brother®

FACSIMILE EQUIPMENT
SERVICE MANUAL

MODEL: MFC8500/FAX4100/FAX4750e/FAX5750e
MFC9660/FAX8360P

PREFACE

This publication is a Service Manual covering the specifications, construction, theory of operation, and maintenance of the Brother facsimile equipment. It includes information required for field troubleshooting and repair--disassembly, reassembly, and lubrication--so that service personnel will be able to understand equipment function, to rapidly repair the equipment and order any necessary spare parts.

To perform appropriate maintenance so that the facsimile equipment is always in best condition for the customer, the service personnel must adequately understand and apply this manual.

This manual is made up of six chapters and appendices.

This manual describes the models and their versions to be destined for major countries. The specifications and functions are subject to change depending upon each destination.

SAFETY INFORMATION

Laser Safety (110-120V Model only)

This printer is certified as a Class 1 laser product under the US Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within the protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

CDRH Regulations (110-120V Model only)

The Center for Device and Radiological Health (CDRH) of the US Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

The label for Chinese products

MANUFACTURED: JULY   1999   C
BROTHER CORP. (ASIA) LTD.
BROTHER BUJI NAN LING FACTORY
Gold Garden Industry, Nan Ling Village, Buji,
Rong Gang, Shenzhen, China.
This product complies with FDA radiation
performance standards, 21 CFR Subchapter J.

CHAPTER I.

GENERAL DESCRIPTION

CHAPTER I. GENERAL DESCRIPTION

CONTENTS

1. EQUIPMENT OUTLINE

1.1 External Appearance and Weight

The figure below shows the equipment appearance and approximate dimensions.

(H)
323 mm, 12.7"
432 mm, 17.0" incl. 2nd cassette

(W)
377 mm, 14.8"
435 mm, 17.1" incl. handset

(D)
442 mm
17.4"
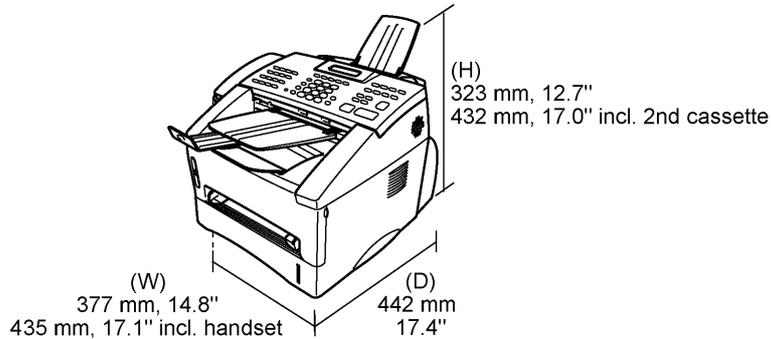
Weight:		w/o 2nd cassette	w/ 2nd cassette
	Machine proper	10.5 kg	14.0 kg
	Machine (incl. drum unit & toner cartridge)	12.0 kg	15.5 kg
	In package	16.5 kg	22.0 kg

1.2 Components

The equipment consists of the following major components:

Rear cover

Control panel ASSY

Outer chute

Scanner frame ASSY

Handset *1

Top cover

Laser unit

Handset mount *1

Heat-fixing unit

Side cover *2

Main chassis

Fan

Main cover

Drive gear ASSY

Low-voltage power supply PCB

Front cover

NCU PCB

Paper ejection sensor PCB

Engine PCB

Main PCB

High-voltage power supply PCB

Bottom plate
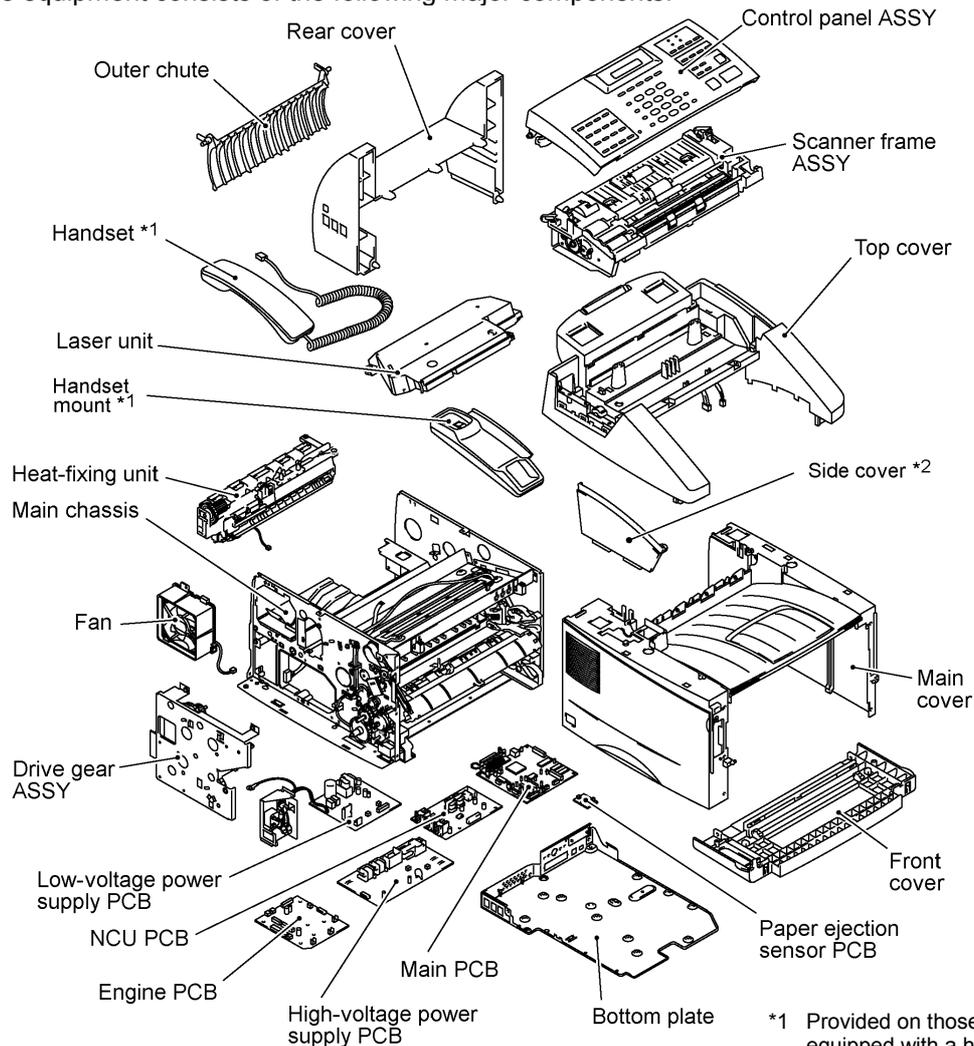
*1 Provided on those models equipped with a handset.

