

## Z310 E-Box Replacement Procedure

Rev C

### Description:

This procedure details how to replace the E-Box Assembly on a ZPrinter 310 or ZPrinter 310 Plus.

### Prerequisites:

ZPrinter 310 or 310 Plus

### Equipment / Parts Required:

- Phillips Screwdriver
- VGA Monitor and cable
- Keyboard
- Replacement E-Box

### Procedure:

The procedure involves 4 activities:

- Remove the existing E-Box.
- Install the replacement E-Box.
- Configure the replacement E-Box.
- Rezero the pistons.

## Remove the Existing E-Box

**Turn off system power and disconnect system from power.**

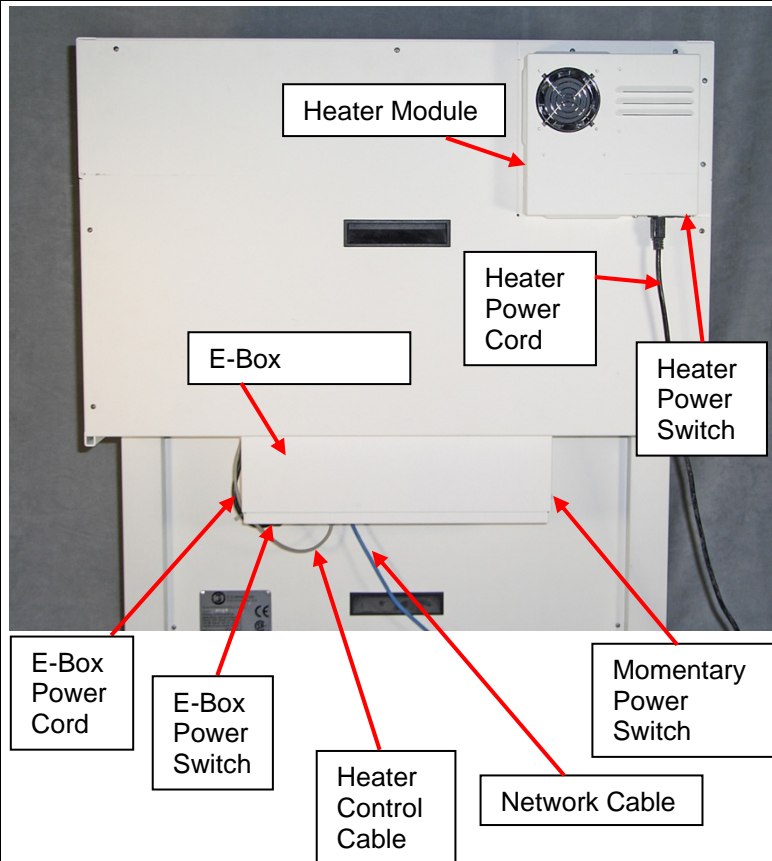
### Z310 Plus:

On E-Box –  
Turn off system power using the momentary switch on the side. Unplug the E-Box power cord. Also unplug heater control cable (plugged into green mouse connection). Unplug the serial or network cable.

On heater module –  
Turn off heater power switch and unplug heater power cord.

### Z310:

Turn off system power using the momentary switch on the side of the E-Box. Unplug the E-Box power cord. Unplug the serial or network cable.



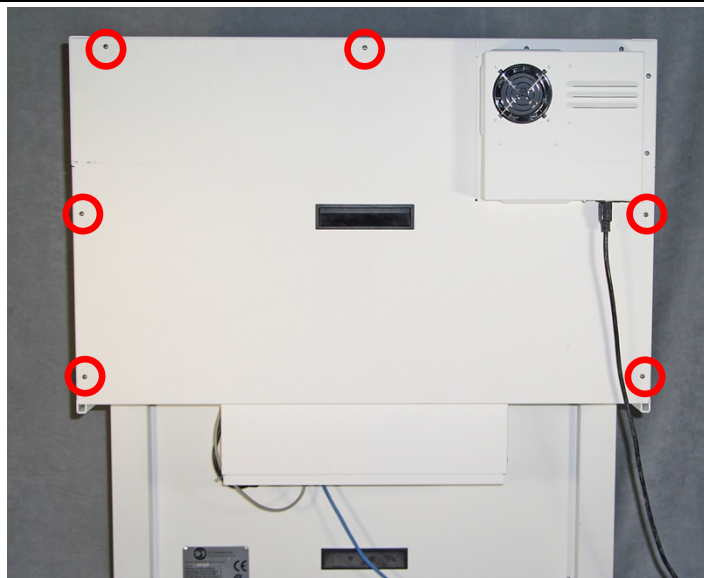
**Remove screws.**

### Z310 Plus:

Remove 6 screws.

