HP 564 and 920 InkJet Cartridges
Refill Instructions

(Professional Version)

For the following cartridges:

934, 934XL, 935, and 935XL Series

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Items Needed:

- Ball Plug Remover (#1110)
- Caps, Small Orange (#1813-OR)
- Caps, Large Orange (#1814-OR)
- Label, Red Adhesive Pull Strip 3/8"X1-1/2" (Strips Of 10) (#4753)
- (4) Needles, 18 Gauge x 1.5” (#1904S)
- Plugs, Injection, 100pk (#1916)
- Plug Covers, 100pk (#1911) - (these are the round black labels)
- (3) Syringes, 20cc (#1953)
- (1) Syringe, 30cc (#1951)

Additional Items Available from R-JetTek

- Anti-Static Bag (#1900 and #1932)
- Box, Cartridge, Plain White (#4942)
- Inks (see list of available inks on the chart below)
- Scale, Compact Digital (#7075)
- Yellow Rinse Solution (#JIR99)

Ink Chart

(The inks listed below are available at R-JetTek)

Cartridge #	Color	Ink #	Type
564(XL) & 920(XL)	Black	BKP249 or 89	Pigment
564(XL)	Photo Black	BK143	Dye
564(XL) & 920(XL)	Cyan	C143	Dye
564(XL) & 920(XL)	Magenta	M143	Dye
564(XL) & 920(XL)	Yellow	Y143	Dye

Troubleshooting – You will find a cartridge troubleshooting chart on page 12. This will help you to identify and solve some cartridge issues you may encounter.

Important - Read through all of the instructions thoroughly before starting the filling process. Including notes, cautions, and warnings.

Caution: Never leave cartridges out of the printer carriage for more than minute. This can lead to drying, which can in turn lead to clogged nozzles. If enough drying occurs the printhead may not be able to recover. To prevent this customers should always keep a second set of refilled cartridges on hand. This way cartridges can be replaced quickly.

Caution: If the chip is not replaced or if there is no replacement chip available then the customer needs to understand that the printer won’t give the ink levels, and it may not give any indication that the cartridge is empty. If the ink flow to the printhead stops the printhead could be damaged as a result. In any case, a set of replacement cartridges should be kept on hand.

Caution: Any time you handle the cartridges always be careful not to touch the electrical contact pads on the chip or the chip itself. To prevent damage to the chip follow common ESD safety procedures. For detailed ESD information on the web go to:

en.wikipedia.org/wiki/Electrostatic discharge

Refill Process Selection

The HP 564 and 920 Regular Cyan, Magenta, and Yellow cartridges are filled through the Air Vent Port. The reason for this is because reservoir sections in these are sealed off, so for these cartridges use Refill Process #1 on Page 4.

The HP 564 and 920 Standard Blacks, the 564XL Black, the 920XL Black, and all of the 564 and 920 XL color cartridges will be filled through the Reservoir Fill Port. For these cartridges use Refill Process #2 on Page 6.

Weight Chart 1

Cartridge #	Color	Empty Wt. (grams)	Ink Amount *(ml)	Full Wt. (grams)	Chip Part #
564	Photo Black	16	5	21	304
564	Cyan	16	5	21	301
564	Magenta	16	5	21	302
564	Yellow	16	5	21	303
920	Cyan	16	5	21	311
920	Magenta	16	5	21	312
920	Yellow	16	5	21	313

* Please note that the Ink Amount is shown in milliliters, and the Empty and Full Weights are shown in grams. For simplicity in the refilling process 1 ml ≈ 1 gram.