*2 Provided on those models without handset.

2. SPECIFICATIONS

Model Name	MFC8500	F AX4100
GENERAL		
Print Engine	Laser (ZLe)	Laser (ZLe)
Modem Speed(bps)	14,400(Fax)	**14,400(Fax)**
Transmission Speed(sec.)	Approx. 6	**Approx. 6**
ITU-T Group	G3	G3
Coding Method	MH/MR/MMR	**MH/MR/MMR**
Input/Output Width	5.8"-8.5"/2.75"-8.5"	5.8"-8.5"/2.75"-8.5"
ADF(pages)	30	30 (50:Conditional *1)
LCD Size	16 Characters x 2 Lines	16 Characters x 2 Lines
On-Screen Programming	Yes	Yes
Backup Clock	Yes (9 hours)	Yes (9 hours)
Memory Capacity(MB)	8 MB	8 MB
Backup Memory	N / A	N / A
Memory Security	N / A	N / A
Optional Memory	N / A	N / A
Paper Capacity(sheets)	250	250
Additional Paper Capacity(sheets)	250 (User Option)	250 (User Option)
Dimensions (WxDxH)	17.1x17.4x12.7 inches 435x442x323 mm	17.1x17.4x12.7 inches 435x442x323 mm
Weight	26.4 lbs/(12 kg)	26.4 lbs/(12 kg)
Color	Gray 1495	Gray 1495
Standby Mode	Yes	Yes
PC-Fax Protocol Compliance	Class 2	N / A
Simultaneous Operation	Yes	Yes
Data Modem	N / A	N / A
Energy Star Compliance (for U.S.A.)	Yes	Yes
LCD Back Light	N / A	N / A
Operating Environment Temperature Humidity	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)
Power Source	120VAC 50/60Hz	120VAC 50/60Hz
Power Consumption (Sleep/Standby/Peak)	Less than 10W / 70W / 940W	Less than 10W / 70W / 940W
Toner Life (Standard Yield : TN-430) (High Yield : TN-460)	3,000 A4 pages@5% 6,000 A4 pages@5%	3,000 A4 pages@5% 6,000 A4 pages@5%
Drum Life (DR-400)	up to 20,000 pages	up to 20,000 pages
Bundled Cable	N / A	N / A
TELEPHONE		
Automatic Redial	Yes	Yes
Handset	Yes	Yes
One-Touch Dial	16 (8x2)	32 (16x2)
Speed Dial	100	**100**
Telephone Index	Yes	Yes
Speaker Phone	N / A	N / A
Chain Dialing	Yes	Yes
Caller ID	Yes	Yes
Call Waiting Caller ID	Yes by Search/Speed Dial key	N / A
Call Waiting Ready	**Yes by Search/Speed Dial key**	**Yes by Search/Speed Dial key**
Transfer Method	Flash	Flash
PBX Feature	N / A	N / A
Distinctive Ringing	Yes	Yes
Hold/Mute Key	Yes	Yes
Power Failure Dialing	N / A	N / A
Speaker Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Ring Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Handset Volume	Yes (2 steps + 1(Hearing Amplify) step)	Yes (2 steps + 1(Hearing Amplify) step)
Figures of One-Touch & Speed Dial	20 digits	20 digits
Resisterable Number Of Characters	15 chars	15 chars

Model Name	FAX4750e	FAX5750e
GENERAL		
Print Engine	Laser (ZLe)	Laser (ZLe)
Modem Speed(bps)	**33,600(Fax)**	**33,600(Fax)**
Transmission Speed(sec.)	**Approx. 2**	**Approx. 2**
ITU-T Group	**Super G3**	**Super G3**
Coding Method	**MH/MR/MMR/JBIG**	**MH/MR/MMR/JBIG**
Input/Output Width	5.8"-8.5"/2.75"-8.5"	5.8"-8.5"/2.75"-8.5"
ADF(pages)	30 (50:Conditional *1)	30 (50:Conditional *1)
LCD Size	16 Characters x 2 Lines	16 Characters x 2 Lines
On-Screen Programming	Yes	Yes
Back up Clock	Yes (9 hours)	Yes (9 hours)
Memory Capacity(MB)	8 MB	8 MB
Back up Memory	**Yes (for 4 days)**	**Yes (for 4 days)**
Memory Security	**Yes**	**Yes**
Optional Memory	**Yes(16/32 Mbyte:DIMM)**	**Yes(16/32 Mbyte:DIMM)**
Paper Capacity(sheets)	250	**500(250+250)**
Additional Paper Capacity(sheets)	250 (User Option)	N/A
Dimensions (WxDxH)	17.1x17.4x12.7 inches 435x442x323 mm	17.1x17.4x17.0 inches 435x442x432 mm
Weight	26.4 lbs/(12 kg)	34.3 lbs/(15.5kg)
Color	Gray 1495	Gray 1495
Standby Mode	Yes	Yes
PC-Fax Protocol Compliance	**Class 2**	**Class 2**
Simultaneous Operation	Yes	Yes
Data Modem	N / A	N / A
Energy Star Compliance (for U.S.A.)	Yes	Yes
LCD Back Light	N / A	N / A
Operating Environment Temperature Humidity	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)
Power Source	120VAC 50/60Hz	120VAC 50/60Hz
Power Consumption (Sleep/Standby/Peak)	Less than 10W / 70W / 940W	Less than 10W / 70W / 940W
Toner Life (Standard Yield : TN-430) (High Yield : TN-460)	3,000 A4 pages@5% 6,000 A4 pages@5%	3,000 A4 pages@5% 6,000 A4 pages@5%
Drum Life (DR-400)	up to 20,000 pages	up to 20,000 pages
Bundled Cable	N / A	N / A
TELEPHONE		
Automatic Redial	Yes	Yes
Handset	Yes	Yes
One-Touch Dial	32 (16x2)	32 (16x2)
Speed Dial	**200 *5**	**200 *5**
Telephone Index	Yes	Yes
Speaker Phone	N / A	N / A
Chain Dialing	Yes	Yes
Caller ID	Yes	Yes
Call Waiting Caller ID	N / A	N / A
Call Waiting Ready	**Yes by Search/Speed Dial key**	**Yes by Search/Speed Dial key**
Transfer Method	Flash	Flash
PBX Feature	N / A	N / A
Distinctive Ringing	Yes	Yes
Hold/Mute Key	Yes	Yes
Power Failure Dialing	N / A	N / A
Speaker Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Ring Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Handset Volume	Yes (2 steps + 1(Hearing Amplify) step)	Yes (2 steps + 1(Hearing Amplify) step))
Figures of One-Touch & Speed Dial	20 digits	20 digits
Resisterable Number Of Characters	15 chars	15 chars