### Z310:

Remove 7 screws.



## Remove rear panel

### Z310 Plus:

Slide panel out toward you.  
Push down slightly so the  
panel clears the bottom of the  
heater.

### Z310:

Slide panel out toward you.

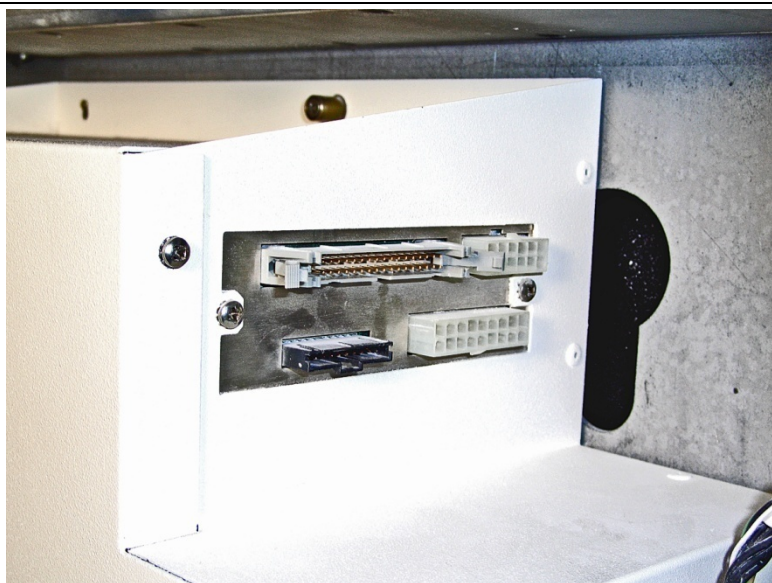




**Disconnect E-Box from  
printer**

Unlatch 2 ribbon cables and  
unplug them.

Unlatch 2 wiring harnesses  
and unplug them.

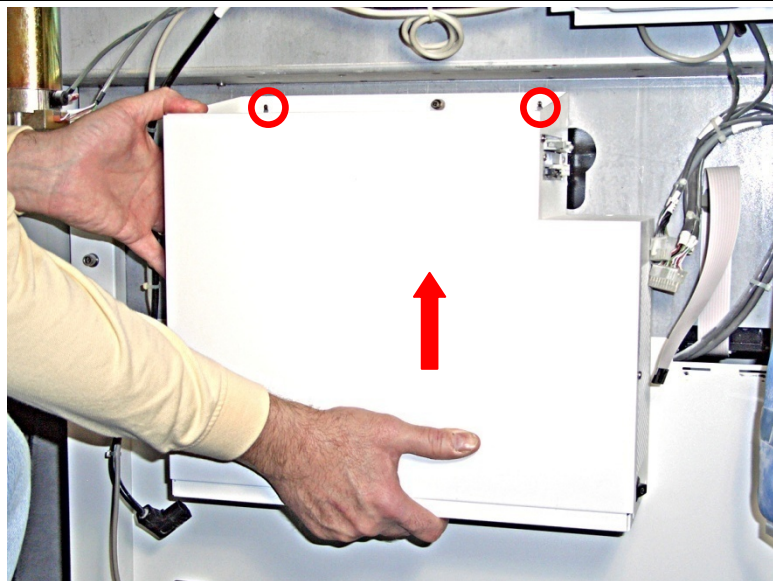


### Unmount E-Box

Loosen the captive Phillips head screw.



