



# MCS Eagle Printhead Installation Manual



Version 1 - October 2013

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## Included

Before you begin, please make sure you have the following:

- ▶ Computer
- ▶ Monitor
- ▶ Keyboard
- ▶ Mouse
- ▶ Surge Protector
- ▶ Hardware Pack
- ▶ 8020 Crossbar Kit



Fig. 1: MCS 530 (or 430) Base



Fig. 2: IO Sort Box



Fig. 3: Printer Controller



Fig. 4: Eagle Printhead



Fig. 5: Network Hub



Fig. 6: Ink Tank Level Indicator (UV)



Fig. 7: Interlock Jumper



Fig. 8: Network Cables (3)



Fig. 9: RS232 Jumper (1)



Fig. 10: Splitter (1)



Fig. 11: Printer Cable Bundle (1)



Fig. 12: Ink Line Tube (1)

## Tools Needed

- ▶ Screwdrivers
- ▶ Allen Wrench
- ▶ Measuring Tape
- ▶ Level
- ▶ Gloves
- ▶ Wipes

# Introduction

This manual details how to install the MCS Eagle Printhead on either a 530 or 430 base. The 530 base includes space for a dryer and the 430 base only has room for the printhead.

## Warnings

- ▶ Do not touch the printhead with your fingers.
- ▶ Use gloves when handling ink.
- ▶ Use only Think Ink approved gloves and wipes.

## Notes

These instructions use the direction of paper travel as reference. Please note on which side the feeder will be set up. That side will be known as the lead edge. The opposite side will be known as the trail edge.

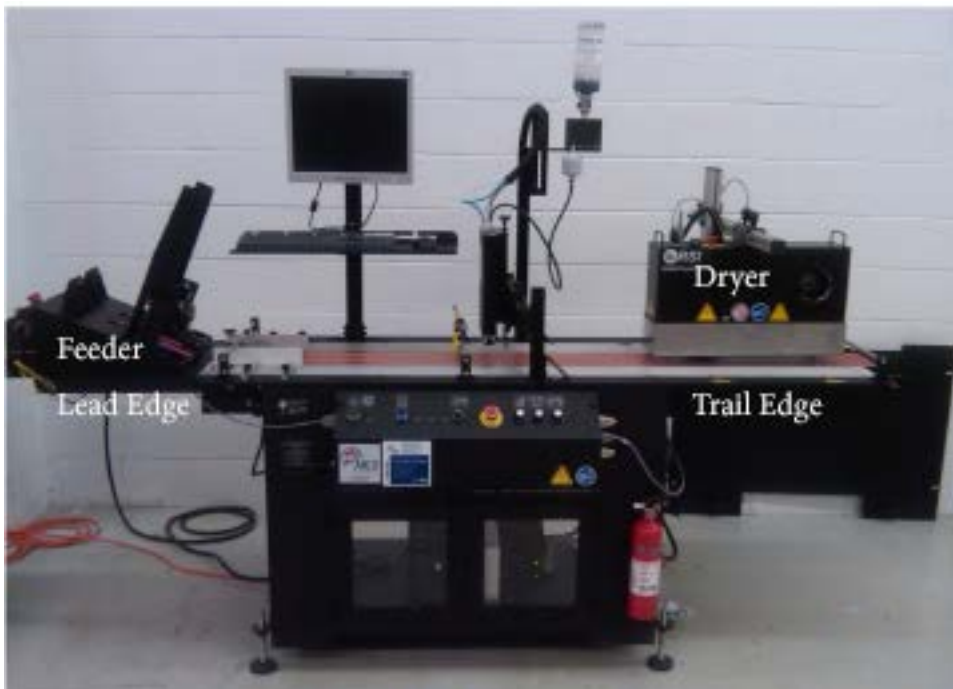


Fig. 13: Completed Install of 530 Base with Feeder and Dryer

# Instructions

## 1. Set up Base

Make sure the base is level with a leveling tool by adjusting the feet as needed. Make sure you can still get behind the printer for later steps.

## 2. Place Computer, Network Hub, and Control Boxes in Base

Place the computer tower in the base. Stack the IO Sort Box on top of the Printer Controller Box in the base. Place the Network Hub in the base. Make sure all components will not be in the way of the suction pump.

## 3. Attach Jumpers to Panel

This panel is the interlock system. Open the panel. On the right, upper board put a jumper on the connection on the left of the board. There is only one spot for the jumper inside the panel.

Close the panel and install the jumpers on all connections on the outside of the panel. There is one spot inside the panel (Fig. 14), one on the outer left (Fig. 16), and three on the outer right (Fig. 15).

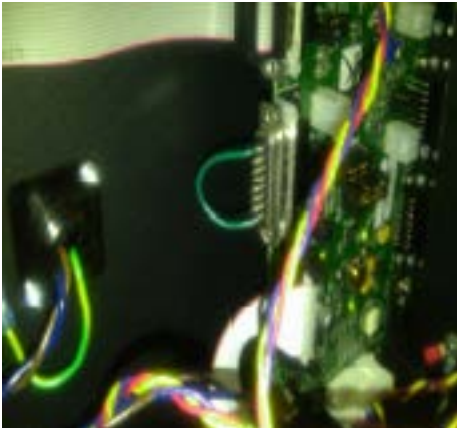


Fig. 14: Front Panel, Interior



Fig. 15: Front Panel, Dryer Plugs



Fig. 16: Front Panel, Feeder Side

## 4. Install MCS Eagle Printhead

Slide the longer pillar of the 8020 mount in the middle of the three tracks farthest from the panel (the back of the base). Fasten the pillar 36 inches (3 feet) from the lead edge of the base (Fig. 18). Use provided screws.

Attach 8020 crossbar to the two pillars. The crossbar should be attached to the lead edge side of the pillars. Fasten the crossbar 5 inches up from the base (Fig. 17). Make sure to measure from both pillars.

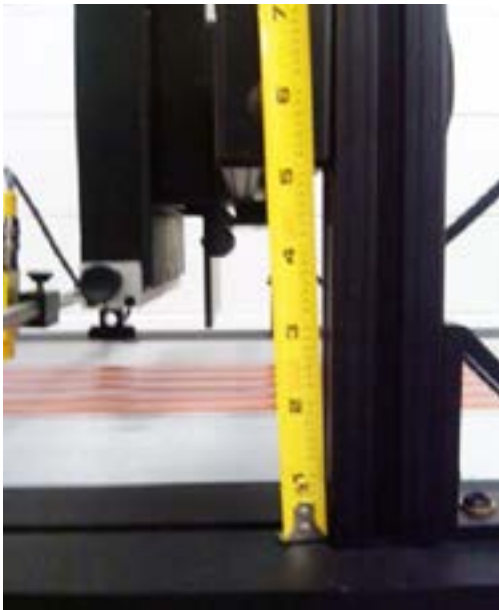


Fig. 17: Crossbar Measurement is 5 inches from base



Fig. 18: Sidebar Measurement from Lead Edge of Base

Slide mount onto crossbar. Make sure the mount is on the lead edge side of the crossbar. Put endcap on crossbar. Snap the MCS Eagle Printhead onto the mount. Make sure the Printhead is level and flush to mount.

For the UV installation, make sure there is a label on the MCS Eagle Printhead indicating UV ink only.



## 5. Install Electric Eye

Slide Electric Eye crossbar onto base. Use the middle of the three tracks. Fasten crossbar 28 inches (2 feet, 4 inches) from the lead edge.

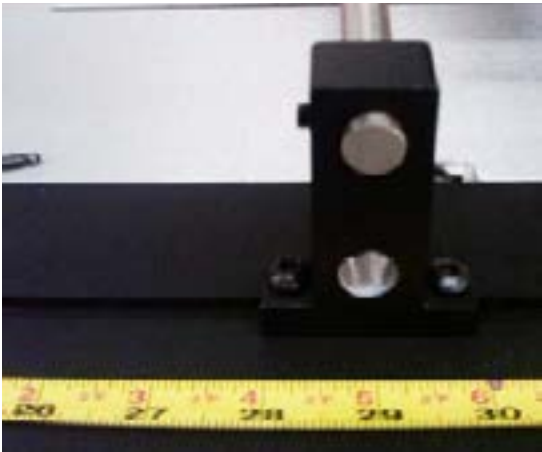


Fig. 19: Electric Eye measured 28 inches from Lead Edge



Fig. 20: Electric Eye on Mount

Unscrew crossbar from mounts and slide on Electric Eye. Reattach crossbar. Run the attached cable to behind the base and leave it there for now.

## 6. Install Ink Supply Mount

On the top of the taller 8020 pillar, attach the Ink Supply Mount 24 inches (2 feet) from the base surface (Fig. 21). Attach the mount to the trail edge side of the pillar. Use the screws provided.

For the UV installation, mount the UV Ink Tank Level Indicator to the front side of the Ink Supply Mount. Set the adjustment tool aside for now (Fig. 22). It will be used later when loading the ink.

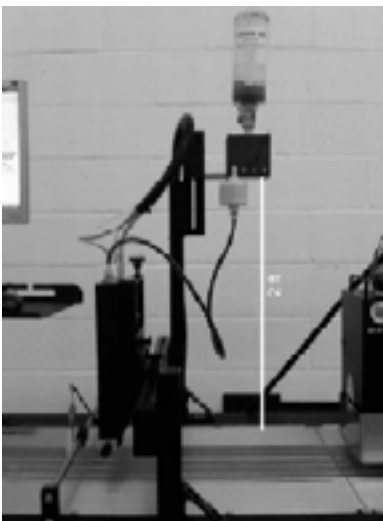


Fig. 21: Ink Tank Level, 2 feet above base



Fig. 22: Ink Tank Level Indicator tool



Fig. 23: Light Tree

## 7. Install the Light Tree

On the same 8020 pillar as the ink mount, attach the light tree (Fig. 23). Attach the light tree to the Lead Edge side of the pillar. Leave the Data Cable behind the base for now.

## 8. Install Monitor and Keyboard Stand

On the track closest to the back of the table, slide the monitor mount pillar. Fasten the pillar 12 inches (1 foot) from the lead edge of the base (Fig. 24 and Fig. 25).

