

Chapter Three M A I N T E N A N C E / A D J U S T M E N T S

Chapter Three C O N T E N T S

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Life expectancy of modules

The table below shows the nominal life expectancy for modules. Detailed part information for each module (except toner containers) can be found in chapter 7, *Parts Catalog*.

Kit	Module	Nominal life (pages)	Remarks
Toner kit*			
TK-20	Toner container	10,000	User-replaceable
TK-20G	Toner container	15,000	User-replaceable
FS-1700			
DK-20	Drum unit	300,000	Common use with FS-3700
DV-20	Developer unit	300,000	
FK-20	Fuser unit	300,000	
LK-20	Laser scanner	300,000	
-	Transfer roller	300,000	
-	Drive gear assembly	300,000	
MK-20	Refurbishment kit	300,000	Includes DK-20, DV-20, FK-20, and a feed-transfer unit.
FS-3700			
DK-21	Drum unit	300,000	Common use with FS-1700
DV-20	Developer unit	300,000	
FK-21	Fuser unit	300,000	
LK-21	Laser scanner	300,000	
-	Drive gear assembly	300,000	
-	Transfer roller	300,000	
MK-21	Refurbishment kit	300,000	Includes DK-20, DV-20, FK-20, and a feed-transfer unit.
* The toner kit is commonly available for both models.			

Toner containers

The toner container is the only consumable that the printer requests replacement during normal operation (user-replaceable). The following toner containers are available for use with models FS-1700 and FS-3700.

Model	Life in pages*	Remarks
TK-20	10,000 (530g)	One waste toner bottle included
TK-20G	15,000 (780g)	Two waste toner bottles included

* Based on letter or A4 size paper; average print density of 5%.

Toner container replacement

The printer gives two steps of user attention as explained below. The first one is the warning that the toner is almost run out. This is the earliest chance for the user to replace the toner container and clean various parts inside the printer (See section **Cleaning the printer** on page 3-7):

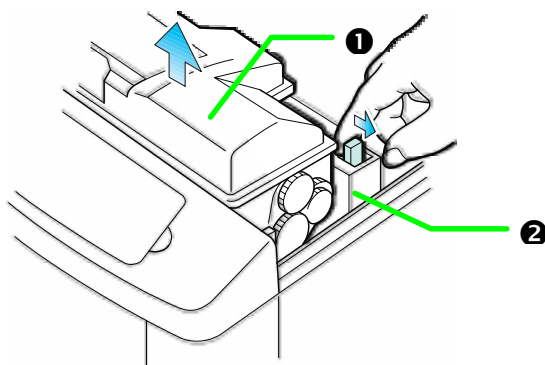
Toner low TK-20 Clean printer

If the user continues to use the printer, the printer will print approximately 50 pages (A4 or Letter size paper, 5% average toner density), eventually the toner supply being exhausted at which point the printer will stop printing and the following message will be displayed:

Replace Toner Clean printer

This instructs to install a new toner kit to bring the printer back in normal operation. Cleaning various parts inside must be also done in this occasion (See section **Cleaning the printer** on page 3-7).

To replace the toner container ❶, pull the toner container release lever ❷ to right as shown.



Then, refer to section **Installing toner** on page 2-4 to install the new toner container. After installing the new toner container, several parts in the printer must be cleaned as instructed in section **Cleaning the printer** on page 3-7.

If the toner container has been replaced when the message

Replace Toner Clean printer

was displayed, the message

Clean printer.. press CONT

will be displayed after replacement. After cleaning the inside of the printer following the procedure shown below, press the **CONT** key; the message will disappear and the printer will be ready for printing.

The printer can get ready for printing approximately 15 seconds after replacing the toner container.

Waste toner bottle

Locate the new waste toner bottle in the toner kit, and install in the printer according to section **Installing the new waste toner bottle** on page 2-6.

Note that the printer has a sensor to monitor the presence of the waste toner bottle. The printer does not operate without a bottle installed.

For the reference, the waste toner bottle can hold up to 100g of waste toner. The nominal amount of waste toner derived after 10,000 pages have been printed is 20 to 30g (Letter or A4 size paper; average toner density of 5%).