Weight Chart 2

Cartridge #	Color	Empty Wt. (grams)	Ink Amount (ml)	Full Wt. (grams)	Exact Fill - 1st Position	Fill - 2nd Position	Chip Part #
564	Black	20	11	31	9	Remainder	300
564XL	Black	20	18	38	10	Remainder	208
564XL	Photo Black	16	9	25	5.5	Remainder	212
564XL	Cyan	16	12	28	5.5	Remainder	209
564XL	Magenta	16	12	28	5.5	Remainder	210
564XL	Yellow	16	12	28	5.5	Remainder	211
920	Black	20	14	34	9.5	Remainder	310
920XL	Black	34	39	72	23	Remainder	293
920XL	Cyan	16	9	25	5.5	Remainder	294
920XL	Magenta	16	9	25	5.5	Remainder	295
920XL	Yellow	16	9	25	5.5	Remainder	296

Special Note: The following photos used in these instructions are of the HP 935 cartridge, but are only being used for illustration purposes. The basic design of the cartridge is the same as the HP 564 and 920, as is the filling method.

Refill Process #1 – Used for the HP 564 and 920 standard yield Cyan, Magenta, and Yellow Cartridges.

Note: For the standard yield Black and all the XL size cartridges go to Process 2 on Page 6.

1. Using a small postal scale weigh the cartridge to assess whether or not the cartridge is empty (see the Weight Chart 1 on Page 3). **Note:** Set the scale to grams.

Important: Start with an empty cartridge. This will make the filling process more effective. If you believe the cartridges you are filling are too dry, or have dried ink caked on the Exit Port then see the Cleaning Section near the end of these instructions.

2. Use a centrifuge (2800 to 3200 rpm) to extract any liquid remaining in the cartridge for at least 10 minutes, by placing the cartridge flat with the Exit Port facing out, and the Exit Port to the rear of the direction of rotation. **Note:** Less time may cause foaming or bubbling of the ink through the vent hole.
3. Weigh the cartridge again. If the cartridge still weighs more than the specified Empty Weight then take the Full Weight of the cartridge from the weight chart, and subtract the actual weight of the cartridge. This will give you the amount of ink you can safely inject into the cartridge (1 gram ≈ 1 ml).
4. Take the 18g needle (#1904S) and attach it to either the 20 or 30ml syringe.
5. Fill the syringe with the correct ink listed on the Ink Chart on Page 2, and ink amount on Weight Chart 1 on Page 3. **Caution:** Make sure that your empty weight plus the ink amount never exceeds to Full Weight shown on the chart.
6. Hold the syringe with the needle facing upward, and place the tip of the needle into a paper towel. Press the plunger just a little to clear the needle of any air bubbles. This will help prevent foaming while filling the cartridge
7. Locate the Air Vent Port (see Figure 1). If you have not removed the label, then to find this hole follow Air Vent Channel from the Inlet on top of the cartridge to a round indent under the label (all of this can be seen as an impression through the label). See Figure 2.
8. Using a razor blade cut a 3mm diameter hole in the label just above the Air Vent Port. This will allow air to escape while filling.
9. Push the needle through Air Vent Port, but at a slight angle towards the Exit Port about 3/4 to 1 inch into the cartridge. See Figure 3.

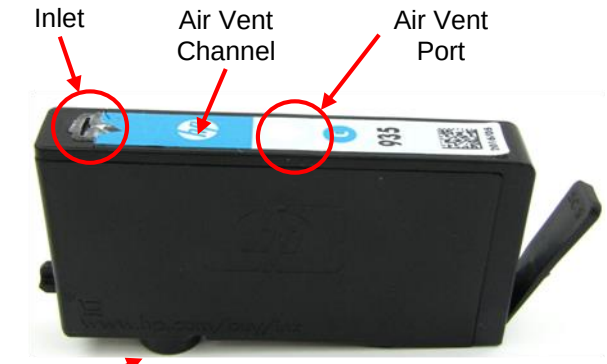

Figure 1

Figure 2

Figure 3

10. Tilt the cartridge at about a 35° angle towards the Exit Port. See Figure 4. This will help air to escape the cartridge while it fills.

Caution: DO NOT overfill the cartridges, because this may cause the cartridge to leak. Follow all instructions, especially the designated **Full Weight** of the cartridge.

