Thermoglaze

TG 25

Operator's Manual

Belshaw Bros., Inc.
814 44th Street NW, Suite 103
Auburn, WA 98001 USA
Phone: (206) 322-5474 • Fax: (206) 322-5425
Email: service@belshaw.com • http://www.belshaw.com

Congratulations on buying a new Thermoglaze from Belshaw Bros., Inc. Please inspect the unit carefully for damage or missing pieces immediately after receiving your system. Belshaw cannot pay for shipping damage, because the freight company has accepted the machine from Belshaw in good condition, and is responsible for its safe delivery.

For your protection, **each crate should be inspected before signing the Bill of Lading to report any visible damage caused by the trucker in transit, and account for the number of crates.**

EQUIPMENT RECORD

Please provide the information below when you correspond with us about your machine.

Purchased by _____

Installed by _____

Date of Installation _____

Model number _____

Serial number _____

011108

MN-1727EN

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Contents

Preface

The operator of the Thermoglaze is expected to behave safely, read this manual before operation, and follow its instructions and warnings.

Study the instructions and warnings in this manual carefully before operating the equipment. A thorough understanding of how to install, maintain, and safely operate the Thermoglaze will prevent production delays and injuries. Prior operation of the equipment before reading and understanding the instructions in the manual will void the warranties of the equipment.

To use the Thermoglaze safely, heed the following warnings and all other warnings that appear in this manual:

- To avoid damaging the Thermoglaze, never use force to assemble, disassemble, operate, clean, or maintain it.

Operation 1

- Turn on main power switch and allow to heat to operating temperature. **(Note: Heat light will go out when oven reaches temperature.)**
- Turn on the Thermoglaze and heat for 30 minutes to allow it to reach operating temperature.
- Load glaze reservoir with 20 pounds (one small bucket) of glaze and turn on the glaze pump.

WARNING

Use proper lifting technique when lifting glaze buckets to avoid back injury.

WARNING

Do not operate glazer without glaze or water in the pump. Doing so can cause permanent damage to the pump.

CAUTION

If water is spilled while filling the water pan, thoroughly dry all surfaces including the floor. Spilled water may cause serious injury, loss of life, or damage to equipment. Water may continue to drip. To prevent the floor from becoming wet and slippery, use a pan to collect dripping water. Do not move the Thermolizer when water is in the reservoir.

Note: Use only distilled or purified water in the Thermolizer to avoid build-up in the water box of minerals and deposits normally found in tap water.

- Lift off water reservoir cover and fill water reservoir (see Figure 1-1). If necessary, open the lower door(s) and remove screen(s) or tray(s) to access the water reservoir. Do not fill beyond ½" of the top edge. When finished, replace the cover and doors. If equipped with the autofill unit, turn on the water and the filler unit will stop at the correct water level.

Note: Do not pull the control box out to gain access to the water reservoir because water may be spilled when moving the control box.

  - Turn on control box power switch.
  - Wait 25 minutes for the Thermolizer to reach operating temperature.
- After the donuts have been in the Thermolizer for at least 30 minutes (60 minutes for filled product), turn on glazer using the on switch located on the main control panel.
- After the donuts are thawed, place a screen of donuts from Thermolizer box to the infeed end of the Thermoglaze conveyor and allow the screen to travel through the oven and glazer. This takes approximately 2 minutes.
- When the screen of donuts is through the glazer and stopped forward travel, place the glazed product on a rack for cooling using the 2 delrin tray grips provided with the unit.

WARNING

To avoid burning yourself, never touch the Thermoglaze unit, conveyor, or interior of the oven while the machine is in use.

WARNING
Thoroughly clean and dry the floor if water or other materials are spilled. Materials spilled on the floor may cause serious injury and loss of life.

WARNING
Conveyor will automatically start when Thermoglaze power switch is turned on.

CAUTION!
Donut screens are hot after coming out of the glazer and will burn you if you grab them without the handles.

Operating the Thermolizer

CAUTION
Do not permit water pan to run out of water. Check often. Use only soft or distilled water in the operation of this proofer.

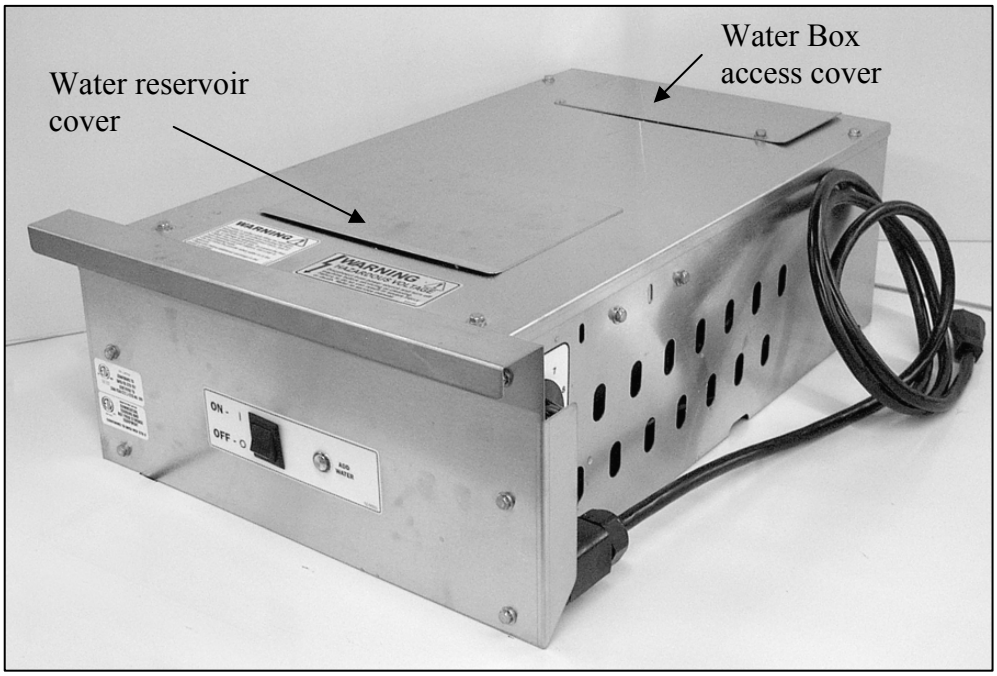
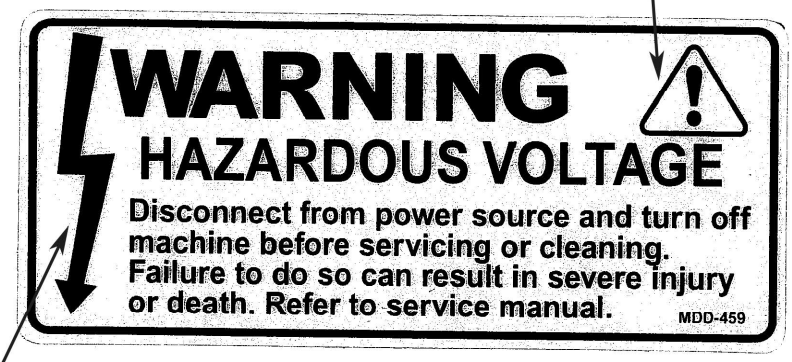


Figure 1-1. Water Reservoir.

Thermoglaze 25 Symbol Key

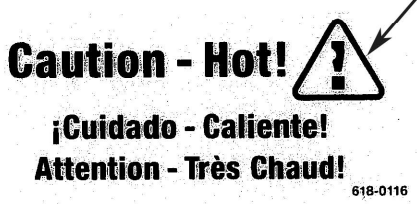
Read the appropriate section in the manual



Electric Shock Hazard

Pinch Point Hazard

Read the appropriate section in the manual

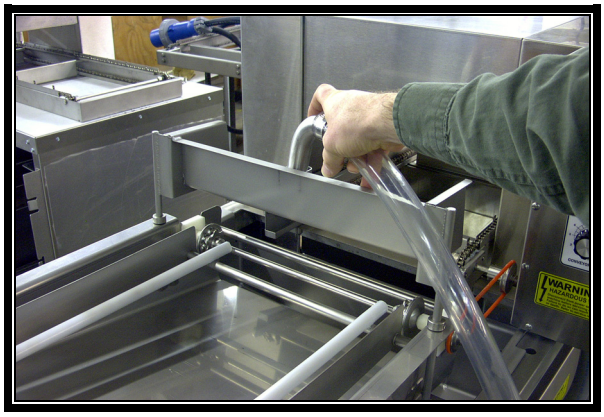


Cleaning 6

Daily TG Cleaning Instructions

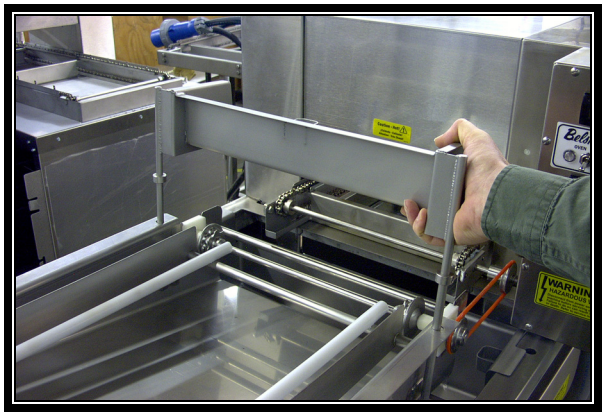
TG 25 Daily Cleaning instructions.

Disassembly:

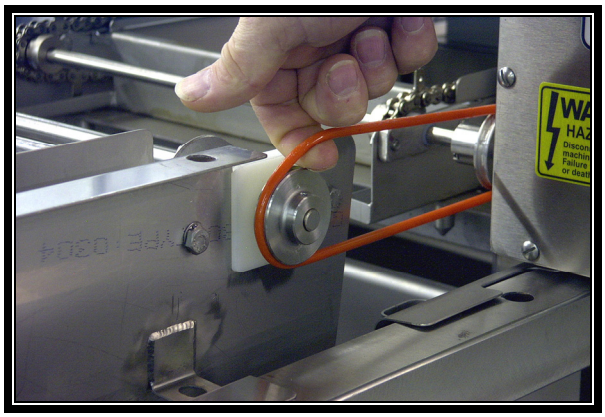


1. Remove glaze hose from glaze trough and pump unused glaze into a clean storage container.
2. **Disconnect main power cord.**

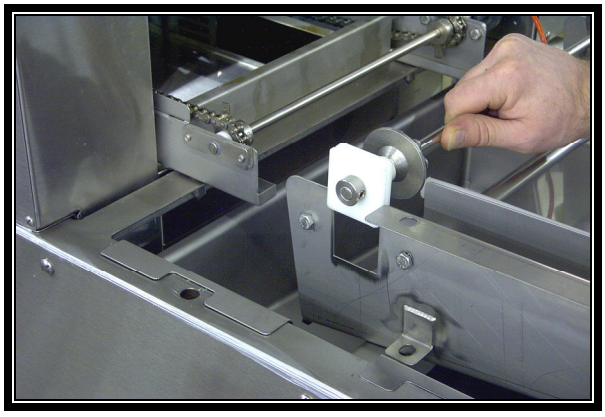
3. Return glaze tube to the holder in the glaze kettle.