Toner saver mode (*EcoPrint*)

The *EcoPrint* enables to reduce the amount of toner consumed on the page so as to save printing costs by drastically extending the toner container life. EcoPrint mode is factory-set to off and turned on by the printer's front control panel (also accessible through the application software with the assistance of the printer driver). See details in the **Mode Select Menu** roadmap on page 2-17.

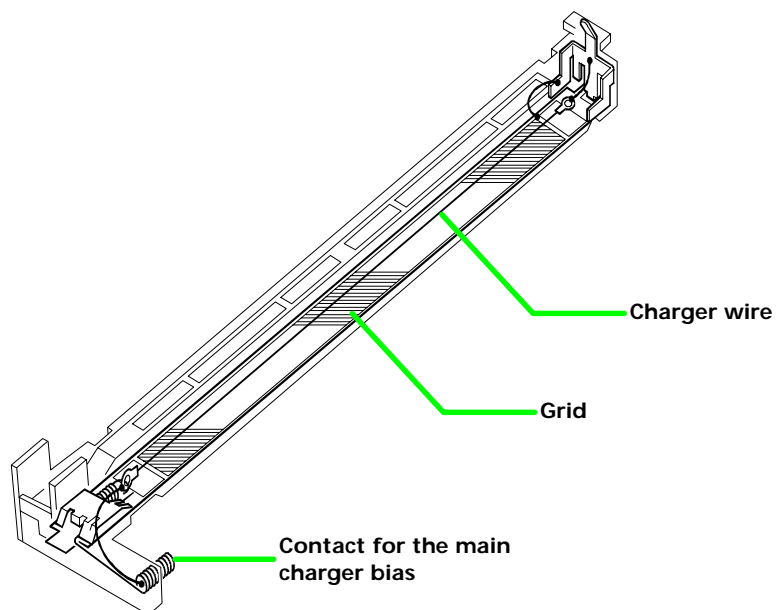
The *EcoPrint* setting has no effect on the print speed.

Cleaning the printer

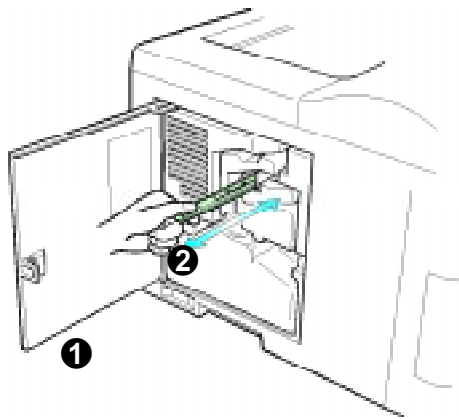
To avoid print quality problems, the following printer parts must be cleaned with every toner container replacement.

Main charger unit

The main charger unit should be cleaned in its two parts - the wire and grid (See the picture below.) - whenever the toner container is changed. Cleaning of the main charger can be done without needing any tools thanks to its self-cleaning system.

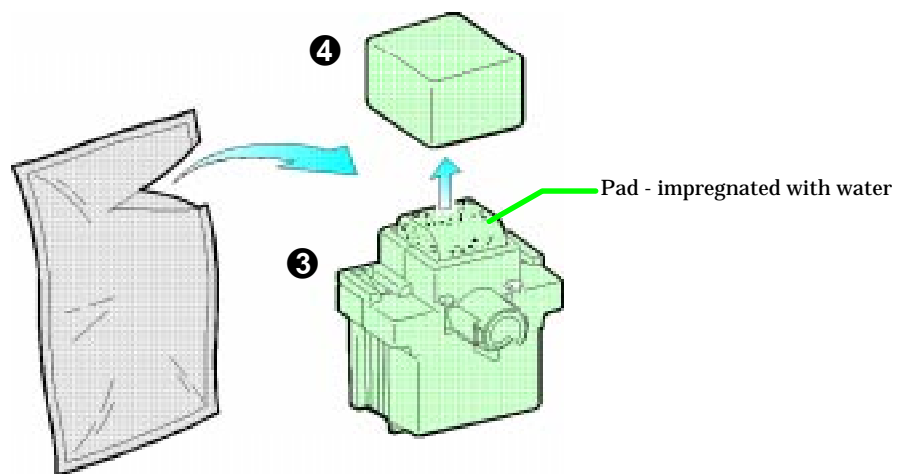


To clean the main charger, first open the drum access door ❶. Pull the cleaning knob (green) ❷ slowly in and out a few times. This pulls a cleaning pad inside the drum unit along the wire.



