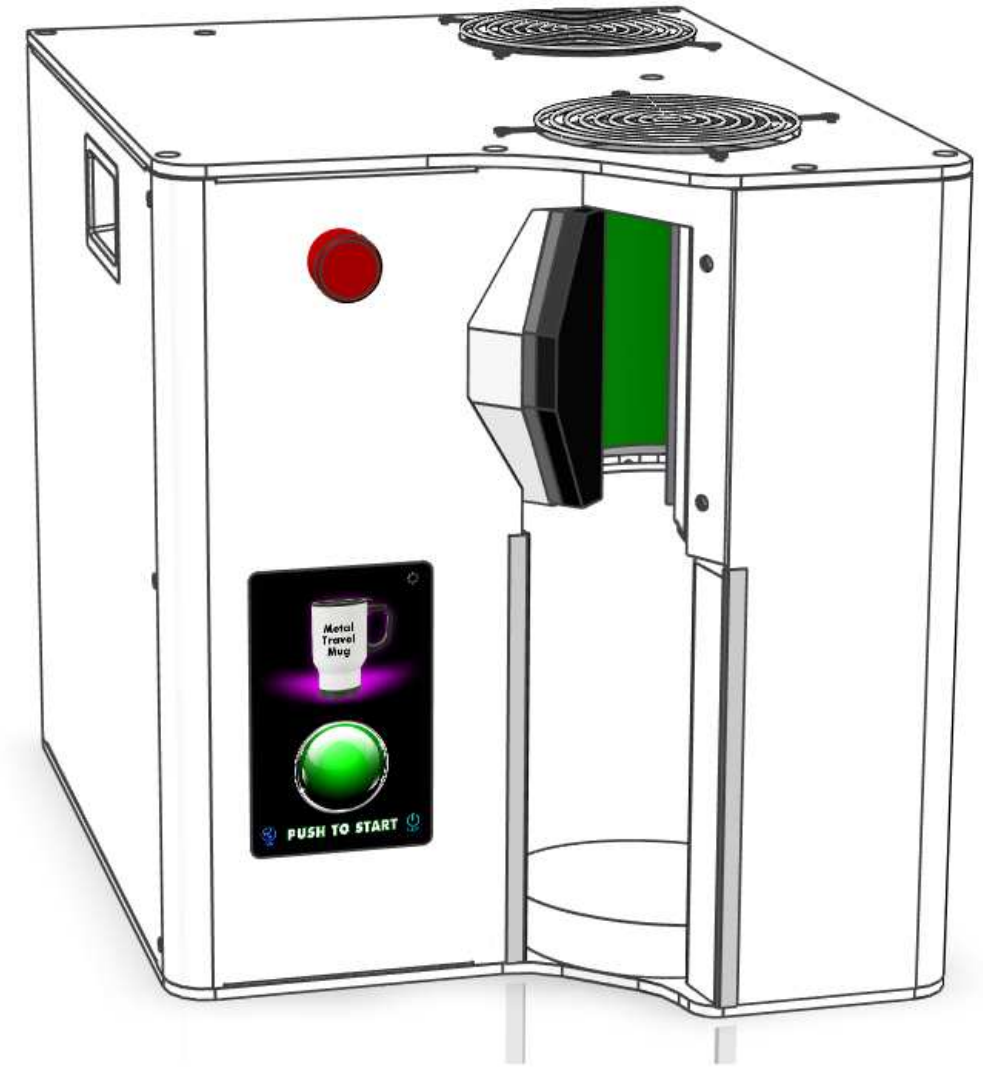
DK3AW

AUTOMATIC MUG PRESS

REV122023-A



DESCRIPTION OF MACHINE:

The DK3AW mug press is an automatic mug press. The machine is designed to press the mug once the operator has positioned the mug in the pressing chamber and activated the machine. Once the pressing time cycle is complete, the machine will automatically open allowing the mug to drop down into the cooling chamber. The operator can adjust the temperature of the mug band heater as well as adjust the pressing time. The machine will automatically adjust the pressure needed to insure proper transfer.