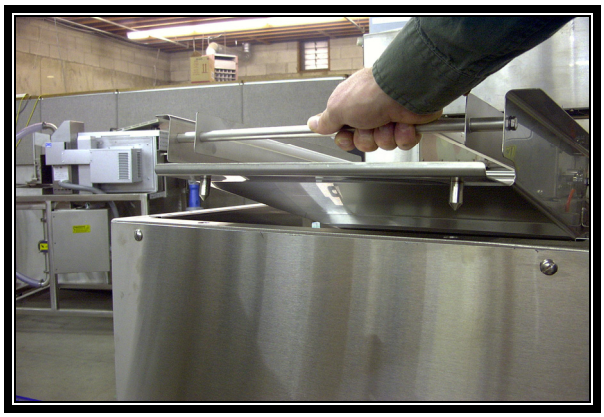
4. Remove glaze trough.



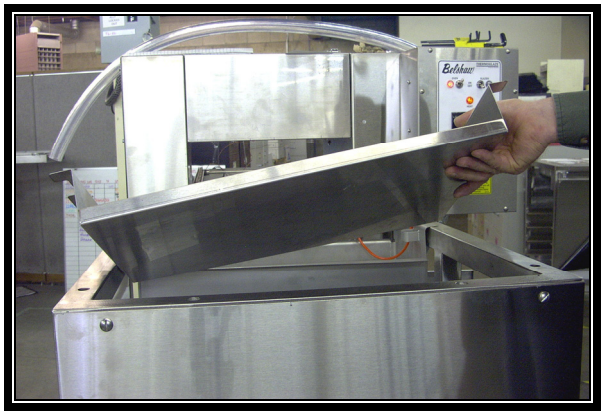
5. Remove transfer shaft drive belt.



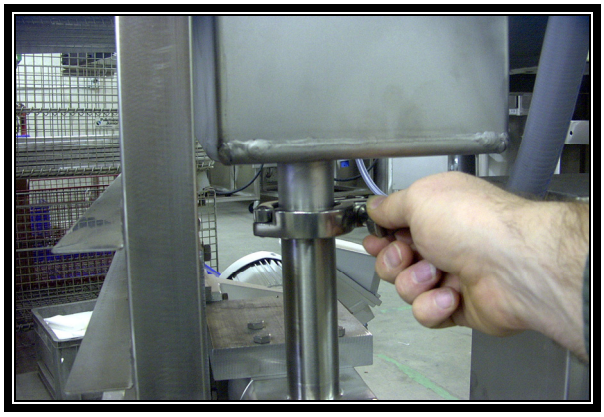
6. Remove the transfer drive shaft.



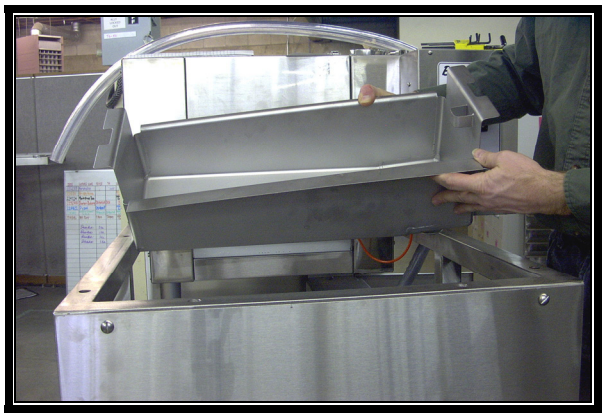
7. Remove the drain tray assembly.



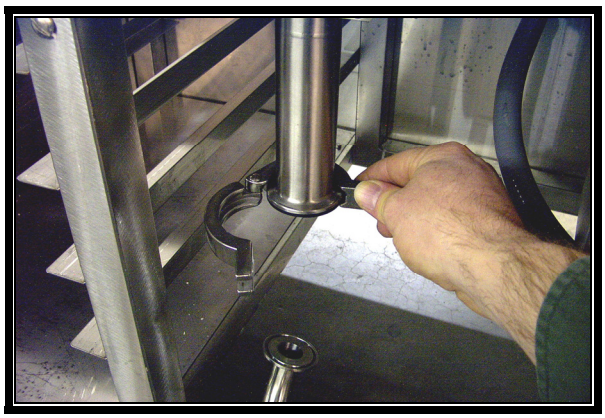
8. Remove the outfeed crumb tray.



9. Removed the hose clamp from the glaze tank drain.

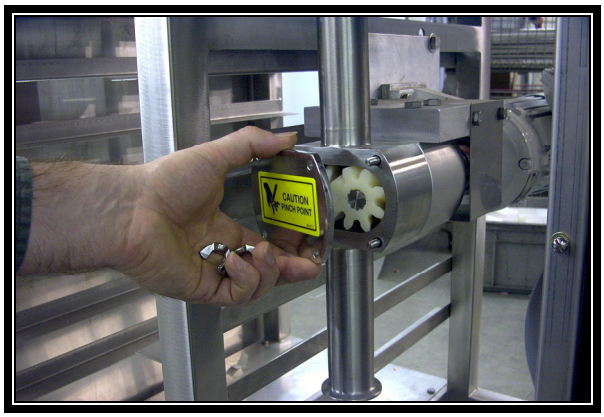


10. Remove the glaze kettle.

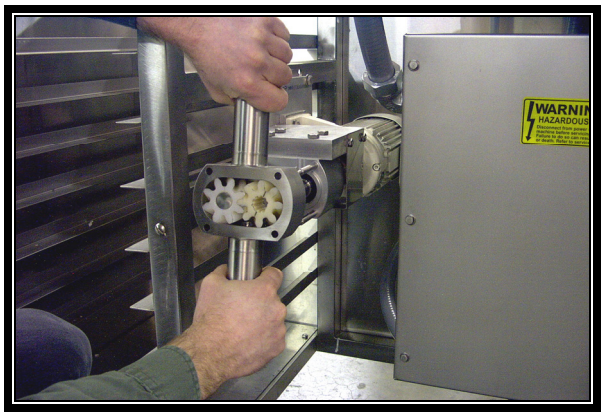


11. Remove the lower hose clamp, hose and hose gasket.

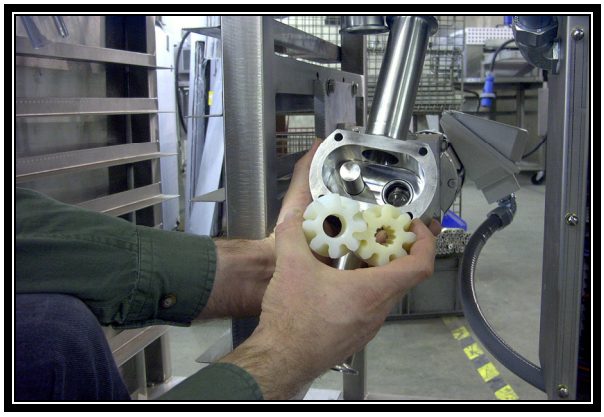
12. Remove the 4 wing nuts from the glaze pump cover.



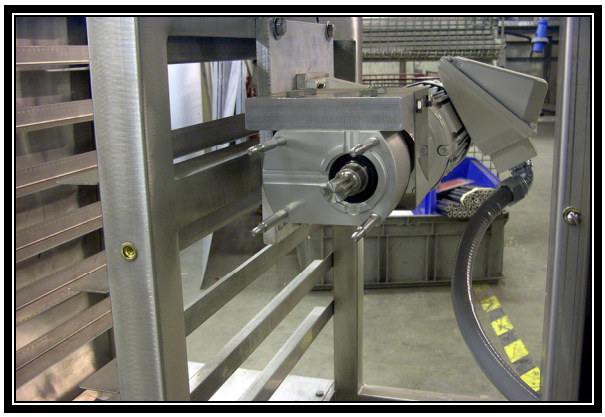
13. Remove the glaze pump cover and gasket.



14. Remove the pump body and gear impellers.

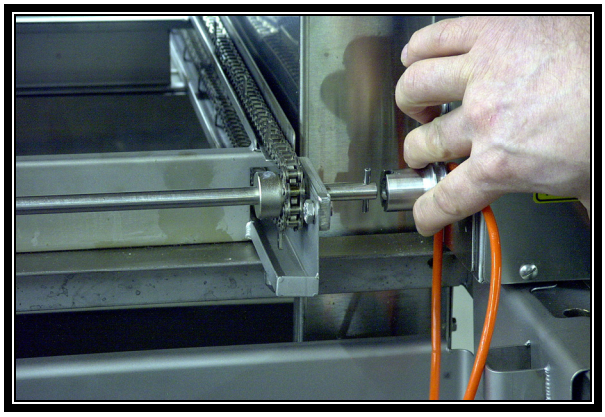


15. Remove the gear impellers from the pump body.



16. Clean the pump shaft splines thoroughly to prevent the gear from sticking onto the shaft during assembly.

Note: Allow the oven to cool below 130 deg F. before disassembling the oven or conveyor.



17. Pull the conveyor drive coupling back to release the conveyor.

18. Remove the conveyor assembly trough the outfeed end of the oven.

19. Remove the oven crumb tray.
20. Hand wash all parts in hot soapy water, rinse and sanitize.
21. Allow to dry before assembling.