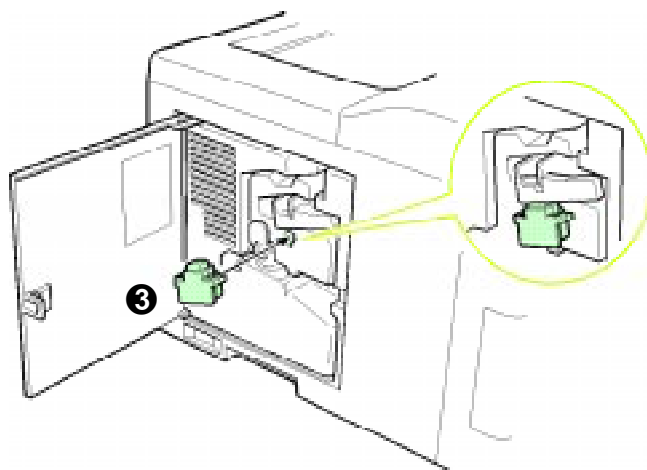
Then, clean the grid using the grid cleaner supplied with the toner kit.

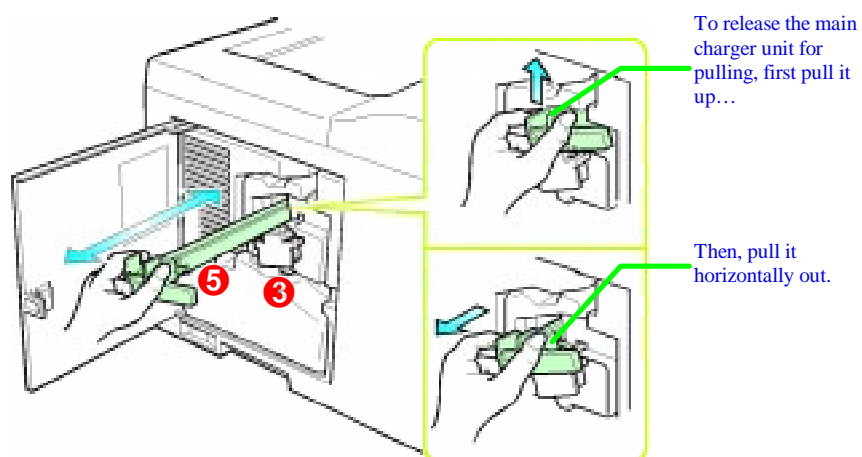
Take the grid cleaner ❸ from protective bag in the new toner kit, and remove the cap ❹.



The grid cleaner pad is impregnated with water. Perform the following cleaning procedure before the pad dries.

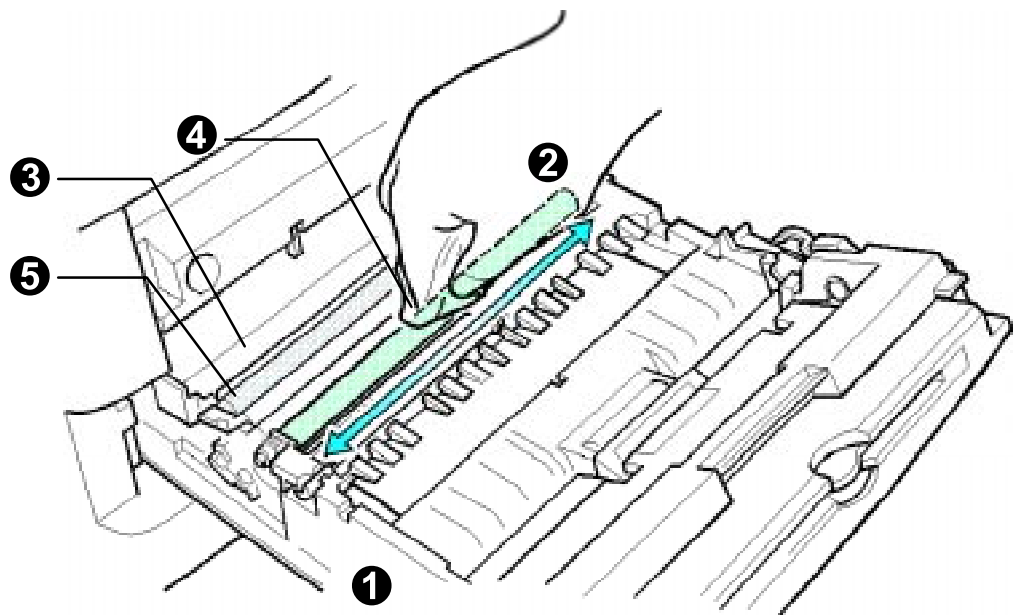
Attach the grid cleaner ③ to the printer with the pad uppermost, as shown in the diagram below.





