STAFFORD ST316B MANUAL

(STEP BY STEP SOLUTIONS)

2023

Tetlow Kiln Pty. Ltd. ABN: 26 166 832 300 54 Howleys Road, Notting Hill, 3168 Victoria Australia
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FIRST FIRING OF KILN WITH STAFFORD ST316B

NB: If there is no energy regulator present, the firing rate is automatically set in the ST316B to 100%.

Do not fit ceramic close off bungs to vent holes during dry out firing.

Allow kiln to cool completely before opening.

It is recommended that the electrical supply to your kiln be fitted with an isolating switch within close proximity of kiln so power can be turned off in case of an emergency or when kiln needs servicing. i.e. switch not attached to kiln but in close proximity of kiln.

It is further recommended that adequate ventilation be supplied to the kiln by way of a Tetlow ventilation system. If this is not fitted, the kiln should be in a well-ventilated position with exhaust fan to the atmosphere or similar.

The above is necessary as kilns during their firing cycle put out by-products from clay at the approximate rate of 50 – 1, some of these by-products can be in the form of steam acid vapours, lead vapours, etc., depending on clay, glazes, etc. being fired.

NB: It is recommended that the bung holders are closed off with the bungs at temperature below 750°C in the cast or biscuit firing. It is better to leave the bungs out for the entire firing rather than putting them in early. It is recommended that the first firing of a new kiln be a slow firing, with the kiln empty, to a temperature 10%-15% less than the maximum temperature of the kiln. This is to enable the cement to mature and to remove any moisture from the brickwork.

If the kiln is fitted with a Tetlow floor vent system, the bungs are to remain in the kiln at all times.

If the kiln is fitted with a Tetlow roof mount vent system, the bungs are to remain in and the roof bungs are to be left out.

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PROGRAM 1 – SLOW BISQUE TO 1000°C

SEGMENT 1	20°C/hr 100°C	50°C/hr 700°C	700°C for 00.00 minutes
SEGMENT 2	75°C/hr 1000°C	End	

Press the ⇒ key.
Then press the ⇓ key to display PROGRAM 1 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **20°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Temperature for first ramp set to **100°C**.
Press the ⇒ key.
Second ramp rate set to **50°C**/hr.
Press the ⇒ key.
Temperature for second ramp set to **700°C**.
Press the ⇒ key.
Soak time for second temperature set to **00.00**.
Press the ⇒ key.
If End appears press ⇑ key and set a ramp of **75°C**/hr. This is the 3rd ramp.
Press the ⇒ key.
Temperature required for third ramp **1000°C**.
Press the ⇒ key.
Press the ⇓ key to display End.
Total firing time 21 hours.
Allow 10 seconds for programmer to return to start position.
Press start.
Program will now run.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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PROGRAM 2 – MEDIUM HEAT RATE BISQUE 1000°C

SEGMENT 1	25°C/hr 100°C	75°C/hr 700°C	700°C for 00.00 minutes
SEGMENT 2	100°C/hr 1000°C	End	

Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 2 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **25°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Temperature for first ramp set to **100°C**.
Press the ⇒ key.
Second ramp rate set to **75°C**/hr.
Press the ⇒ key.
Temperature for second ramp set to **700°C**.
Press the ⇒ key.
Soak time for second temperature set to **00.00**.
Press the ⇒ key.
If End appears press ⇑ key and set a ramp of **100°C**/hr. This is the 3rd ramp.
Press the ⇒ key.
Temperature required for third ramp **1000°C**.
Press the ⇒ key.
Press the ⇓ key to display End.

Total firing time 15 hours.

Allow 10 seconds for programmer to return to start position.