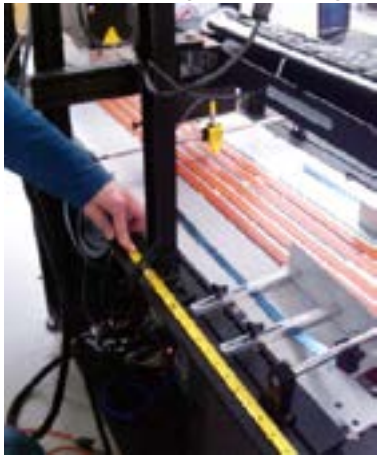


Fig. 24: Monitor Stand 1 foot from Lead Edge



Fig. 25: Monitor Stand

Attach the keyboard tray to pillar (Fig. 26) with provided screws. Attach the monitor to the mount (Fig. 27). Plug the power and monitor cables into the back of the monitor.



Fig. 26: Mounted Keyboard Tray



Fig. 27: Monitor on Stand

## 9. Install Side Guides

Fasten one Side Guide onto the closest track to the front of the table on both sets of tracks. Fasten the Side Guide 5 inches from the lead edge.

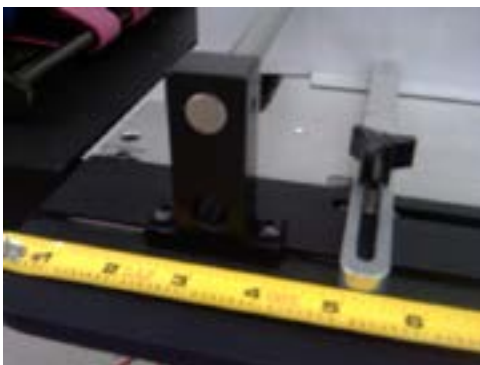


Fig. 28: Side Guides 5 inches from Lead Edge

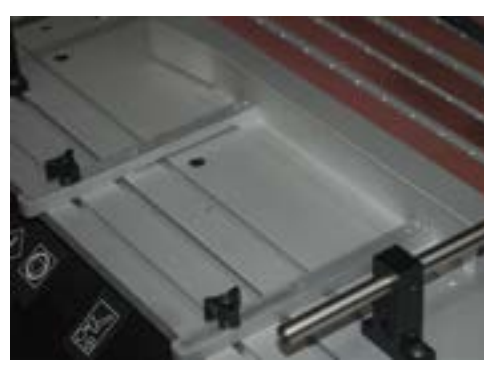


Fig. 29: Side Guides

## 10. Install Dryer (530 Base Only)

This step is only applicable for the 530 base. Make sure you have the correct dryer. The UV printing system should have the Fusion LightHammer 6 (Fusion LH6) dryer. The H2O dryer is either the S-800 or the S-900.

Mount the dryer to the base with screws. For the UV dryer, fasten the dryer 13 inches from the trail edge of the base with screws. For the H2O dryer, fasten the dryer 10 inches from the trail edge of the base (Fig.31).

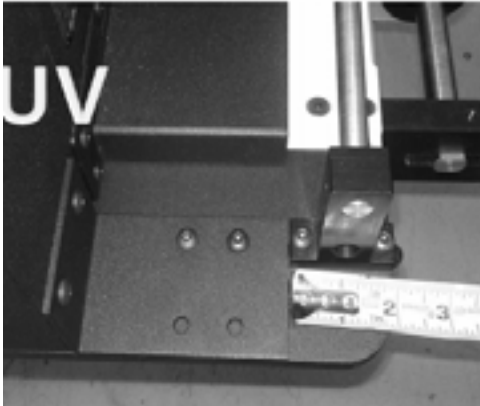


Fig. 30: UV Dryer



Fig. 31: H2O Dryer

Attach Interlock cable to the “Dryer” slot on the front panel. Remove the jumper already in the “Dryer” slot and replace it with the cable from the dryer. Run the data cable to the back of the base to be plugged into the controller later.

## 11. Connect Cables to MCS Eagle Printhead

Take the Eagle Cable Bundle and attach each cable and tube to the MCS Eagle Printhead. Connect the clear tube to the connection marked “M-vac.” Connect the blue tube into the connection marked “Degass vac.” Connect the larger data cable into the connection marked “Print Data.” Connect the smaller data cable into the connection marked “Ink Control.” Run this group of cables over the printhead pillar to behind the base. The other end will be plugged into the controller later.



Fig. 32: Eagle Printhead



Fig. 33: Eagle Printhead with Cable Bundle and Ink Line

Take the longest ethernet cable and connect it to the ethernet port of the printhead. Run the ethernet cable to behind the base to plug into the network hub later. Take the black tube and connect one end into the “Ink In” connection. Connect the other end to the nozzle on the bottom of the Ink Mount.

## 12. Install Printer Controller Box

Take the Eagle Cable Group and attach this end of the cable to the controller. Connect the clear tube to the



connection marked “M-vac.” Connect the blue tube into the connection marked “Degass vac.” Connect the larger data cable into the connection marked “Print Data.” Connect the smaller data cable into the connection marked “Ink Control.”

Take an ethernet cable and connect one end to the ethernet port of the controller. The other end of the cable will connect to the Network Hub later.

Take the 3-way splitter. The side with only 1 connection will be connected to the IO Sort Box later. The side with 3 connections will be connected to this controller. Each end is marked where it is supposed to connect. Connect the “Encoder” connector into the “Encoder” port. Connect the “Sensor” connector to the “Sensor” port. Connect the “Link” connector into the “Link” port.

If Printer Controller Box has ports “L/C Rs 232” and “Rs 232,” take the double-ended jumper cable provided and connect the two ports (Fig. 36)



Fig. 34: IO Sort Box on Print Controller



Fig. 35: Splitter from IO Sort Box to Print Controller



Fig. 36: RS232 Jumper on Printer Controller

## 13. Install IO Sort Box

Take the free end of the splitter from the Printer Controller box and plug in the single connection side into the port marked “Head-1.”

Connect the cable running from under the table (the encoder) and plug the cable into the port marked “Encoder.” Take the last cable running to behind the base, the cable from the Electric Eye, and connect the cable to the port marked “TOF Sensor.”

Take an ethernet cable and connect one end to the ethernet port of the controller. The other end of the cable will connect to the Network Hub later.

## 14. Install Computer

Connect the last ethernet cable to the ethernet port of the computer. The other end will connect to the Network Hub later. Connect the keyboard and mouse USB cables to the back of the computer. Connect the monitor cable to the monitor connection of the computer.

Plug in the power cord to the back of the machine. Plug the Dongle (Software Key) into the front of the computer. Boot the computer and install the MCS Raptor Software.

## 15. Install Network Hub

There are 4 ethernet cables. Connect the ethernet cables from the MCS Eagle Printhead, the IO Sort Box, the Printer Controller, and the computer into the Network Hub. Plug the cables into any port.

## 16. Turn on Printer

Plug the power cords from the Monitor, Computer, IO Sort Box, Printer Controller, and the Network Hub into the filtered Surge Protector. Plug in the power cord from the base and the dryer (if applicable), as well. Without the dryer, there should be 6 power cords connected to the surge protector.

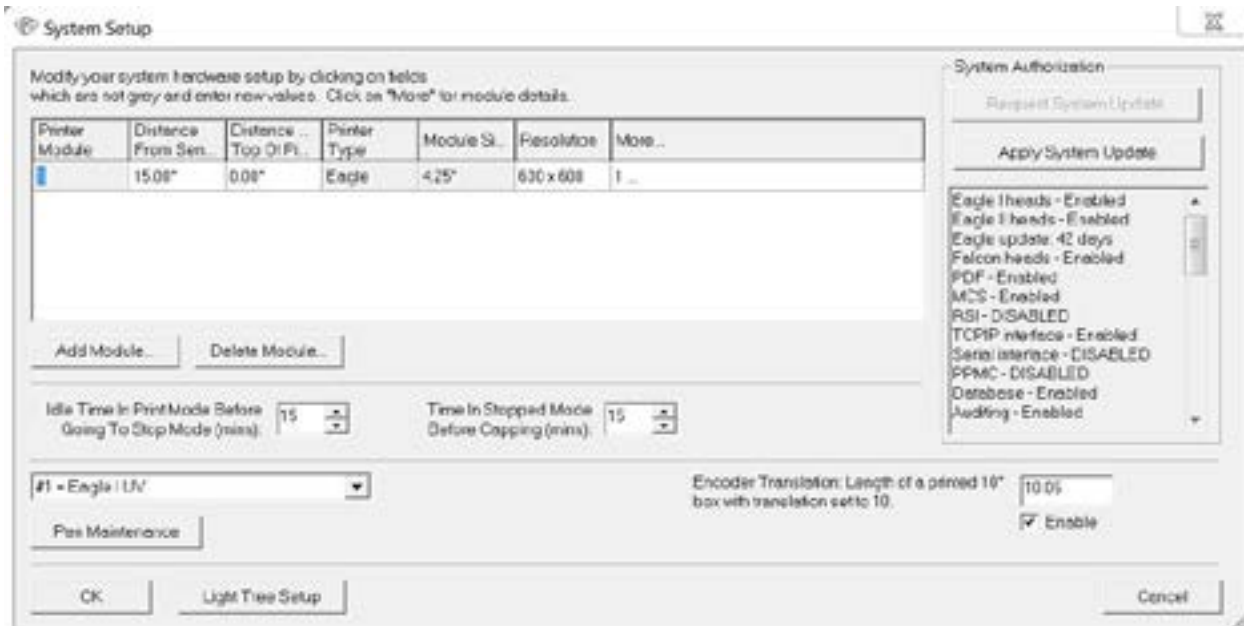


Fig. 37: System Setup Window

Turn everything on. Make sure that all components are running. Open the MCS Raptor software and adjust the system settings for this print setup. Go to File > System Setup... and the following window will open:

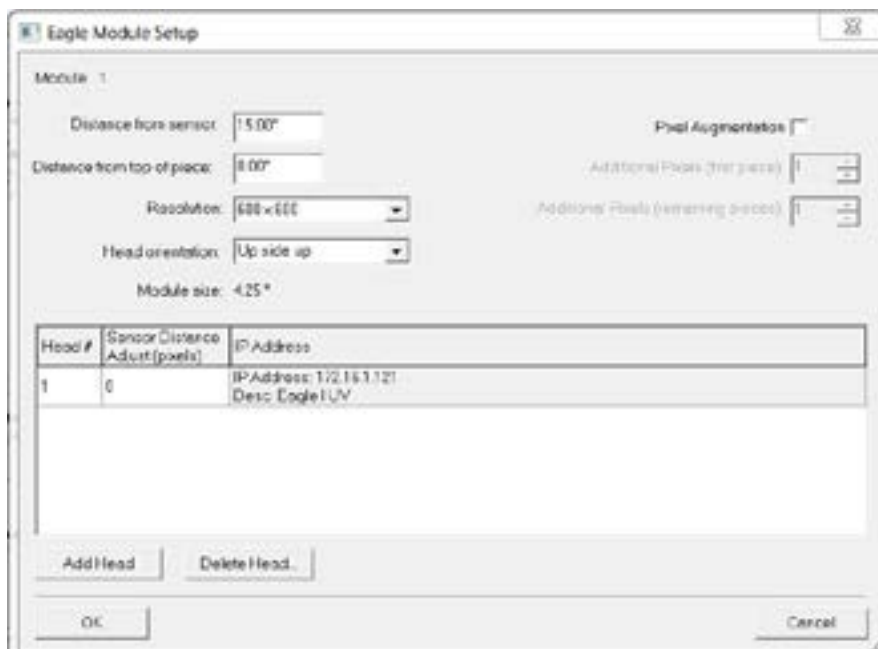


Fig. 38: Eagle Module Setup Window

If this is the first time opening the setup, delete any modules that do not apply to the configuration of the printer. Make sure the module is set up for Eagle printhead. Delete Modules by select them and clicking the “Delete Module” button. Add a Module by clicking “Add Module.” Edit a Module by clicking the value you wish to edit or clicking the number in the “More...” column. Clicking the number in the “More...” column will open the “Eagle Module Setup” window. Here you can edit “Resolution” and “Head Orientation.”