ELECTRICAL SPECIFICATIONS:
VOLTAGE: 115V-125V AC
CYCLES: 50/60 HZ.
WATTAGE: 600 WATTS
AMPS: 5 AMPS

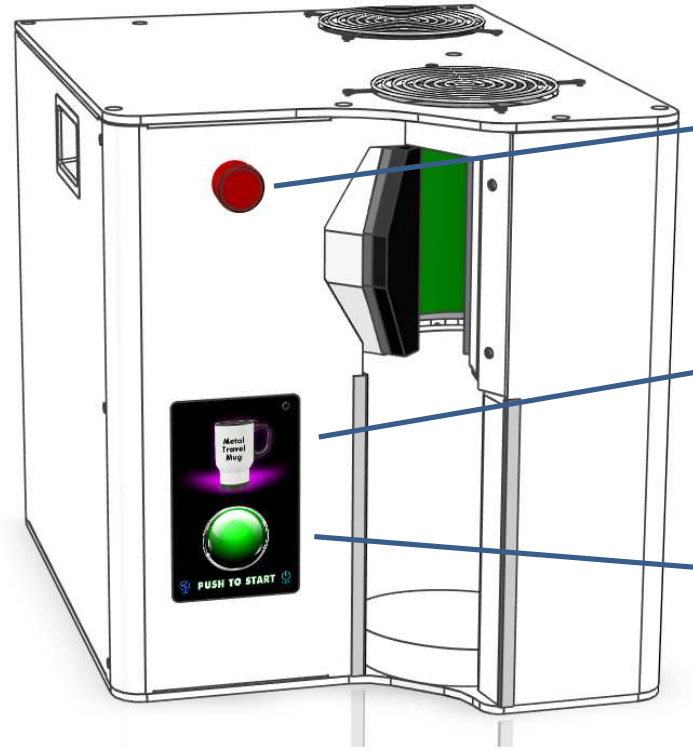
CAUTION: Only trained staff should operate the DK3AW mug press machine. The machine is an automatic machine that requires great care in operating the machine properly.

CAUTION: Locate the DK3AW machine on a sturdy level surface. In order for the machine to operate properly, the machine requires a minimum of 8" of clearance around the RIGHT- BACK- LEFT side of the machine. Keep all flammable materials away for the machine. Do not store or keep materials on the top of the press. Make sure no flammable fumes are present in the area the machine will be operating in.

CAUTION: To provide continued protection against risk of electric shock, connect to properly grounded outlets only. ONLY USE the power cord supplied with the machine. DO NOT use extension cords or power strips unless they have the required amperage rating and are properly grounded.

CAUTION: Keep molded power cord firmly engaged with the machine's power socket. Position the power cord in a fashion that prevents damage to the power cord or over extended.

