



Operation Guide

990-FX Line

Power UP Each Machine

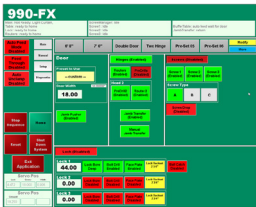
1. Verify the area of operation is clear and safe to machine product.
2. Ensure factory air is applied to machine and main air supply is turned on.
3. Verify that all **E-Stop** buttons are **OUT** and Gates are CLOSED.
4. Turn the Electrical Disconnect to the ON positions each Electrical Cabinet.
5. Turn the **Control Transformer** On.
6. Initiate the **START MACHINE** button (Approximately 3 minute Boot-up)
See reverse for 6 Lights description



Boot-Up



After the computer is completed booting up, the Interface will start automatically.



Set-Up



Press the Hinge Loaded button to startup the process



Select the Home Machine Button. After all machine is Homed, the machine status will display Idle in the Machine Feedback Status box.



Select the correct Preset. Verify that the information is correct.
For Example: Check Door Width, Check Auto Feed is enabled, Auto Width is enabled, Check Jamb Pusher is Enabled, and Auto Door Width is Enabled.

- Set the Door Hand.
- RH (Right Hand Door)
 - Auto (Automatically receives data)
 - LH (Left Hand Door)



Load Jamb



1. Pull jamb from Stack Area



2. Load Jamb on top of ledge pressing tightly against fence.



Process



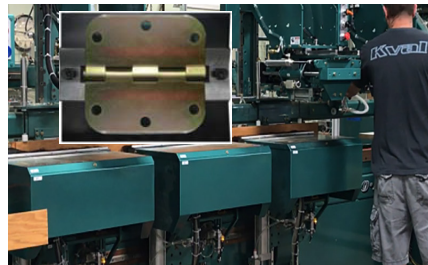
1. After Jamb is secure, press the Jamb Clamp Foot Pedal to clamp the Jamb



2. Press the Start Sequence button.



3. Load the hinges, one for each of the three Six-Shooter heads with the hinge pin towards the top of the door.
4. Move out of area beyond the Light Curtain



5. Press the Hinge Loaded button to start the process.
6. When the Status Light is off, enter the staging area and process next door.



Hinge Loaded Button



View Status Light

Tips (Blink Codes)

Blink Codes	
Light	Status
Off	System OK: Not Armed
Solid	Light Curtain Armed: Don't Enter
1 Blink	Light Curtain Reset Required
2 Blinks	Servo Not Homed
3 Blinks	Air Pressure Low
4 Blinks	Screwdriver Heads Not Up
5 Blinks	Limit Switch Error
6 Blinks	Low Voltage

- The Hinges Loaded button acts like a Reset Button for the Light Curtain.
- Do Not Enter the staging area with a solid light displayed on the Status Light. This will shut down the machine. The machine will have to be reset and re-homed.
- A steady 1 blink rate is permissible to enter staging area and start to process a door.
- A steady 2 blink rate, perform Homing Routine.
- A steady 3 blink, check air pressure gages and verify it is correct through-out the machine. (Shop Air may be low, Check Solenoids, Air Cylinders, or Lubricators)
- A steady 4 blink, check air brakes , switches, sensors, or brake release valve on air input.
- A steady 5 blink, check limit switches or travel of assembly.
- A steady 6 blink , check if all power is on or have a **qualified technician**, check fuses, power supplies or voltage connections

About the 6-Lights

Control Power

Light turns on when the Control Transformer power is working, Indicates power on secondary side-of transformer and High Power is applied to all components

Overload Relay

The overload circuit is working when light is on.

E-Stop

If the light is NOT on, ensure gates are closed and all E-Stops are not activated

Stop

This light will be on if Machine Stop button is deactivated.

Start

This light turn on when the Machine Start button is pressed and the ACR Relay is latched.

24VDC

Light turns on once the ACR is latched and the 24VDC Power Supply is working. Powers the PLC.