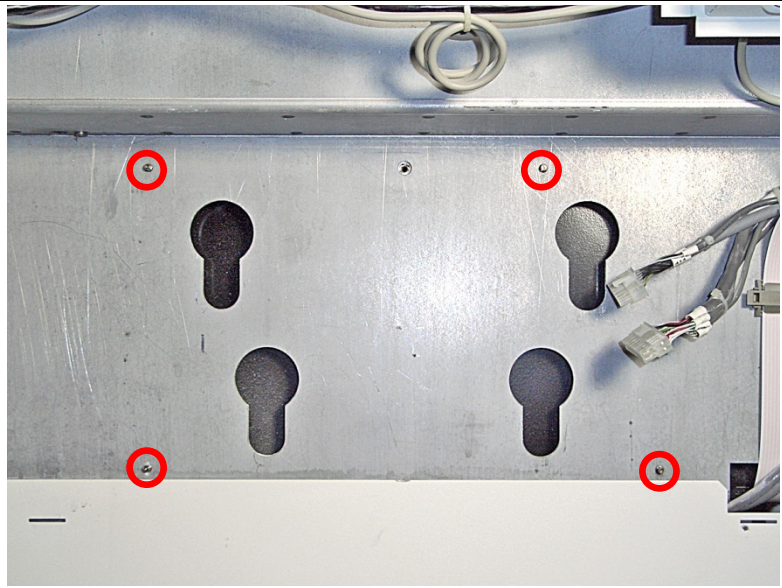
Lift E-Box up off the studs and slide away from the system to remove.





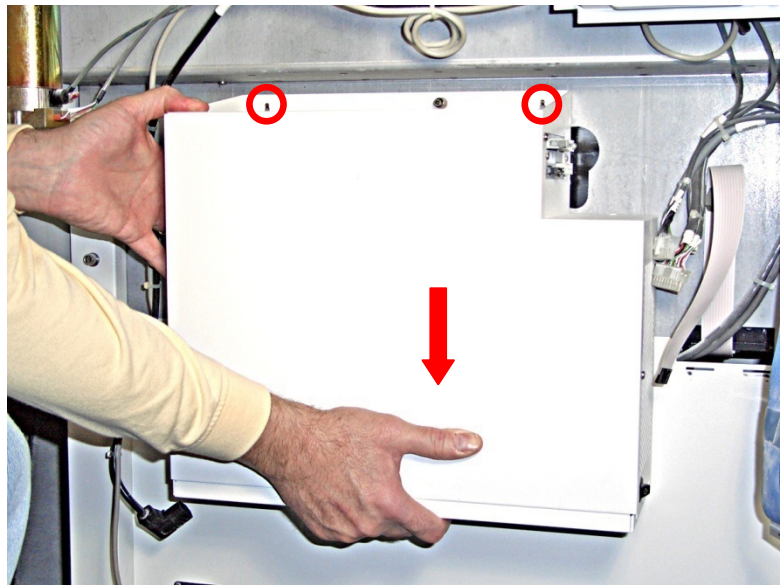
## Install the Replacement E-Box

Align the E-Box onto the four studs on the back of the printer and slide back into place.



Lower the E-Box onto the studs.

Ensure that the E-Box is seated on all four studs.

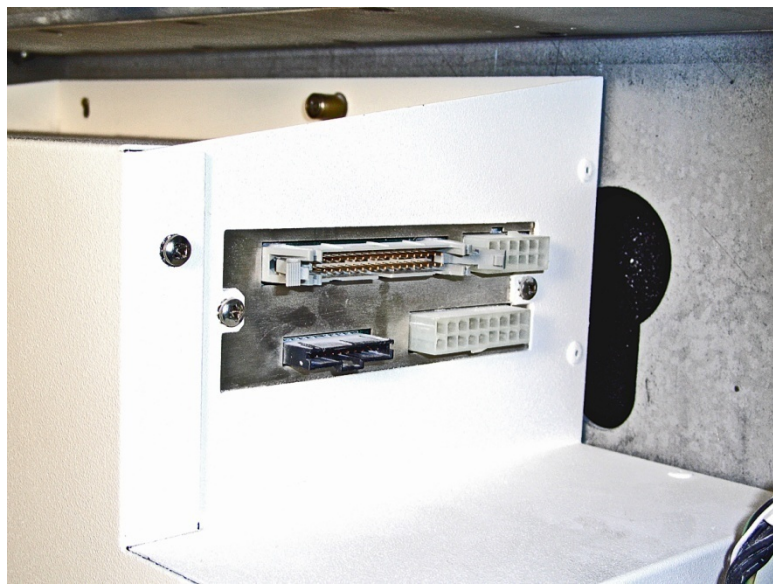


Tighten the captive Phillips screw on the top of the E-Box.



Plug 2 wiring harnesses and 2 ribbon cables into the connector panel on the E-Box.

