



# How to refill your M351a, M451dn, M451dw toner

Also OK for use with the following printers: HP Pro M451nw, M375mw, M475dw, M475dn.

Before use, familiarise yourself with the safety information on pages 6 to 8.

## “Introductory cartridges” can be refilled, but more difficult

The new machine arrives with a set of so-called “introductory cartridges” (quoted by HP as yielding 1,400 pages). They have less toner in than the cartridges you can subsequently buy and their physical design differs in ways you need to know about for refilling them.

This kit and our refill bottles are directed towards the ongoing “bought” cartridges in terms of the weight of toner they contain. **Not all of the toner we give you will fit into an introductory cartridge:** to avoid mess, don’t try and get it all in at once (we remind you again in the flow of the instructions).

In addition, you’ll see that, for introductory cartridges, the refilling hole has to go in a riskier place as far as leaks are concerned. More risky because gravity isn’t on our side there, so the seal has to be perfect. Toner leaking willy-nilly into your printer’s paper path is something you want to avoid: follow our advice to steer yourself away from problems.

Refilling the bought cartridges is more straightforward.

## At “[Colour] very low” message, press OK button and carry on printing till fade out

As you use your printer, there’ll come a point where it won’t let you print anymore. The “attention” (exclamation mark) light on your printer’s control panel will flash, along with the following rolling display message ....

**PRESS** the **OK** button and then carry on printing until you get actual toner fade out.

Note: the machine’s default setting is for this behaviour to happen at the “[Colour] very low” status. However, you can change this setting as follows and if you do, you’ll be able to print directly to fade out with none of the above symptoms.

### To change to “Continue to print” at “[Colour] very low” status:

- On the control panel, press the **OK** button
- Use arrows to select **System Setup** menu, press **OK**
- Use arrows to select **Supply Settings** menu, press **OK**
- Use arrows to select **Black** or **Colour Cartridge(s)** menu, and press **OK**
- Use arrows to select **At Very Low Setting** menu, press **OK**
- Select the **Continue** option, press **OK**

Any pop-up alerts on your computer monitor will merely reflect messages shown on the printers control panel. Just ignore them: they go away when you follow our method with the control panel.



## Knowing which cartridge is fading

If your printing profile stays about the same, it’ll likely be the cartridge you first had the “[Colour] very low” message about.

You’ll see from your prints that something’s fading, but depending on what you’re printing, it’s not always obvious which colour is the culprit. The mainly blue image right shows the kind of counter-intuitive effect you can get.

It’s crucial to know which of the four cartridges to refill, so if you’re not sure, print this 4 colour swatch. Download it from:

<http://www.urefilltoner.co.uk/downloads/toner-refill-fade-out-swatch.pdf>

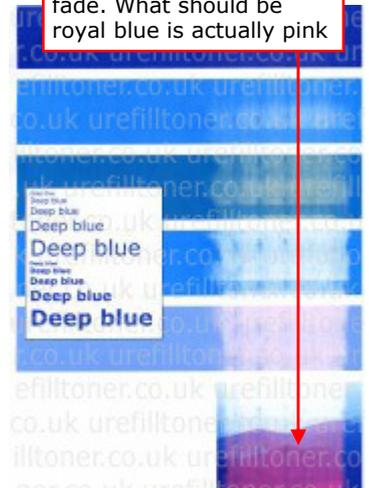


Print the sheet a few times and identify the fading cartridge as follows:

Colours affected on swatch	Cartridge fading
Black only	Black
Blue only	Cyan
Blue and orange	Magenta
Yellow and orange	Yellow

Having identified the fading cartridge, just refill it according to the “How to refill it” section starting on page 2.

Cyan cartridge starting to fade. What should be royal blue is actually pink





## Important: only refill the cartridge that's showing signs of fading

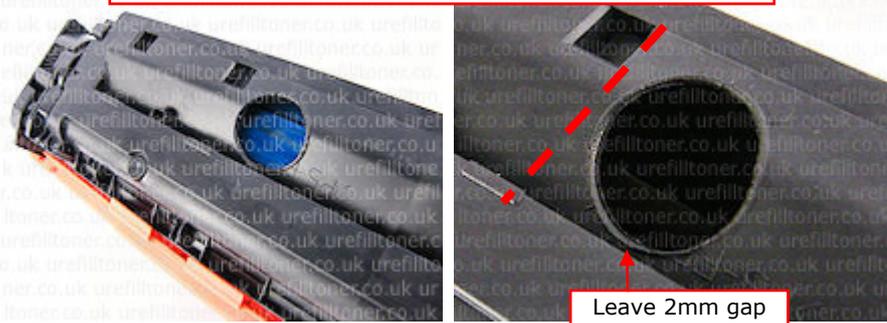
Don't refill a cartridge until it has shown at least the first signs of fade out. Don't "top up" all the cartridges while you're doing one. The laundry list of things that can go wrong with this approach is as long and dreary as the websites that promote it. Make up your mind right now to just refill each individual cartridge as and when it fades out.