Tips

Light NOT ON	Steps to Try
Control Power	Check Main Power to the machine Ensure the Control Circuit Button is ON Tech: (Lock/Tagout) Ensure the Disconnect Switch in the Panels is ON Tech: (Lock/Tagout) Check Control Transformer
Over Load Relay	Tech: (Lock/Tagout) Check Overload Relays on Contactors
E-Stop	Ensure ALL E-Stops are in the OUT position. Ensure ALL Safety Gates are closed and Light Curtain feedback is error free. Tech:(Lock/Tagout) Check resistance of E-Stop circuit
Stop	Ensure Stop Button is not stuck Tech: (Lock/Tagout) Check resistance of Stop circuit
Start	Ensure Start Button is making connection Tech: (Lock/Tagout) Check ACR Circuit
24VDC	Tech: (Lock/Tagout) Check voltage into and out of the 24VDC power supply

For Technicians: Get detailed troubleshooting information on the 6 Lights. (See a video ,Download a PDF)

Video (6-LightsTroubleshooting): <https://www.kvalinc.com/videos/training>

PDF (6-Lights Troubleshooting): <https://www.kvalinc.com/machine-support>



High Voltage may cause *injury or death*.
Troubleshooting checks must be performed
by a *Qualified Electrical Technician*.



Machine Terminology

Machine	Electrical Panels	Electrical Panels contain the brains and power for the machine. The Main Electrical Panel contains the main PLC and servo drivers to control the servo motors. The High Frequency Panels contain the VFD's to drive the routers, width adjust, and feed motors.
	Door Clamp	The Door Clamp secures the door for stable routing and drilling.
	Jamb Clamp	The Jamb Clamp secures the jamb for stable routing and drilling.
	Door Stop	The Door Stop sets a reference for the door to be in the correct position for processing.
	Jamb Stop	The Jamb Stop sets a reference for the jamb to be in the correct position for processing. Is located on the front section of the machine and is set manually by the operator.
Tools	Routers	Routers are located in the Carriage Heads and on the Back Section. The routers rout the hinge pockets and rout face plates. Typically Carriage Heads contain two routers that cut in opposite directions to create a smooth cut.
	Pre-drills	The pre-drills are located in the Carriage Heads. They pre-drill the screw holes for hinge screw application on the door and the jamb.
	Bolt Drill	The bolt drill is located on the Back Section. Drills a bolt hole on the lock edge of the door.
	Lock Bore	The lock bore is located on the Back Section. Drills a lock hole on the face of the door.
	Chisels(Opt)	Chisels are located in the Carriage Heads and the Back Section. The chisels square corners on the hinge pockets and the lock plate.
Operation	Chip-Out Block	Chip-Out Blocks are located under some drills to reduce tear-out on the edges of the cut.
	Operator's Station	The Operator's Station is the interface of operator to machine. It contains power controls and touch screen interface to control the cutting parameters of the door.
	Machine Control	Located mid machine, manually set Feed (Auto-Man), LH or RH door, Start or Stop machine.
	Door Clamp Pedal	The Door Clamp pedal is a foot pedal that activates the door clamp to either clamp or unclamp the door.
	Jamb Clamp Pedal	The Jamb Clamp pedal is a foot pedal t activates the jamb clamp to either clamp or unclamp the jamb.
	Six-Shooter	The Six-Shooter is located at the right side of the machine. Six-Shooters apply hinges and secures them with screws (3x3 pattern)
	Eight-Shooter (Opt K)	The Eight-Shooter is located at the left side of the machine. Eight-Shooters apply hinges and secures them with screws (4x4 pattern)


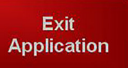
Remote Troubleshooting


Get a Service Technician to log on to the machine and help troubleshoot.

- Have a good detailed summary of the issue.
- Ensure Machine has Internet Connection
- Contact KVAL Service and start a ticket (Call (800)- 553-5825 or start a support ticket Online <https://www.kvalinc.com/support>)
- Have tools ready (DVM and Tool Kit)



Get to the Support AP to allow Tech to Logon

- Exit the Kval program. On the Main Screen select  then select 

- On the Windows Screen select the KVAL Service Icon 
- Follow instructions from Kval Service Tech.