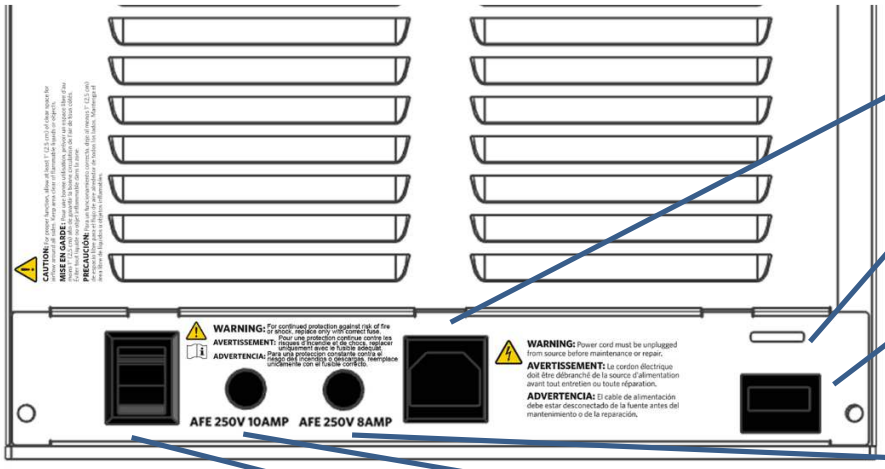
BASIC FEATURES



EMERGENCY RELEASE BUTTON
PRESS BUTTON TO STOP OR RELEASE THE MUG IN PROCESS
TWIST TO RESET

TOUCHSCREEN
PRODUCT SELECTION

TOUCHSCREEN
ACTIVATE BUTTON



POWER INLET SOCKET

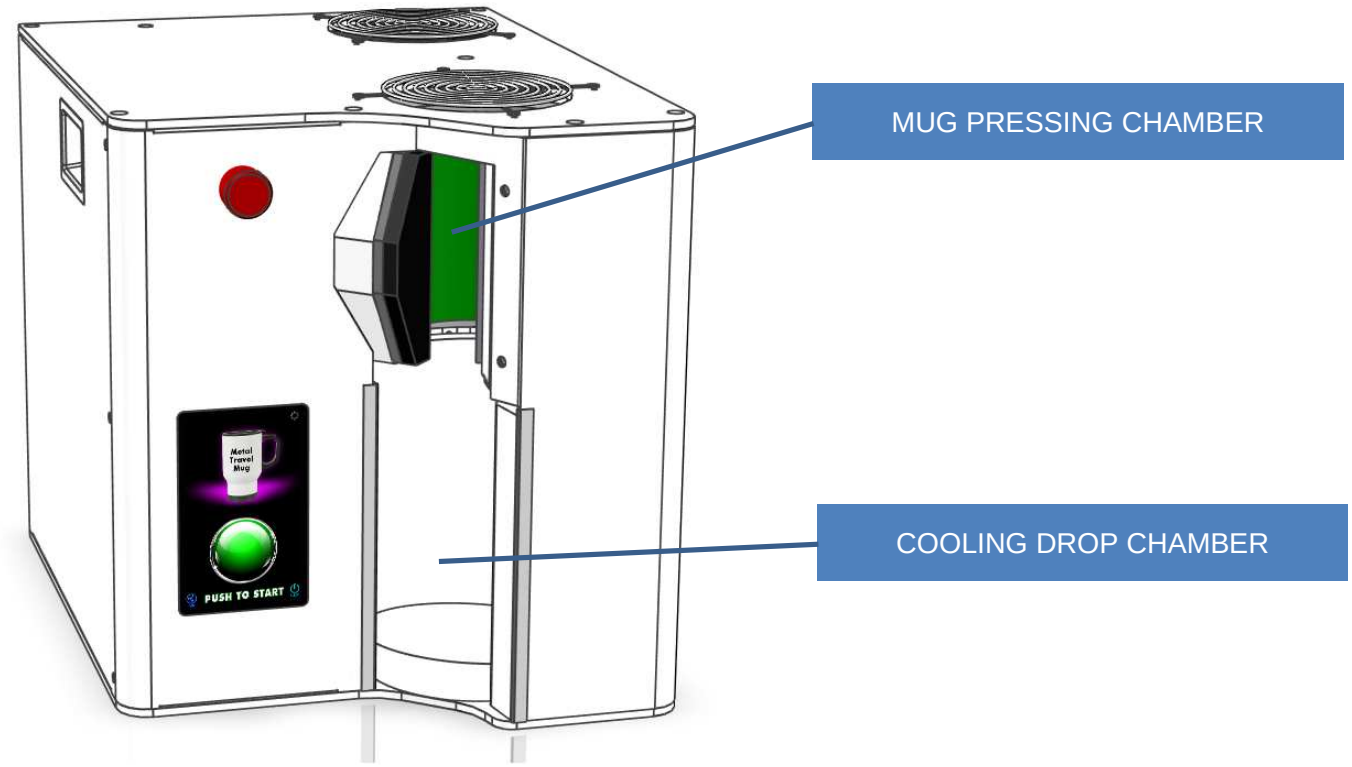
MICRO SD CARD

USB PORT

ACTUATOR FUSE HOLDER

MAIN POWER FUSE HOLDER

MAIN ON/OFF SWITCH



CAUTION: Do not touch surfaces in the heated mug band pressing chamber. Surfaces are extremely HOT and can cause injury. Only hold the mug by the handle and always make sure that your hand and or fingers are clear of the closing mug band heater while activating the press.

CAUTION: After the printed mug has dropped down into the lower chamber, the mug is still very HOT to the touch. Only handle the printed mug by its handle and wearing proper protective gloves.

WARNING: DO NOT activate the machine without a mug present. This action can result in premature failure of the band heater as well as impact the life of other components.

BASIC OPERATION

1. Plug machine into wall outlet.
2. Turn MAIN power switch on.
3. Tape the IMAGE TRANSFER SHEET tightly to the specially coated ceramic mug.
4. Now insert the mug into the lower cooling chamber.
5. Hold the mug to be printed by the handle and enter into the lower cooling chamber area as shown below.

