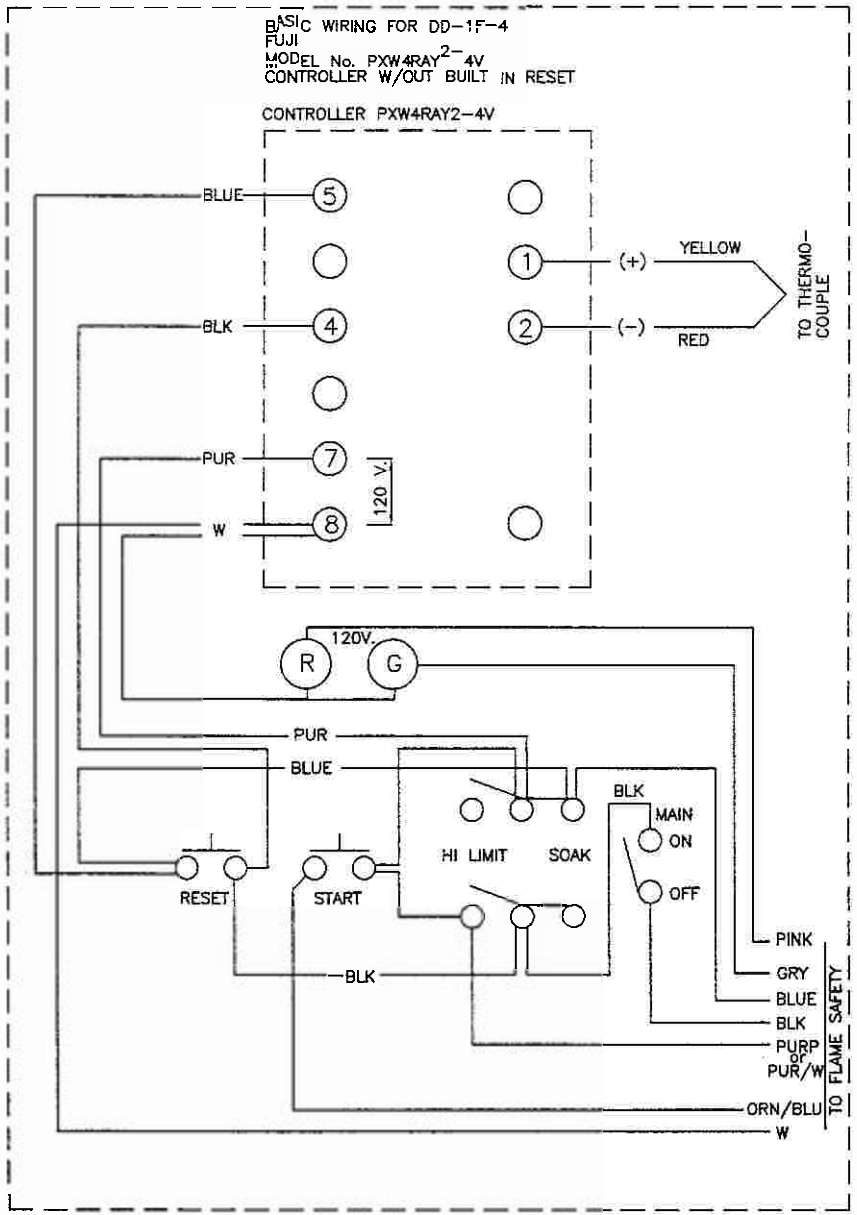
2. Turn MAIN POWER to OFF position.

