# Pro412 style Fusers & Cartridges…
What's the Difference?

Workcentre 312, Pro412, M15, M15i,
& CopyCentre C20, WorkCentre M20, M20i

   With the M20, & M20i, & C20 gaining in popularity, its time we take a look at just what is the difference between these new-comers and the earlier versions (Pro412, M15, M15i, WC312). We'll start with the consumable stuff… the Fusers, Drum Cartridges, and Toner Cartridges. The M20 versions of all 3 are very similar in some ways, but there are also some significant changes. Then we'll do a quick overview of what else makes the newer machines different from their predecessors.

   The fusers share many common parts with some big changes in the M20 version. The Pro412 / WC312 version and the M15 / M15i version are nearly identical to one another except that the Fuser Lamps have different Wattage ratings. The Pro412 uses a 600 watt lamp and the M15 uses a 750 watt lamp. The Pro412 and M15 versions have many parts in common including the same Heat Rolls, and Pressure Rolls (a sleeved roller)… also they share the same bearings, fingers, thermistor, and thermostat.

Heat Lamp Terminal

Pro412 or M15 version…

M20 version…
A very different heater terminal.
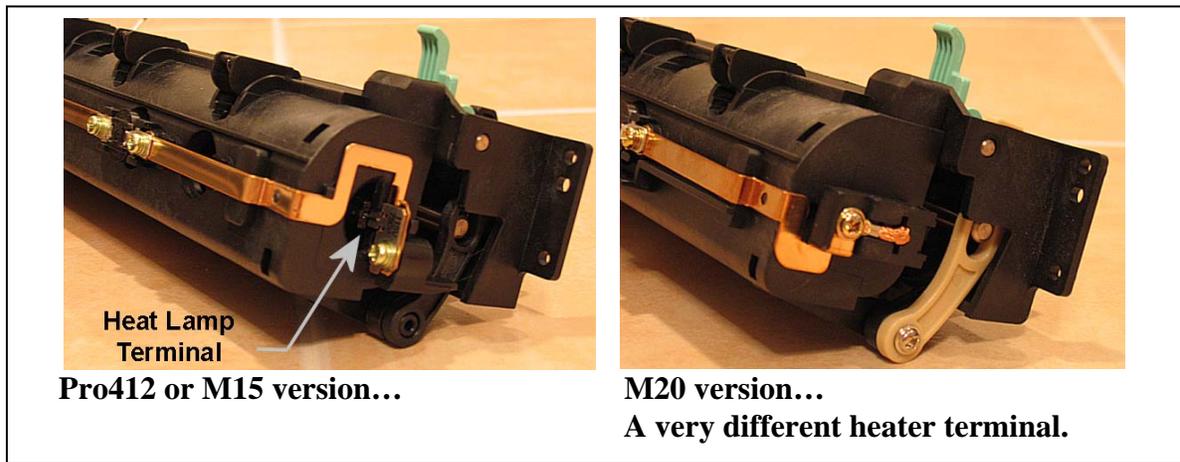
The M20 fuser is noticeably different in appearance from the other two versions, particularly if you're looking at its end (See the comparison photos above). The M20 doesn't have a traditional Heat Lamp at all. Instead, they have a heater element built directly into the Heat Roll Assembly. I took one apart and found that the roller is stuffed with some sort of material and has an element reminiscent of something you'd see in a toaster-oven. Obviously, if you want to replace the "heat element", you would need to buy either the Heat Roll Assembly which includes the heat roll, heater element, and fuser drive gear and rear heat roll bearing. Any argument that this new design is an improvement is likely to fall flat... it seems that the M20 fusers fail more frequently than the fusers in the predecessor models. I am figuring that the failures probably relate to the terminals at either end of the Heat Roll Assembly becoming oxidized and building up resistance. The terminal is a round stud which is spring loaded against the plate at the end of the heat roller (see photo #3).

Photo #2:

M20 on the left... (Heat Roll / Element Assy, Pressure Roll, and Pressure Arms)
Pro412 version on the right. (Pressure Roll, Heat Roll, Fuser Lamp, Fuser Drive Gear, and Pressure Arms)

Aside from the pieces of the Heat Roller / Element Assembly (heat roll, lamp or element, and fuser drive gear), the other parts which are different include the Pressure Roller which is a larger diameter on the M20, and the Pressure Arms which are bulkier to accommodate the larger pressure roller. See the photo above which shows the M20 Heater / Roller Assembly and the Pressure Roll and Pressure Arms on the left... You can also see the Pro412 stuff on the right for comparison.

Photo #3: M20 Heater Terminal

Alright, now for the Toner Cartridges. The Pro412, M15, M15i, & WC312 use one version (106R584) and the M20, M20i, & C20 use a different version (106R1047). The most significant thing which sets the M20 version apart is that the manufacturer added a "CRUM" (Customer Replaceable Unit Monitor) to the rear of the cartridge. It looks like a little rectangular card with some electronics including an EEPROM on it. The Pro412 version of the cartridge required only refilling to reset the toner messages, but now for the M20, you'll need to also

M20 Toner Reset Chip Board

replace this CRUM piece to get the message to clear. The two versions of the cartridge have other physical differences which would prevent you from using the cartridge in the wrong

machine.   There is some good aftermarket refill toner out there which will work in either version of the cartridge, but don't forget to order the CRUM if you're working on the M20/C20 version.

The Copy Cartridges (Drum Cartridges) also have some changes to them. Once again, the Pro412, M15, M15i, & WC312 share one version (113R506), and the M20, M20i, & C20 use a new version (113R671). The hub and gear ends of the drums are slightly altered because the M20 version uses some unusual new bearings. The Blades are completely different in the new cartridges… Bottom line is; if you're ordering reconditioning supplies (drums or blades), you need to specify your exact model to make sure you get the right parts.

Pro412 version   M20 version
Copy Cartridge Differences:

Another thing about the machine which has morphed more than once, is the feed rolls. In the Pro412, F12, WC312, there are two half-moon shaped tires which are relatively close together on a plastic shaft assembly. The M15 / M15i in contrast have a single wide tire near the rear end of the feed assembly. This tire looks like a half-moon shape in the machine although the rubber itself comes as a round tire. As a result, folks sometimes think they've gotten the wrong piece when they order the M15 tire. Now along comes the C20 / M20 / M20i. These have the same rubber tire at the rear as is found in the M15, but they've added a narrower version of the same shaped tire closer to the front of the machine.

By the way… don't go to the Service Manual for instructions on how to replace the feed tires. They have you dismantling the entire machine. Not necessary unless you need to replace the entire feed assembly. It is possible instead to replace the tires from the bottom of the machine. You'll need to remove the rear cover and the Main Drive Assembly which has the two main motors on it. Then the Feed Sector Gear slides off of the rear end of the feed shaft. Take out the Paper Tray and turn the machine on its rear-end gently so that you can see the feed tires and the feed shafts. There are a few white plastic clips and, on the M20, a bunch of metal eclips to pop off. Then you can slide the feed shafts far enough to give you access to the feed rolls. The Pro412's are definitely going to prove easier to work on for the feed tires, but the M20's can be approached in the same basic way.

That covers the most important differences within this series of machines… there are of course other changes to stuff like electronic boards, Laser Units, etc. Just remember whenever you're ordering a part, provide your vendor with the exact model of the machine you're working on. That'll help them steer you to the right version of the part you actually need.