Caution: While holding and handling the cartridges DO NOT hold the cartridge on the sides, because this will cause ink to squeeze out of the cartridge through the Air Vent Port and Exit Port. Hold the cartridge instead between the front and the back of the cartridge.

11. Slowly inject the ink into the sponge (about 2 seconds per milliliter), so it can effectively push out the air, and fill the lower section of the sponge without causing air pockets to form. Otherwise, this could cause foaming or bubbling through the vent hole.

Caution: If there are air bubbles remaining in the syringe DO NOT push these into the cartridge. Try and minimize the air bubbles when you are filling up the syringe.

12. Once the syringe has been emptied into the cartridge remove the needle.
13. Let the cartridge rest for about 10 minutes with the Exit/Egress Port facing down. Then clean as needed. If done correctly there should not be any ink coming out of the Exit Port or the vent hole.
14. Seal the hole you made in the label above the Air Vent Port using the Plug Cover (#1911, the round black label). See Figures 5 and 6
15. Seal the Air Vent Channel Inlet using the Red “Pull” Label (#4753). See Figures 1 and 7.

    Caution: You must cover the entire opening with a little overlap. Also, press to fit the label to all uneven surfaces.

16. Seal the Exit/Egress Port using either the Small Orange Cap (#1813-OR), or the Large Orange Cap (#1814-OR). See Figure 8.
17. If you have a replacement chip then follow the chip installation instructions that come with the chip.

    Caution: To prevent damage to the chip follow common ESD safety procedures. For detailed ESD information on the web go to:

    en.wikipedia.org/wiki/Electrostatic discharge

    Caution: While installing the chip be careful not to squeeze the sides of the cartridge, because this may cause the ink to leak out of the cap.

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

18. Place the finished cartridge (see Figure 9) into an Anti-Static Bag (such as #1900). See Figures 10.
19. Seal the bag using the Impulse Sealer. See Figure 11.
20. Then place the bagged cartridge into a box, such as #4942 (see Figure12). Create your own label to place on the outside of the box..

Figure 9

Figure 10

Figure 11

Figure 12

➔ Continue on to Refill Process #2 at the top of Page 7.

Refill Process #2 – Used for the HP 564 and 920 standard yield Black, and all of the XL Black and XL Color cartridges.

1. Weigh the cartridge to assess whether or not the cartridge is empty (see the Weight Chart on Page 3).

   Important: Start with an empty cartridge. This will make the filling process more effective. If you believe the cartridges you are filling are too dry, or have dried ink caked on the Exit Port then see the Cleaning Section near the end of these instructions.

2. Use a centrifuge (2800 to 3200 rpm) to extract any liquid remaining in the cartridge for at least 10 minutes, by placing the cartridge flat with the Exit Port facing out, and the Exit Port to the rear of the direction of rotation. **Note:** Less time may cause foaming or bubbling of the ink through the vent hole

3. Weigh the cartridge again. If the cartridge still weighs more than the specified Empty Weight then take the Full Weight of the cartridge from the weight chart, and subtract the actual weight of the cartridge. This will give you the amount of ink you can safely inject into the cartridge (1 gram ≈ 1 ml).

4. Use a razor blade to cut away the label above the Fill Port (a round circular area beneath the label). See Figures 13 and 14.

5. Remove the ball plug using the Ball Plug Remover tool (#1110). Do this by pressing the screw end of the tool into the center of the ball plug with a little pressure, and turning clockwise to thread the screw in. Then when you have threaded the screw in about 4 to 5 full rotations pull back on the tool to extract the ball plug. See Figures 15 and 16.

   Caution: Be careful not to damage the sides of the hole while doing this, because this could cause a leak.

6. Insert the Injection Plug (#1916), nipple side first, into the Fill Port. The top of the plug should be level with the top surface of the cartridge. See Figure 17.