## 17. Install Ink

Make sure the ink is the right type. If this is a UV system, make sure the ink bottle says UV. If this is a waterbased ink, make sure the ink says so.

Snap ink bottle onto Ink Supply Mount on the printhead pillar. **DO NOT SQUEEZE THE BOTTLE.**

For the UV installation, make sure the ink sensor is attached to the bottle first before screwing into the mount. Plug the power cord into either “Input-1” or “Input-2” of the IO Sort Box. Please note that the input of the Ink Tank Level Indicator will have to be altered in the programs config file.



Fig. 39: Ink Tank Level Indicator: Empty



Fig. 40: Ink Tank Level Indicator: Full

Once the ink bottle is in place, use the adjustment tool you previously set aside to turn on the second (yellow) light on the UV Ink Tank Level Indicator. Set the adjustment tool aside to give to the client later.

For Flexhead or fast drying inks, such as Flexink or Extended, additional steps will need to be completed in the Raptor software. If this set up does not include Flexhead ink, skip to the next set of instructions.

Open the Eagle Module Setup Window (refer to directions in Section 16). Select the “Pixel Augmentation on” check box. This will pre-wet the nozzles for printing. You can increase the number of pixels to pre-wet by increasing the value in “Additional Pixels (first piece).”

## 18. Purge and Wipe Printhead

Be sure to wear gloves and use only approved wipes.



Fig. 41: Approved Wipes



Fig. 42: Approved Gloves

Raise the MCS Eagle Printhead to its highest setting. Remove the cover on the bottom and set it aside for now. Put an ink tray beneath the MCS Eagle Printhead.

On the top of the MCS Eagle Printhead, press the yellow “Purge” button for five seconds. Ink should come out of the nozzles and drip into the ink tray. Wipe the printhead with a clean wipe. Make sure all the ink on the bottom of the printhead has been wiped away. Lower MCS Eagle Printhead and prepare some printer paper for the following tests.

## 19. Complete Alignment Test

This test is important to make sure the MCS Eagle Printhead is perpendicular to the direction of paper travel.

In the Raptor software, open the normal print screen window. Set the resolution to 600 dpi and set the template for 8.5 x 11 paper.

Press “Ctrl” and “Alt” and click on the “Print” button. A screen will pop-up asking for the test pattern file name. Select either “Eagle A Alignment.bmp” and “Eagle B Alignment.bmp” according to the setup as described below.

| Rail side mount  | Paper feed direction | Test pattern          |
|------------------|----------------------|-----------------------|
| Mounted on left  | Left-to-right        | Eagle A Alignment.bmp |
| Mounted on right | Right-to-left        | Eagle A Alignment.bmp |
| Mounted on left  | Right-to-left        | Eagle B Alignment.bmp |
| Mounted on right | Left-to-right        | Eagle B Alignment.bmp |

Click Open. Once the files have successfully been loaded the printer will enter print mode. Be sure that the program indicates “Head Test Patterns.” Print the page.

There are 6 places you have to inspect. On the leftmost portion of the pattern there are 6 pairs of horizontal lines. Looking at each pair, make sure the lines touch (shown in diagram below).

If the lines do not touch, then the MCS Eagle Printhead will need to be rotated. If the top line is the line that is centered more on the right, then rotate the printhead clockwise. If the top line is the line that is centered more on the left, rotate the printhead counterclockwise.

Repeat alignment print test until each pair touches its respective horizontal line.

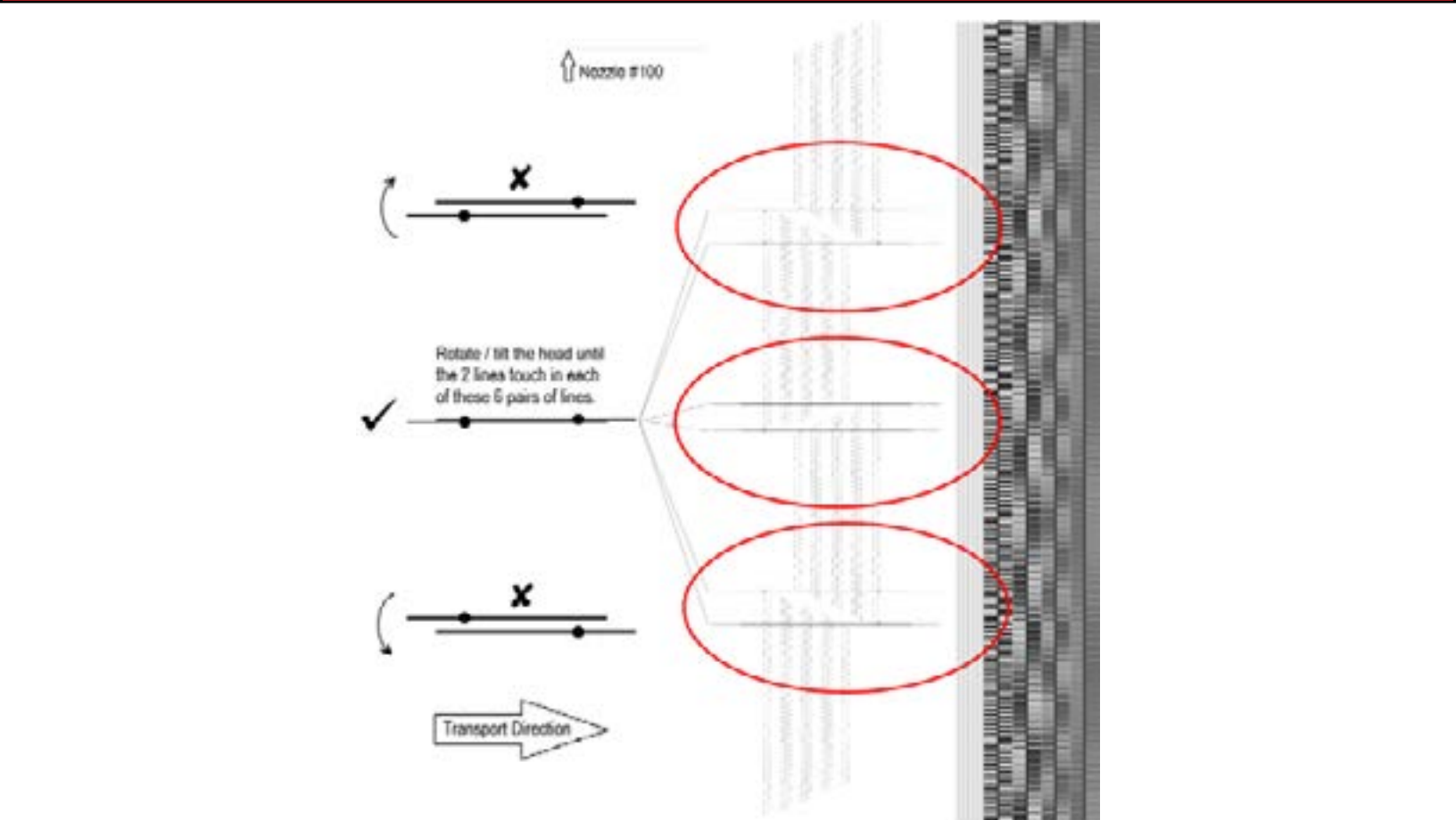


Fig. 43: Printout with Horizontal Line Descriptions

## 20. Complete Encoder Print Test

This test is designed to calibrate the encoder for accuracy.

In a new print session, create a 10 inch long box in the print window. It does not matter how tall the box is. Print this box at 600 dpi and on 8.5 x 11 paper.

Measure the printed box with a ruler. If the box is slightly smaller or larger, go to the “System Setup” Window found under “File/System Setup.” In the “Encoder Translation: Length of Printed 10” box with translation set to 10” box, enter the size of your printed box to the nearest 1/16 of an inch. Underneath that box, click the “Enable” box.

Once the encoder has been properly calibrated, a vertical line of single pixel dots should print. If the vertical line does not print precisely in a row, alter “Encoder Translation” value.

Repeat test print to ensure the encoder has been calibrated.

## 21. Complete Quality Print Test

In a new print session, print a test pattern. Make sure resolution is at 600 dpi and set for 8.5 x 11 paper.

Press “Ctrl” and ”Alt” and click on the “Print” button. The program will ask for the test pattern file name. Select either “Eagle Test Pattern A.bmp” and “Eagle Test Pattern B.bmp” based on the setup described below.



| Rail side mount  | Paper feed direction | Test pattern             |
|------------------|----------------------|--------------------------|
| Mounted on left  | Left-to-right        | Eagle Test Pattern A.bmp |
| Mounted on right | Right-to-left        | Eagle Test Pattern A.bmp |
| Mounted on left  | Right-to-left        | Eagle Test Pattern B.bmp |
| Mounted on right | Left-to-right        | Eagle Test Pattern B.bmp |

Click Open. Once the files have successfully been loaded, the printer will enter print mode. Be sure that the program indicates “Head Test Patterns.” Print the page. Refer to Appendix A for printouts of both test patterns.