Make sure all 4 latch into position





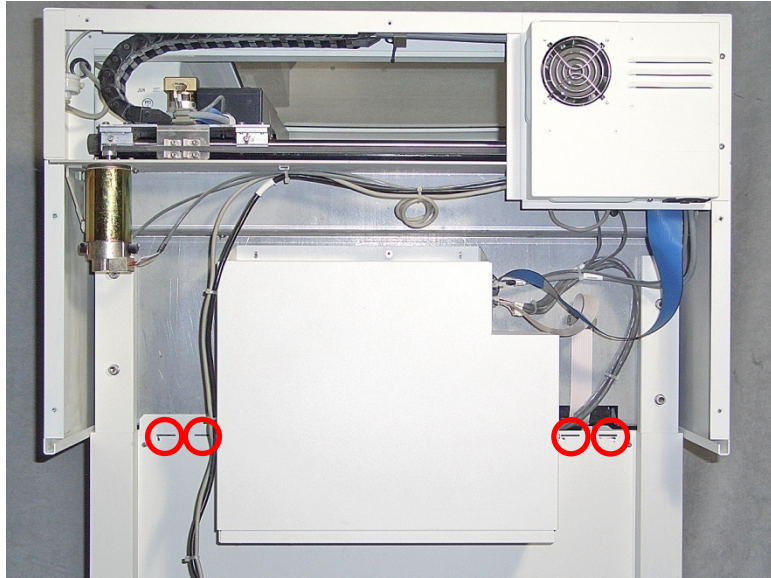
**Replace the rear panel and screws.**

Z310:

Line up the tabs on the rear panel with the slots in the printer cabinet and slide the panel into place. Replace 7 screws.

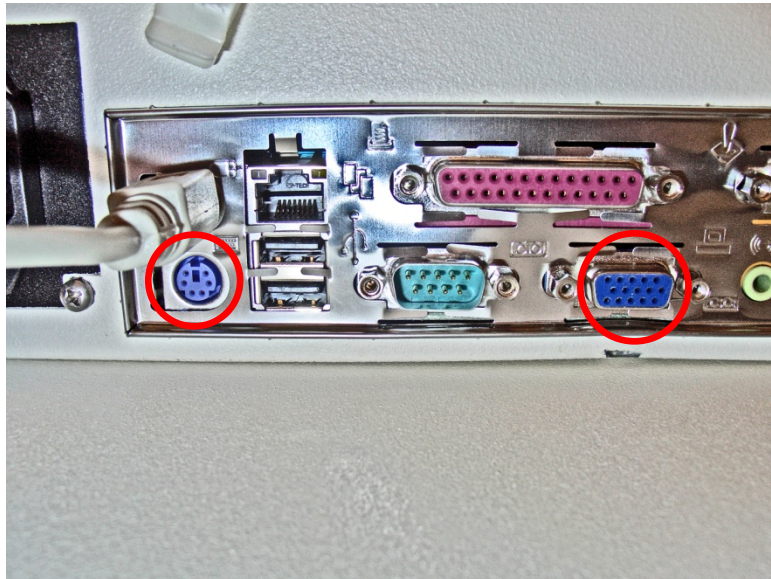
Z310 Plus:

Line up the tabs on the rear panel with the slots in the printer cabinet and slide the panel into place, pressing down slightly so it clears the bottom of the heater. Replace 6 screws.



**Connect monitor and keyboard.**

Connect the monitor and keyboard to the E-Box. Ensure that the keyboard is plugged into the purple connector.