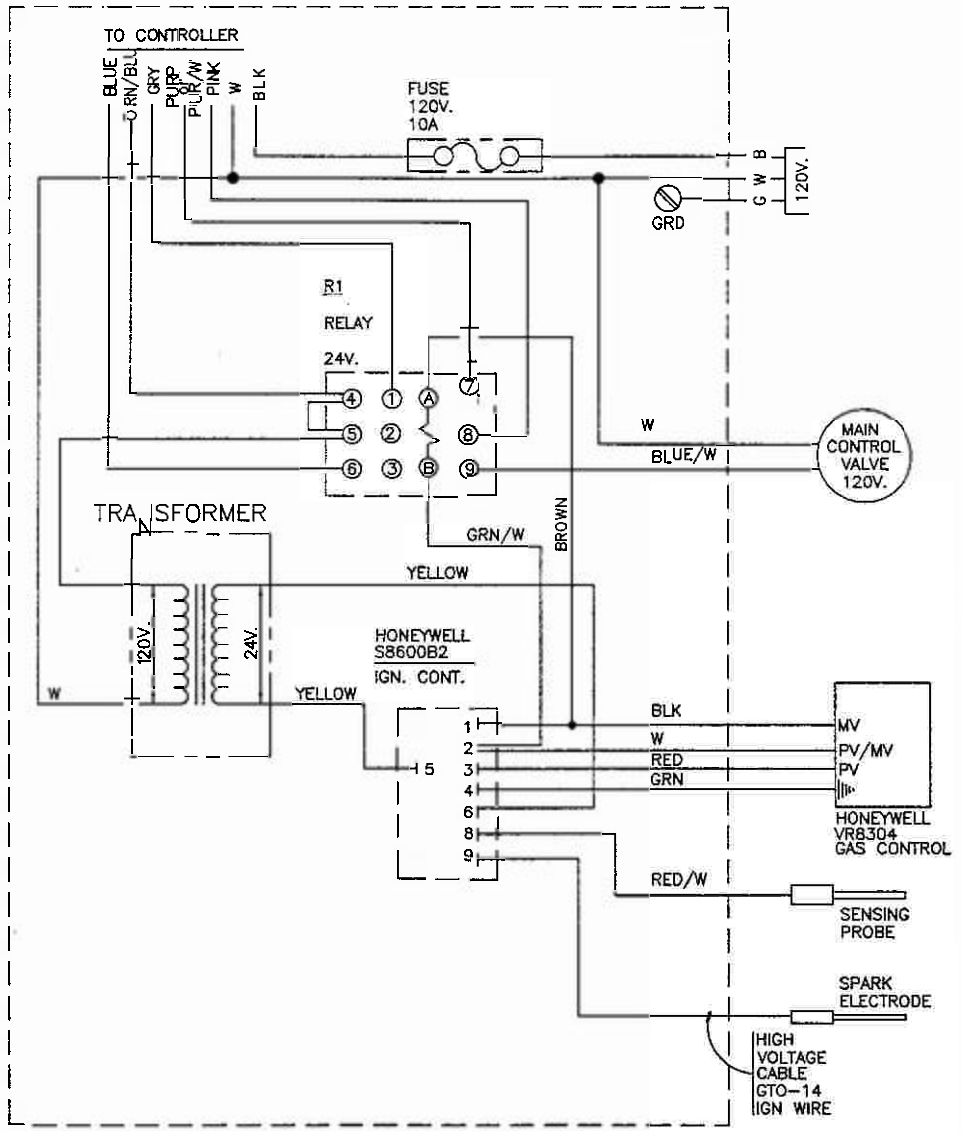
3. Close damper IMMEDIATEL

GEIL KILNS CO.
7201 CLAY AVE.
HUNTINGTON BEACH, CA.
92648 (714) 847-6135

Fig. 1—Top view of gas control.