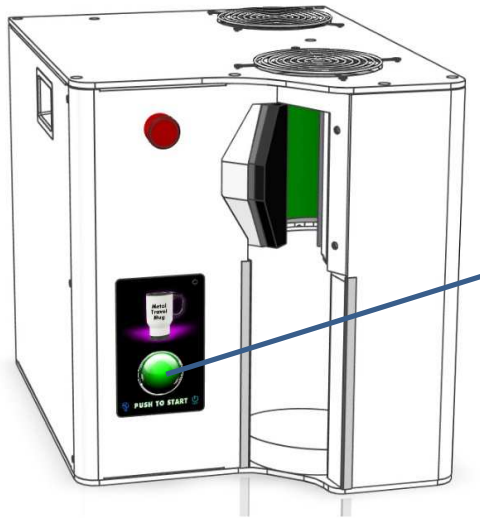
HOLD MUG BY THE HANDLE AND POSITION THE MUG WITH TRANSFER TAPED TO MUG INTO THE LOWER COOLING CHAMBER AREA OF THE MACHINE

6. Lift mug vertical up towards the pressing area of the machine. Position the mug so it is centered vertically with the band heater as well as the handle is positioned in the open space of the band heater as shown below.

LIFT MUG INTO THE PRESSING AREA OF THE MACHINE. MAKE SURE POSITION THE MUG CENTERED TO THE BAND HEATER AND THE HANDLE IS IN ALSO CENTERED TO THE BAND HEATER.

7. Press the GREEN ACTIVATE BUTTON on TOUCHSCREEN to cause the band heater to wrap the mug. Continue to press the GREEN activate push button until the band heater has fully wrapped the mug **and the PRE-HEATING BEEPER and pressing indicator is showing.**

CAUTION: In the event that you wish to OPEN the band heater while it's closing, simply RELEASE the GREEN ACTIVATE BUTTON and the band heater will RETREAT automatically to the open position.



PRESS GREEN ACTIVATE TOUCHSCREEN BUTTON TO PRESS THE MUG.

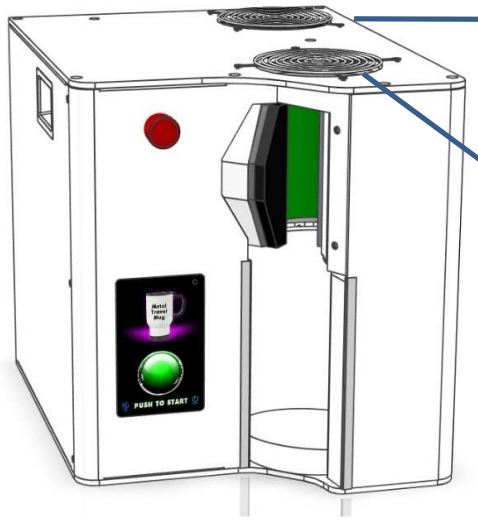
MAKE SURE THE HANDLE IS CENTERED TO THE OPENING.

8. Once the pressing cycle is complete, the band heater will open and the printed mug will drop down to the cooling chamber area.

MUG DROPPED INTO THE COOLING

CAUTION: Printed mugs are HOT to the touch when they are first pressed. Great care must be used when handling. Use proper protective gloves when handling the mug.

9. Once the mug has dropped in the cooling chamber, the printed mug can then be placed on top of the RAPID COOLING fan to expedite rapid cooling of the printed mug. Place the mug upside over the RAPID COOLING fan as shown below.



CAUTION: **Keep the top of the machine clear of any materials or fluids. Only place a heated printed ceramic mug on the cooling exhaust fan for rapid cooling. Once the printed mug has cooled properly, remove mug from the cooling exhaust fan guard.**

WARNING: Only factory authorized personnel are allowed to service or perform maintenance on this machine.