**Connect the power and network cables.**

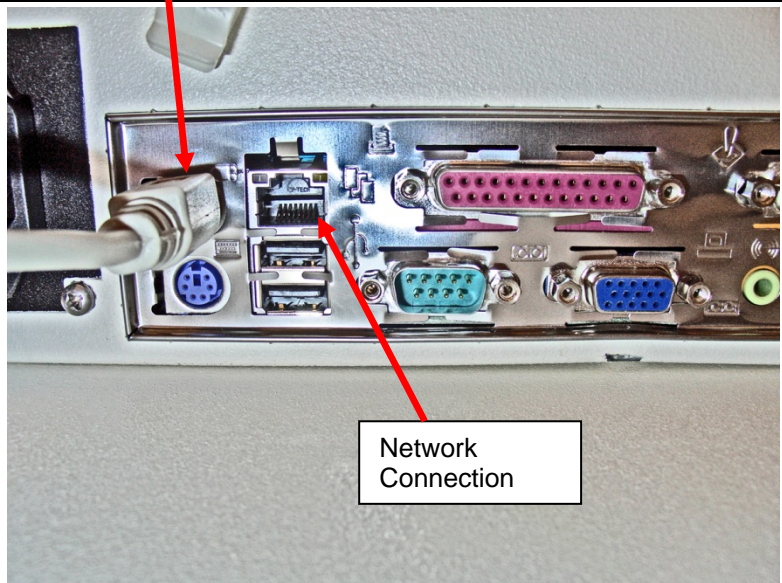
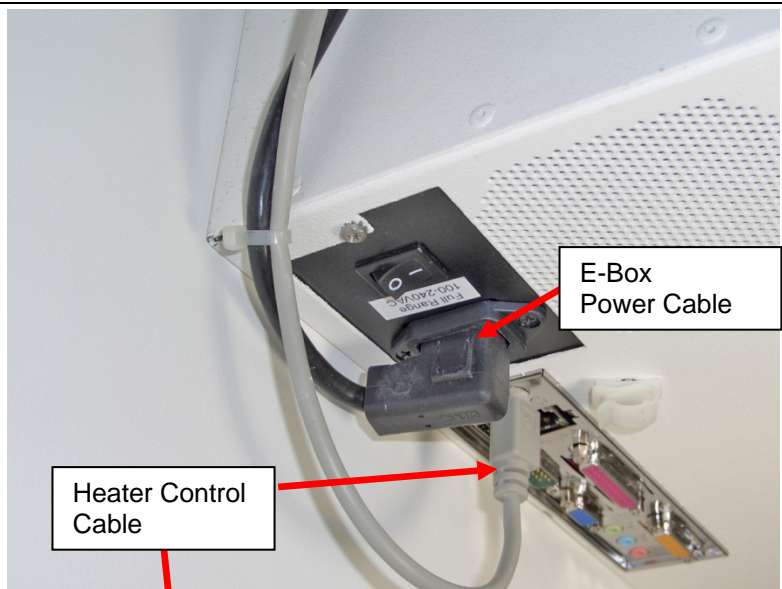
Z310:

Connect the E-Box power cable and the network cable to the bottom of the E-Box.

Z310 Plus:

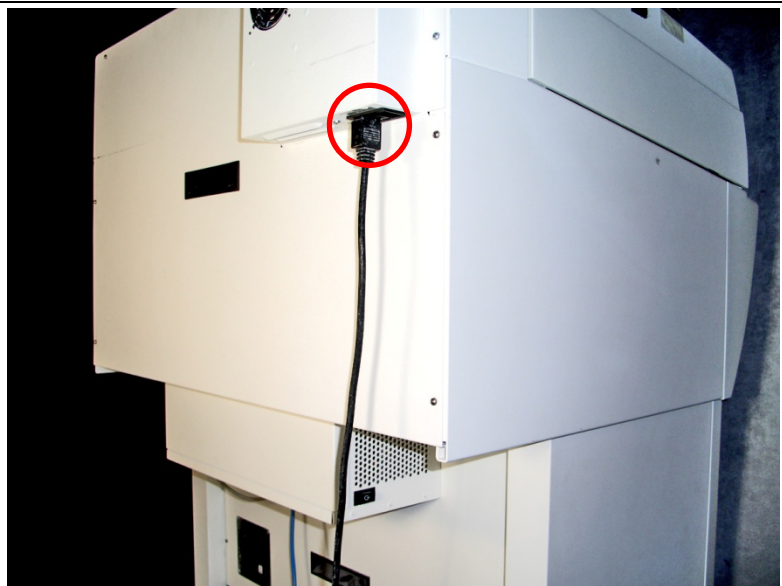
Connect the E-Box power cable, heater control cable and network cable to the bottom of the E-Box.

Ensure that the heater control cable plugs into the green (mouse) connector.



Z310 Plus:

Also connect the heater power cable to the bottom of the heater.