Model Name	MFC8500	F AX4100
FAX		
Internet FAX	N / A	N / A
Easy Receive/Fax Detect	Yes	Yes
Fax/Tel Switch	Yes	Yes
Super Fine	Yes (TX & RX)	Yes (TX & RX)
300dpi Transmission	N / A	N / A
Gray Scale	64	64
Contrast	Yes (Auto/S.Light/S.Dark)	Yes (Auto/S.Light/S.Dark)
Smoothing	Yes	Yes
Call Reservation Over Auto TX	N / A	N / A
Password Check	N / A	N / A
Enhanced Remote Activate	Yes	Yes
Multi Resolution Transmission	N / A	N / A
Multi Transmission	N / A	N / A
Next-Fax Reservation	Yes (Dual Access)	Yes (Dual Access)
Delayed Timer	Yes (up to 50)	Yes (up to 50)
Polling	Yes (Std/Seq)	Yes (Std/Seq)
Quick Scan (Memory Transmission)	Approx. 2 sec./page (A4:standard)	Approx. 2 sec./page (A4:standard)
Broadcasting	Yes (166 locations)	**Yes (182 locations)**
Batch Transmission	Yes	Yes
Auto Reduction	Yes	Yes
Out-of-Paper Reception *2	up to 500 pages(MMR)	**up to 500 pages(MMR)**
Dual Access	Yes	Yes
ECM(Error Correction Mode)	Yes	Yes
ITU SUB Addressing	N / A	N / A
Group Dial	Yes (6)	Yes (6)
Resend After Receive Error Signal	N / A	N / A
Confidential	N / A	N / A
Station ID	1 (20 digits/20 chars)	1 (20 digits/20 chars)
Off Hook Alarm	N / A	N / A
Remote Maintenance	Yes	Yes
Call Reservation Over Manual TX	N / A	N / A
RX Mode Indication	LED	LED
Resolution Indication	LED	LED
LIST REPORT		
Activity Report/Journal Report	Yes (up to 200)	Yes (up to 200)
Transmission Verification Report	Yes	Yes
Coverpage	Yes (Super)	Yes (Super)
Help List	Yes	Yes
Call Back Message	N / A	N / A
Caller ID List	Yes	Yes
Demo Sheet	**Yes by Stop/Exit & Fax Start keys**	**Yes by Stop/Exit & Fax Start keys**
INTERFACE		*Interface backside to be covered with plastic cover.*
External TAD Interface	Yes	Yes
Missing Link/PC Interface	N / A	N / A
Host Interface	**Yes (Auto switching : Parallel/USB *3)**	**Yes (Auto switching : Parallel/USB *3) *4**
LAN Interface	N / A	N / A

Model Name	FAX4750e	FAX5750e
FAX		
Internet FAX	**Available with Option[NC-8100h]**	**Yes**
Easy Receive/Fax Detect	Yes	Yes
Fax/Tel Switch	Yes	Yes
Super Fine	Yes (TX & RX)	Yes (TX & RX)
300dpi Transmission	N / A	N / A
Gray Scale	64	64
Contrast	Yes (Auto/S.Light/S.Dark)	Yes (Auto/S.Light/S.Dark)
Smoothing	Yes	Yes
Call Reservation Over Auto TX	N / A	N / A
Password Check	N / A	N / A
Enhanced Remote Activate	Yes	Yes
Multi Resolution Transmission	N / A	N / A
Multi Transmission	N / A	N / A
Next-Fax Reservation	Yes (Dual Access)	Yes (Dual Access)
Delayed Timer	Yes (up to 50)	Yes (up to 50)
Polling	Yes (Std/Seq)	Yes (Std/Seq)
Quick Scan (Memory Transmission)	Approx. 2 sec./page (A4:standard)	Approx. 2 sec./page (A4:standard)
Broadcasting	**Yes (282 locations)**	**Yes (282 locations)**
Batch Transmission	Yes	Yes
Auto Reduction	Yes	Yes
Out-of-Paper Reception *2	**up to 600 pages(JBIG)**	**up to 600 pages(JBIG)**
Dual Access	Yes	Yes
ECM(Error Correction Mode)	Yes	Yes
ITU SUB Addressing	N / A	N / A
Group Dial	Yes (6)	Yes (6)
Resend After Receive Error Signal	Yes	Yes
Confidential	N / A	N / A
Station ID	1 (20 digits/20 chars)	1 (20 digits/20 chars)
Off Hook Alarm	N / A	N / A
Remote Maintenance	Yes	Yes
Call Reservation Over Manual TX	N / A	N / A
RX Mode Indication	LED	LED
Resolution Indication	LED	LED
LIST REPORT		
Activity Report/Journal Report	Yes (up to 200)	Yes (up to 200)
Transmission Verification Report	Yes	Yes
Coverpage	Yes (Super)	Yes (Super)
Help List	Yes	Yes
Call Back Message	N / A	N / A
Caller ID List	Yes	Yes
Demo Sheet	N / A	N / A
INTERFACE	*Interface backside to be covered with plastic cover.*	*No cover*
External TAD Interface	Yes	Yes
Missing Link/PC Interface	N / A	N / A
Host Interface	**Yes (Auto switching : Parallel/USB *3) *4**	**Yes (Auto switching : Parallel/USB *3)**
LAN Interface	**Available with Option[NC-8100h]**	**Yes**