MODEL No. PXW4RAY2-4V

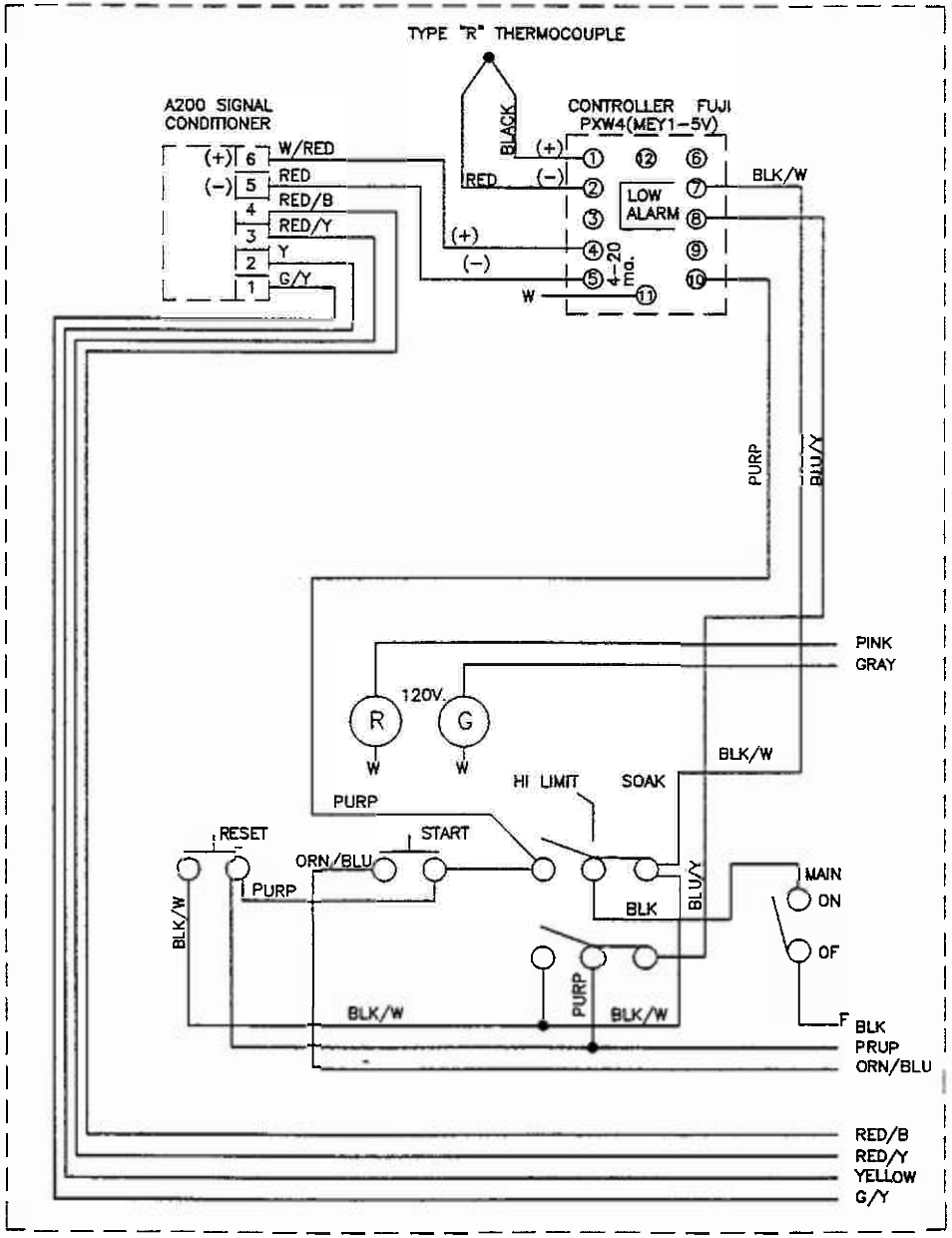
APPROVALS	DATE	GEIL INDUSTRIES
DRAWN W. GEIL	JUN95	BASIC WIRING DD-1-802
CHECKED		DWG. NO. DD-1-802(PXW) REV. 0
ISSUED		SHEET OF