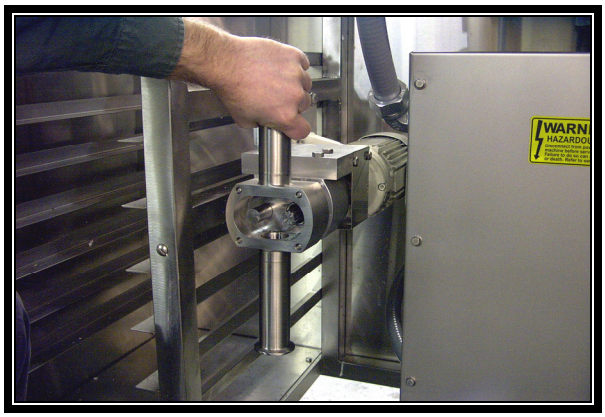
Assembly:

1. Install the crumb tray.

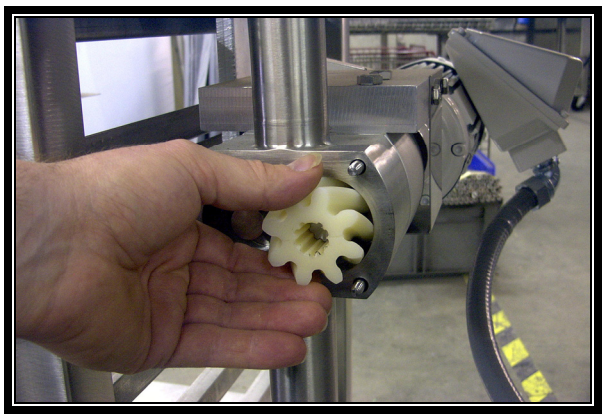
2. Install the conveyor into the oven and line up the locating pins at the outfeed end of the oven.

Note: lubricate the pump shaft "O" ring and gear impellers with food grade mineral oil before installation.

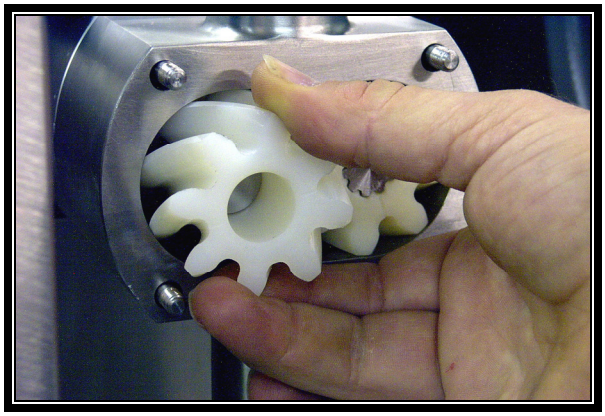
CAUTION
Failure to properly clean or lubricate the glaze pump could cause damage to the pump gear impellers.



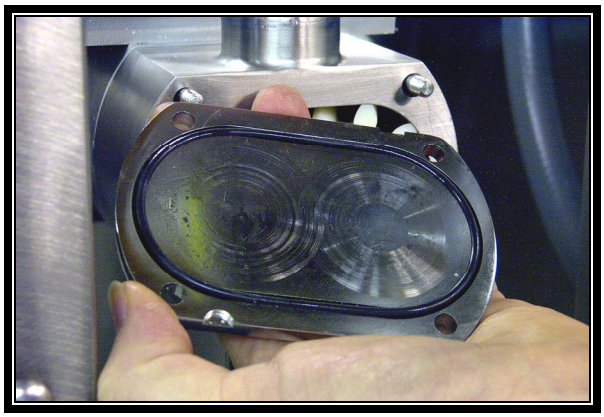
3. Install the glaze pump body.



4. Install the drive gear onto the splined shaft.



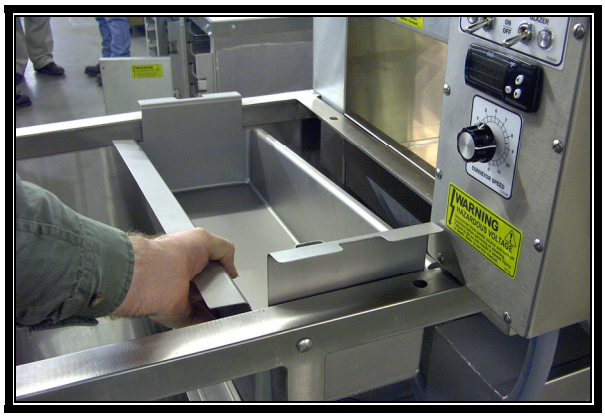
5. Install the lay gear onto the smooth shaft.



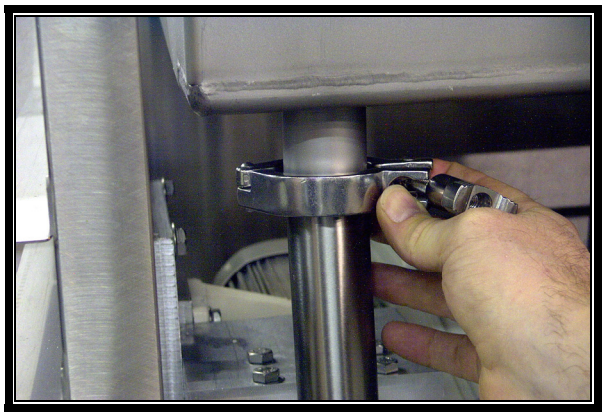
6. Install the glaze pump cover “O” ring into the cover and install the cover onto the pump. Make sure the “O” ring stays in the groove during installation.

7. Install the wing nuts onto the pump, do not over tighten them.

8. Install a hose gasket on the top of the pump.



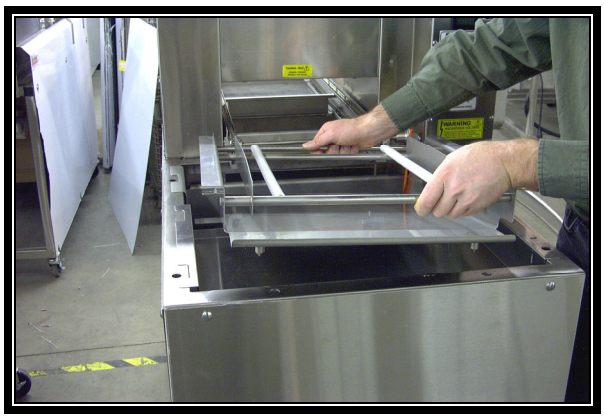
9. Install the glaze kettle; make sure the gasket is properly seated.



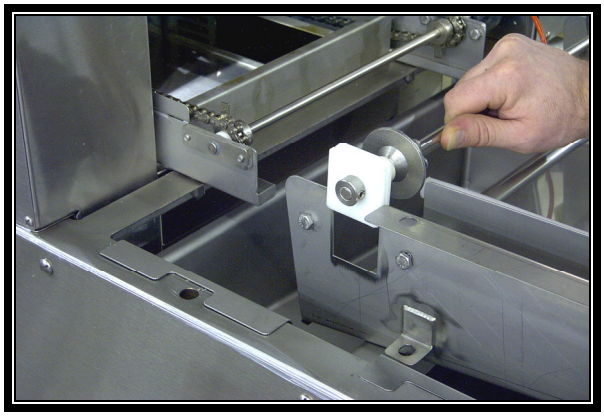
10. Install the hose clamp. Finger tighten only, do not use tools.

11. Install the glaze hose, gasket and clamp. Finger tighten clamp only.

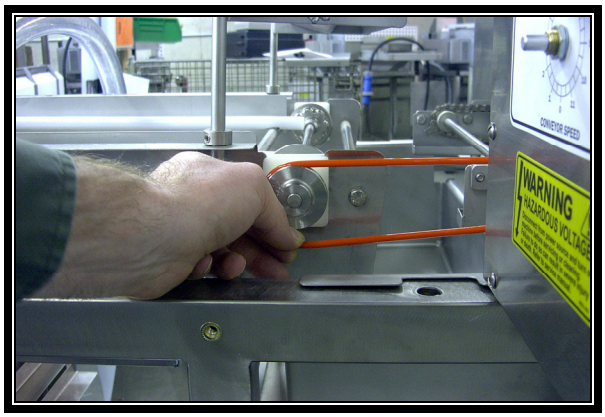
12. Install the outfeed crumb tray.



13. Install the drip tray by lining up the locating pins at the outfeed end of the tray.

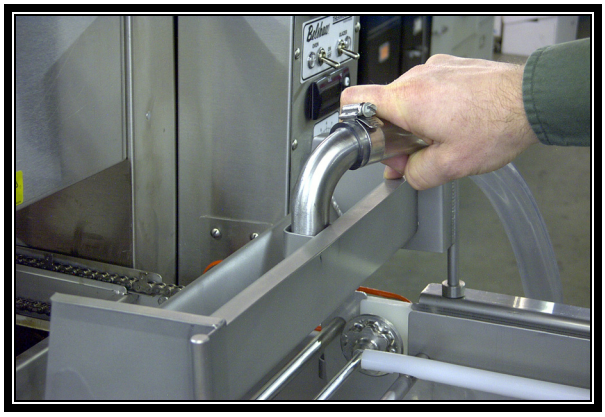


14. Install the transfer drive shaft assembly.



15. Install the transfer shaft drive belt.

16. Install the glaze trough.



17. Install the glaze hose into the glaze trough.

Thermolizer Cleaning Instructions

Once a week, clean the Thermolizer as follows:

1. Remove and clean Plexiglas doors with warm water.
2. Disconnect from power and remove control box from cabinet.
3. Remove and clean the screen rack angles, angle supports, and air duct.
4. Wipe the cabinet interior clean.
5. Special attention should be given to cleaning the water box (Item 2 of Control Box Assy., parts list drawings). Clean the water box as follows:
    a. Turn off water to the Thermolizer control box. (Auto-water fill only)
    b. Remove water reservoir cover.
    c. Empty the water reservoir pan.
    d. Remove water box access cover thumb screw and rotate access cover to open position. (see Figure 5-1)
    e. Use a rubber syringe baster to remove sediment from the water box. Wipe the inside of the water box with a rag.
    f. Add a small amount of water to the water reservoir pan. Water should flow freely into the water box. If not, clean out the water line between the water box and the water reservoir pan. Check for blockage at the water box inlet hole first.
    g. Close water box access cover and fasten with thumbscrew.
    h. Replace water reservoir cover.

Thermoglaze

TG 25

Technical Supplement

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To use the Thermoglaze safely, heed the following warnings and all other warnings that appear in this manual:

- To avoid damaging the Thermoglaze, never use force to assemble, disassemble, operate, clean, or maintain it.

1 Unloading and Uncrating

DO NOT LIFT EXCESSIVE WEIGHT

Once the crate has been delivered, immediately take the covers off the crate and inspect for hidden damage. If damage is found, please see the above information to make a damage claim to the shipping company. After inspection, cut the banding and remove any other restraints from the Thermoglaze unit. Remove the banding and other packing material from the Thermolizer unit. Roll the Thermolizer, carefully, off the skid first and move it near the area where it will be assembled.

Do not connect the Thermoglaze or the Thermolizer to electrical power before completing the assembly and placement of the products.

The cartons under the Thermoglaze contain the glaze trough and oven guard. See Section 3 to assemble the unit. The carton in the Thermolizer contains the doors and other interior parts. See Thermolizer manual for assembly instructions.