Examine the page to make sure the lines are straight and the ink bar is solid. If it is, the quality print is good and you can skip to the next step. If not, purge and wipe the printhead and reprint. If the quality of the test print is still not good, a nozzle or two of the printhead may need to be turned on or off.

To turn a nozzle on or off, look at the test printout and identify which row the misdirected line is located in. Count the number of lines over from the left to where the misdirected line is. Refer to the chart in Appendix B to identify the nozzle number you will need to turn off.

In the Raptor software, open the Eagle Module Setup Window (refer to instructions in section 16). Hold down the “Ctrl” and “Shift” keys while clicking the Module in the “IP Addresses” column. This will open a window that will allow you to turn on or off desired nozzles:

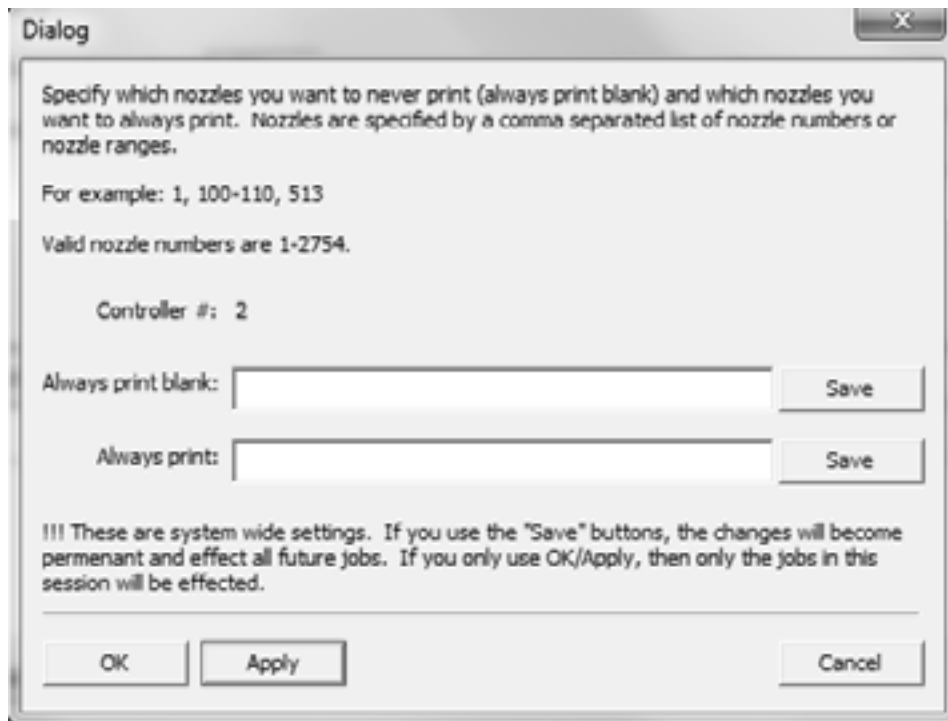


Fig. 44: Nozzle Print Window.png

You can do one of two things in this window: you try to print with the problem nozzle and only the problem nozzle or you can turn off the problem nozzle. For water-based inks, it may be possible to recover a clogged nozzle. Trying the flushing technique may help clear it out. For UV inks, once a nozzle is clogged it cannot be unclogged. This is when its best to turn off the nozzle.

To turn off nozzle, enter the nozzle number in the “Always print blank:” box. If there is more than one nozzle to turn off, separate each nozzle number with a comma. To only print from desired nozzles, enter nozzle number in

the “Always print:” box. If there is more than one nozzle, separate each nozzle number with a comma.

Flush the problem nozzle or nozzles. Print again. If the quality is still not correct, turn off the nozzle and print again. Repeat process until the Quality Test Print looks like one of the prints from Appendix A.

## **22. Clean Printer**

Purge and wipe MCS Eagle Printhead. Put the plate back on the printhead. Wipe down the printer and the base of any spills.

## **23. Finish Installation**

Give the client appropriate documentation and warnings.

If this is a UV system, give the client the adjustment tool for the Ink Tank Level Indicator.

# Troubleshooting

1. Printer will not power on.
  - ☐ Make sure everything is plugged into the filtered surge protector.
  - ☐ Make sure the surge protector is switched on and plugged in.
  - ☐ Make sure the MCS Base is powered on.
2. Printer will not print.
  - ☐ Check connections on the front panel (interlock).
  - ☐ Make sure that all ports on the interlock have either a cable or a jumper attached.
  - ☐ Make sure the computer has valid software key (dongle) plugged into the computer.
3. Printer is misprinting lines
  - ☐ Make sure the Eagle Printhead is properly aligned.
  - ☐ Run Print Quality Test.
  - ☐ Turn off non working nozzles.

# Installation Checklist

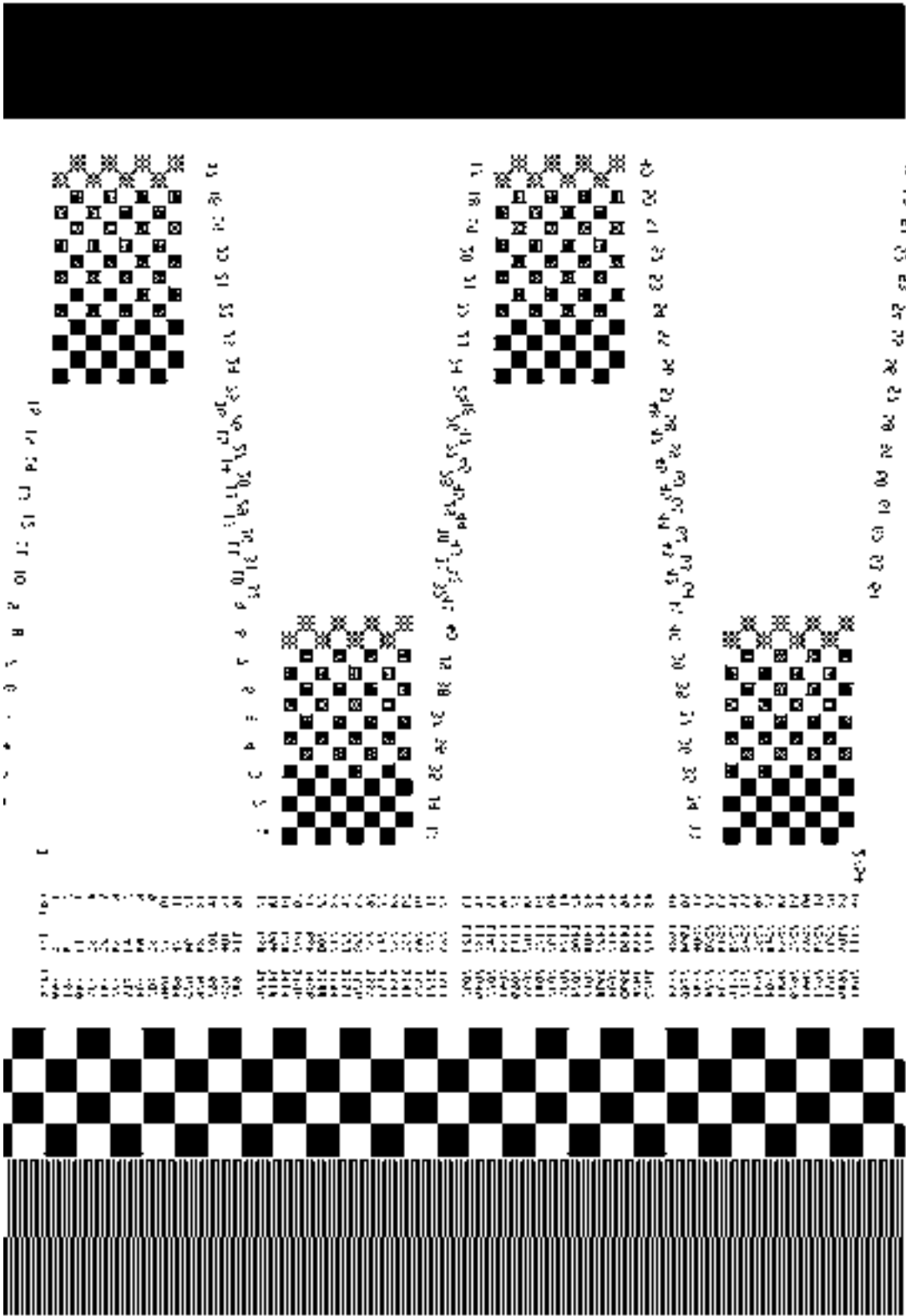
Before you leave, please make sure that the following has been completed:

1. Set up Base
  - ☐ Base is level and near power source.
2. Place Computer, Network Hub, and Control Boxes in Base
  - ☐ Components are placed in base if possible.
3. Plug Jumpers into Interlock Panel
  - ☐ Jumper plugged into board in panel.
  - ☐ Jumpers are plugged into empty slots on front panel.
4. Install MCS Eagle Printhead
  - ☐ 8020 Sidebars installed 36 inches (3 feet) from the lead edge of the base.
  - ☐ 8020 Crossbar installed 5 inches from the top of the base.
  - ☐ MCS Eagle Printhead Mount installed and MCS Eagle Printhead mounted.
5. Install Electric Eye
  - ☐ Electric Eye mount installed 28 inches from the lead edge of the base.
6. Install Ink Supply Mount
  - ☐ Ink supply installed 24 inches (2 feet) from the top of the base on the trail edge side of the back 8020 Sidebar.
  - ☐ Installed Ink Tank Level Indicator to the front of the Ink supply mount (UV Installation only).
7. Install Light Tree
  - ☐ Installed on back 8020 Sidebar.
8. Install Monitor and Keyboard Stand
  - ☐ Installed 12 inches (1 foot) from the lead edge on far track.
  - ☐ Mounted keyboard tray.
  - ☐ Mounted monitor stand and mounted monitor.
9. Install Side Guides
  - ☐ Installed 5 inches from lead edge of base on the closest track of each grouping.
10. Install Dryer (530 base only)
  - ☐ Installed S-800 or S-900 for H2O install 10" from trail edge of base.
  - ☐ Installed Fusion LH6 for UV install 13" from trail edge of base.
  - ☐ Plugged in Dryer interlock cable into Interlock.
11. Connect Cables to MCS Eagle Printhead
  - ☐ Connected large, black tube to "Ink In" on one end and to ink mount on the other.
  - ☐ Connected clear tube to "M-Vac."
  - ☐ Connected blue tube to "Degass Vac."
  - ☐ Connected the larger computer cable to "Print Data."
  - ☐ Connected smaller computer cable to "Ink Control."
  - ☐ Connected ethernet cable.
12. Install Printer Controller Unit
  - ☐ Connected clear tube to "M-Vac."
  - ☐ Connected blue tube to "Degass Vac."