Model Name	MFC8500	FAX4100
PRINTER	**Yes**	**Available with Web download**
Color/Mono	Mono	Mono
Engine Type	Laser(ZL)	Laser(ZLe)
Resolution(dpi)	600x600	600x600
Speed(ppm)	up to 15 (Letter size)	up to 15 (Letter size)
Output Paper Capacity(sheets)	150	150
Standard Print Language	Windows GDI(600x600)	Windows GDI(600x600)
Emulation	PCL4	N / A
Resident Fonts	24 Bitmap (PCL4 Comp.)	N / A
Fonts Disk Based	Yes (35 TrueType)	N / A
Paper Handling Size	LTR, LGL, A4, B5, A5, EXE	LTR, LGL, A4, B5, A5, EXE
Manual Feed Slot	Custom Size (2.75x5 - 8.5x14) Envelop(DL/C5/CM10/Mona)	Custom Size (2.75x5 - 8.5x14) Envelop(DL/C5/CM10/Mona)
Other Paper Type	OHP, Envelopes, Labels, Organizer	OHP, Envelopes, Labels, Organizer
Sheet Weight (Paper Cassette) (Manual Slot)	64-105 g/m2 (17 - 28 lb) 64-157 g/m2 (17 - 43 lb)	64-105 g/m2 (17 - 28 lb) 64-157 g/m2 (17 - 43 lb)
Printer Driver	Win95/98(SE)/Me and NT4.0/2000 Driver with Auto Installer Program	Win95/98/Me//NT4.0/2000/XP Driver with Auto Installer Program
Utility Software	Yes (Remote Printer Console for PCL4)	N / A
COPY		
Color	N / A	N / A
Speed(cpm)	up to 15 (Letter size)	up to 15 (Letter size)
Multi Copy(Stack)	up to 99	up to 99
Multi Copy(Sort)	Yes	Yes
Reduction/Enlargement(%)	50 -- 200 in 1% increments	50 -- 200 in 1% increments
Resolution(dpi)	600 dpi class	600 dpi class
SCANNER	**Yes**	**N / A**
Color/Mono	Mono	N / A
Resolution(dpi)	9,600x9,600(Int.)/300x600(Opt.)	N / A
Gray Scale	256	N / A
TWAIN Compliant	Yes	N / A
OCR	Yes(ScanSoft TextBridge)	N / A
MESSAGE CENTER/MESSAGE MANAGE	**N / A**	**N / A**
ICM Recording Time	N / A	N / A
Page Memory	N / A	N / A
OGM (MC/MC Pro/Paging)	N / A	N / A
TAD Type	N / A	N / A
Memo/Recording Conversation	N / A	N / A
Toll Saver	N / A	N / A
Fax Forwarding	Yes	Yes
Fax Retrieval	Yes	Yes
Paging	Yes	Yes
Remote Access	Yes	Yes

Model Name	FAX4750e	FAX5750e
PRINTER	**Available with Web download**	**Yes - standard**
Color/Mono	Mono	Mono
Engine Type	Laser(ZLe)	Laser(ZLe)
Resolution(dpi)	600x600	600x600
Speed(ppm)	up to 15(Letter size)	up to 15(Letter size)
Output Paper Capacity(sheets)	150	150
Standard Print Language	Windows GDI(600x600)	Windows GDI(600x600)
Emulation	N / A	**PCL5e**
Resident Fonts	N / A	N / A
Fonts Disk Based	N / A	N / A
Paper Handling Size	LTR, LGL, A4, B5, A5, EXE	LTR, LGL, A4, B5, A5, EXE
Manual Feed Slot	Custom Size (2.75x5 - 8.5x14) Envelop(DL/C5/CM10/Mona)	Custom Size (2.75x5 - 8.5x14) Envelop(DL/C5/CM10/Mona)
Other Paper Type	OHP, Envelopes, Labels, Organizer	OHP, Envelopes, Labels, Organizer
Sheet Weight (Paper Cassette) (Manual Slot)	64-105 g/m2 (17 - 28 lb) 64-157 g/m2 (17 - 43 lb)	64-105 g/m2 (17 - 28 lb) 64-157 g/m2 (17 - 43 lb)
Printer Driver	Win95/98/Me//NT4.0/2000/XP Driver with Auto Installer Program	Win95/98/Me//NT4.0/2000/XP Driver with Auto Installer Program
Utility Software	N / A	**Yes (Remote Printer Console for PCL5e)**
COPY		
Color	N / A	N / A
Speed(cpm)	up to 15 (Letter size)	up to 15 (Letter size)
Multi Copy(Stack)	up to 99	up to 99
Multi Copy(Sort)	Yes	Yes
Reduction/Enlargement(%)	50 -- 200 in 1% increments	50 -- 200 in 1% increments
Resolution(dpi)	600 dpi class	600 dpi class
SCANNER	**Available with web download**	**Yes - standard**
Color/Mono	Mono	Mono
Resolution(dpi)	9,600x9,600(Int.)/300x600(Opt.)	9,600x9,600(Int.)/300x600(Opt.)
Gray Scale	256	256
TWAIN Compliant	Yes	Yes
OCR	Yes (ScanSoft TextBridge)	Yes (ScanSoft TextBridge)
MESSAGE CENTER/MESSAGE MANAGE	**N / A**	**N / A**
ICM Recording Time	N / A	N / A
Page Memory	N / A	N / A
OGM (MC/MC Pro/Paging)	N / A	N / A
TAD Type	N / A	N / A
Memo/Recording Conversation	N / A	N / A
Toll Saver	N / A	N / A
Fax Forwarding	Yes	Yes
Fax Retrieval	Yes	Yes
Paging	Yes	Yes
Remote Access	Yes	Yes