The Thermoglaze system has been designed for quick assembly and installation. Within a few minutes of receiving the system, the installer can have the Thermoglaze ready to make donuts if the electrical connections are properly installed and inspected by the prevailing local authorities.

2 Installation

WARNING

To avoid electrocuting yourself or damaging the Thermoglaze, never allow water, steam, cleaning solution, or other liquid to enter the electrical panels or connections

Electrical:

Model	Dimensions	Power Requirements
TG25	60"L x 31W x 52"H	See data tag

Make sure that the power requirements of the Thermoglaze, shown on the data plate, match your power source.

Only plug in to power source that matches the required voltage and current for the Thermoglaze. (The Thermoglaze unit TG25 comes standard with a Hubbel 360P6W plug that needs a 360C6W socket or equivalent for electrical current.

Thermoglaze must be electrically grounded and connected in compliance with the National Electrical Code, ANSI-NFPA 70, and applicable municipal building codes.

Do not apply electrical power to the system until the assembly has been completed. See Section 4 for the assembly of the Thermoglaze.

WARNING

When handling Thermolizer Control Box, keep hands and feet clear as injury may occur if box is dropped.

Venting:

Local codes prevail. The authorities having jurisdiction are stated in NFPA 96-1994 regarding requirements for the Thermoglaze.

Building Layouts:

Specification sheets and AutoCAD drawings for use in developing architectural drawings can be provided by request. Please call your Belshaw Bros., Inc. representative for help in defining your requirements.

Thermolizer Installation

Unpacking and Assembling the Thermolizer

Use a forklift to transport the shipping crate to the workstation.

1. Break down the shipping crate.
2. Remove the packing materials from the thermolizer, including foam, tape, brown paper, plastic, and white protective coating. ***Do not remove the plastic from the Plexiglas doors at this time.***
3. Cut the bands holding the control box in place and remove the control box from the cabinet.
4. Remove and discard the plywood that the control box was resting on.
5. Inspect the machine to see that no parts are bent, scratched, or otherwise damaged. If any damage has occurred in shipping, file a freight claim with the shipping company immediately.
6. Clean the humidifier water box and attach to filtered water per plumbing codes in your

area. Refer to Section 2 of the Operator's Manual for cleaning instructions. (With optional auto-water fill only)

WARNING
If water is spilled while cleaning the thermolizer, be sure to dry the floor thoroughly.

7. Install screen rack angles onto angle supports by tilting the angles up and sliding the flange into the notches of the supports. See Figure 2-1.

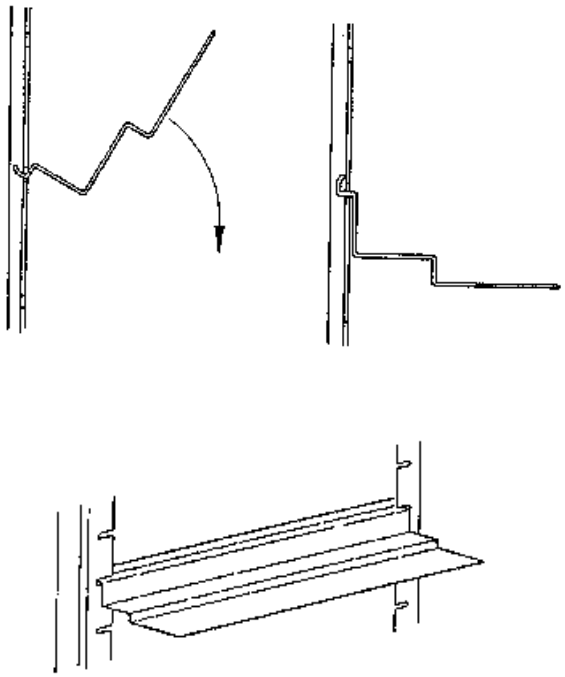

Figure 2-1

8. If not already done, remove the packing material from the control box and the put water reservoir cover in place over the water reservoir.
9. Place the control box into the cabinet, push the cord through the hole in the bottom to the right of the control panel, and close the cord opening cover plate.
10. Remove the protective covering from the Plexiglas doors. Clean the doors with warm water.
11. Insert the hinge pin on the right side of the door into place, and then slip the left side hinge pin into the slot.

WARNING
Pull down and away when opening door on Thermolizer as not to dislodge door from hinges. Loose door may cause injury.

Note: due to vibration in shipping, the door handles might get out of adjustment. To adjust door handles: loosen the screws which fasten the handle to the Plexiglas door, adjust position of the handle so it just clears the bottom of the door above when both are closed, and tighten the screws. If more than one door handle requires adjustment, start with the one nearest the top of the proofer and work down.

12. Turn the control box power switch to the off position (see Operation Instructions)
13. Connect Thermolizer cord to power source provided from the ThermoGlaze main power box.
14. Keep this manual for future reference. Put it where you know you can find it.

Initial Cleaning

Remove all the packing materials. Wipe the Thermolizer with a soft, damp cloth. Dry these areas completely.

WARNING
To avoid electrocution or other injury, turn off the machine's main power before attempting any cleaning, disassembly, adjustment, or repair.

3 Assembly

Clean all parts with mild soap and water and let dry before assembly and applying electrical power to the equipment.

The Thermoglaze unit is design for ease of assembly and use. The system is crated in a manner so there are few pieces to put together once the Thermoglaze is in place for production.

To help familiarize you with your Thermoglaze, please study the following photographs:

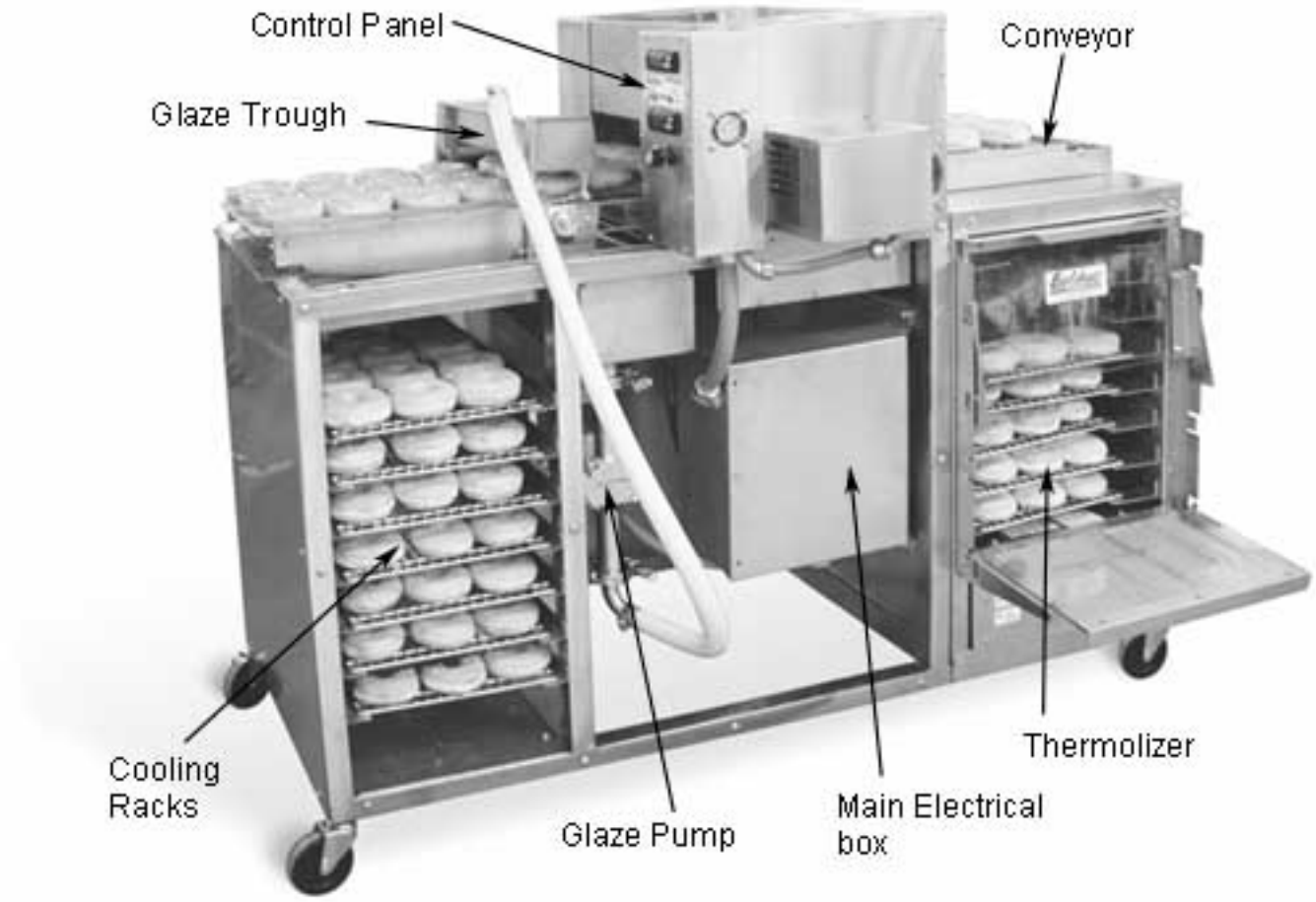

Figure 3-1 Front view:

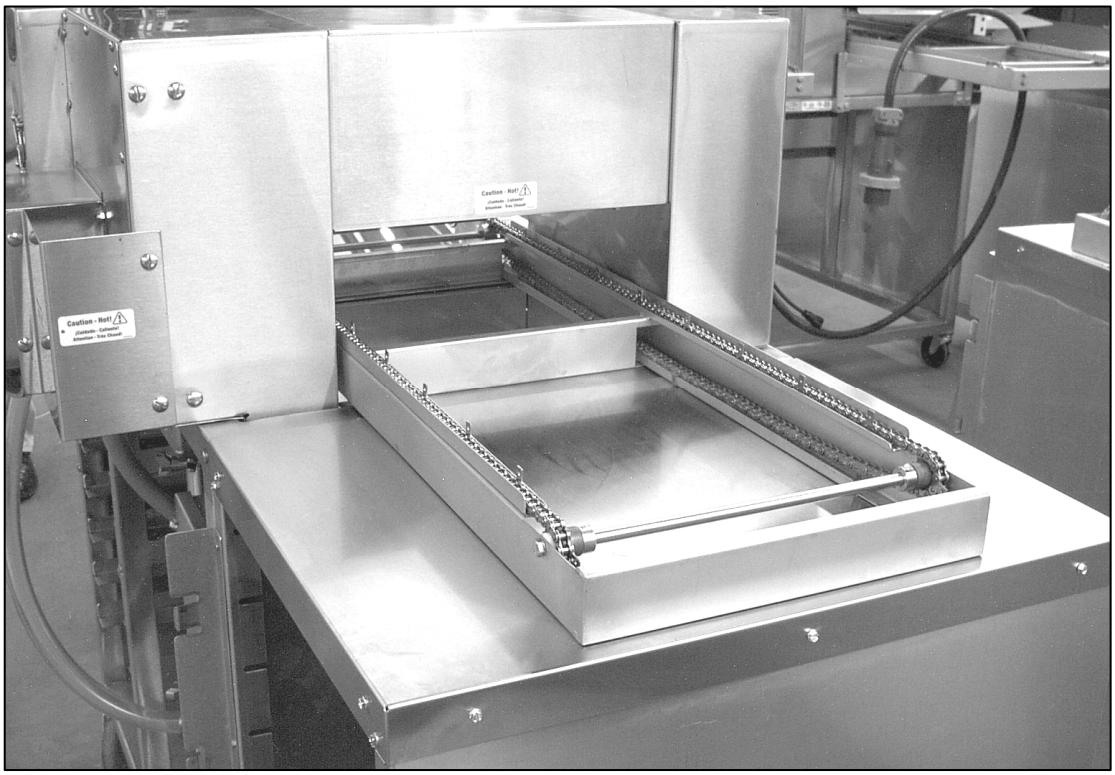

Figure 3-2 Infeed view.