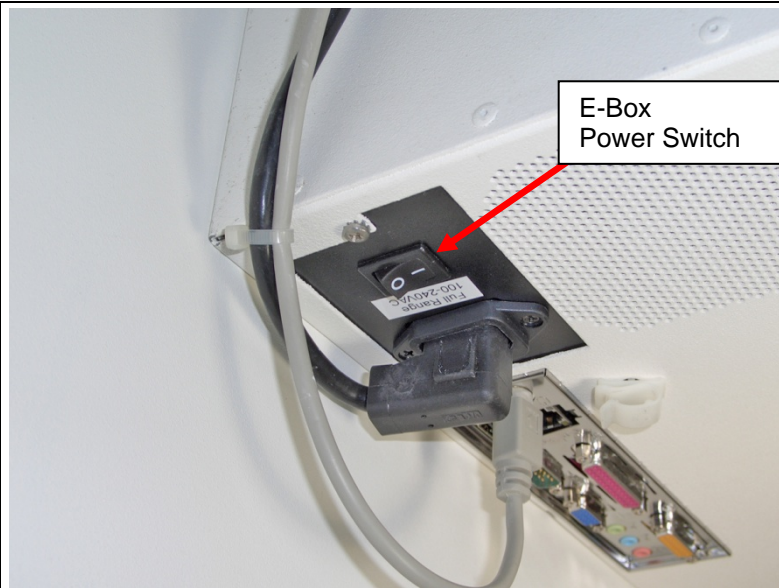
## Configure the Replacement E-Box

### Power up and enter Configuration Mode

Newer E-Boxes have an E-Box power switch on the bottom of the E-Box.

Make sure this switch is ON before proceeding.

Older E-Boxes do not have this switch.

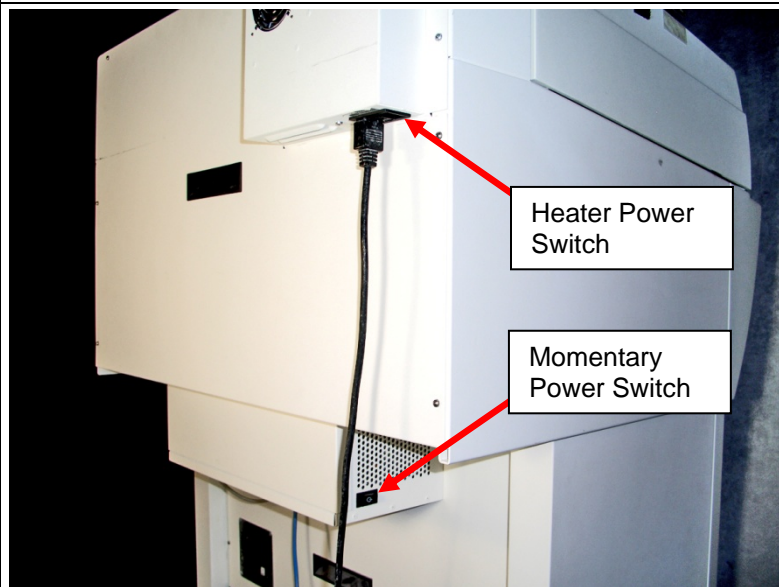


### Z310:

Turn on system power using the momentary switch on the side of the E-Box.

### Z310 Plus:

Turn on the heater power switch on the bottom of the heater, and then turn on system power using the momentary switch on the side of the E-Box.



Immediately press and hold the **Insert** key on the keyboard.

Continue holding the **Insert** key; release it when the monitor displays the **Configuration Menu**.

Type **1** to access the .ini file.

```
ZEPHYR V10.156
Configuration Menu
1. Edit .INI file
2. Restore backup firmware
3. Exit
>
```

### Set printer name

Scroll down to the variable `PRINTER_NAME`. This is the alphanumeric identity of this printer on your network. By default this is set to the serial number of the printer, in the format of