Press Start/Stop button.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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PROGRAM 3 – EARTHERNWARE GLAZE/POTTERY TO 1080°C

SEGMENT 1	150°C/hr 600°C	Full 600°C	00.15 minutes
SEGMENT 2	120°C/hr 1000°C	80°C/hr 1080°C	00.10 minutes
SEGMENT 3	END		

SEGMENT 1
Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 3 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **150°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature required i.e. **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp to FULL using the ⇑ key.
Press the ⇒ key.
Set the temperature to **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.15** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 2
Set the ramp to **120°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1000°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp required i.e. **80°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1080°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.10** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 3
Set to END. Push the ⇓ key until END appears.

Total firing time 8 hours 43 minutes.

Allow programmer approximately 10 seconds to return to start position.

Press Start/Stop button.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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PROGRAM 4 – STONEWARE MIDFIRE TO 1200°C

SEGMENT 1	150°C/hr 600°C	Full 600°C	00.15 minutes
SEGMENT 2	120°C/hr 1000°C	80°C/hr 1200°C	00.10 minutes
SEGMENT 3	END		

SEGMENT 1
Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 4 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **150°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature required i.e. **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp to FULL using the ⇑ key.
Press the ⇒ key.
Set the temperature to **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.15** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 2
Set the ramp to **120°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1000°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp required i.e. **100°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1200°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.10** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 3
Set to END. Push the ⇓ key until END appears.

Total firing time 10 hours 13 minutes.

Allow programmer approximately 10 seconds to return to start position.

Press Start/Stop button.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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PROGRAM 5 – STONEWARE HIGHFIRE TO 1280°C

SEGMENT 1	150°C/hr 600°C	Full 600°C	00.15 minutes
SEGMENT 2	120°C/hr 1000°C	100°C/hr 1200°C	00.00 minutes
SEGMENT 3	60°C/hr 1280°C	Full 1280°C	00.10 minutes
SEGMENT 4	END		

SEGMENT 1
Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 5 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **150°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature required i.e. **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Press the ⇑ key to select FULL.
Press the ⇒ key.
Set the temperature to **600°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.15** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 2
Set the ramp to **120°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1000°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp required i.e. **100°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1200°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.00** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 3
Set the ramp to **60°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1280°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp required i.e. **FULL**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1280°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.10** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

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SEGMENT 4

Set to END. Push the ⇓ key until END appears.

Total firing time 11 hours 2 minutes.

Allow programmer approximately 10 seconds to return to start position.

Press Start/Stop button.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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PROGRAM 6 – ONE SHOT FIRING TO 1100°C FOR PRIMARY SCHOOLS

This firing will allow the clay to harden and will not accept a glaze but is hard enough to be painted over in acrylic or similar paints which have a clear varnish or similarly applied. This firing avoids the necessity to fire clay twice.

SEGMENT 1	20°C/hr 100°C	50°C/hr 700°C	00.0 minutes
SEGMENT 2	75°C/hr 1000°C	100°C/hr 1100°C	00.00 minutes
SEGMENT 3	END		

SEGMENT 1
Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 6 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **20°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **100°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp to required i.e. **50°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **700°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.00** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 2
Set the ramp to **75°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1000°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp required i.e. **100°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1100°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time to **00.00** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 3
Set to END. Push the ⇓ key until END appears.

Total firing time 22 hours.

Allow programmer approximately 10 seconds to return to start position.

Press Start/Stop button.

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Red start light indicator program is running.

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PROGRAM 7 – ELEMENT COMMISSIONING FIRING FOR NORMAL OPERATIONS

SEGMENT 1	25°C/hr 100°C	50°C/hr 700°C	00.00 minutes
SEGMENT 2	100°C/hr 1100°C	Full 1100°C	02.00 HOURS
SEGMENT 3	END		

SEGMENT 1
Press the ⇒ key.
Press the ⇓ key or ⇑ to display PROGRAM 7 SEGMENT 1
Then press the ⇒ key.
Delay timer set being usually set to **00.00**.
Press the ⇒ key.
Set the ramp required i.e. **25°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature required i.e. **100°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp to i.e. **50°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **700°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **00.00** minutes use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 2
Set the ramp to **100°C**/hr use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1100°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the ramp to FULL use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the temperature to **1100°C** use ⇑ or ⇓ keys to select.
Press the ⇒ key.
Set the soak time **02.00** hours use ⇑ or ⇓ keys to select.
Press the ⇒ key.