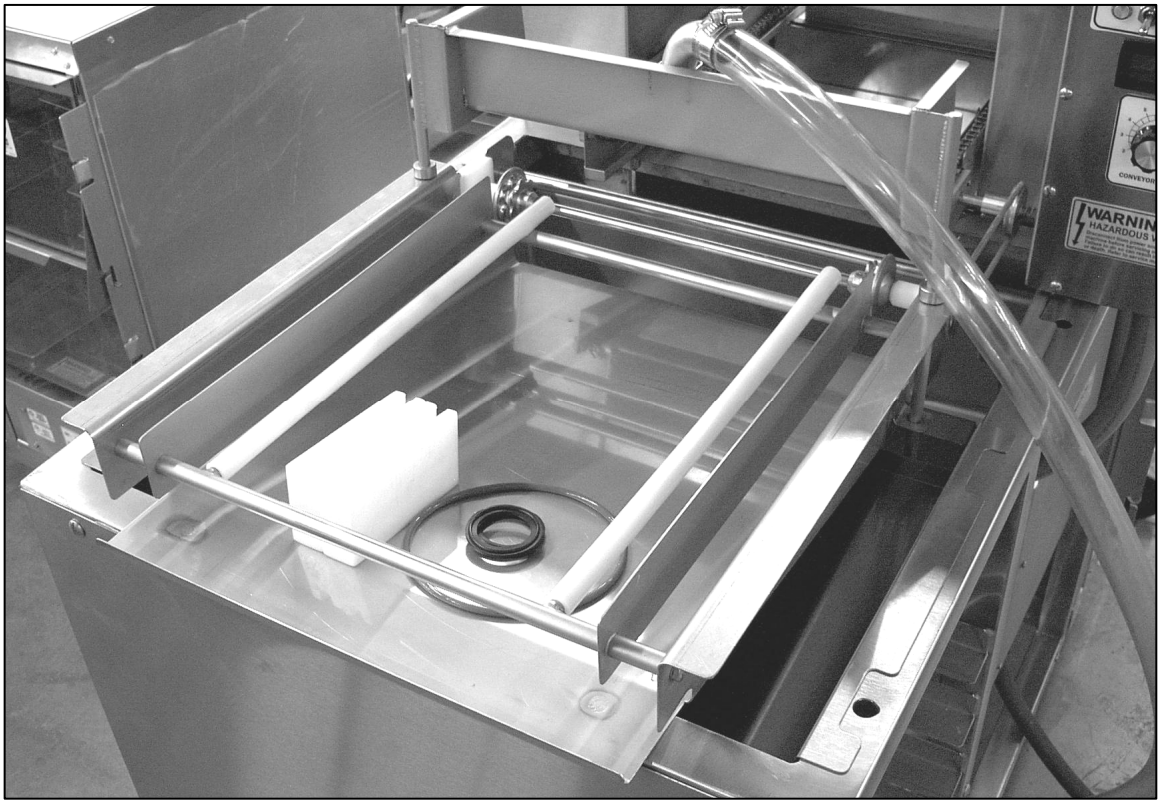

Figure 3-3 Outfeed View:

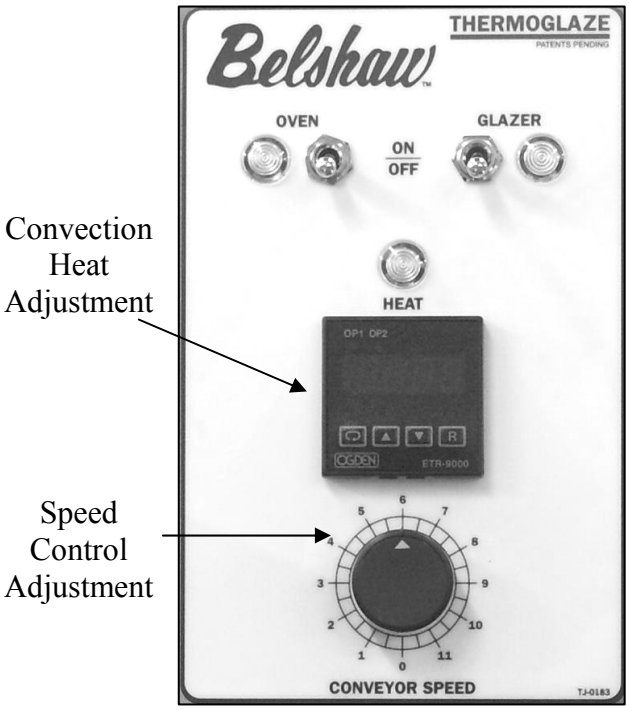

Figure 3-4. Control Panel View.

The Thermoglaze system consists of a Thermoglaze unit and the Thermolizer. They are placed in unison in the area located for the production of donuts.

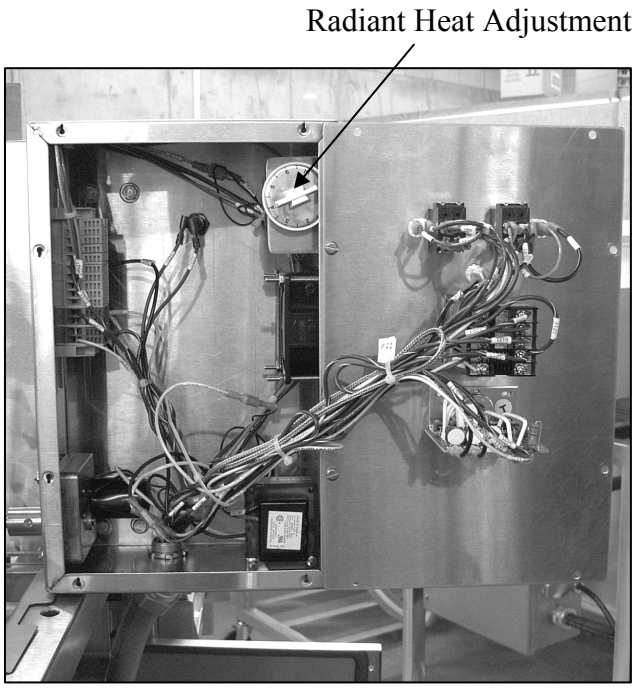

Figure 3-5. Control Box.

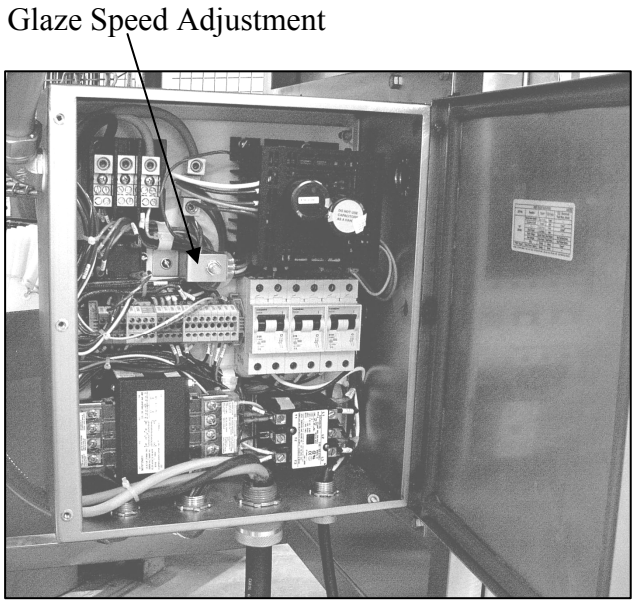

Figure 3-6. Electrical Panel.

Initial Setup Procedure of Thermoglaze Model TG25

TG-25 Factory Settings

1. Convection Heat: 400°F Digital Controller, see Figure 3-4
2. Radiant Heat: 6.0 Infinite Controller See Figure 3-5
3. Conveyor: 7.5 at 90 seconds
4. Glazer: 60% This adjustment needs to be made according to the thickness of your glaze. See Figure 3-6

Convection Heat Adjustment

Push the button on the digital controller, "SP1" will light up. This is the set point. Push the up and down arrows to adjust the convection heat set point. See Figure 3-4. Push "R" button to return to operational mode.

Radiant Heat Adjustment

Disconnect the TG25 from power before removing any access covers. This procedure should be performed only by a qualified service

technician. Remove the electrical box cover on the oven to access the radiant temperature controller. See Figure 3-5.

Speed Control/Cook Time Adjustment:

Turn on the oven and allow it to come up to temperature. This will take about 30 minutes.

Put a glaze screen on the conveyor chains that run through the oven. With the oven in operation, time the leading edge of the screen as it enters the oven until the leading edge just leaves the exit end of the oven. Turn the converyor speed adjustment knob until the desired time/speed is found. To decrease the cook time, turn the knob clockwise. To increase the cook time, turn the knob counterclockwise.

Glazer Speed Control

Turn off the power to the TG 25 before opening electrical control box.

WARNING
Do not operate glazer without glaze or water in the pump. Doing so can cause permanent damage to the pump.

Turn the glazer speed control potentiometer counterclockwise to increase flow of glaze or clockwise to decrease flow of glaze. See Figure 3-6.