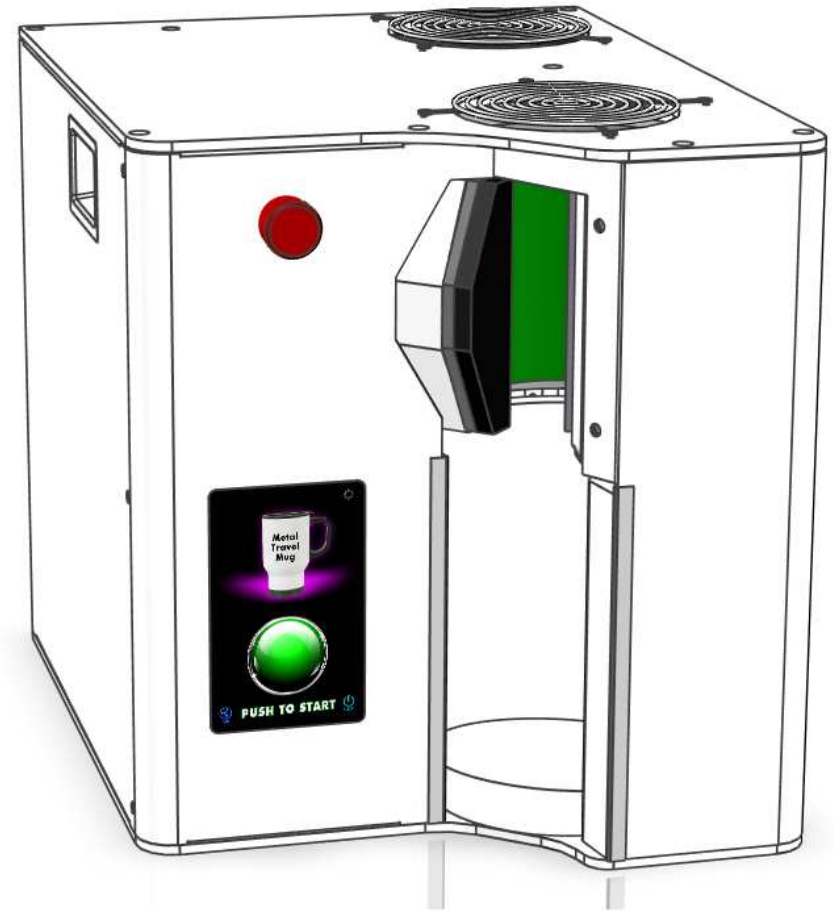
FOR TECHNICAL SUPPORT, CONTACT GEO. KNIGHT CO. AT 1-800-525-6766

GEO Knight & CO. INC EST. 1885

DK3AW

AUTOMATIC DRINKWARE PRESS

SERVICE MANUAL



SPECIFICATIONS

Electrical:	120 Volts - 4.4 Amps - 525 Watts - 50/60Hz
Total Dimensions:	13” Wide x 17” Deep x 15” High
Footprint:	13” Wide x 17” Deep
Requirements:	14AWG UL listed modular power cord required (included)
	1” space for airflow suggested behind press
	Do Not store anything on heater or fan grills
	Do Not store liquids on or around machine

TESTING PROCEDURES

POWER ON TEST

Turn power on, Beeper sounds for approx. ¼-second
Fan powers on for approx. 2 seconds
Touchscreen displays initial splash-screen display
Product & GREEN Activate Button displays
Heater relay ‘clicks’ and heater begins heating

ACTUATOR & LIMIT SWITCHES TEST

Depressing the GREEN Activate button on the Touchscreen should begin outward travel
Letting go before full travel reached should result in automatic retraction
Heater should stop its return home when limit switch depressed
Holding GREEN Activate button continuously should cause heater to reach hard-stop limit
A printing cycle activation beep should start at hard-stop limit
Press E-Stop to return actuator and heater to home position
(NOTE: Hard stop limit is stressful on the heater, do not perform this often, it is only a safety feature)

PRODUCT SELECT TEST

Press Product Select button to cycle through available product modes/colors
Press Product Select button rapidly 2X to confirm bounce protection against rapid pressings
Press and HOLD Product Select button to activate Fan, then activate Sleep mode, then turn Fan off
Press Product Select button to return from Sleep to heating/product mode

E-STOP TEST

Depress E-Stop button to confirm RED Button indicator
Ongoing printing cycles will be interrupted and heater will return to home position
Twist and Pull on E-Stop button to return to normal operating mode
Press E-Stop button rapidly in then out to confirm bounce protection against rapid E-Stop signals

FAN TEST

Press Fan icon at far lower left of Touchscreen while press is inactive to Activate Fan
Press Fan icon at far lower left of Touchscreen to Deactivate Fan

DRINKWARE PRESS/RELEASE TEST

Insert drinkware with cover sheet of paper attached/wrapped into the heater
Hold drinkware in place and depress GREEN Activate button
Beeper should beep when drinkware is pressed and pressure limit is reached
Depress the E-Stop button to release drinkware and confirm dropping onto landing pad