SEGMENT 3
Set to END. Push the ⇓ key until END appears.

Total firing time 22 hours.

Allow programmer approximately 10 seconds to return to start position.

Press Start/Stop button.

Red start light indicator program is running.

Illuminated arrow or dot indicates position of firing.

Temperature read out shows the kiln temperature.

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OPERATING INSTRUCTIONS ONCE PROGRAMMER IS SET

Power ON.

Programmer beeps then self-checks, and then displays kiln temperature plus last program used number + segment 1.

Press the ⇒ key and use the ⇑ or ⇓ key to select a program to run or edit. Number flashes until either START/STOP is pushed. This will start the program or the ⇒ key is pushed allowing entry into the programming mode.

Note: There are 9 segments available. Each segment consists of a ramp to temperature followed by another ramp to temperature and then a soak time.

PROGRAMMING

Press the ⇒ then either the ⇑ or ⇓ to select the program number.
Press the ⇒ and you are given the option here to select a delayed start in hours and minutes. Default value is 00.00.
Press the ⇒ key. A small red arrow on up 1st up slope flashes. Use the ⇑ or ⇓ keys to select ramp rate. I.e. degrees °C/hr.
The red light beside the °C/hr is also illuminated confirming input data.
Press the ⇒ key. The red dot on the graph illuminates. The red light beside the °C also illuminates. This is the target temperature for the ramp previously set. Use the ⇑ or ⇓ keys to select.
Press the ⇒ key. A small red arrow on the second slope illuminates as does the light beside the °C/hr. This is the second ramp setting. Use the ⇑ or ⇓ keys to select ramp.
Press the ⇒ key. The red dot illuminates as the small red light besides °C/. This is the target temperature for your second ramp.
Press the ⇒ key. A small red arrow and light beside the hr/min illuminates. This is a soak time. Set a time to remain at second temperature.
NOTE: If no soak is required set 00.00. This is segment 1 of the program set.
Press the ⇒ key.
Program number and segment 2 will display.
NOTE: If End is also displayed and you want to use more segments press the ⇑ key then program each step as per instructions for Segment 1.

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WARRANTY

(Applicable only to products marketed and used within the Commonwealth of Australia.) Kiln has been thoroughly tested and inspected during manufacturing and is guaranteed against faulty materials and workmanship. Should there prove to be defective material or workmanship, within 12 months from date of purchase, it will be repaired free of charge, provided it is returned intact, freight paid to, Tetlow Kilns and Furnaces Pty Ltd. Naturally the warranty does not cover failure due to accidental damage, misuse, negligence, consequential damage, modification, or where the controller is not installed and operated in accordance with any statutory regulations, the appropriate installation code, or with details appearing on the controller rating plate. The warranty is valid wherever you live in Australia even if you move. For ready recognition of your warranty, record the date of purchase hereon and retain this for your record. Also retain proof of purchase as you may be asked to produce same in event of a service claim. This warranty is the sole guarantee by the manufacturers and they are not responsible for any other obligations assumed or expressed by any other person or persons.
No other remedy shall be available to the buyer (except the conditions contained in this warranty) for damage to kilns, ware or property, lost profits, or lost sales or any other consequential or accidental loss.

If service is required on this equipment on site, a service charge will be made according to time taken at normal trade rates including travelling time.

In case repair under guarantee is claimed, this guarantee must be tendered.
Please note that elements are not covered by guarantee.

For further information, locate us at our website, www.tetlow.com.au
Do not hesitate to contact us at Tetlow Kilns and Furnaces at 03 8545 8296 or info@tetlow.com.au

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