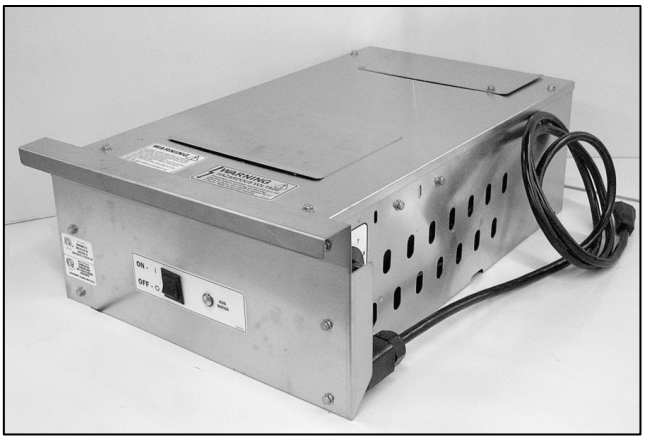

Figure 3-7. Thermolizer Control Box.

Initial Setup of Thermolizer

Humidity Control

This control is located on the left hand side of the control box behind the front panel. It controls the water heating element. Set on high, the water heat element will remain on constantly. Set on any setting other than high, the control will cycle on and off. Higher numbered settings create a longer on-cycle and high humidity. The factory setting is 5.5 on the dial.

Heat Control

This control is located on the right hand side of the control box behind the front panel. It controls the air-heating element. The factory setting is to place the white dot on the knob at 11:00 to produce 95° -110°F.

4 Maintenance

The ThermoGlaze is engineered to need little maintenance. By keeping the system clean, the equipment will last for years. The only maintenance that is required is the following:

When cleaning the donut system, check all rubber gaskets for wear and replace when necessary. Check for wear on impellers of the glaze pump, replace when necessary. .

DO NOT spray machine with water or cleaning agents to clean. Only wipe main unit off with damp cloth.

Motor Speed Control Board Adjustment

1. When installing new motor speed control board, start by setting the potentiometers as shown in Figure 4-1.
2. Connect volt meter to "+ arm" and "- arm" on the board. Set meter to DC Voltage.
3. Turn conveyor speed to maximum (clockwise).
4. Adjust max pot until the maximum voltage out is 12 VDC.

Figure 4-1. Motor Speed Pot Adjustment.

5 Troubleshooting

Call Belshaw Bros. at (206)322-5474, or (800) 578-2547. One of our customer support representatives will be happy to help you. When you call, please specify the following:

- The model name of the machine.
- The serial number of the machine.
- The voltage, phase, and hertz (cycle) of the machine. This information can be found on the small, rectangular data tag/plate.

CAUTION

If you perform repairs yourself or have them performed by anyone other than Belshaw Bros. or a service technician authorized by Belshaw Bros., you do so at your own risk.

Following is a troubleshooting chart to help you identify and solve some basic problems.

WARNING

Disconnect the machine from the power source before disassembling, repairing, or wiring.

Glazer VFD Status Indicators

LED Ref.	Function	State[1]	LED Color	LED Color – Recovered Fault (Manual Mode)
"ST" (Status)	Normal Control Operation	Slow Flash	Green	—
	CL (current limit)	Steady	Red	Green[2]
	$I^2 t$	Quick Flash	Red	Green[2]
	Short Circuit	slow Flash	Red	—
	Undervoltage	Quick Flash	Red/Yellow	Red/Yellow/Green[5]
	Overvoltage	Slow Flash	Red/Yellow	Red/Yellow/Green[5]
	Stop	Steady	Yellow	Green[2]
"PWR" (Power)	Bus & Power Supply	Steady	Green	—

(1) Slow flash: 1 sec. on, 1 sec. off; Quick flash: .25 sec. on, .25 sec. off. (2) flashing green.

Figure 5-1. KVBF Status Indicators

CONVEYOR WILL NOT MOVE	
Possible Causes	**What To Do**
Conveyor is jammed.	Check for obstruction in conveyor and remove.
GLAZER WILL NOT PUMP GLAZE (SEE FIGURE 5-1)	
Glazer motor is not running.	Check to make sure the motor is running. (See Pump Motor Will Not Run)
Glazer pump impellers are worn.	1. Disconnect power. 2. Replace impellers.
GLAZE IS MISSING THE DONUTS ON ONE SIDE OF THE GLAZE SCREEN	
Glazer or glaze trough is not level.	Adjust level of glaze trough by moving set collar.
Glaze pump is running too slow.	1. Disconnect from power. 2. Open Electrical Enclosure. 3. Turn glazer speed control clockwise. 4. Close Electrical Enclosure.
THE PUMP MOTOR WILL NOT RUN	
Possible Causes	**What To Do**
The connection of the power cord to the power source is faulty.	Make sure the power cord is fully plugged in to a proper power source.
The circuit breaker has been tripped.	1. Disconnect from power. 2. Open electrical enclosure. 3. Reset circuit breaker. 4. Close electrical enclosure.
THE FILL HOSE IS LEAKING	
Possible Causes	**What To Do**
Fill hose is leaking at the connection.	Hose bracket needs adjusting or tightening.
Fill hose is leaking near the pump.	Check for missing or damaged o-ring.

Troubleshooting the Thermolizer

If you have problems with your Thermolizer, call your dealer or another qualified technician.

If your dealer cannot help you, please call Belshaw. To do so, first dial the appropriate international access code, then 1-206-322-5474 (United States). When you call, please specify the following:

- The model name of the machine.
- The serial number of the machine.
- The voltages, phase, and cycle of the machine.

WARNING
If you perform repairs yourself or have them performed by anyone other than a service technician authorized by Belshaw Bros., you do so at your own risk.

WARNING
Disconnect the machine from the power source before disassembling, repairing, or wiring.

THERMOLIZER WILL NOT TURN ON	
Possible Causes	**What To Do**
Power cord is not plugged in	Plug power cord into the TG control box
Fuse is blown.	Replace the 20 Amp fuse
Circuit breaker is off in the TG control box.	• Disconnect TG from power. • Open TG control box. • Turn on Circuit breaker. • Close control box. • Reconnect to power.
THERMOLIZER WILL NOT HEAT UP	
Possible Causes	**What To Do**
Control box power switch is not “on.”	Flip switch to “on” position.
Defective heat control.	Replace the heat control.
Loose wire or bad connection.	Repair the wire.
Defective heat element.	Replace the heat element.
Defective control box power switch.	Replace power switch.

LACK OF HUMIDITY OR UNEVEN HUMIDITY	
Possible Causes	**What To Do**
Low water.	Refill water reservoir/Check water is on.
Defective humidity control.	Replace the humidity control.
Defective water heat element.	Replace the water heat element.
Restriction or sediment in the water line or the water heat box inlet hole.	Clean out water line.
Loose wire or bad connection in humidity circuit.	Repair loose wire or connection in humidity circuit.
Blower is not running.	See “Blower Will Not Run” section
Doors out of alignment.	Align doors.
BLOWER WILL NOT RUN	
Possible Causes	**What To Do**
Control box power switch is not “on.”	Flip switch to “on” position.
Defective blower motor.	Replace blower motor.
Defective control box power switch.	Replace control box power switch.
Loose wire or bad connection in blower control circuit.	Repair loose wire or bad connection.

SB-0345 Rev 1

AFFECTS: TG-50
PURPOSE: PROGRAMMING THE OGDEN ETR-9000 TEMPERATURE CONTROLLER

Operator Interface:

The operator interface on the Ogden ETR-9000, Temperature Controller, consists of the following:

- A scroll key [⟲] used to select a parameter to be viewed or adjusted.
- Up [▲] and down [▼] arrow keys are used to increase or decrease the selected parameter.
- A reset key [R] used to return to normal operation mode.

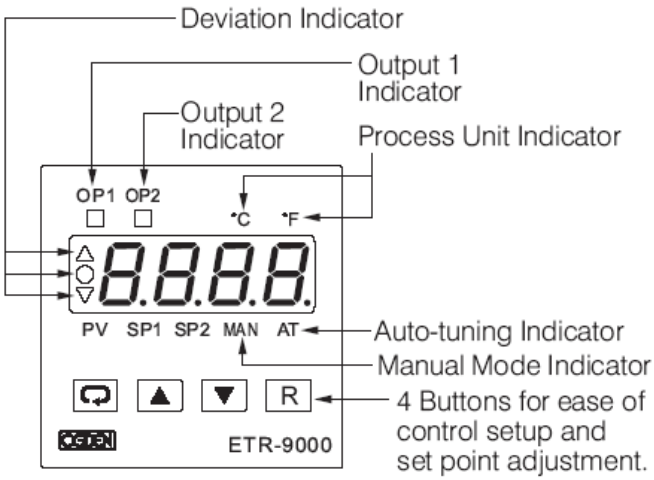

Figure 1.2 – Operator Interface Description

Menu Overview:

There are three main menus that contain parameters that require programming; they are User Menu, Setup Menu, and Calibration Mode. The figure below (Figure 2) shows the sequence of operations necessary to access the programming parameters in each menu.