USB FIRMWARE UPDATE TEST

Turn power off, insert USB Drive into side port with DK3A.HEX file on the USB drive
Turn power on, confirm 2 short beeps and WHITE flashing button
Remove USB thumb drive early to confirm RED button and normal startup without update
On additional check, leave USB thumb drive to confirm GREEN button and firmware updated & reboot

VERSION DISPLAY & PRESSING CYCLES DISPLAY TEST

While powered on and inactive, press the Settings Icon at the far lower right of Touchscreen
Press the access code 888 into the keypad on the Touchscreen
Offset calibration, Firmware Version, product cycles, relay/actuation & other basic usage stats appear

PLC CONFIRMATION / TESTING

With 12V to PLC – the bright BLUE LED will turn ON 1 sec, OFF 1 sec
The 1-sec flashing BLUE LED confirms the code is cycling and processing correctly.
LED indicators above each input and output position light when signaling (Not Touchscreen RX/TX)

TEMPERATURE ERROR TESTING

When the thermocouple wires are disconnected from the PLC, it will beep 1 or 2 times and repeat
The indicator button will turn RED with the beep, and the heater relay will turn off

ACTUATOR ERROR TESTING

Push in and twist the actuator fuse holder (8A)
While holding the fuse holder in manually, touch the GREEN Activate button to begin closing the heater
Pull out the actuator fuse holder while continuing to hold the Green Activate button depressed
After 10+ seconds, the actuator error indicator will beep 4 or 5 times and pause and repeat
The fuse must be replaced and power cycled to remove the error state

HEATER ERROR TESTING

Unplug one power wire from the heater relay
Press the Product Select or GREEN Activate button every minute to avoid the press going into Sleep mode
After 10 minutes, the Heater Error will beep 3 times and pause and repeat warning the heater is on too long

TROUBLESHOOTING STEPS

PRESS DOES NOT POWER ON

Confirm modular power cord is fully seated into right panel inlet socket
Check if the cord is plugged into a wall socket or power strip and make sure either are not tripped and ON
Check the lower 10A fuse on the power panel panel
Test for A/C power across the “L” and “N” contacts on the power supply module inside. (B&W wires from on/off switch)
Test for 12V power across the “V+” and “V-“ contacts on the power supply, and look for green light on bottom of supply
Confirm Blinking Blue light on PLC

** Replace cord/fuse/socket/on-off-switch/power-supply or PLC based on how far the power is able to reach

HEATER DOES NOT GET HOT

Confirm Sleep mode & E-Stop mode are OFF and screen displays normal Product Selection & GREEN Activate button.
Confirm there is NO Temperature/Actuator/Heater errors beeping and RED button is OFF
Confirm Heater LED indicator on PLC behind wire harness (labeled HTR) is ON
Open back panel and test for 12V at external heater relay across coil contacts
Check heater black wire leading to “V-” on power supply fork connection
Unplug both white fiberglass heater wires from the heater relay & neutral white wire and test for continuity/resistance

** Press Touchscreen leave Sleep Mode and return to active
** Twist Pull E-Stop button out to return to active heating
** Replace 12V external heater relay or Heater band depending on continuity and how far the power is able to reach

PRODUCT PRINTING BROWN / OVERCOOKING

Confirm the correct Product Selection was selected for the printed drinkware

** Adjust Calibration in settings menu to REDUCE heat by 10 degrees & print a mug. Repeat or fine-tune as necessary.
See “**VERSION DISPLAY & PRESSING CYCLES DISPLAY TEST”** on page 3.

PRODUCT PRINTING LIGHTLY / UNDERCOOKING

Confirm the correct Product Selection was selected for the printed drinkware

** Adjust Calibration in settings menu to INCREASE heat by 10 degrees & print a mug. Repeat or fine-tune as necessary.
See “**VERSION DISPLAY & PRESSING CYCLES DISPLAY TEST”** on page 3.