3DP3xxxxx

Type in the printer name you need for your installation, or leave it as the default value.

```
Navigation: Arrows, PageUp/PageDown F2: Rest
Default POST WIPE SQUIRT 1000
Default SHINGLE_STEP_SIZE 17
Default SHINGLE_MODULUS 150
Default COLOR_SHINGLE_STEP 17
Default COLOR_SHINGLE_MOD 150
Default LINES_PER_STRIPE 300
Default COLOR_STRIPE_LINES 300
Default STRIPE_OVERLAP 1
Default SEALEVEL_CARD 0
Default REMOTE_NATTER 0
Default PARK_SECONDS 30
Default USE_NETWORK 1
Default PRINTER_NAME 3DP32112
Default PRINTER_ADDRESS
Default SUBNET_MASK
Default GATEWAY_ADDRESS
Default DNS_ADDRESS
Default CARWASH_TWEAK_SLOW 0
Default CARWASH_TWEAK_FAST 0
Default START_JOB_SPIT 40000
Default END_JOB_SPIT 25000
Default MAX_HEAD_TEMP 82
Default LOG_LAYERS 0
Default LOG_ETC_EVENTS 0
Default LAYER_RESET_TEMPS 0
Default MAX_LAYER_BYTES 4000000
Default COOL_HEAD_WAIT 5000
Default HEAD_ALARM_RETRIES 1
Default NEED_SERVICE_CALL 0
Default MATERIALS_TEST 0
Default MAX_LOG_SIZE 1000000
Default ROLLER_SPEED 255
Default MAX_STICKY_VARS 50
Default STICKY_MINUTES 10
Default HARD_REZERO_PISTONS 0
Default FIRE_VOLTAGE 0
Default COUNT_DRY_PIXELS 1
Default SHINGLE_HISTORY 4
Default POSITION_BASED_FIRIN 1
Default PRINT_SPEED_MOD 0.9
Default FIRE_PULSE_WIDTH 1
Default LAYER_WAIT_MILLISECS 1
Default MULTIPASS 1
Default MULTIPASS_DRY_PIXELS 500000
Default MAINTAIN_BUILD_TEMP 0
Default SLEEP_BUILD_TEMP 25
Default USE_HI_RES --->2
```

### Set printer address

Scroll down to the variable `PRINTER_ADDRESS`. This is the IP address of this printer on your network. By default this is blank, meaning the printer will use DHCP addressing and request an IP address from the server. If you are using DHCP, simply leave this value blank.

If you are using a static IP address, fill in values for both `PRINTER_ADDRESS` and `SUBNET_MASK`.

```
Navigation: Arrows, PageUp/PageDown F2: Rest
Default POST WIPE SQUIRT 1000
Default SHINGLE_STEP_SIZE 17
Default SHINGLE_MODULUS 150
Default COLOR_SHINGLE_STEP 17
Default COLOR_SHINGLE_MOD 150
Default LINES_PER_STRIPE 300
Default COLOR_STRIPE_LINES 300
Default STRIPE_OVERLAP 1
Default SEALEVEL_CARD 0
Default REMOTE_NATTER 0
Default PARK_SECONDS 30
Default USE_NETWORK 1
Default PRINTER_NAME 3DP32112
Default PRINTER_ADDRESS
Default SUBNET_MASK
Default GATEWAY_ADDRESS
Default DNS_ADDRESS
Default CARWASH_TWEAK_SLOW 0
Default CARWASH_TWEAK_FAST 0
Default START_JOB_SPIT 40000
Default END_JOB_SPIT 25000
Default MAX_HEAD_TEMP 82
Default LOG_LAYERS 0
Default LOG_ETC_EVENTS 0
Default LAYER_RESET_TEMPS 0
Default MAX_LAYER_BYTES 4000000
Default COOL_HEAD_WAIT 5000
Default HEAD_ALARM_RETRIES 1
Default NEED_SERVICE_CALL 0
Default MATERIALS_TEST 0
Default MAX_LOG_SIZE 1000000
Default ROLLER_SPEED 255
Default MAX_STICKY_VARS 50
Default STICKY_MINUTES 10
Default HARD_REZERO_PISTONS 0
Default FIRE_VOLTAGE 0
Default COUNT_DRY_PIXELS 1
Default SHINGLE_HISTORY 4
Default POSITION_BASED_FIRIN 1
Default PRINT_SPEED_MOD 0.9
Default FIRE_PULSE_WIDTH 1
Default LAYER_WAIT_MILLISECS 1
Default MULTIPASS 1
Default MULTIPASS_DRY_PIXELS 500000
Default MAINTAIN_BUILD_TEMP 0
Default SLEEP_BUILD_TEMP 25
Default USE_HI_RES --->2
```

Press **F4** to return to the main Configuration Menu.

Type **3** to Exit the Configuration Menu.

The printer will now reboot.

```
ZEPHYR V10.156
Configuration Menu
1. Edit .INI file
2. Restore backup firmware
3. Exit
>
```



Rezero the Pistons

During reboot, the printer should rezero the feed and build pistons. As it rezeroes each piston it will make a loud buzzing noise for a short while (up to 60 seconds). Once this is complete the new zero values are stored in memory.