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Model Name	MFC8500	F AX4100
APPLICATION SOFTWARE		
For Windows		
Printer Driver (Brother)	Yes	**Downloadable from the web site**
TWAIN (Brother)	Yes	N / A
POP UP menu	Yes	N / A
PC Fax (Brother; both TX & RX)	Yes	N / A
Remote Setup	Yes	N / A
Auto Email Printing	Yes	N / A
Support OS version (Win95/98(SE)/Me, WinNT4.0/2K/XP)	Yes	N / A
BRAdmin Professional	Yes	N / A
Network Print Software (LRP) for Win95/98(SE)/Me/XP)	Yes	N / A
Network Print Software (NetBIOS/SMTP)	Yes	N / A
For iMAC		
Printer Driver (Brother)	Yes	**Downloadable from the web site**
TWAIN (TII/Brother)	Yes	N / A
Viewer (ScanSoft PaperPort)	Yes	N / A
POP UP menu	Yes	N / A
PC Fax (Brother)	Yes	N / A
Remote Setup	Yes	N / A
Auto Email Printing	Yes	N / A
Support OS version Printer 8.5 - 9.1	Yes	N / A
Others 8.6 - 9.2	Yes	N / A

*1: Xerox 4200 20lb paper under Office Condition (Temperature/Humidity)

*2: Brother Chart #1 with JBIG Coding System and Standard Resolution

*3: USB - Windows98/Me/2000/XP and iBook/iMAC/G3/G4 only.

*4: The interface connector is covered with a plastic plate.

*5: Email address can be stored up to 100 locations; from 01 -100.

Model Name	FAX4750e	FAX5750e
APPLICATION SOFTWARE		
For Windows		
Printer Driver (Brother)	Downloadable from the web site	Yes - standard
TWAIN (Brother)	Downloadable from the web site	Yes - standard
POP UP menu	Downloadable from the web site	Yes - standard
PC Fax (Brother; both TX & RX)	Downloadable from the web site	Yes - standard
Remote Setup	Downloadable from the web site	Yes - standard
Auto Email Printing	N / A	N / A
Support OS version (Win95/98(SE)/Me, WinNT4.0/2K/XP)	Downloadable from the web site	Yes - standard
BRAdmin Professional	Downloadable from the web site	Yes - standard
Network Print Software (LRP) for Win95/98(SE)/Me/XP)	Downloadable from the web site	Yes - standard
Network Print Software (NetBIOS/SMTP)	Downloadable from the web site	Yes - standard
For iMAC		
Printer Driver (Brother)	Downloadable from the web site	Yes - standard
TWAIN (TII/Brother)	Downloadable from the web site	Yes - standard
Viewer (ScanSoft PaperPort)	Downloadable from the web site	Yes - standard
POP UP menu	Downloadable from the web site	Yes - standard
PC Fax (Brother)	Downloadable from the web site	Yes - standard
Remote Setup	Downloadable from the web site	Yes - standard
Auto Email Printing	N / A	N / A
Support OS version Printer 8.5 - 9.1	Downloadable from the web site	Yes - standard
Others 8.6 - 9.2	Downloadable from the web site	Yes - standard

*1: Xerox 4200 20lb paper under Office Condition (Temperature/Humidity)

*2: Brother Chart #1 with JBIG Coding System and Standard Resolution

*3: USB - Windows98/Me/2000/XP and iBook/iMAC/G3/G4 only.

*4: The interface connector is covered with a plastic plate.

*5: Email address can be stored up to 100 locations; from 01 -100.

Model Name	MFC-9660	FAX8360P
GENERAL		
Print Engine	Laser (ZLe)	Laser (ZLe)
Modem Speed(bps)	33,600(Fax)	33,600(Fax)
Transmission Speed(sec.)	Approx.2 (Brother#1, JBIG)	Approx.2 (Brother#1, JBIG)
ITU-T Group	Super G3	Super G3
Coding Method	MH/MR/MMR/JBIG	MH/MR/MMR/JBIG
Input/Output Width	5.8"-8.5"/2.75"-8.5"	5.8"-8.5"/2.75"-8.5"
ADF(pages)	Up to 30	Up to 30
LCD Size	16 Characters x 2 Lines	16 Characters x 2 Lines
On-Screen Programming	Yes	Yes
Back up Clock	Yes (9 hours)	Yes (9 hours)
Memory Capacity (Physical: MByte)	8 Mbyte(RAM)	8 Mbyte(RAM)
Memory Backup	Yes(Max 4 days)	Yes(Max 4 days)
Optional Memory	Yes(16/32 MByte:DIMM)	Yes(16/32 MByte:DIMM)
Optional Paper Tray	Yes(250pages:LT-400)	Yes(250pages:LT-400)
Dimensions w/carton (WxDxH)	471 x 560 x 460 mm	471 x 560 x 460 mm
Dimensions w/out carton (WxDxH)	377 x 442 x323 mm	377 x 442 x323 mm
Weight w/carton	16.5 Kg	16.5 Kg
Weight w/out carton	12 Kg	12 Kg
Color	Gray 1495	Gray 1495
Standby Mode	Yes	Yes
PC-Fax Protocol Compliance(TX/RX)	Class 2	-
Simultaneous Operation	Yes (Print/Fax, Print/Copy, Print/Scan)	N/A
Data Modem	N/A	N/A
Energy Star Compliance	N/A	N/A
Operating Environment Temperature Humidity	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)	10 - 32.5 degrees Centigrade 20 - 80%(without condensation)
Power Source	220-240VAC 50/60Hz	220-240VAC 50/60Hz
Power Consumption(Sleep/Standby/Peak)	10W / 70W / 940W or less	10W / 70W / 940W or less
Demo Model	No	No
TELEPHONE		
Automatic Redial	Yes	Yes
Handset	No	No
One-Touch Dial	32 (16x2) locations	32 (16x2) locations
Speed Dial	100	200
Telephone Index	Yes (Normal)	Yes (Normal)
Speaker Phone	N/A	N/A
Chain Dialing	Yes	Yes
Caller ID	N/A	N/A
Call Waiting Caller ID	N/A	N/A
Distinctive Ringing	Yes(UK, DEN Only)	Yes(UK, DEN Only)
Hold/Mute Key	N/A	N/A
Power Failure Dialing	N/A	N/A
Speaker Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Ring Volume	Yes (3 steps + OFF)	Yes (3 steps + OFF)
Handset Volume	N/A	N/A
PBX Feature	Yes	Yes
Transfer Method	Flash	Flash
Figures of One-touch & Speed Dial	20 digits	20 digits
Resisterable Number of Characters	15 characters	15 characters