Paper Feed Unit

Do not touch the transfer roller ⑤ (black sponge roller) when wiping the paper ramp.



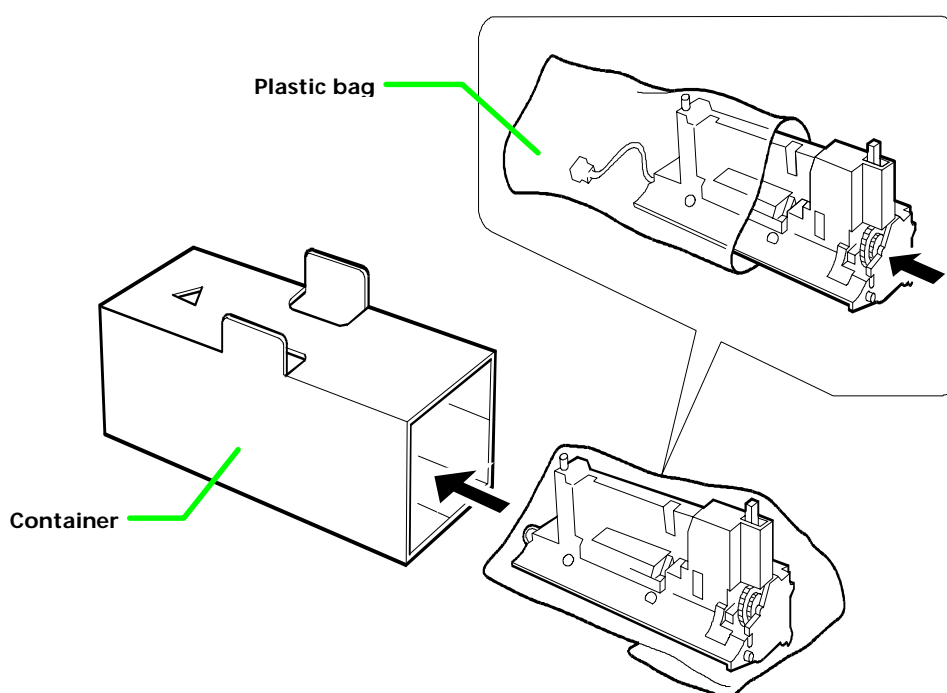
Replacing the developer

In case that the developer unit is to be removed from the printer for shipment or replacing to a new one, it should be handled following the instructions below.

Also, a new developer unit, after installing, needs a special treatment that repletes the developer with toner for printing. This can be done by using the front control panel (See section **Feeding toner into the new developer** on page 3-13).

Shipping the developer unit

The printer is supplied with a developer container package that should be retained for future shipment of the developer. To pack the developer in the container package, refer to the below:



Feeding toner into the new developer

The new developer unit is shipped from the factory with no toner contained. The developer can be automatically replenished with toner when a toner container is installed onto it and the printer is turned on. However, because the toner reservoir in the developer has a large capacity, it requires a lengthy period of time until a substantial amount of toner has been fed to get the printer ready. (A new developer needs approximately 200g for triggering the sensor inside.)

A great many seconds of time for this is greatly deducted by using the service menu in the printer’s mode select routine as accessed by its front control panel. Follow these steps to use this feature, top to bottom (For details on using the front control panel keys, refer to section *Mode Select Menu* diagram on page 2-17.

Key to press:	Display to show:
MODE	
+ (repeatedly)	Others>
▸	
+ (repeatedly)	>Service>
▸	>>Developer
ENTER	>>Developer?
ENTER	The printer enters the service mode and the developer unit and the toner feeder motor are continually activated.

Turn printer power off, then on.