   Note: The injection plug is a replacement for the ball plug. Unlike the ball plug though, which only seals the port, the injection plug allows you to insert a needle through it and fill the cartridge. After removing the needle the plug will seal itself.

   Caution: These plugs are designed to be self-sealing for only one refill. Any subsequent usage may cause the plug to leak.

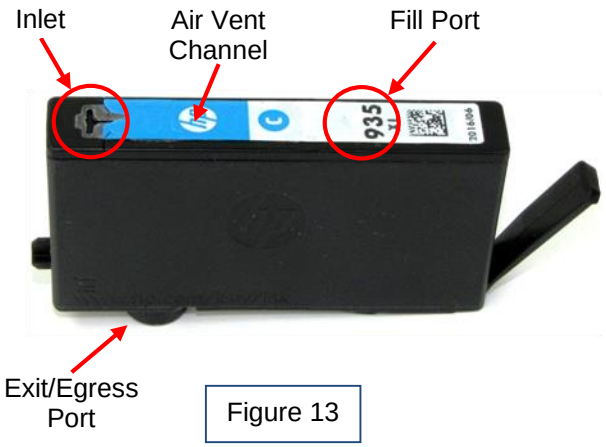

Figure 13


Figure 14


Figure 15


Figure 16


Figure 17

7. Take the 18g needle (#1904S) and attach to either the 20 or 30ml syringes. **Caution:** Use only an 18 gauge needle for the injection plug, otherwise the plug could leak.
8. Fill the syringe with the correct ink listed on the Ink Chart on Page 2, and ink amount on the Weight Chart 2 on Page 3. **Caution:** Make sure that your empty weight plus the ink amount never exceeds to Full Weight shown on the chart.

Note: On Weight Chart 2 on Page 3 refer to the last two columns. One is for the 1st Position (Figure 19), and the other is the 2nd Position (Figure 20)

Caution: DO NOT overfill the cartridges, because this may cause the cartridge to leak. Follow all instructions, especially the designated **Full Weight** of the cartridge.

Caution: While holding and handling the cartridges DO NOT hold the cartridge on the sides, because this will cause ink to squeeze out of the cartridge through the Air Vent Port and Exit Port. Hold the cartridge instead between the front and the back of the cartridge.

9. Carefully push the needle about 1/2" through the plug (Figure 18). Hold the cartridge with the Exit Port up, and at a 45° angle (as shown in Figure 19). Then **slowly** inject (at a rate of 2 seconds per milliliter) with the ink amount shown for 1st Position on Weight Chart 2 on Page 3.
10. Rotate the cartridge to the 2nd Position as shown in Figure 20. The cartridge should now be in the upright position. Continue filling slowly until the syringe is empty, or until you have filled the cartridge to the full weight shown on Weight Chart 2.

    Note: When a cartridge is filled correctly, and with the right amount of ink, it will maintain the hydrophobic area at the top of the sponge. This will assist in the proper function of the cartridge once installed in the printer.
11. Hold plug in place using a small pair of needle-nose pliers (or fingernail), while extracting the needle. See Figure 21.

    Caution: If the plug comes out press it back in place immediately.
12. Let the cartridge rest for about 30 minutes with the Exit/Egress Port facing down.
13. Clean the cartridge as needed using dry or slightly damp paper towel.

Note: Seal the cartridge before replacing the chip and packaging. Make sure that you press to fit each label seal, especially where there are uneven surfaces.

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22

14. Seal the Fill Port using the Plug Cover (#1911, the round black label). Figure 22
15. Seal the Air Vent Channel Opening using Red "Pull" Label (#4753). See Figures 13 and 23.

    Caution: You must cover the entire opening with a little overlap. Also, press to fit the label to all uneven surfaces.
16. Seal the Exit/Egress Port using either the Small Orange Cap (#1813-OR), or the Large Orange Cap (#1814-OR). See Figure 24.
17. If you have a replacement chip then follow the chip installation instructions that come with the chip.