Model Name	MFC-9660	FAX8360P
FAX		
Internet FAX	Available with Option (NC8100h)	-
Easy Receive/Fax Detect	Yes	Yes
Fax/Tel Switch	Yes	Yes
Super Fine	Yes (TX & RX)	Yes (TX & RX)
300dpi Transmission	No	No
Gray Scale	64	64
Contrast	Yes (Auto/Light/Dark)	Yes (Auto/Light/Dark)
Smoothing	Yes	Yes
Call Reservation Over Auto TX	No	No
Password Check	No	No
Enhanced Remote Activate	Yes	Yes
Multi Resolution Transmission	No	No
Multi Transmission (>Dual Access)	No	No
Next-Fax Reservation (>Dual Access)	No	No
Delayed Timer	Yes (up to 50 locations)	Yes (up to 50 locations)
Polling	Yes (Std/Seq/Sec/Del)	Yes (Std/Seq/Sec/Del)
Quick Scan (Memory Transmission)	Yes as default, approx. 2 sec./page (A4 :standard)	Yes as default, approx. 2 sec./page (A4 :standard)
Broadcasting	Yes (182 locations)	Yes (282 locations)
Batch Transmission	Yes	Yes
Auto Reduction	Yes	Yes
Out-of-Paper Reception (ITU-T#1 Chart) *1	Up to 500 pages (JBIG/Standard Resolution)	Up to 500 pages (JBIG/Standard Resolution)
Dual Access	Yes	Yes
ECM(Error Correction Mode)	Yes	Yes
ITU SUB Addressing	No	-
Resend After Receive Error Signal	Yes	Yes
Confidential	No	No
Station ID	1 (20digits/20char)	1 (20digits/20char)
Off Hook Alarm	No	No
Remote Maintenance	Yes	Yes
Call Reservation Over Manual TX	No	No
RX Mode Indication	LED	LED
Resolution Indication	LED	LED
LIST REPORT		
Activity Report/Journal Report	Yes (up to 200)	Yes (up to 200)
Transmission Verification Report	Yes	Yes
Coverpage	Yes (Super)	Yes (Super)
Help List	Yes(Reports key)	Yes(Reports key)
Call Back Message	No	No
Caller ID List	No	No
INTERFACE		
External TAD Interface	Yes	-
Missing Link/PC Interface(=Serial I/F)	No	-
Host Interface(Serial)	No	-
Host Interface(IEEE1284)	Yes	-
Host Interface(USB)	Yes	-
LAN Interface	Ethernet Auto Switching 10/100 Base-TX Available With Optional NC-8100h	-

Model Name	MFC-9660	FAX8360P
PRINTER		
Color/Mono	Mono	-
Engine Type	Laser(ZLe)	-
Resolution(dpi)	600x600	-
Speed(ppm)	up to 14	-
Paper Capacity(sheets)	250	-
Additional Paper Capacity(sheets)	250 (User Option)	-
Output Paper Capacity(sheets)	150	-
Standard Print Language	Windows GDI(600x600)	-
Emulation	PCL5e	-
Resident Fonts	Yes (Bitmap font:Letter Gothic 16.66, OCR-A, OCR-B, Scaleable font; 49 fonts)	-
Fonts Disk Based	Yes (49 TrueType)	-
Paper Handling Size	LTR, EXE, A4, A5, A6, ISO B5, ISO B6	-
Manual Feed Slot	Custom Size (2.75x5 - 8.5x14) Envelop(DL/C5/CM10/Mona)	-
Other Paper Type	OHP, Envelopes, Labels, Organizer	-
Sheet Weight (Paper Cassette) (ADF) (Manual Slot)	60-105 g/m2 64 - 90 g/m2 60-161 g/m2	-
Printer Driver	Win95/98(SE)/Me and NT4.0/2000 MacOS 8.5-9.1	-
Utility Software	Yes (Remote Printer Console for PCL5e)	-
Toner Life (Standard Yield : TN-6300) (High Yield : TN-6600)	Up to 3,000 A4 pages@5% Up to 6,000 A4 pages@5%	-
Drum Life (DR-6000)	Up to 20,000 pages (by Continuous printing)	-
Interface Type	Parallel & USB *2	-
Bundled Cable	No	-
COPY		
Speed(cpm)	Up to 14	Up to 14
Multi Copy(Stack)	Yes (Up to 99)	Yes (Up to 99)
Multi Copy(Sort)	Yes	Yes
Poster	No	No
Reduction/Enlargement(%)	50 -- 200 in 1% increments	50 -- 200 in 1% increments
Resolution(dpi)	600x300	600x300
SCANNER		
Colour/Mono	Mono	-
Resolution(dpi) Optical	300x600	-
Resolution (dpi) Interpolated	9,600x9,600	-
Colour Depth	No	-
Gray Scale	256	-
TWAIN Compliant & Operating System	Win95/98/98SE/Me MacOS 8.6-9.1	-
Scan to Image key	Yes	-
Scan to OCR key	Yes	-
Scan to E-mail key	Yes	-