### How to refill it

- 1) Turn on melting tool and wait 5 minutes to reach operating temperature (see page 6 for guidance on safe use of melting tool)
- 2) Re-fit the orange OPC drum protector if you've got one handy —  
 If not, take care not to touch or handle the pale blue OPC cylinder. Don't rest the cartridge on the pale blue OPC cylinder
- 3) Find position for refill hole as shown



#### Introductory cartridge refill hole



Leave 2mm gap

- 4) Melt your hole (see page 6 for guidance on safe use of melting tool). Press lightly. If tool is hot and hole is just in right position, hole will be made easily.

#### Bought cartridge refill hole



Just to right of "p" of "Japan".  
 Come as far down as red dotted line (i.e. bottom of bar code), but don't go any further away from it than shown in photo

- 5) Before opening toner bottle, shake vigorously for 5 seconds.
- 6) Open toner bottle and screw on spout.
- 7) To avoid leakage of microfine toner, wrap any kind of tape around join between spout and bottle: selotape, brown parcel tape, gaffa tape etc.
- 8) Hold cartridge upright with one hand. Use other hand for bottle.

Introductory cartridge



Bought cartridge



- 9) Jam spout into vertical cartridge and, keeping spout jammed in with distinct pressure, lean cartridge back until bottle is near vertical.
- 10) Wait for a count of 5 for toner to flow in.
- 11) Return cartridge to 45 degree angle and, keeping spout in hole, rotate bottle down to below horizontal.

**Introductory cartridges only:** take a look inside hole. Stop if you can see toner level is close to hole. Go carefully if filling it some more. Not all of toner will fit in an introductory cartridge. Save some toner for next time.



- 12) Put finger over end of spout and give bottle another shake. Repeat shaking and pouring until all the toner has been poured (bought cartridges) or until chamber can't be filled any more (introductory cartridges).
- 13) Use alcohol swab to clean up any stray toner around hole.
- 14) **Introductory cartridge only:**



- a) Use scissors to trim off part of lip of plug
- b) Fill groove of plug with silicon glue or sealant all way round (glue shown)



- c) Engage groove of plug with inner edge of melted hole in one place. Squeeze plug to engage more of groove with cartridge. "Persuade" last of groove to engage with flat blade of a screwdriver. This is what we're aiming at



- d) Wipe off excess silicon glue or sealant, but leave plenty under plug's flange and in cracks
- e) Gently shake cartridge over a blank sheet of white paper to check for any toner leaks from sealed hole. If leaky, smear more sealant over leaky point. Consider re-doing the hole-sealing operation. Leave cartridge overnight to dry if there are large amounts of silicon glue or sealant needed for an effective seal.

15) **Bought cartridge only:**



There's no need to trim lip of plug. Just fill groove with silicon glue or sealant. Fit plug by engaging groove with inner edge melted hole.

- 16) Either your introductory cartridge or your bought cartridge is ready to go back in the machine.
- 17) Introductory cartridge more prone to leakage so check for leaks after a few hours or a few hundred pages of operation in the machine.
- 18) End

## Changing the chip (or not)

Because it's not necessary for a successful refill, a chip is **not supplied** with this Starter Kit. However, a chip might be important to you if you want to preserve HP-style toner status messaging. For that reason compatible chips are available at [urefilltoner.co.uk](http://urefilltoner.co.uk) and we show you how to change them here:

- 1) Identify chip.
- 2) Taking all precautions against personal injury, cut off 2 pieces of plastic that hold chip.
- 3) Prise/slide old chip up and out.

Replacement chip pushed into position. Flat edge at top

- 4) Push replacement chip into place with brass contact plates facing out as shown.





## Black: empty waste before doing 3rd refill

## Colours: empty waste before doing 2nd refill

## Empty waste anytime vertical streaks appear

## Emptying waste is messier than a refill

As these machines print, they produce waste toner. It's sneakily stored inside an empty chamber inside the toner cartridge. If the waste fills up completely, you'll start to get "waste streaks" like these yellow examples vertically, all the way down the page (could also be black, blue or magenta of course, according to the colour of the cartridge).

Our testing on the Pro M451dn showed this is most likely to happen during the 3<sup>rd</sup> refill of a black cartridge or during the 2<sup>nd</sup> refill of a colour cartridge. So if you want to empty the waste, the preventative route would be to empty the black waste before a 3<sup>rd</sup> refill and empty colour waste before a 2<sup>nd</sup> refill.

Yellow could be anomalous. We were struggling to get even one yellow refill before waste overflow happened.

It's also just about feasible to wait until you get waste overflow streaks and empty the waste at that point. You have to catch it straight away, though. Otherwise the abrasive action of compacted waste will quickly and permanently scratch the pale blue OPC cylinder: at which point, it's curtains for that cartridge.

We say "if" you want to empty the waste, because it's your call. Emptying the waste is messier than just refilling. If you're up for it, though, here's how it's done:

1. Waste hole is in same position for both introductory and bought cartridges. Melt waste hole in place shown.



2. Shake waste toner straight into an outside bin: do not expose the pale blue OPC drum to direct sunlight.
3. Wipe stray toner from cartridge surface with absorbent paper.
4. Outside of cartridge can optionally be cleaned with vacuum cleaner fitted with the "hairy" attachment. However, take great care not to scratch the very delicate pale blue OPC drum surface and only perform surface cleaning: do not penetrate into crevices. **Safety note:** consult your vacuum cleaner manufacturer over the suitability and safety of using your model before vacuuming toner powder.
5. Use alcohol swab to clean and prepare flat surfaces around hole.
6. Seal hole with any tape that's wide enough. Some duct tape's included in the kit to get you started (you'll need to cut the patch supplied in half).
7. Occasionally check the cartridge to make sure the seal's holding. Tiny leaks can be sealed with silicon glue or white sealant in syringe.

## Note about sealant

The kit comes with either silicon glue or some sealant in a syringe to get you started. If you get the syringe, it's just bathroom sealant, so you might want to have some handy for sealing cartridges as time goes on.

## Effective refill lifespan of cartridges

With due attention to waste issues, we've personally performed 5 successful refills of the black cartridge.

Based on the weights of toner involved, that makes 3 refills of colours easily achievable (again, with due attention to waste issues).

Of course, some cartridges can mysteriously go down early due to anything from slight manufacturing imperfections to human hair being forced into delicate seals by the mechanical operation of the printer.

If you're rolling your sleeves up for a sixth refill, by all means go for it, but bear in mind that no cartridge is going to go on for ever.

If you're persistently getting toner on the page where you don't want it, and you've ruled out waste overflow as a cause, it's normally time to send that particular cartridge to the great laser printer in the sky. That could literally mean to meet its maker: HP do have a re-cycling program. Check their website for details.



## About this "how to refill" guide

These CopyLeft instructions from <http://www.urefilltoner.co.uk/> are the same as those included with our HP Pro 400 M351a, M451dn, M451dw toner refill Starter Kit.

A Starter Kit is our "zero to hero" kick-start. It's got all the materials and know-how you need to refill your empty cartridge the right way. First time.

These instructions show you **how we did it**, not how we imagine it could be done. In the case of the HP Pro M451dn, we successfully done this refill 22 times and printed 18,295 test prints. Most of those prints were sent out to real customers in the form of catalogues and printed instruction booklets like the one you're reading now.

This document contains all substantial information needed for a successful refill assuming you're taking advantage of U Refill Toner Ltd / <http://www.urefilltoner.co.uk/> products. Again: the way we did it, not how we imagine it could be done.



Click the link below to get this and many more HP laser printer refill kits (UK and most of Europe)  
[http://www.urefilltoner.co.uk/toner\\_refill\\_printers.aspx?manufacturer=Hewlett+Packard](http://www.urefilltoner.co.uk/toner_refill_printers.aspx?manufacturer=Hewlett+Packard)

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## Refills by you ... thanks to you .....

Thanks for refilling the toner cartridges in your printer. We invented "do-it-yourself" toner refills in 1992, "melt & pour" in 1996 and put "unplug & pour" into internet-speak in 2002. We've never tried to patent or otherwise restrict the use of these ideas.

If you liked our product, please recommend us to friends and colleagues. We've survived for over 20 years – fighting giant corporations that dwarf us – thanks to your custom and recommendation. No one here takes that, or you, for granted.

U Refill Toner. Now needed more than ever. Now refined more than ever.

- ✓ more than halve the cost
- ✓ halve CO<sub>2</sub>
- ✓ stop being a doormat for big manufacturers

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