HEATER NOT CLOSING / ACTUATOR NOT MOVING

Confirm E-Stop mode is not on & E-Stop button not depressed
Confirm Temperature/Heater/Actuator Error modes not active with RED button & beeping
Confirm Product Selection is responding and products are changing & displaying
Confirm GREEN Activate button is turning TURQUOISE when touched and check for light Touchscreen beeping response
Check 8A actuator fuse (above 10A main fuse) on right panel for continuity
Unplug actuator connector plug between PLC wire harness & actuator harness and check for 12V on PLC harness
Check that the 4 LED actuator indicators on the PLC circuit board (behind main power connector) are lighting

** Reboot press from Cold Start
** Replace 8A fuse if open continuity
** Replace Actuator if 12V power is present but actuator does not move
** DO NOT replace Actuator or Fuse twice if it trips multiple times – check Limit switches for active continuity upon closure

FAN NOT ACTIVATING

Confirm the fan wire connector is plugged into the PLC wire harness & check connection strength
Confirm the PLC FAN output LED indicator (behind wire harness plugs) labeled “FAN” (next to “HTR”) is on
Unplug fan connector wire and test for 12V across RED and BLACK wires from PLC while FAN LED indicator is on
Check fan black wire leading to “V-” on power supply fork connection

** Replace Fan if 12V power is present at wire harness connector plug

BEEPER NOT SOUNDING

Confirm the beeper connector is plugged into the PLC 3-pin connector (next to main 12V power connection)
Confirm the beeper connector RED wire faces the power connector and BLACK wire faces the corner nut of PLC board
Confirm the beep indicator LED (behind 3-pin connector on circuit board) is lighting when beeper is supposed to beep

** Reverse beeper connector if backwards
** Replace beeper if not sounding but indicator LED lighting

E-STOP MODE NOT WORKING

Check that E-Stop switch is fully depressed and locked in
Twist and release E-Stop mode to check release action
Check E-Stop switch wire connections from inside of front panel
Confirm continuity between E-Stop button contacts (closed continuity = normal operation)
Confirm E-Stop socket/terminal section is fully locked and engaged with switch section
Confirm E-Stop LED indicator on PLC behind wire harness (labeled EST) is lit (E-Stop OFF) and Not Lit (E-Stop ON)

** Replace E-Stop button if “EST” LED indicator on PLC not responding & no continuity on switch contacts

TOUCHSCREEN NOT LIGHTING / SCREEN NOT DISPLAYING

Confirm 4 wire, 6-position, polarized wire harness plug is fully seated and plugged into Touchscreen display connection
Confirm 5V supply across Black and Red wires on Touchscreen wire harness

** Unplug, Reconnect and Reseat wire harness plug into Touchscreen
** Upload full DWIN folder from Micro SD card with .bin, .icl, .fgc, .h2k config, program, & image files to Touchscreen
** Replace Touchscreen if 5V on Black & RED wires at plug and DWIN upload won't show a Blue Upload Screen

TEMPERATURE ERROR ALERTING (1 BEEP or 2 BEEPS / PAUSE / with RED LED)

Check thermocouple connection at green 2-screw terminal on side of PLC
Confirm RED thermocouple wire is closer to wire harness connection side of PLC, BLACK wire closer to USB connector

** Remove and then Thoroughly & tightly Reconnect thermocouple wires to green connector terminal

ACTUATOR ERROR ALERTING (4 BEEPS or 5 BEEPS / PAUSE / with RED button)

Check "Heater Not Closing / Actuator Not Moving" troubleshooting steps above
Check Open limit switch (near heater) for continuity between NO/COM when depressed

** Follow "Heater Not Closing / Actuator Not Moving" resolutions above
** Replace limit switch(es) if no continuity when depressed

REPAIR PROCEDURES

REPLACE HEATER

Remove Left & Right Panels from press, unplugging Touchscreen and E-Stop wire harness plugs
Peel small round black silicone pad covering heater bolt connector (recessed in black triangle padding on heater)
Loosen small set screw in heater-actuator coupler tightening down onto flathead connecting bolt inside
Remove large flat head bolt connecting heater to actuator coupler
Unscrew and disconnect thermocouple wire leads from green connector on PLC
Unplug White fiberglass power wire from heater relay
Unplug White smooth wire from 2nd heater White fiberglass wire (may be glass cloth taped and under black sleeve)
Remove 2 small allen shoulder screws heater is pivoting between actuator frame on
Carefully rotate the heater out from the FRONT – Rotate the triangle bracket side of heater out to the right
Rotate new heater in place and reconnect allen shoulder screws and large flathead bolt
Tighten set screw against large flat head bolt in heater-actuator coupler
Adhere new silicone disc to top face of flathead bolt
Reconnect fiberglass wires to White power wire and heater relay
Reconnect thermocouple wires to green connector on PLC. RED wire closest to wire harness side, BLACK closes to USB
Test carefully – turn press on, confirm heating, and confirm relay is clicking ON/OFF within 3 to 4 minutes of heat on
If continuously heating & relay is not clicking on/off within 5 minutes, turn power off & check thermocouple wires