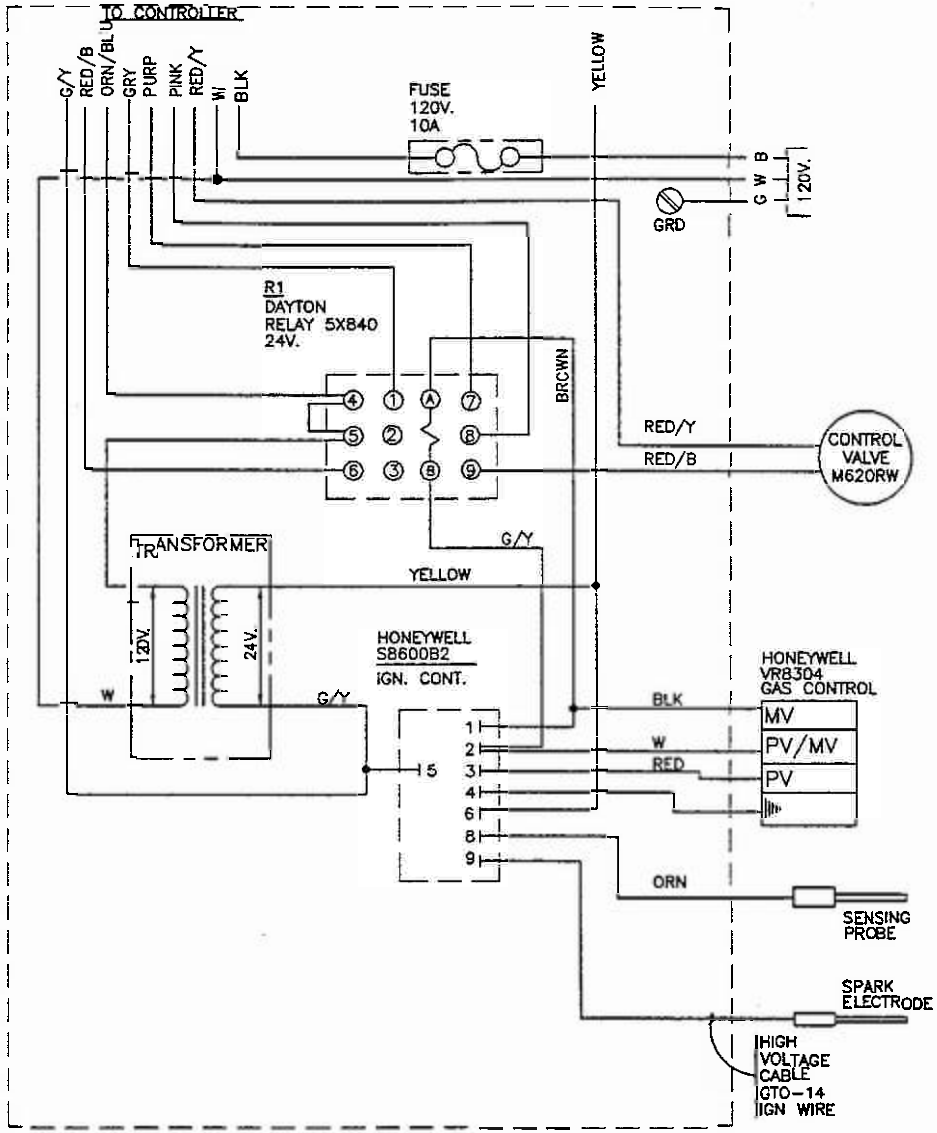
Jun. 10, 2000 - 08:23:11
DWG. NO. DD-1-802(PXW) SH REV. 0
DD-1-802.DWG

GEIL INDUSTRIES

LIMITED KILN WARRANTY

Your Geil Kiln is guaranteed to be free of defects in material and workmanship for twelve months from the original purchase date. If any defects in workmanship or material appear during such twelve-month period Geil Industries will replace or repair the defective part, providing all transportation costs are bore by the purchaser. Written proof of purchase date is required, otherwise the date of manufacture determined by the serial number shall be deemed to be the date of purchase . This warranty is limited only to the original purchaser and is non-transferable. This warranty does not cover: kilns damaged by over-firing (exceeding the melting temperature of material being fired) regardless of cause; Kilns damaged by transporting, abuse, improper use, unauthorized changes or alterations, reactive materials being fired, moisture; contents being fired, improper gas connection and installation; kilns used for any other purpose other than firing ceramic materials, ware of kiln furniture damage by over-firing. Pyrometers and gauges are specifically excluded from this warranty, there being a limited warranty directly by the manufacturers of the controls. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.





APPROVALS	DATE	BASIC WIRING 802-1PC2 LOW ALARM	
DRAWN VIDAL V.	JUN99		
CHECKED			
ISSUED		DWG. NO. 802-1PC2	REV. 0
		SHEET OF	

802-1PC2 DWG NO 0 REV Oct 24, 1999 - 07:08:43

D:\ELEC\802-1PC2.DWG