When printer power is turned on again, the printer continually engages in this mode for a period of approximately 4 minutes for model FS-1700; and approximately 5 minutes for model FS-3700, after which the printer reverts to the ready state.

Updating the engine firmware

The printer accepts update of the engine firmware as well as the localized front panel message data through the parallel interface. Updating using these data is implemented by directly rewriting the flush memory in the printer's engine board. The printer must be in the *supervisor* mode (See page 3-15) to update the engine firmware.

Note. This applies the engine firmware only. The controller firmware is updated by replacing ROMs.

Kyocera supplies three types of data for updating the engine firmware depending on the purpose of update. These are:

- ☐ Engine firmware data
- ☐ Front panel initialization data (required to reprogram the panel message)
- ☐ Front panel message data

These data may be stored in a memory card for field use. To store (write) data in a memory card, and reread them into the printer through the slot, refer to the printer's *User's Manual*.

Note. Each single data must be written on a memory card. Do not write more than one data on a memory card.

Engine/front panel data format

The data is identified using the following naming syntax:

de0230.dat

1

2

3

4

Identifies...

1	de: Engine firmware data dm: Front panel message data
2	01: FS-1700 02: FS-3700
3	Version of data
4	dat: Engine firmware data dan: Panel message data for Danish swe: Panel message data for Swedish ita: Panel message data for Italian spa: Panel message data for Spanish

Downloading data from the parallel interface

To download data from the parallel interface:

Perform, from top to bottom:	Then the display shows:
Turn printer power on. Make sure the printer is <i>Ready</i> .	Ready
At the DOS prompt, execute the following command: !R! BOOT "SPR" ;	
Note —Do not add an EXIT; command in the above.	
The display should indicate Supervisor Mode.	Supervisor mode
DOS COPY the data to download from the host computer.	Downloading
Check the display reverts to <i>Ready</i> .	Ready
Turn power off, then on again. Check the display shows Ready. If not, refer to <i>Downloading errors</i> section that follows.	

Confirm the status page shows the new engine version (See *Appendix B*, page B-4). If the message display indicates *Call service person Dn* ($n=0, 1, \dots$), refer to section on Downloading data from a memory card page 3-16.

Downloading data from a memory card

To download data written in a memory card to the printer:

Perform, from top to bottom:	Then the display to show:
Insert the memory card in the printer's memory card slot (at the right side).	
Turn printer power on. The printer automatically reads data in the memory card, indicating <i>Downloading</i> on the message panel.	Downloading
When the data is successfully read, the message display indicates <i>Supervisor mode</i> .	Supervisor mode
Turn printer power off.	
Remove the memory card from the printer.	
Turn printer power on again. Check the display shows Ready. If not, refer to Downloading errors section that follows.	Ready

Confirm the status page shows the new engine version (See *Appendix B*, page B-4). If the message display indicates *Call service person Dn* ($n=0, 1, \dots$), refer to section Downloading errors below.

Downloading errors

The following messages are indicated on the message display when an error occurred during downloading data.

Error message	Meaning	Corrective action
Call service person D0 - Checksum error	Checksum error occurred during downloading. The engine ROM is empty.	Turn printer power off once, then on again. Try downloading again.
Call service person D1 - Machine compatibility error	The data to be downloaded is not compatible with the printer.	Obtain correct data for the printer model.
Call service person D2 - Version compatibility error	The version of the data does not match the current engine version.	Obtain the correct version of data.
Call service person D3 - Data error	The data to be downloaded is corrupted.	Obtain the correct data.

Adjusting the transfer bias for thick paper

Printing on paper with extra thickness of 91 to 200 g/m², such as postcards, OHP, envelopes, etc., tend to result in faint printing because of insufficient penetration of transfer bias developer at the transfer roller. For the satisfactory transferring process on different paper thickness, the transfer bias is user-switchable from -1.8 kV to -2.45 kV (limit), or vice versa, by using the printer's operator panel.

To increase the transfer bias for a type of thick paper, perform the following steps, top to bottom:

Key to press:	Display to show:
MODE	
+ (repeatedly)	Paper type Normal
ENTER	Paper type Normal ?
+	Paper type Thick ?
ENTER	The transfer bias is raised for thick paper.

Double-sided printing using a DU-20 duplexer automatically introduces the higher setting of the transfer bias.