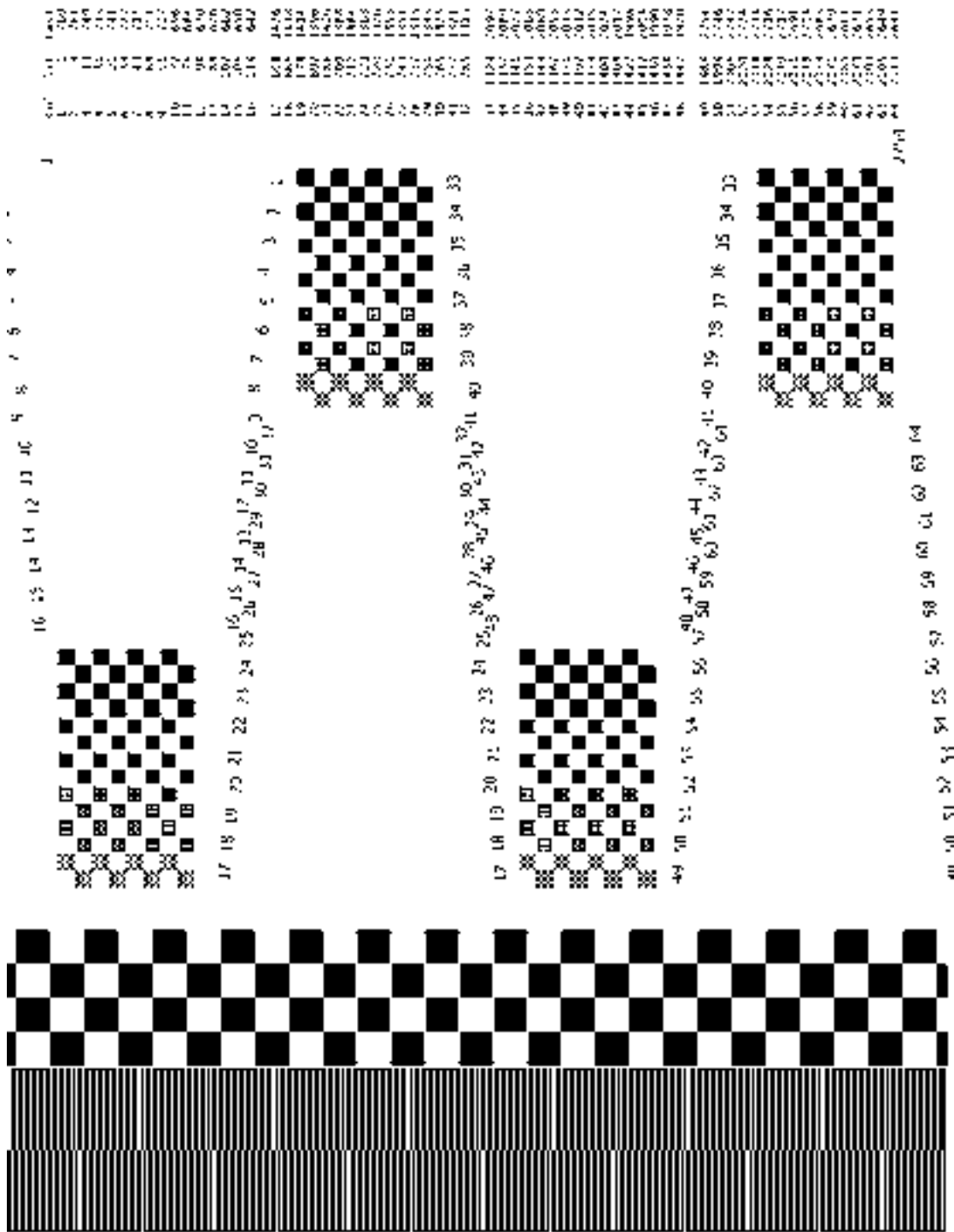
- ☐ Connected larger computer cable to “Print Data.”
  - ☐ Connected smaller computer cable to “Ink Control.”
  - ☐ Connected jumper cable between “L/C Rs 232” and “Rs 232.”
  - ☐ Connected splitter cable to “Encoder,” “Sensor,” and “Link.”
  - ☐ Connected ethernet cable to ethernet port.
13. Install IO Sort Controller
- ☐ Connected Light Tree to “LT Tree.”
  - ☐ Connected Encoder cable to “Encoder.”
  - ☐ Connected splitter to “Head-1.”
  - ☐ Connected Electric Eye to “TOF Sensor.”
  - ☐ Connected ethernet cable to ethernet port.
  - ☐ Connected Ink Tank Level Indicator to “Input 1” (UV install only).
14. Install Computer
- ☐ Connected Mouse, Keyboard, and Monitor.
  - ☐ Connected ethernet cable to ethernet port.
  - ☐ Plugged in Dongle/Software Key.
  - ☐ Installed Software.
15. Install Network Hub
- ☐ Connected ethernet cords from Computer, IO Sort Controller, Printer Controller and Printhead.
16. Connected Power
- ☐ Connected Network Hub, Computer, IO Sort Controller, Printer Controller, Dryer, and Base to filtered surge protector.
17. Install Ink
- ☐ Installed correct ink bottle.
  - ☐ Connected Ink Tank Level Indicator (UV Install only).
  - ☐ Adjusted “Pixel Augmentation” (Flexhead ink only).
18. Purge & Wipe Printhead
- ☐ Purge & Wipe procedure was completed.
19. Complete Alignment Test
- ☐ MCS Eagle Printhead is perpendicular to feeder.
20. Complete Encoder Print Test
- ☐ Printer will print to scale.
21. Complete Quality Print Test
- ☐ Printed Test Print.
  - ☐ Test Print lines are straight and properly aligned.
22. Clean Printer
- ☐ Completed final purge & wipe.
  - ☐ Replaced protective plate on printhead.
  - ☐ Wiped the top of the printer’s base of any ink or dust.
23. Finish Installation
- ☐ Gave client appropriate documentation and warnings.



# Appendix A: Quality Test Print



Eagle Test Pattern A



Eagle Test Pattern B

## Appendix B: Nozzle Chart

| Row\Col | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0       | 1   | 9   | 13  | 31  | 21  | 39  | 43  | 64  | 51  | 72  | 76  | 94  | 84  | 102 | 106 | 114 |
| 1       | 17  | 25  | 29  | 47  | 37  | 55  | 59  | 80  | 67  | 88  | 92  | 110 | 100 | 118 | 122 | 130 |
| 2       | 33  | 41  | 45  | 63  | 53  | 71  | 75  | 96  | 83  | 104 | 108 | 126 | 116 | 134 | 138 | 146 |
| 3       | 49  | 57  | 61  | 79  | 69  | 87  | 91  | 112 | 99  | 120 | 124 | 142 | 132 | 150 | 154 | 162 |
| 4       | 65  | 73  | 77  | 95  | 85  | 103 | 107 | 128 | 115 | 136 | 140 | 158 | 148 | 166 | 170 | 178 |
| 5       | 81  | 89  | 93  | 111 | 101 | 119 | 123 | 144 | 131 | 152 | 156 | 174 | 164 | 182 | 186 | 194 |
| 6       | 97  | 105 | 109 | 127 | 117 | 135 | 139 | 160 | 147 | 168 | 172 | 190 | 180 | 198 | 202 | 210 |
| 7       | 113 | 121 | 125 | 143 | 133 | 151 | 155 | 176 | 163 | 184 | 188 | 206 | 196 | 214 | 218 | 226 |
| 8       | 129 | 137 | 141 | 159 | 149 | 167 | 171 | 192 | 179 | 200 | 204 | 222 | 212 | 230 | 234 | 242 |
| 9       | 145 | 153 | 157 | 175 | 165 | 183 | 187 | 208 | 195 | 216 | 220 | 238 | 228 | 246 | 250 | 258 |
| 10      | 161 | 169 | 173 | 191 | 181 | 199 | 203 | 224 | 211 | 232 | 236 | 254 | 244 | 262 | 266 | 274 |
| 11      | 177 | 185 | 189 | 207 | 197 | 215 | 219 | 240 | 227 | 248 | 252 | 270 | 260 | 278 | 282 | 290 |
| 12      | 193 | 201 | 205 | 223 | 213 | 231 | 235 | 256 | 243 | 264 | 268 | 286 | 276 | 294 | 298 | 306 |
| 13      | 209 | 217 | 221 | 239 | 229 | 247 | 251 | 272 | 259 | 280 | 284 | 302 | 292 | 310 | 314 | 322 |
| 14      | 225 | 233 | 237 | 255 | 245 | 263 | 267 | 288 | 275 | 296 | 300 | 318 | 308 | 326 | 330 | 338 |
| 15      | 241 | 249 | 253 | 271 | 261 | 279 | 283 | 304 | 291 | 312 | 316 | 334 | 324 | 342 | 346 | 354 |
| 16      | 257 | 265 | 269 | 287 | 277 | 295 | 299 | 320 | 307 | 328 | 332 | 350 | 340 | 358 | 362 | 370 |
| 17      | 273 | 281 | 285 | 303 | 293 | 311 | 315 | 336 | 323 | 344 | 348 | 366 | 356 | 374 | 378 | 386 |
| 18      | 289 | 297 | 301 | 319 | 309 | 327 | 331 | 352 | 339 | 360 | 364 | 382 | 372 | 390 | 394 | 402 |
| 19      | 305 | 313 | 317 | 335 | 325 | 343 | 347 | 368 | 355 | 376 | 380 | 398 | 388 | 406 | 410 | 418 |
| 20      | 321 | 329 | 333 | 351 | 341 | 359 | 363 | 384 | 371 | 392 | 396 | 414 | 404 | 422 | 426 | 434 |
| 21      | 337 | 345 | 349 | 367 | 357 | 375 | 379 | 400 | 387 | 408 | 412 | 430 | 420 | 438 | 442 | 450 |
| 22      | 353 | 361 | 365 | 383 | 373 | 391 | 395 | 416 | 403 | 424 | 428 | 446 | 436 | 454 | 458 | 466 |
| 23      | 369 | 377 | 381 | 399 | 389 | 407 | 411 | 432 | 419 | 440 | 444 | 462 | 452 | 470 | 474 | 482 |
| 24      | 385 | 393 | 397 | 415 | 405 | 423 | 427 | 448 | 435 | 456 | 460 | 478 | 468 | 486 | 490 | 498 |
| 25      | 401 | 409 | 413 | 431 | 421 | 439 | 443 | 464 | 451 | 472 | 476 | 494 | 484 | 502 | 506 | 514 |
| 26      | 417 | 425 | 429 | 447 | 437 | 455 | 459 | 480 | 467 | 488 | 492 | 510 | 500 | 518 | 522 | 530 |
| 27      | 433 | 441 | 445 | 463 | 453 | 471 | 475 | 496 | 483 | 504 | 508 | 526 | 516 | 534 | 538 | 546 |
| 28      | 449 | 457 | 461 | 479 | 469 | 487 | 491 | 512 | 499 | 520 | 524 | 542 | 532 | 550 | 554 | 562 |
| 29      | 465 | 473 | 477 | 495 | 485 | 503 | 507 | 528 | 515 | 536 | 540 | 558 | 548 | 566 | 570 | 578 |
| 30      | 481 | 489 | 493 | 511 | 501 | 519 | 523 | 544 | 531 | 552 | 556 | 574 | 564 | 582 | 586 | 594 |
| 31      | 497 | 505 | 509 | 527 | 517 | 535 | 539 | 560 | 547 | 568 | 572 | 590 | 580 | 598 | 602 | 610 |
| 32      | 513 | 521 | 525 | 543 | 533 | 551 | 555 | 576 | 563 | 584 | 588 | 606 | 596 | 614 | 618 | 626 |
| 33      | 529 | 537 | 541 | 559 | 549 | 567 | 571 | 592 | 579 | 600 | 604 | 622 | 612 | 630 | 634 | 642 |
| 34      | 545 | 553 | 557 | 575 | 565 | 583 | 587 | 608 | 595 | 616 | 620 | 638 | 628 | 646 | 650 |     |
| 35      | 561 | 569 | 573 | 591 | 581 | 599 | 603 | 624 | 611 | 632 | 636 | 654 | 644 | 662 |     |     |
| 36      | 577 | 585 | 589 | 607 | 597 | 615 | 619 | 640 | 627 | 648 | 652 | 670 | 660 |     |     |     |
| 37      | 593 | 601 | 605 | 623 | 613 | 631 | 635 | 656 | 643 | 664 | 668 |     | 676 |     |     |     |
| 38      | 609 | 617 | 621 | 639 | 629 | 647 | 651 | 672 | 659 | 680 | 684 |     |     |     |     |     |
| 39      | 625 | 633 | 637 | 655 | 645 | 663 | 667 | 688 | 675 | 696 |     |     |     |     |     |     |
| 40      | 641 | 649 | 653 | 671 | 661 | 679 | 683 | 704 | 691 |     |     |     |     |     |     |     |
| 41      | 657 | 665 | 669 | 687 | 677 | 695 | 699 | 707 |     |     |     |     |     |     |     |     |
| 42      | 673 | 681 | 685 | 703 | 693 | 711 | 715 |     |     |     |     |     |     |     |     |     |
| 43      | 689 | 697 | 701 | 719 | 709 | 727 |     |     |     |     |     |     |     |     |     |     |
| 44      | 705 | 713 | 717 | 735 | 725 |     |     |     |     |     |     |     |     |     |     |     |
| 45      | 721 | 729 | 733 |     | 741 |     |     |     |     |     |     |     |     |     |     |     |
| 46      | 737 | 745 | 749 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 47      | 753 | 761 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 48      | 769 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |



| Row\Col | 17   | 18   | 19   | 20   | 21   | 22   | 23   | 24   | 25   | 26   | 27   | 28   | 29   | 30   | 31   | 32   |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0       | 658  | 666  | 678  | 692  | 686  | 700  | 712  | 723  | 720  | 731  | 743  | 757  | 751  | 765  | 777  | 785  |
| 1       | 674  | 682  | 694  | 708  | 702  | 716  | 728  | 739  | 736  | 747  | 759  | 773  | 767  | 781  | 793  | 801  |
| 2       | 690  | 698  | 710  | 724  | 718  | 732  | 744  | 755  | 752  | 763  | 775  | 789  | 783  | 797  | 809  | 817  |
| 3       | 706  | 714  | 726  | 740  | 734  | 748  | 760  | 771  | 768  | 779  | 791  | 805  | 799  | 813  | 825  | 833  |
| 4       | 722  | 730  | 742  | 756  | 750  | 764  | 776  | 787  | 784  | 795  | 807  | 821  | 815  | 829  | 841  | 849  |
| 5       | 738  | 746  | 758  | 772  | 766  | 780  | 792  | 803  | 800  | 811  | 823  | 837  | 831  | 845  | 857  | 865  |
| 6       | 754  | 762  | 774  | 788  | 782  | 796  | 808  | 819  | 816  | 827  | 839  | 853  | 847  | 861  | 873  | 881  |
| 7       | 770  | 778  | 790  | 804  | 798  | 812  | 824  | 835  | 832  | 843  | 855  | 869  | 863  | 877  | 889  | 897  |
| 8       | 786  | 794  | 806  | 820  | 814  | 828  | 840  | 851  | 848  | 859  | 871  | 885  | 879  | 893  | 905  | 913  |
| 9       | 802  | 810  | 822  | 836  | 830  | 844  | 856  | 867  | 864  | 875  | 887  | 901  | 895  | 909  | 921  | 929  |
| 10      | 818  | 826  | 838  | 852  | 846  | 860  | 872  | 883  | 880  | 891  | 903  | 917  | 911  | 925  | 937  | 945  |
| 11      | 834  | 842  | 854  | 868  | 862  | 876  | 888  | 899  | 896  | 907  | 919  | 933  | 927  | 941  | 953  | 961  |
| 12      | 850  | 858  | 870  | 884  | 878  | 892  | 904  | 915  | 912  | 923  | 935  | 949  | 943  | 957  | 969  | 977  |
| 13      | 866  | 874  | 886  | 900  | 894  | 908  | 920  | 931  | 928  | 939  | 951  | 965  | 959  | 973  | 985  | 993  |
| 14      | 882  | 890  | 902  | 916  | 910  | 924  | 936  | 947  | 944  | 955  | 967  | 981  | 975  | 989  | 1001 | 1009 |
| 15      | 898  | 906  | 918  | 932  | 926  | 940  | 952  | 963  | 960  | 971  | 983  | 997  | 991  | 1005 | 1017 | 1025 |
| 16      | 914  | 922  | 934  | 948  | 942  | 956  | 968  | 979  | 976  | 987  | 999  | 1013 | 1007 | 1021 | 1033 | 1041 |
| 17      | 930  | 938  | 950  | 964  | 958  | 972  | 984  | 995  | 992  | 1003 | 1015 | 1029 | 1023 | 1037 | 1049 | 1057 |
| 18      | 946  | 954  | 966  | 980  | 974  | 988  | 1000 | 1011 | 1008 | 1019 | 1031 | 1045 | 1039 | 1053 | 1065 | 1073 |
| 19      | 962  | 970  | 982  | 996  | 990  | 1004 | 1016 | 1027 | 1024 | 1035 | 1047 | 1061 | 1055 | 1069 | 1081 | 1089 |
| 20      | 978  | 986  | 998  | 1012 | 1006 | 1020 | 1032 | 1043 | 1040 | 1051 | 1063 | 1077 | 1071 | 1085 | 1097 | 1105 |
| 21      | 994  | 1002 | 1014 | 1028 | 1022 | 1036 | 1048 | 1059 | 1056 | 1067 | 1079 | 1093 | 1087 | 1101 | 1113 | 1121 |
| 22      | 1010 | 1018 | 1030 | 1044 | 1038 | 1052 | 1064 | 1075 | 1072 | 1083 | 1095 | 1109 | 1103 | 1117 | 1129 | 1137 |
| 23      | 1026 | 1034 | 1046 | 1060 | 1054 | 1068 | 1080 | 1091 | 1088 | 1099 | 1111 | 1125 | 1119 | 1133 | 1145 | 1153 |
| 24      | 1042 | 1050 | 1062 | 1076 | 1070 | 1084 | 1096 | 1107 | 1104 | 1115 | 1127 | 1141 | 1135 | 1149 | 1161 | 1169 |
| 25      | 1058 | 1066 | 1078 | 1092 | 1086 | 1100 | 1112 | 1123 | 1120 | 1131 | 1143 | 1157 | 1151 | 1165 | 1177 | 1185 |
| 26      | 1074 | 1082 | 1094 | 1108 | 1102 | 1116 | 1128 | 1139 | 1136 | 1147 | 1159 | 1173 | 1167 | 1181 | 1193 | 1201 |
| 27      | 1090 | 1098 | 1110 | 1124 | 1118 | 1132 | 1144 | 1155 | 1152 | 1163 | 1175 | 1189 | 1183 | 1197 | 1209 | 1217 |
| 28      | 1106 | 1114 | 1126 | 1140 | 1134 | 1148 | 1160 | 1171 | 1168 | 1179 | 1191 | 1205 | 1199 | 1213 | 1225 | 1233 |
| 29      | 1122 | 1130 | 1142 | 1156 | 1150 | 1164 | 1176 | 1187 | 1184 | 1195 | 1207 | 1221 | 1215 | 1229 | 1241 | 1249 |
| 30      | 1138 | 1146 | 1158 | 1172 | 1166 | 1180 | 1192 | 1203 | 1200 | 1211 | 1223 | 1237 | 1231 | 1245 | 1257 | 1265 |
| 31      | 1154 | 1162 | 1174 | 1188 | 1182 | 1196 | 1208 | 1219 | 1216 | 1227 | 1239 | 1253 | 1247 | 1261 | 1273 | 1281 |
| 32      | 1170 | 1178 | 1190 | 1204 | 1198 | 1212 | 1224 | 1235 | 1232 | 1243 | 1255 | 1269 | 1263 | 1277 | 1289 | 1297 |
| 33      | 1186 | 1194 | 1206 | 1220 | 1214 | 1228 | 1240 | 1251 | 1248 | 1259 | 1271 | 1285 | 1279 | 1293 | 1305 | 1313 |
| 34      | 1202 | 1210 | 1222 | 1236 | 1230 | 1244 | 1256 | 1267 | 1264 | 1275 | 1287 | 1301 | 1295 | 1309 | 1321 |      |
| 35      | 1218 | 1226 | 1238 | 1252 | 1246 | 1260 | 1272 | 1283 | 1280 | 1291 | 1303 | 1317 | 1311 | 1325 |      |      |
| 36      | 1234 | 1242 | 1254 | 1268 | 1262 | 1276 | 1288 | 1299 | 1296 | 1307 | 1319 | 1333 | 1327 |      |      |      |
| 37      | 1250 | 1258 | 1270 | 1284 | 1278 | 1292 | 1304 | 1315 | 1312 | 1323 | 1335 | 1349 | 1343 |      |      |      |
| 38      | 1266 | 1274 | 1286 | 1300 | 1294 | 1308 | 1320 | 1331 | 1328 | 1339 | 1351 | 1365 |      |      |      |      |
| 39      | 1282 | 1290 | 1302 | 1316 | 1310 | 1324 | 1336 | 1347 | 1344 | 1355 |      |      |      |      |      |      |
| 40      | 1298 | 1306 | 1318 | 1332 | 1326 | 1340 | 1352 | 1363 | 1360 |      |      |      |      |      |      |      |
| 41      | 1314 | 1322 | 1334 | 1348 | 1342 | 1356 | 1368 |      | 1376 |      |      |      |      |      |      |      |
| 42      | 1330 | 1338 | 1350 | 1364 | 1358 | 1372 | 1384 |      |      |      |      |      |      |      |      |      |
| 43      | 1346 | 1354 | 1366 | 1380 | 1374 | 1388 |      |      |      |      |      |      |      |      |      |      |
| 44      | 1362 | 1370 | 1382 | 1396 | 1390 |      |      |      |      |      |      |      |      |      |      |      |
| 45      | 1378 | 1386 | 1398 |      | 1406 |      |      |      |      |      |      |      |      |      |      |      |
| 46      | 1394 | 1402 | 1414 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 47      | 1410 | 1418 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 48      | 1426 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |



| Row\Col | 33   | 34   | 35   | 36   | 37   | 38   | 39   | 40   | 41   | 42   | 43   | 44   | 45   | 46   | 47   | 48   |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0       | 1329 | 1337 | 1341 | 1359 | 1349 | 1367 | 1371 | 1392 | 1379 | 1400 | 1404 | 1422 | 1412 | 1430 | 1434 | 1442 |
| 1       | 1345 | 1353 | 1357 | 1375 | 1365 | 1383 | 1387 | 1408 | 1395 | 1416 | 1420 | 1438 | 1428 | 1446 | 1450 | 1458 |
| 2       | 1361 | 1369 | 1373 | 1391 | 1381 | 1399 | 1403 | 1424 | 1411 | 1432 | 1436 | 1454 | 1444 | 1462 | 1466 | 1474 |
| 3       | 1377 | 1385 | 1389 | 1407 | 1397 | 1415 | 1419 | 1440 | 1427 | 1448 | 1452 | 1470 | 1460 | 1478 | 1482 | 1490 |
| 4       | 1393 | 1401 | 1405 | 1423 | 1413 | 1431 | 1435 | 1456 | 1443 | 1464 | 1468 | 1486 | 1476 | 1494 | 1498 | 1506 |
| 5       | 1409 | 1417 | 1421 | 1439 | 1429 | 1447 | 1451 | 1472 | 1459 | 1480 | 1484 | 1502 | 1492 | 1510 | 1514 | 1522 |
| 6       | 1425 | 1433 | 1437 | 1455 | 1445 | 1463 | 1467 | 1488 | 1475 | 1496 | 1500 | 1518 | 1508 | 1526 | 1530 | 1538 |
| 7       | 1441 | 1449 | 1453 | 1471 | 1461 | 1479 | 1483 | 1504 | 1491 | 1512 | 1516 | 1534 | 1524 | 1542 | 1546 | 1554 |
| 8       | 1457 | 1465 | 1469 | 1487 | 1477 | 1495 | 1499 | 1520 | 1507 | 1528 | 1532 | 1550 | 1540 | 1558 | 1562 | 1570 |
| 9       | 1473 | 1481 | 1485 | 1503 | 1493 | 1511 | 1515 | 1536 | 1523 | 1544 | 1548 | 1566 | 1556 | 1574 | 1578 | 1586 |
| 10      | 1489 | 1497 | 1501 | 1519 | 1509 | 1527 | 1531 | 1552 | 1539 | 1560 | 1564 | 1582 | 1572 | 1590 | 1594 | 1602 |
| 11      | 1505 | 1513 | 1517 | 1535 | 1525 | 1543 | 1547 | 1568 | 1555 | 1576 | 1580 | 1598 | 1588 | 1606 | 1610 | 1618 |
| 12      | 1521 | 1529 | 1533 | 1551 | 1541 | 1559 | 1563 | 1584 | 1571 | 1592 | 1596 | 1614 | 1604 | 1622 | 1626 | 1634 |
| 13      | 1537 | 1545 | 1549 | 1567 | 1557 | 1575 | 1579 | 1600 | 1587 | 1608 | 1612 | 1630 | 1620 | 1638 | 1642 | 1650 |
| 14      | 1553 | 1561 | 1565 | 1583 | 1573 | 1591 | 1595 | 1616 | 1603 | 1624 | 1628 | 1646 | 1636 | 1654 | 1658 | 1666 |
| 15      | 1569 | 1577 | 1581 | 1599 | 1589 | 1607 | 1611 | 1632 | 1619 | 1640 | 1644 | 1662 | 1652 | 1670 | 1674 | 1682 |
| 16      | 1585 | 1593 | 1597 | 1615 | 1605 | 1623 | 1627 | 1648 | 1635 | 1656 | 1660 | 1678 | 1668 | 1686 | 1690 | 1698 |
| 17      | 1601 | 1609 | 1613 | 1631 | 1621 | 1639 | 1643 | 1664 | 1651 | 1672 | 1676 | 1694 | 1684 | 1702 | 1706 | 1714 |
| 18      | 1617 | 1625 | 1629 | 1647 | 1637 | 1655 | 1659 | 1680 | 1667 | 1688 | 1692 | 1710 | 1700 | 1718 | 1722 | 1730 |
| 19      | 1633 | 1641 | 1645 | 1663 | 1653 | 1671 | 1675 | 1696 | 1683 | 1704 | 1708 | 1726 | 1716 | 1734 | 1738 | 1746 |
| 20      | 1649 | 1657 | 1661 | 1679 | 1669 | 1687 | 1691 | 1712 | 1699 | 1720 | 1724 | 1742 | 1732 | 1750 | 1754 | 1762 |
| 21      | 1665 | 1673 | 1677 | 1695 | 1685 | 1703 | 1707 | 1728 | 1715 | 1736 | 1740 | 1758 | 1748 | 1766 | 1770 | 1778 |
| 22      | 1681 | 1689 | 1693 | 1711 | 1701 | 1719 | 1723 | 1744 | 1731 | 1752 | 1756 | 1774 | 1764 | 1782 | 1786 | 1794 |
| 23      | 1697 | 1705 | 1709 | 1727 | 1717 | 1735 | 1739 | 1760 | 1747 | 1768 | 1772 | 1790 | 1780 | 1798 | 1802 | 1810 |
| 24      | 1713 | 1721 | 1725 | 1743 | 1733 | 1751 | 1755 | 1776 | 1763 | 1784 | 1788 | 1806 | 1796 | 1814 | 1818 | 1826 |
| 25      | 1729 | 1737 | 1741 | 1759 | 1749 | 1767 | 1771 | 1792 | 1779 | 1800 | 1804 | 1822 | 1812 | 1830 | 1834 | 1842 |
| 26      | 1745 | 1753 | 1757 | 1775 | 1765 | 1783 | 1787 | 1808 | 1795 | 1816 | 1820 | 1838 | 1828 | 1846 | 1850 | 1858 |
| 27      | 1761 | 1769 | 1773 | 1791 | 1781 | 1799 | 1803 | 1824 | 1811 | 1832 | 1836 | 1854 | 1844 | 1862 | 1866 | 1874 |
| 28      | 1777 | 1785 | 1789 | 1807 | 1797 | 1815 | 1819 | 1840 | 1827 | 1848 | 1852 | 1870 | 1860 | 1878 | 1882 | 1890 |
| 29      | 1793 | 1801 | 1805 | 1823 | 1813 | 1831 | 1835 | 1856 | 1843 | 1864 | 1868 | 1886 | 1876 | 1894 | 1898 | 1906 |
| 30      | 1809 | 1817 | 1821 | 1839 | 1829 | 1847 | 1851 | 1872 | 1859 | 1880 | 1884 | 1902 | 1892 | 1910 | 1914 | 1922 |
| 31      | 1825 | 1833 | 1837 | 1855 | 1845 | 1863 | 1867 | 1888 | 1875 | 1896 | 1900 | 1918 | 1908 | 1926 | 1930 | 1938 |
| 32      | 1841 | 1849 | 1853 | 1871 | 1861 | 1879 | 1883 | 1904 | 1891 | 1912 | 1916 | 1934 | 1924 | 1942 | 1946 | 1954 |
| 33      | 1857 | 1865 | 1869 | 1887 | 1877 | 1895 | 1899 | 1920 | 1907 | 1928 | 1932 | 1950 | 1940 | 1958 | 1962 | 1970 |
| 34      | 1873 | 1881 | 1885 | 1903 | 1893 | 1911 | 1915 | 1936 | 1923 | 1944 | 1948 | 1966 | 1956 | 1974 | 1978 |      |
| 35      | 1889 | 1897 | 1901 | 1919 | 1909 | 1927 | 1931 | 1952 | 1939 | 1960 | 1964 | 1982 | 1972 | 1990 |      |      |
| 36      | 1905 | 1913 | 1917 | 1935 | 1925 | 1943 | 1947 | 1968 | 1955 | 1976 | 1980 | 1998 | 1988 |      |      |      |
| 37      | 1921 | 1929 | 1933 | 1951 | 1941 | 1959 | 1963 | 1984 | 1971 | 1992 | 1996 |      | 2004 |      |      |      |
| 38      | 1937 | 1945 | 1949 | 1967 | 1957 | 1975 | 1979 | 2000 | 1987 | 2008 | 2012 |      |      |      |      |      |
| 39      | 1953 | 1961 | 1965 | 1983 | 1973 | 1991 | 1995 | 2016 | 2003 | 2024 |      |      |      |      |      |      |
| 40      | 1969 | 1977 | 1981 | 1999 | 1989 | 2007 | 2011 | 2032 | 2019 |      |      |      |      |      |      |      |
| 41      | 1985 | 1993 | 1997 | 2015 | 2005 | 2023 | 2027 |      | 2035 |      |      |      |      |      |      |      |
| 42      | 2001 | 2009 | 2013 | 2031 | 2021 | 2039 | 2043 |      |      |      |      |      |      |      |      |      |
| 43      | 2017 | 2025 | 2029 | 2047 | 2037 | 2055 |      |      |      |      |      |      |      |      |      |      |
| 44      | 2033 | 2041 | 2045 | 2063 | 2053 |      |      |      |      |      |      |      |      |      |      |      |
| 45      | 2049 | 2057 | 2061 |      | 2069 |      |      |      |      |      |      |      |      |      |      |      |
| 46      | 2065 | 2073 | 2077 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 47      | 2081 | 2089 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 48      | 2097 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |



| Row\Col | 49   | 50   | 51   | 52   | 53   | 54   | 55   | 56   | 57   | 58   | 59   | 60   | 61   | 62   | 63   | 64   |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0       | 1986 | 1994 | 2006 | 2020 | 2014 | 2028 | 2040 | 2051 | 2048 | 2059 | 2071 | 2085 | 2079 | 2093 | 2105 | 2113 |
| 1       | 2002 | 2010 | 2022 | 2036 | 2030 | 2044 | 2056 | 2067 | 2064 | 2075 | 2087 | 2101 | 2087 | 2109 | 2121 | 2129 |
| 2       | 2018 | 2026 | 2038 | 2052 | 2046 | 2060 | 2072 | 2083 | 2080 | 2091 | 2103 | 2117 | 2103 | 2125 | 2137 | 2145 |
| 3       | 2034 | 2042 | 2054 | 2068 | 2062 | 2076 | 2088 | 2099 | 2096 | 2107 | 2119 | 2133 | 2119 | 2141 | 2153 | 2161 |
| 4       | 2050 | 2058 | 2070 | 2084 | 2078 | 2092 | 2104 | 2115 | 2112 | 2123 | 2135 | 2149 | 2135 | 2157 | 2169 | 2177 |
| 5       | 2066 | 2074 | 2086 | 2100 | 2094 | 2108 | 2120 | 2131 | 2128 | 2139 | 2151 | 2165 | 2151 | 2173 | 2185 | 2193 |
| 6       | 2082 | 2090 | 2102 | 2116 | 2110 | 2124 | 2136 | 2147 | 2144 | 2155 | 2167 | 2181 | 2167 | 2189 | 2201 | 2209 |
| 7       | 2098 | 2106 | 2118 | 2132 | 2126 | 2140 | 2152 | 2163 | 2160 | 2171 | 2183 | 2197 | 2183 | 2205 | 2217 | 2225 |
| 8       | 2114 | 2122 | 2134 | 2148 | 2142 | 2156 | 2168 | 2179 | 2176 | 2187 | 2199 | 2213 | 2199 | 2221 | 2233 | 2241 |
| 9       | 2130 | 2138 | 2150 | 2164 | 2158 | 2172 | 2184 | 2195 | 2192 | 2203 | 2215 | 2229 | 2215 | 2237 | 2249 | 2257 |
| 10      | 2146 | 2154 | 2166 | 2180 | 2174 | 2188 | 2200 | 2211 | 2208 | 2219 | 2231 | 2245 | 2231 | 2253 | 2265 | 2273 |
| 11      | 2162 | 2170 | 2182 | 2196 | 2190 | 2204 | 2216 | 2227 | 2224 | 2235 | 2247 | 2261 | 2247 | 2269 | 2281 | 2289 |
| 12      | 2178 | 2186 | 2198 | 2212 | 2206 | 2220 | 2232 | 2243 | 2240 | 2251 | 2263 | 2277 | 2263 | 2285 | 2297 | 2305 |
| 13      | 2194 | 2202 | 2214 | 2228 | 2222 | 2236 | 2248 | 2259 | 2256 | 2267 | 2279 | 2293 | 2279 | 2301 | 2313 | 2321 |
| 14      | 2210 | 2218 | 2230 | 2244 | 2238 | 2252 | 2264 | 2275 | 2272 | 2283 | 2295 | 2309 | 2295 | 2317 | 2329 | 2337 |
| 15      | 2226 | 2234 | 2246 | 2260 | 2254 | 2268 | 2280 | 2291 | 2288 | 2299 | 2311 | 2325 | 2311 | 2333 | 2345 | 2353 |
| 16      | 2242 | 2250 | 2262 | 2276 | 2270 | 2284 | 2296 | 2307 | 2304 | 2315 | 2327 | 2341 | 2327 | 2349 | 2361 | 2369 |
| 17      | 2258 | 2266 | 2278 | 2292 | 2286 | 2300 | 2312 | 2323 | 2320 | 2331 | 2343 | 2357 | 2343 | 2365 | 2377 | 2385 |
| 18      | 2274 | 2282 | 2294 | 2308 | 2302 | 2316 | 2328 | 2339 | 2336 | 2347 | 2359 | 2373 | 2359 | 2381 | 2393 | 2401 |
| 19      | 2290 | 2298 | 2310 | 2324 | 2318 | 2332 | 2344 | 2355 | 2352 | 2363 | 2375 | 2389 | 2375 | 2397 | 2409 | 2417 |
| 20      | 2306 | 2314 | 2326 | 2340 | 2334 | 2348 | 2360 | 2371 | 2368 | 2379 | 2391 | 2405 | 2391 | 2413 | 2425 | 2433 |
| 21      | 2322 | 2330 | 2342 | 2356 | 2350 | 2364 | 2376 | 2387 | 2384 | 2395 | 2407 | 2421 | 2407 | 2429 | 2441 | 2449 |
| 22      | 2338 | 2346 | 2358 | 2372 | 2366 | 2380 | 2392 | 2403 | 2400 | 2411 | 2423 | 2437 | 2423 | 2445 | 2457 | 2465 |
| 23      | 2354 | 2362 | 2374 | 2388 | 2382 | 2396 | 2408 | 2419 | 2416 | 2427 | 2439 | 2453 | 2439 | 2461 | 2473 | 2481 |
| 24      | 2370 | 2378 | 2390 | 2404 | 2398 | 2412 | 2424 | 2435 | 2432 | 2443 | 2455 | 2469 | 2455 | 2477 | 2489 | 2497 |
| 25      | 2386 | 2394 | 2406 | 2420 | 2414 | 2428 | 2440 | 2451 | 2448 | 2459 | 2471 | 2485 | 2471 | 2493 | 2505 | 2513 |
| 26      | 2402 | 2410 | 2422 | 2436 | 2430 | 2444 | 2456 | 2467 | 2464 | 2475 | 2487 | 2501 | 2487 | 2509 | 2521 | 2529 |
| 27      | 2418 | 2426 | 2438 | 2452 | 2446 | 2460 | 2472 | 2483 | 2480 | 2491 | 2503 | 2517 | 2503 | 2525 | 2537 | 2545 |
| 28      | 2434 | 2442 | 2454 | 2468 | 2462 | 2476 | 2488 | 2499 | 2496 | 2507 | 2519 | 2533 | 2519 | 2541 | 2553 | 2561 |
| 29      | 2450 | 2458 | 2470 | 2484 | 2478 | 2492 | 2504 | 2515 | 2512 | 2523 | 2535 | 2549 | 2535 | 2557 | 2569 | 2577 |
| 30      | 2466 | 2474 | 2486 | 2500 | 2494 | 2508 | 2520 | 2531 | 2528 | 2539 | 2551 | 2565 | 2551 | 2573 | 2585 | 2593 |
| 31      | 2482 | 2490 | 2502 | 2516 | 2510 | 2524 | 2536 | 2547 | 2544 | 2555 | 2567 | 2581 | 2567 | 2589 | 2601 | 2609 |
| 32      | 2498 | 2506 | 2518 | 2532 | 2526 | 2540 | 2552 | 2563 | 2560 | 2571 | 2583 | 2597 | 2583 | 2605 | 2617 | 2625 |
| 33      | 2514 | 2522 | 2534 | 2548 | 2542 | 2556 | 2568 | 2579 | 2576 | 2587 | 2599 | 2613 | 2599 | 2621 | 2633 | 2641 |
| 34      | 2530 | 2538 | 2550 | 2564 | 2558 | 2572 | 2584 | 2595 | 2592 | 2603 | 2615 | 2629 | 2615 | 2637 | 2649 |      |
| 35      | 2546 | 2554 | 2566 | 2580 | 2574 | 2588 | 2600 | 2611 | 2608 | 2619 | 2631 | 2645 | 2631 | 2653 |      |      |
| 36      | 2562 | 2570 | 2582 | 2596 | 2590 | 2604 | 2616 | 2627 | 2624 | 2635 | 2647 | 2661 | 2647 |      |      |      |
| 37      | 2578 | 2586 | 2598 | 2612 | 2606 | 2620 | 2632 | 2643 | 2640 | 2651 | 2663 |      | 2663 |      |      |      |
| 38      | 2594 | 2602 | 2614 | 2628 | 2622 | 2636 | 2648 | 2659 | 2656 | 2667 | 2679 |      |      |      |      |      |
| 39      | 2610 | 2618 | 2630 | 2644 | 2638 | 2652 | 2664 | 2675 | 2672 | 2683 |      |      |      |      |      |      |
| 40      | 2626 | 2634 | 2646 | 2660 | 2654 | 2668 | 2680 | 2691 | 2688 |      |      |      |      |      |      |      |
| 41      | 2642 | 2650 | 2662 | 2676 | 2670 | 2684 | 2696 |      | 2704 |      |      |      |      |      |      |      |
| 42      | 2658 | 2666 | 2678 | 2692 | 2686 | 2700 | 2712 |      |      |      |      |      |      |      |      |      |
| 43      | 2674 | 2682 | 2694 | 2708 | 2702 | 2716 |      |      |      |      |      |      |      |      |      |      |
| 44      | 2690 | 2698 | 2710 | 2724 | 2718 |      |      |      |      |      |      |      |      |      |      |      |
| 45      | 2706 | 2714 | 2726 |      | 2734 |      |      |      |      |      |      |      |      |      |      |      |
| 46      | 2722 | 2730 | 2742 |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 47      | 2738 | 2746 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 48      | 2754 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |