

GENERAL OPERATION

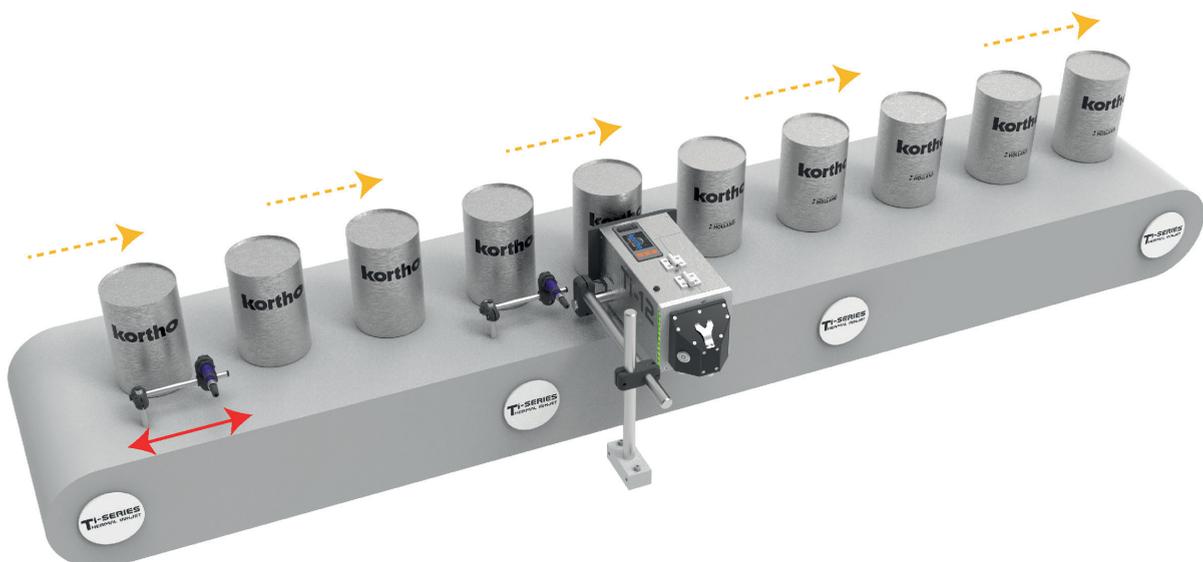
The amount of idle time before the Ti-12 automatically caps the cartridge can be set in the software. This way the shutter-time can be tuned to each different ink. Sealing the nozzles before their specific open-time expires. As a result if a new print is made within the set shutter-time the cartridge will stay out/open. Only when the timer expires will the cartridge be capped.

After each cap a brief moment will be needed to reprime the nozzles. The time needed also varies per ink and can therefore also be set in the software. During repriming the printer will be in "busy" status and not able to print. This guarantees a perfect first print after startup. On the printers display a timer will show how long before repriming is completed.

In practice this means;

- 1 Print before shutter-time expires > Can be done directly**
The shutter will still be open and the cartridge in its print-position. Basically this is the status during normal production. The consecutive prints will prevent the nozzles from clogging and the shutter-time from expiring.
- 2 Print directly after shutter-time expires > Possibly have to wait**
After each closure/cap the cartridge must shortly reprime. During the repriming process the printer will be in "busy" status and will not be able to print. If a print signal does come in a "print missed" error will be generated. Check the LCD screen on the printer to see when repriming is completed.
- 3 Print some time after shutter-time expires > Can be done directly**
The shutter will still be closed, but the cartridge will be primed and ready to print. Please keep in mind that opening the shutter after a restart also takes a second. The "uncap" signal is therefore ideally sent a bit before the first product arrives at the nozzles. Otherwise the printer might not be fully uncapped on time. In this case the first product won't be printed and a "print-missed" error shall be generated by the printer. The most common method to prevent this is by placing an additional photocell earlier on the conveyor. This will detect the first product after a restart before it reaches the nozzles. By sending the uncap signal with the first photocell the printer will be uncapped timely.

All the above mentioned settings on shutter-time, repriming and uncap signals are only needed once and shall in general be configured by Kortho certified personnel upon installation. Only when switching to a different ink they might need to be revised.



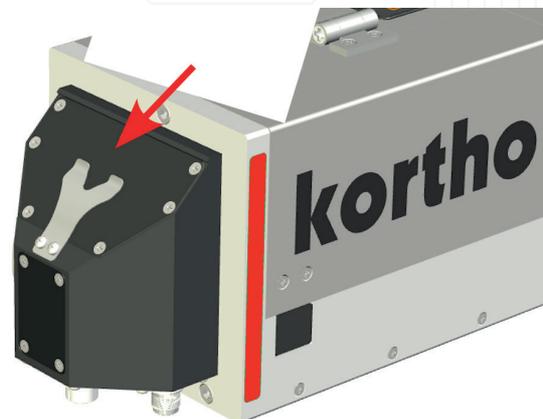
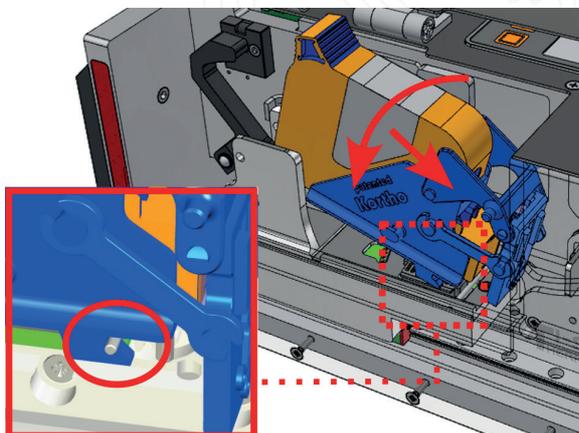
INSERTING THE CARTRIDGE

Before inserting the cartridge only the rubber band has to be removed. The blue plastic module with the shutter is fixed on the cartridge and is meant stay like that for the entire lifecycle of the cartridge. Both are to be inserted together as one single component into the printer when new, and also removed together when empty. Once inserted there's no need to take the cartridge out in between before it's empty. Even if the printer is depowered for months it will keep the nozzles hermetically sealed. The Ti-Series does not require any in-between human interaction or maintenance to prevent the cartridge from clogging.

Steps to exchange a cartridge:

- 1 Remove the rubber band**
The rubber band can be cut at the recess located on the front of the shutter lid. However if you wish to exchange cartridges in between, for example when alternating between different inks, best is to remove the band by hand and keep it intact. This way the band can be used again later to seal cartridges while they're outside of the printer. As a final step inspect the shutter. All four plastic arms need to be fully clicked onto the notches and the shutter must be able to move freely.
- 2 Wipe the nozzles with the white cloth**
New cartridges must always be wiped once before being inserted. For this use the included white cloth. Wipe vertically over the nozzles and insure that two stripes of ink can be seen on the cloth afterwards. Save the cloth in a dry and clean location in case wiping needs to be done again later.
- 3 Open the printer lid and insert the cartridge**
Press the black button on the side of the printer to open its lid. The carriage will move to the exchange position. Slightly tilt the cartridge and insert the two plastic hooks on its bottom into the slots on top of the carriage. After this push the cartridge down and forward. Making sure it's flat on the carriage with the hooks inside the slots and all the way forward. Now the cartridge can be locked using the black lever on the back of the carriage. The position of the shutter while inserting the cartridge is irrelevant. It will be automatically positioned correctly after closing the lid. However holding the shutter up with the index finger can give a better view on the slots while inserting the hooks. Once the cartridge is locked in place the lid can be closed again.
- 4 Use the RFID tag in the plastic card**
When the printer detects a new cartridge a notification will be show on it's LCD screen requesting to use a print-tag. This tag is inside the plastic card that's included with each cartridge. To use it first vertically place the card underneath the leaf spring on the connector block. After this follow the instructions on the LCD screen. When completed the content of the cartridge shall be added to the printers memory. It's possible to switch cartridges in between. The printer will only request a tag when a cartridge is new.

The blue silicone cap is the exact same one as used in the official HP cartridge storage clips. It's like putting the cartridge back in its clip during production stops. Only now the printer does it for you.



TROUBLE SHOOTING

Below are the most common issues and how to correct them:

- 1 Cartridge not detected or not inserted correctly**

Check if the hooks on the bottom of the cartridge are inserted correctly into the slots and if the cartridge is completely flat and forward before pulling the black lever. All pins on the pogo-pin assembly must make full contact with the connectors on the bottom of the cartridge.
- 2 Cartridge did not cap correctly during production stops**

Check if the blue plastic module on the cartridge is intact and all four notches of the shutter are clicked on correctly. Also check if the shutter can move freely. Secondly always put the printer on pause or stop before unplugging it or shutting it off. This will make the printer cap the nozzles. If the power is cut before the shutter time has expired the shutter will have stayed open.
- 3 Issues with the first print's quality after startup**

Check if the shutter-time is not set too long. This must always be shorter than the used ink's decap time. Secondly also check if the reprime time is not set too short. When in doubt set the reprime time to the maximum 5 minutes. If the print quality issues after startup then still remain most probably the shutter-time is set too long.
- 4 Issues with print quality in between**

When printing on plastic: place anti-static brushes on the substrate or use an ionizer.
- 5 Print missed notifications at startup**

Check if the uncap signal is timed correctly. It must be given early enough to give the shutter time to fully open before the first product after a restart arrives at the print position. But on the other hand also not too early otherwise the shutter might be closed again before the product has arrived. Something that will especially happen if the shutter-time is set very short.
- 6 Print missed notifications in between**

Check if the print signals have been generated close to the selected shutter time. If this is the case the printer might have been (un)capping or repriming at that moment. The interval between each print is then too close to the set shutter-time. Make sure products follow up after each other sooner (within the shutter-time). Or use an ink with a longer decap time so that the shutter-time can be set longer. Secondly make sure the photocell for the printsignal is as close as possible to the nozzles.