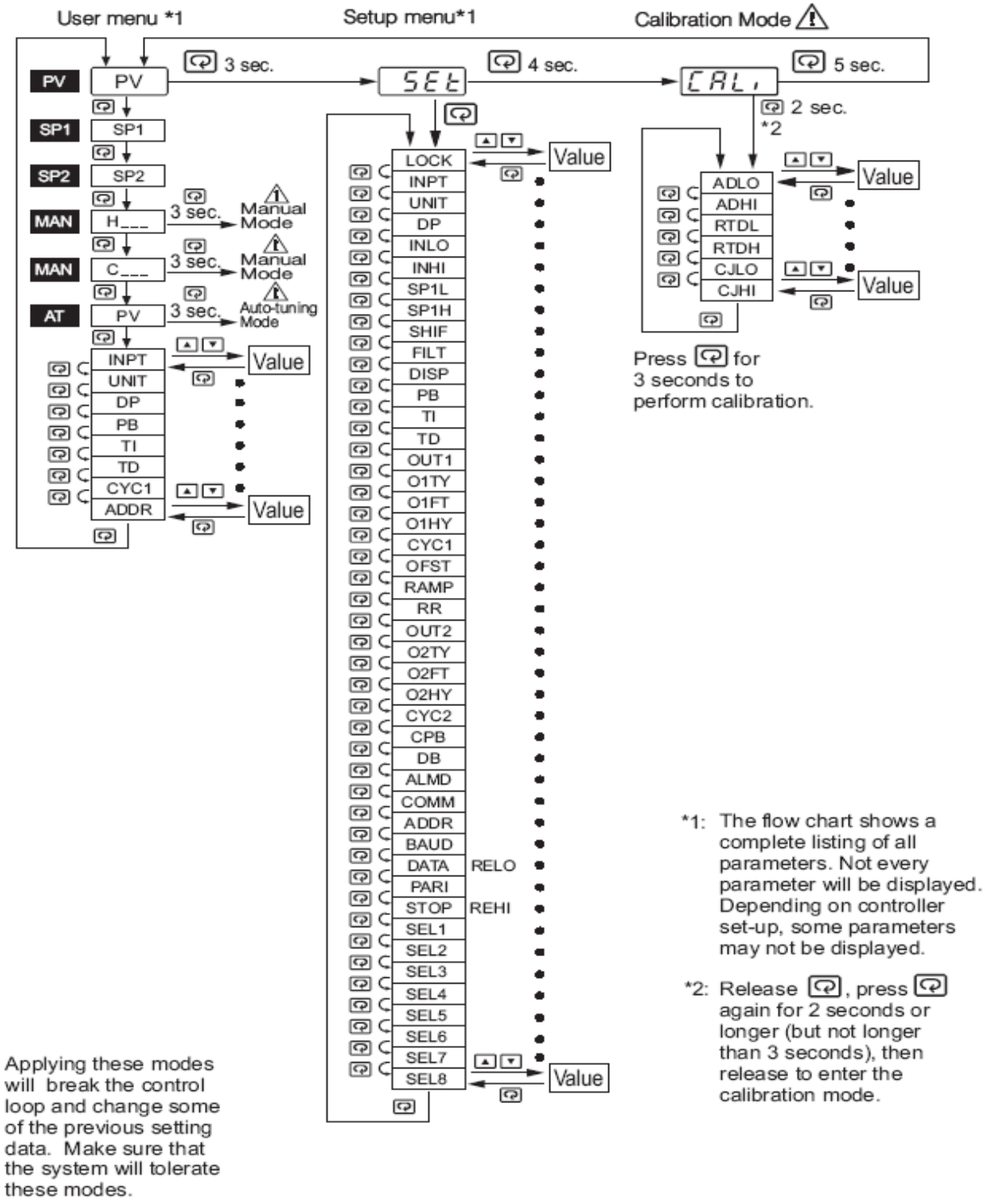

Figure 1.3 - Menu Flow Chart

TG Parameter Settings

Tables 1, 2 and 3 below list of the temperature controller default settings and the Belshaw Factory settings. When installing a new controller 3 of the default setting must be changed to the Belshaw Factory settings.

- Push and hold the scroll key [⟲] for 3 seconds, this will take you to the "**SEt**" menu.
- Push the scroll key [⟲] once to access the "**LocK**" parameter.
- Push the Up [▲] or down [▼] arrow keys to change "**LocK**" to "**nonE**".
- Push the scroll key [⟲] to page through the settings and the Up [▲] or down [▼] arrow keys to change the settings listed in the Belshaw "**Factory**" column. (see tables 1, 2 and 3)

When finished setting parameters.

- Continue pushing the scroll key [⟲] until you are back to "**LocK**".
- Push the Up [▲] or down [▼] arrow keys to set "**LocK**" to "**uSEr**".
- Push the reset key [R] to return normal operation.

Default Settings:

In the event that parameters have been modified without recording the modifications, change each parameter to match those listed in Tables 1, 2 and 3 listed below (controller parameter default settings). Then adjust **SP1H, PB, OUT2** and the **LocK** parameters as listed in Belshaw "**Factory**" below. Then set **SP1** to 420ºF.

Table 1 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Factory
SP1	Set point for output 1	Low: SP1L High :SP1H	77.0 °F (25.0 °C)	**420ºF**
SP2	Set point for output 2 when output 2 performs alarm function or dwell timer	Low: -19999 High :45536	18.0°F (10.0 °C)	
LOCK	Select parameters to be locked	0 nonE : No parameters are locked 1 SEt : Setup data is locked 2 uSEr : Setup and User data is locked Set point is un- locked 3 ALL : All data is locked	0	**set to "uSEr" after setup**
INPT	Input sensor selection	0 J_tC : J type T/C 1 K_tC : K type T/C 2 t_tC : T type T/C 3 E_tC : E type T/C 4 b_tC : B type T/C 5 r_tC : R type T/C 6 S-tC : S type T/C 7 n_tC : N typeT/C 8 L-tC : L type T/C 9 Ptdn : PT 100 ohms DIN 10 PtJS : PT 100 ohms JIS 11 4-20 : 4 - 20 mA 12 0-20 : 0 - 20 mA 13 0-60 : 0 - 60 mV 14 0- 1V : 0 - 1V 15 0-5V : 0 - 5V 16 1-5V : 1 - 5V 17 0- 10 : 0 - 10V	1 (0)	
UNIT	Input unit selection	0 °C : Degree C unit 1 °F : Degree F unit 2 Pu : Process unit	0 (1)	
DP	Decimal point selection	0 nodP : No decimal point 1 1-dP : 1 decimal digit 2 2-dP : 2 decimal digits 3 3-dP : 3 decimal digits	1	
INLO	Input low scale value	Low: -19999 High: 45486	0°F (-17.8 °C)	
INHI	Input high scale value	Low: INLO+50 High: 45536	200.0°F (93.3 °C)	
SP1L	Low limit of set point value	Low: -19999 High: 45536	0°F (-17.8 °C)	
SP1H	High limit of set point value	Low: SP1L High: 45536	1000°F (537.8 °C)	**450ºF**
SHIF	PV shift (offset) value	Low: -360.0 °F (-200.0 °C) High: 360.0 °F (200.0 °C)	0.0	**-40ºF**
FILT	Filter damping time constant of PV (seconds)	0 0 : 0 1 0.2 : 0.2 2 0.5 : 0.5 3 1 : 1 4 2 : 2 5 5 : 5 6 10 : 10 7 20 : 20 8 30 : 30 9 60 : 60	2	
DISP	Normal display selection	0 PV : Display process value 1 SP 1 : Display set point 1 value	0	**0ºF**
PB	Proportional band value	Low: 0 High: 932.0 °F (500.0 °C)	18.0 °F (10.0 °C)	**0ºF**
TI	Integral time value	Low: 0 High: 1000 sec	100	
TD	Derivative time value	Low: 0 High: 360.0 sec	25.0	

Table 2 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Set to
OUT1	Output 1 function	0 rEVr : Reverse (heating) control 1 dir rt : Direct (cooling) control	0	
O1TY	Output 1 signal type	0 rELY : Relay 1 SSrd : Solid state relay drive 2 SSr : Solid state relay 3 4-20 : 4-20 mA 4 0-20 : 0 - 20 mA 5 0- 1V : 0 - 1V 6 0-5V : 0 - 5V 7 1-5V : 1 - 5V 8 0- 10 : 0 - 10V	0	
O1FT	Output 1 failure transfer mode	Select BPLS (bumpless transfer) or 0.0 ~ 100.0 % to continue output 1 control function as the unit fails, or select OFF (0) or ON (1) for ON-OFF control.	0	
O1HY	Output 1 ON-OFF control hysteresis	Low: 0.1 High: 50.0 °C(90.0°F)	0.2 °F (0.1 °C)	
CYC1	Output 1 cycle time	Low: 0.1 High: 90.0 sec.	18.0	
OFST	Offset value for P control	Low: 0 High: 100.0 %	25.0	
RAMP	Ramp function selection	0 nonE : No Function 1 ñi nr : Use unit/minute 2 Hr.r : Use unit/hour	0	
RR	Ramp rate	Low: 0 High: 900.0 °F (500.0 °C)	0.0	
OUT2	Output 2 function	0 nonE : Output 2 No Function 1 ti ñr : Dwell timer action 2 dEHi : Deviation High Alarm 3 dELo : Deviation Low Alarm 4 dbHi : Deviation out of band Alarm 5 dbLo : Deviation in band Alarm 6 PVHi : Process High Alarm 7 PVLo : Process Low Alarm 8 CooL : Cooling PID Function	2	**“nonE”**
O2TY	Output 2 signal type	0 rELY : Relay output 1 SSrd : Solid state relay drive 2 SSr : Solid state relay 3 4-20 : 4 - 20 mA 4 0-20 : 0 - 20 mA 5 0- 1V : 0 - 1V 6 0-5V : 0 - 5V 7 1-5V : 1 - 5V 8 0- 10 : 0 - 10V	0	
O2FT	Output 2 failure transfer mode	Select BPLS (bumpless transfer) or 0.0 ~ 100.0 % to continue output 2 control function as the unit fails, or select ON (0) or OFF (1) for alarm and dwell timer function.	0	
O2HY	Output 2 hysteresis value when output 2 performs alarm function	Low: 0.1 High: 90.0 °F (50.0 °C)	0.2 °F (0.1 °C)	
CYC2	Output 2 cycle time	Low: 0.1 High: 90.0 sec.	18.0	
CPB	Cooling proportional band value	Low: 50 High: 300 %	100	
DB	Heating-cooling dead band (negative value= overlap)	Low: -36.0 High: 36.0 %	0	
ALMD	Alarm operation mode	0 norñ : Normal alarm action 1 LtCh : Latching alarm action 2 HoLd : Hold alarm action 3 LtHo : Latching & Hold action	0	

Table 3 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Set to
COMM	Communication function	0 nonE : No communication 1 rtu : Modbus RTU mode protocol 2 4-20 :4-20mA retransmission output 3 0-20 :0-20mA retransmission output 4 0-5V :0-5V retransmission output 5 1-5V :1-5V retransmission output 6 0- 10 :0-10V retransmission output	1	
ADDR	Address assignment of digital communication	Low: 1 High: 255	———	
BAUD	Baud rate of digital communication	0 24 : 2.4 Kbits/s 1 48 : 4.8 Kbits/s 2 96 : 9.6 Kbits/s 3 144 : 14.4 Kbits/s 4 192 : 19.2 Kbits/s 5 288 : 28.8 Kbits/s 6 384 : 38.4 Kbits/s	2	
DATA	Data bit count of digital communication	0 7bit : 7 data bits 1 8bit : 8 data bits	1	
PARI	Parity bit of digital communication	0 EVEn : Even parity 1 odd : Odd parity 2 nonE : No parity bit	0	
STOP	Stop bit count of digital communication	0 1bit : One stop bit 1 2bit : Two stop bits	0	
RELO	Retransmission low scale value	Low: -19999 High: 45536	32.0 °F (0.0 °C)	
REHI	Retransmission high scale value	Low: -19999 High: 45536	212.0 °F (100.0 °C)	
SEL1	Select 1'st parameter for user menu	0 nonE : No parameter selected 1 LocK : LOCK is put ahead 2 inPt : INPT is put ahead 3 unit : UNIT is put ahead 4 dP : DP is put ahead 5 SHIF : SHIF is put ahead 6 Pb : PB is put ahead 7 ti : TI is put ahead 8 td : TD is put ahead 9 o1HY : O1HY is put ahead 10 CYC1 : CYC1 is put ahead 11 oFSt : OFST is put ahead 12 rr : RR is put ahead 13 o2HY : O2HY is put ahead 14 CYC2 : CYC2 is put ahead 15 C.Pb : CPB is put ahead 16 db : DB is put ahead 17 Addr : ADDR is put ahead	2	
SEL2	Select 2'nd parameter for user menu	Same as SEL1	3	
SEL3	Select 3'rd parameter for user menu	Same as SEL1	4	
SEL4	Select 4'th parameter for user menu	Same as SEL1	6	
SEL5	Select 5'th parameter for user menu	Same as SEL1	7	
SEL6	Select 6'th parameter for user menu	Same as SEL1	8	
SEL7	Select 7'th parameter for user menu	Same as SEL1	10	
SEL8	Select 8'th parameter for user menu	Same as SEL1	17	