REPLACE ACTUATOR

Remove Left & Right & Rear Panels from press, unplugging Touchscreen and E-Stop wire harness plugs
Unplug 12V PLC wire harness connector from actuator connector
Remove shoulder bolt connecting actuator cylinder rod to heater coupler & stop eye-bolt
Remove shoulder bolt connecting spring to rear actuator coupler
Remove shoulder bolt connecting actuator to rear coupler
It may be necessary to manually connect 12V to the actuator connector to retract the cylinder rod to remove it
With PLC power connector unplugged, carefully use 12V from power supply to manually retract actuator cylinder rod
Remove actuator from frame & bracket
Reposition new actuator into frame and bracket, and reverse steps above, using 12V to position cylinder rod as needed

REPLACE TOUCHSCREEN DISPLAY

Remove Left Panel from press, unplugging Touchscreen and E-Stop wire harness plugs
Use a thin small flathead screwdriver or razor to CAREFULLY pry Outer Touchscreen GLASS Cover away from the display
Work around the GLASS Touchscreen cover gently, a little at a time, all the way around to unstick from the panel
Remove 4 hex nuts and whit spacers from the rear 4 corners of the touchscreen
Replace the Touchscreen, noting original orientation, and replace hex nuts and white spacers – do not mix white spacers

REPLACE E-STOP BUTTON

Remove Left Panel from press, unplugging Touchscreen and E-Stop wire harness plugs
Unplug molex connector from rear of E-Stop button
Cut the small white wire tie locking the terminal block to the switch body
Unlock the yellow locking lever holding the terminal bock to the switch assembly
Remove the inside terminal block half of the switch assembly & unscrew the plastic nut holding the switch to the panel

REPLACE POWER SUPPLY

Remove Left & Right & Rear Panels from press, unplugging Touchscreen and E-Stop wire harness plugs
Unscrew all power connections to power supply (take pictures to confirm positions later)
Unscrew the tiny 5-40 allen screws mounting the power supply to the base of the machine
Install new power supply and confirm the voltage selector switch recessed along the top edge is set for 120V
Reattach all power connections

REPLACE PLC CONTROLLER

Remove Rear Panel only
Unplug all wire harness connectors from PLC plus thermocouple & USB connections
Unplug Beeper connector and Remove adhered beeper from PLC housing
Unscrew (2) Allen screws from base plate of machine
Install new PLC and plug in beeper & all wire-harness/thermocouple/USB connections

REPLACE LIMIT SWITCHES

Remove Left & Right & Rear Panels from press, unplugging Touchscreen and E-Stop wire harness plugs
Unplug PLC wire harness connections from Limit Switch wire short harnesses (leave short wires on)
Use a crescent wrench to loosen the outer nut on the threaded body of the limit switch
Hand loosen and remove the locking nut from the threaded body and remove the nut completely
Feed the Limit switch out of the opening in the actuator bracket
Move the short wire harness to the new Limit Switch, and make sure COM and NO connections are used, NOT NC
Reinstall by reversing the above steps

REPLACE FAN

Remove all flat head allen fasteners (they are very tight) from Top panel - leave grills connected
Carefully lift the top panel up and unplug the fan connector from the PLC wire harness
Take pictures of the order of screws/washers/nuts holding the fan in position with spacing and attachment order
Remove the 4 corner screws and all nuts holding the grill and fan to the top panel
Reattach new fan LABEL SIDE UP in the same orientation as the original and reference pictures for order of fasteners

SET CALIBRATION SETTINGS

While powered on and inactive, press the Settings Icon at the far lower right of Touchscreen
Press the access code 888 into the keypad on the Touchscreen
Offset calibration, Firmware Version, product cycles, relay/actuation & other basic usage stats appear

Example: To reduce browning slightly, try reducing the offset value by 10 degrees, press OK to return to normal screen
Example: To increase darkness slightly, try increasing the offset value by 10 degrees, press OK to return to normal screen