Model Name	MFC-9660	FAX8360P
MESSAGE CENTER/MESSAGE MANAGER		
ICM Recording Time	N / A	N / A
Page Memory	N / A	N / A
OGM (MC/MC Pro/Paging)	N / A	N / A
TAD Type	N / A	N / A
Memo/Recording Conversation	N / A	N / A
Toll Saver	N / A	N / A
Fax Forwarding	Yes	Yes
Fax Retrieval	Yes	Yes
Paging	No	No
Remote Access	Yes	Yes
MESSAGE CENTER Pro/MESSAGE MANAG	**N/A**	**N/A**
MESSAGE CENTER (PC MC)	**N/A**	**N/A**
VIDEO CAPTURE	**N/A**	**N/A**
PHOTO CAPTURE CENTER	**N/A**	**N/A**
BUNDLED SOFTWARE		
For Windows		
Support OS version	Win95/98/98SE/Me, WinNT4.0/2K	-
Printer Driver	Yes(Brother)	-
Viewer	Yes (PaperPort by ScanSoft including Text Bridge OCR)	-
TWAIN	Yes(Brother)	-
PC Fax	Yes (Brother: both TX & RX)	-
For MAC		
Support OS version Printer	Mac OS 8.5 - 9.1	-
Others	Mac OS 8.6 - 9.1	
Printer Driver	Yes(Brother)	-
Viewer	No	-
TWAIN	Yes(Brother)	-
PC Fax	Yes(Brother; TX only)	-

*1: Brother Chart #1 with JBIG Coding System and Standard Resolution

*2: The interface connector is covered with a plastic plate.

CHAPTER II.

INSTALLATION

CHAPTER 2 INSTALLATION

CONTENTS

1. INSTALLING THE UPDATE DATA TO THE FACSIMILE MACHINE

If you want to update the current program stored in the flash ROM of the main PCB to the newer version or after you replace the main PCB, install the update program onto the flash ROM.

The program installation requires a PC/AT-compatible computer (which is capable of running MS-DOS or its compatible OS).

Connecting the facsimile machine to your computer

(1) Make sure that your computer is turned off.

(2) Make sure that the machine's power cord is unplugged from a wall socket. (If the machine has a power ON/OFF switch, make sure that the switch is turned off.)

(3) Connect the parallel interface cable to the parallel port on the back of the machine and secure it with the lock wires.

(4) Connect the other end of the interface cable to the printer port of your computer and secure it with the two screws.

(5) While pressing the **5** key on the machine's control panel, plug the machine's power cord into a wall socket (or turn on the power ON/OFF switch if the machine has the switch).

(6) Check to see that the following pattern displays on the LCD. If it does not display, go back to step (2) above.

$\leftarrow$ 1st row
$\leftarrow$ 2nd row

(7) Turn on your computer.

Interface cable

Host computer

Lock wires
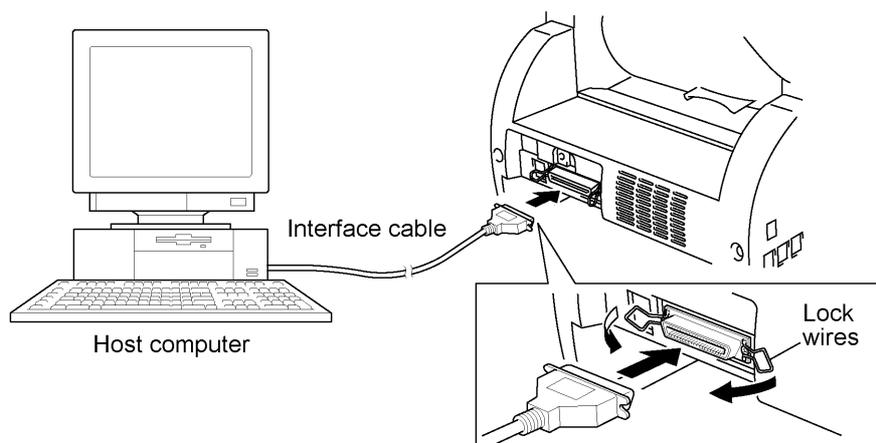
Installing the update data onto the flash ROM of the facsimile machine

NOTE: The following is an installation procedure example on a PC that is running Windows 95/98.

(1) Copy the update data and transfer utility onto the desired directory of the hard disk.
e.g., C:\UPDATE

(2) Click the Start button, point to Programs, and then click MS-DOS Prompt to open an MS-DOS window.

(3) Type the drive letter where the update data and transfer utility are located. In the above example, type C:\ from the command line and press the **ENTER** key.

Then type CD UPDATE and press the **ENTER** key.

(4) Check that your computer is connected with the facsimile machine correctly.

(5) To start the transfer utility transmitting the update data to the flash ROM of the facsimile machine, type the following:

ICEN *filename* /b

Where *filename* is an update data file, e.g., 8500x.upd.

Then press the **ENTER** key.

During downloading, the machine beeps *intermittently*.

Upon completion of the downloading, the machine beeps *continuously*.

NOTE: If the facsimile machine cannot return to the standby state after completion of downloading, turn the power off and on.

2. SETTING ID CODES TO FACSIMILE MACHINES

Brother facsimile machines are assigned unique ID codes (character strings) at the factory. If you replace the main PCB of the machine, the machine will lose its assigned ID code so that it will not be identified by the connected PC*.

You need to assign a unique ID code (character string) to the machine according to the procedure given here. For models covered by this manual, set serial numbers given to individual machines as ID codes.