SB-0315R3

AFFECTS: TG-50, TG-25 **REVISED: 5/10/2006 JD**

PURPOSE: VFD-0017-3 PROGRAMMING INSTRUCTIONS

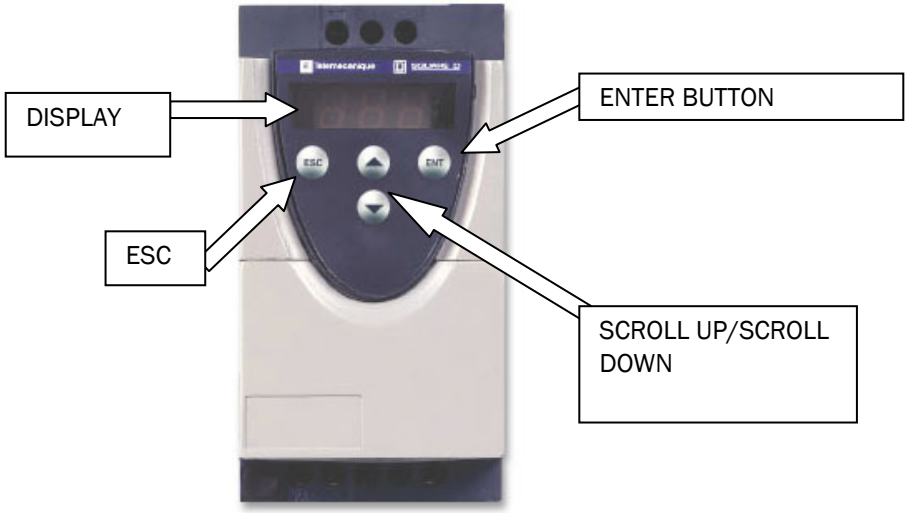

Figure 1

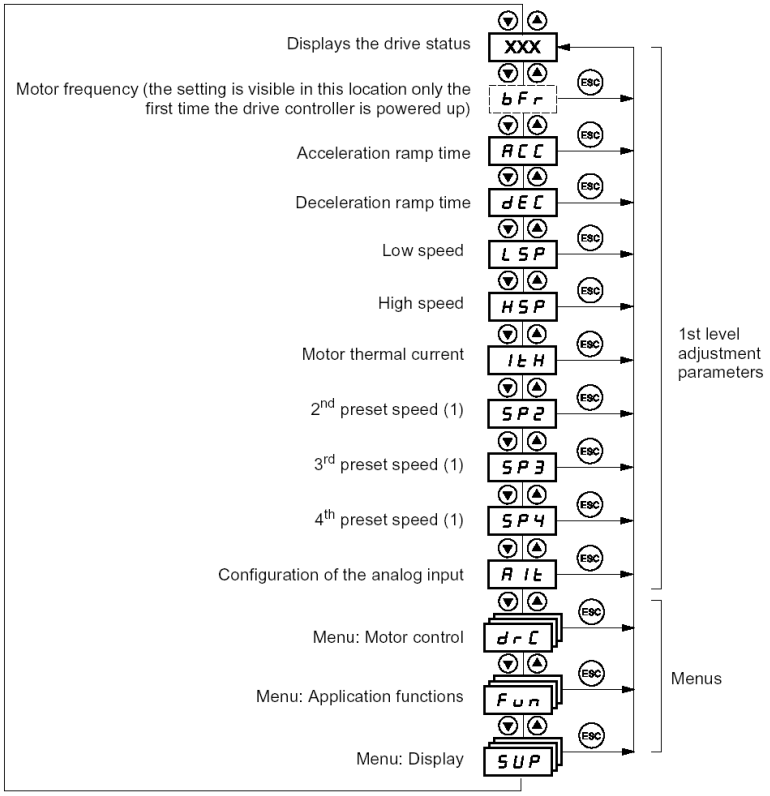

Figure 2

General:

Figure 1, above, shows the location of programming/navigating buttons on the face of the Altivar 11 (Belshaw P/N: VFD-0017). Figure 2 shows the navigation paths to various programming parameters. The following has been adapted from the ATV11 Technical Manual which can be found at http://ecatalog.squared.com/pubs/Motor%20Control/AC%20Drives/Altivar%2011/VVDED302026US.pdf

Programming:

Using Figures 1, and 2 navigate to the following programming parameters and set them as shown below in Table 1. Items listed as default are set at the factory and should be verified.

	The parameters in unshaded boxes can only be modified when the controller is stopped. Remove jumper wire from terminal 15 to stop drive.
	The parameters in shaded boxes can be modified with the controller operating or stopped.

MENU	PARAMETER	SECONDARY PARAMETER	FUNCTION	SETTING
1st Level	ACC		Acceleration ramp time (sec.)	3 (default)
	dEC		Deceleration ramp time (sec.)	3 (default)
	LSP		Low Speed (hz)	0 (default)
	HSP		High Speed (hz)	50/60 (default) based on motor Hz
	ItH		Motor thermal current (amps)	2.1 (Set to motor nameplate amps)
	Alt		Configuration of Analog Input	5U (default)
drC	UnS		Motor voltage (volts)	230 (Set to motor nameplate voltage)
	FrS		Motor frequency (hz)	60 (Set to motor nameplate frequency)
	nCr		Motor current (amps)	2.1 (Set to motor nameplate current)
	COS		Motor power factor	.80 (Set to motor nameplate power factor (sometimes labeled 'pf'))
FUn	tCC	ACt	2-wire control	2c (default)
		tCt	Type of 2-wire control	LEL
	rrS		Reverse operation	nO
	PS2	L1A	Assignment of L1A	nO
		L1b	Assignment of L1B	nO
	PI	PIF	Assignment of PI function feedback	nO (default)
	rSF		Fault reset	nO (default)
	bFr		Motor Frequency (hz)	60 for domestic machines (default). 50 for AS/NZ, and CE machines;

Returning VFD to factory default settings:

Sometimes the easiest way to ensure that the VFD has the correct operating parameters is to return the configuration parameters to factory default and re-enter the few parameters changed for use with the TG-25 and the TG-50s. There are currently over 50 adjustable parameters available with this VFD of which 11 need to be changed from factory default

To reset the VFD to operate on the TGs, reset the parameters to the factory default as shown below and re-enter and/or verify the parameters in the programming section above.

MENU	PARAMETER	SECONDARY PARAMETER	FUNCTION	SETTING
FUn	FCS		Reset configuration to factory default	Lnl (Must hold ENT key for 2 sec) ONLY USE THIS PARAMETER TO RETURN VFD TO FACTOR DEFAULT CONFIGURATION. IF

Note The drive must be stopped to modify this parameter. Remove jumper wire from terminal 15 to stop drive

FAULTS – CAUSES – REMEDIES

Clearing the fault:

Cut the power supply to the drive in the event of a non-resettable fault.

Wait for the display to go off completely.

Find the cause of the fault in order to correct it.

Restore the power supply – this clears the fault if it has disappeared.

Drive does not start, no fault displayed:

Check that the run command input has been jumpered (Jumper is required between terminals LI1 and +15V).

When the drive is switched on, or at a manual fault reset, or after a stop command, the motor can only be supplied with power once the ”forward” commands have been reset. Otherwise, the drive will display “rdy” or “nSt” but will not start.

Drive does not start, display off:

Check that line voltage is present at the drive terminals

Unplug all the connections on the drive U, V, W terminals and check that there is no short circuit between the phase and earth in the motor wiring or in the motor.

Faults which cannot be reset automatically:

The cause of the fault must be removed before resetting by switching power off and on again.

FAULT	PROBABLE CAUSE	REMEDY
CFF Configuration fault	• The current configuration is inconsistent	• Return to factory settings and re-enter parameters
CrF Capacitor charging circuit	• Load relay control fault or charging resistor damaged	• Replace the drive
InF Internal fault	• Internal fault	• Check the environment (electromagnetic compatibility) • Replace drive
OCF Overcurrent	• Ramp to short • Inertia or load too high • Mechanical locking	• Check the settings • Check the size of the motor/drive/load • Check the state of the mechanism
SCF Motor short-circuit	• Insulation fault or short-circuit at the drive output	• Check the cables connecting the drive to the motor, and the motor insulation
SOF Overspeed	• Instability or driving load too high	• Check the motor, gain and stability parameters • Add a breaking resistor and module • Check the size of the motor/drive/load

Faults which can be reset with automatic restart function, after the cause of the fault disappeared:

These faults can also be reset by switching the drive off and on again.

FAULT	PROBABLE CAUSE	REMEDY
ObF Overvoltage during deceleration	• Braking too sudden or driving load	• Increase the deceleration time • Install a braking module and a braking resistor if necessary • Activate the brA function if it is compatible with the application
OHF Drive over temperature	• Drive temperature too high	• Sheck the motor load, the drive ventilation and the environment. Wait for the drive to cool down before restarting
OLF Motor overload	• Trigger by motor current too high	• Check the setting of the motor thermal protection, check the motor load. Wait for the motor to cool down before restarting
OSF Overvoltage	• Line voltage too high • Disturbed line supply	• Check the line voltage. The overvoltage threshold is 415VDC on the DC bus
PHF Line phase failure	• Dive incorrectly supplied of blown circuit protection • Failure of one phase	• Check the power connections and the circuit protection • Reset

Faults which can be reset as soon as its cause disappears:

FAULT	PROBABLE CAUSE	REMEDY
USF Undervoltage	• Line supply too low • Transient voltage dip • Damaged load resistor	• Check the voltage and the voltage parameter. The undervoltage threshold is 230vDC on the DC bus • Replace the drive

6 Appendix

See Parts List Drawing Insert Page.