If the printer does rezero the pistons, skip the steps below and shut down the printer. Disconnect the keyboard and monitor. The printer is ready to be used.

If it does not rezero the pistons they must be rezeroed manually using the procedure below.

After the printer reboots, the monitor should be displaying this screen.

Type **m** to bring up the manufacturing (factory) menu.



When the manufacturing menu appears, type **p** to rezero the pistons

```

ONLINE Monitor Running
1648 SIO SIO 0 0 0 0 0 0 0 0
PRIORITY: 5 Packets Running
my IP address is 192.168.0.2
my MAC address is 08-02-6B-07-B8-3D

PRIORITY: -1 Layers Running
PRIORITY: -2 Stripes Running
PRIORITY: -2

PRIORITY: 0 Printer Running
FS PRINTER BOOTED: 0
PM MANUFACTURING: 0
booting (power-up) 10.158
heater version 1.1
rezero carwash
rezero pistons
pistons restored from EEPROM.
PM_NO OPERATION: 0
PM_MANUFACTURING: 0
a do ALL startup tests
c check control panel
p rezero pistons
t measure piston travel
m check SA, FA motors
e enable rezero upon bootup
s check serial port
Q quit
? help
ZEPHYR FACTORY>_

```

```

PRIORITY: 0 Printer Running
booting (power-up) 10.158
heater version 1.1
rezero carwash
rezero pistons
pistons restored from EEPROM.
PM_NO OPERATION: 0
PM_MANUFACTURING: 0
a do ALL startup tests
c check control panel
p rezero pistons
t measure piston travel
m check SA, FA motors
e enable rezero upon bootup
s check serial port
Q quit
? help
ZEPHYR FACTORY>_

```

When you see the prompt

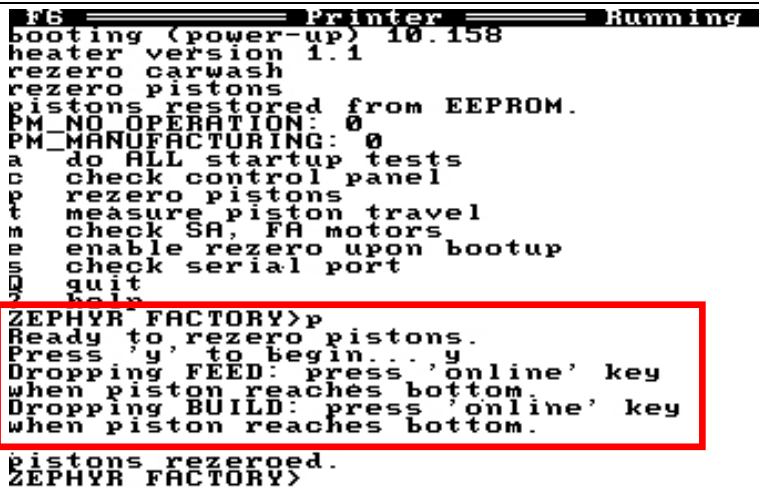

Ready to rezero  
pistons

Type **y** and the rezero routine  
will begin.

```

PRIORITY: 0 Printer Running
booting (power-up) 10.158
heater version 1.1
rezero carwash
rezero pistons
pistons restored from EEPROM.
PM_NO OPERATION: 0
PM_MANUFACTURING: 0
a do ALL startup tests
c check control panel
p rezero pistons
t measure piston travel
m check SA, FA motors
e enable rezero upon bootup
s check serial port
Q quit
? help
ZEPHYR FACTORY>p
Ready to rezero pistons.
Press 'y' to begin...

```

<p>The printer will first lower the <b>feed</b> piston. When it reaches the end of its travel you will hear a loud buzzing sound. When you hear this, press the <b>ONLINE</b> button on the front of the printer.</p> <p>The printer will next lower the <b>build</b> piston. When it reaches the end of its travel you will hear a loud buzzing sound. When you hear this, press the <b>ONLINE</b> button on the front of the printer.</p>	
<p>When the rezeroing is complete, type capital <b>Q</b> to exit the manufacturing menu.</p> <p>The screen will display</p> <p>bye</p>	
<p>Shut down the printer and unplug the monitor and keyboard.</p> <p>The printer is now ready to be used.</p>	



# Change History

Rev B ECN 2382 BWH 6/2/08  
Rev C ECN 2641 RAB/BWH 2/17/09

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