    Caution: To prevent damage to the chip follow common ESD safety procedures. For detail ESD information on the web go to:

    en.wikipedia.org/wiki/Electrostatic discharge

    Caution: While installing the chip be careful NOT to squeeze the sides of the cartridge, because this may cause the ink to leak out of the cap.
18. Place the finished cartridge into an Anti-Static Bag (such as #1900 or 1932). Figure 25
19. Seal the bag using the Impulse Sealer (like the one shown in Figure 26).
20. Then place the bagged cartridge into a box (such as #4942 shown in Figure 27). Create your own label to place on the outside of the box.

Figure 23

Figure 24


Figure 25


Figure 26


Figure 27

➔ Continue on to the Cleaning Reference at the top of Page 10.

Cleaning the HP 564 and 920 Series Cartridges

We have found that the least amount of cleaning done to a cartridge will provide better function during its usage. The following information will help provide you to develop optomum performance in your cartridges.

Intended OEM Design and Function:

- **Hydrophobic** and **Hydrophilic** properties of the sponge – If you have ever noticed the white areas at the top of a cartridge sponge, this is the hydrophobic area of the sponge. When the sponges are intially manufactured the entire sponge has hydrophobic properties. Hydrophobic property means that in affect it repels water. This affect helps put a force down onto the ink towards the bottom of the cartridge. The hydrophilic property comes into play when ink is forced into the sponge (filling) during manufacture. Hydrophilic property means that it attracts water. So, once an area of the sponge becomes saturated with liquid it becomes hydrophilic. Due to particles in the liquid that remain even after the sponge is empty and/or dry. Once new liquid is introduced into the sponge it is immediately attracted to the areas that were previously hydrophilic.

  The reason for all this information is to be able to explain what happens when you process the cartridge, especially during the cleaning a filling stages. **One**, if a cartridge sponge is soaked, but not completely cleaned and dried the entire sponge becomes hydrophilic. So, when you go to fill the sponge liquid is attracted to every corner of the sponge. OEM design properties are lost. There will be no hydrophobic area of the sponge, and a good portion of the ink will remain in the cartridge and not be able to migrate out. **Two**, if the cartridge still has the hydrophobic area still remaining at the top of the sponge when you go to fill it, but you overfill the sponge, you will again lose the hydrophobic property. The reason for this is because when you overfill the sponge it forces liquid into hydrophobic area, thereby causing it to become hydrophilic. The cleaning suggestions below and the filling techniques in the filling sections above will help you to maintain the hydrophobic area of the sponge.

- **Air Ventilation** channel/maze – The air ventilation channel/maze allows a controlled amount of air to enter the cartridge, so that ink can migrate out of the cartridge and into the printer. Without this the ink would not be able to flow out, because a vacuum would be created inside the cartridge. However, this is what will occur if the cartridge is overfilled, and ink goes into the air ventilation channel. You can overcome this issue with the proper cleaning and filling technique.

Non-Vigin Cartridges: Keep in mind, with regards to the hydrophobic properties within the sponge, that the condition of your non-virgin cartridges may be such that they are entirely hydrophilic. Which would cause them to fill improperly.

Cleaning Suggestions:

- **Segregation** – It is recommended that you segregate the cartridges into two groups for cleaning. The first group would be cartridges that were capped and the Egress/Exit port filiment is still wet. The second group would be those cartridges that were not capped, and the Egress/Exit port is dry.
- **Wet Group** – Take these cartridges and place them in a spinner/centrifuge with the Exit port facing out, and the Exit Port to rear of the direction of rotation. Spin for no less than 10 minutes. Then start the filling process on these right away.

➔ Continue on to the Dry Group at the top of Page 11.

- **Dry Group** – These will need a bit more work. There are two methods you can use with these.
  - **Soaking** – The use of water to soak cartridges is not recommended. This can create more work and filling issues than it is worth. There are two other methods you can employ.
    - **Method 1**: Soak them inside a plastic container, which is layered on the bottom with paper towels. This may be the same as you used with water, but with a few changes. First, saturate the paper towels with diluted JIR99. Place your cartridges on top of the paper towels. Try and soak the each color in a separate container. Next, let the cartridges soak for only 5-10 minutes. You only want them to soak long enough to saturate the lower half of the sponge. Then spin the cartridges in a centrifuge.
    - **Method 2**: Inject the cartridge with JIR99 (3ml or less) only if the cartridge is empty. Using a razor blade cut a 3mm diameter hole in the label just above the Air Vent Port. This will allow air to escape while filling. Install an 18g needle on a syringe and fill it with the diluted JIR99. **Note**: If the JIR99 was purchased as a diluted mixture then use as is. If purchased as concentrate then dilute with 3 parts distilled water and one part concentrate. Next, insert the needle into the cartridge through the Air Vent Port (see Figure 1 on page 4) about one inch deep. Then slowly inject the JIR99 at a rate of about 2 seconds per ml. Let stand for about 3-5 minutes, and then spin the cartridges in a centrifuge.
  - **Spinning** – The centrifuge that you use should be at least 2800 to 3200 RPM. Any less than this could require a lot more spin time. Also, at the recommended speed, you should spin for no less than 10 minutes. Anything less may cause foaming or bubbling during filling.

➔ Continue on to the Troubleshooting Chart on Page 12.

Troubleshooting Chart: HP 564 and 920 Series Cartridges

Indication	Probably Cause	Solution
Cartridge Leaks After Filling	1. Cartridge is overfilled. 2. Cleaning and/or Filling Procedure 3. Sponge was too dry for filling. 4. Sponge is worn 5. Damaged Ball Plug Port	1. Check the weight of the cartridge against the weight chart 2. Review procedures to see if something was missed. 3. See Soaking Method 2 on page 11. 4. Discard cartridge 5. If damage to the Ball Plug Port occurred during removal of the Ball Plug, then this cannot be repaired and the cartridge should be discarded.
Cartridge Leaks During Filling	1. Slight drip from Egress 2. Leaks from Air Vent 3. Sponge is too dry 4. Damaged Ball Plug Port	1. This can be considered ok, if only one or two drops from the Egress/Exit Port, and it stops dripping immediately. 2. This is caused by improper filling, not properly emptied, or trapped air - review procedures. 3. See Soaking Method 2 on page 11. 4. If damage to the Ball Plug Port occurred during removal of the Ball Plug, then this cannot be repaired and the cartridge should be discarded.
Foaming or Bubbling - during filling	1. Not emptied properly 2. Cartridge filled too quickly 3. Air in syringe during filling 4. Cartridge is too damp	1. Follow the procedures for emptying the cartridge using a centrifuge on pages 4 and 7. 2. Fill at rate of about 2 seconds per milliliter. 3. Hold the syringe with the needle pointing upward, and press the plunger on the syringe a little to push the ink to the end of the needle. 4. There are generally two reasons why the sponge is too damp, either the cartridge was not between 2800 and 3200 RPM for 10 minutes or longer, or the cartridge was completely flushed and is still too damp. Try spin drying them longer, use a dehydrator at 110-115°F, or air dry.
No Ink Flow - or loss of ink flow in the middle of the cartridge life cycle	1. Air Vent Seal was not removed 2. Air Vent was clogged during filling or transport. 3. Loss of Hydrophobic Area of Sponge 4. Egress Port is clogged or dirty. 5. Customers Printhead is bad.	1. Remove Seal 2. Review cleaning and Filling procedures. There may have been a procedure error made during processing of the cartridge 3. This can be caused by over-filling, or over-saturating during cleaning, and usually occurs in the middle of the cartridges lift cycle (half empty). May need to discard the cartridge. 4. Review cleaning procedures - see the cleaning instructions on pages 10 and 11. 5. Verify cartridge is good - have customer run cleaning cycle or replace printhead.