(*ID codes are essential when more than one machine is connected to a single PC via USB.)

Connecting the facsimile machine to your PC (See the illustration on page II-1.)

(1) Make sure that your PC is turned off.

(2) Make sure that the machine's power cord is unplugged from a wall socket or other power source.

(3) Connect the interface cable to the parallel interface port on the back of the facsimile machine and secure it with the lock wires.

(4) Connect the other end of the interface cable to the printer port of your PC and secure it with the two screws.

(5) Plug the machine's power cord into a wall socket or other power source.

(6) Turn on your PC.

Operating procedure

(1) On your PC, run the ID setting utility. Follow the instructions shown on the PC's screen and enter the 9-digit serial number (e.g., G01012345) printed on the nameplate labeled to the back of the facsimile machine as an ID code. Then press the Enter key.

The ID setting utility will transmit the ID code data from your PC to the facsimile machine and then it will terminate.

The facsimile machine will automatically return to the standby mode.

(2) To check whether the entered character string (ID code) is correct, make the machine enter the maintenance mode (refer to CHAPTER V, Section 1) and then press the **1** key twice (Subsection 3.5).

The facsimile machine will print out a Configuration List. At the right top of the list, "SER.#: BROXXXXXXXXX" is printed.

(3) Check that the character string entered in step (2) is printed in "XXXXXXXXX."

If it is OK, press the **9** key twice to exit from the maintenance mode.

If something other than that is printed in XXXXXXXXX, check the connection between the PC and facsimile machine and go back to step (1).
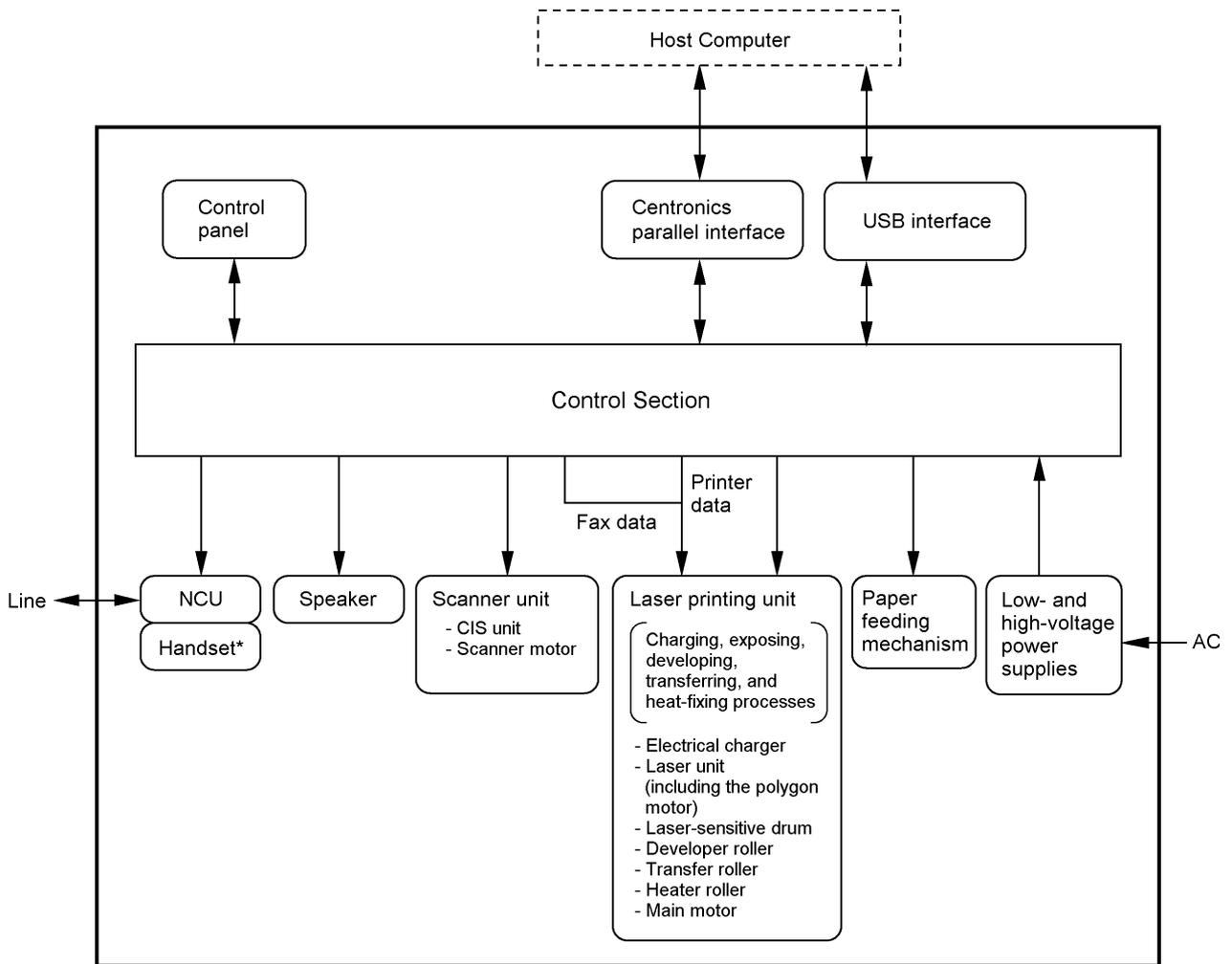
CHAPTER III.

THEORY OF OPERATION

CHAPTER III. THEORY OF OPERATION

CONTENTS

1. OVERVIEW

Host Computer

Control panel

Centronics parallel interface

USB interface

Control Section

Fax data

Printer data

Line

NCU

Handset*

Speaker

Scanner unit
- CIS unit
- Scanner motor

Laser printing unit

Charging, exposing, developing, transferring, and heat-fixing processes

- Electrical charger
- Laser unit (including the polygon motor)
- Laser-sensitive drum
- Developer roller
- Transfer roller
- Heater roller
- Main motor

Paper feeding mechanism
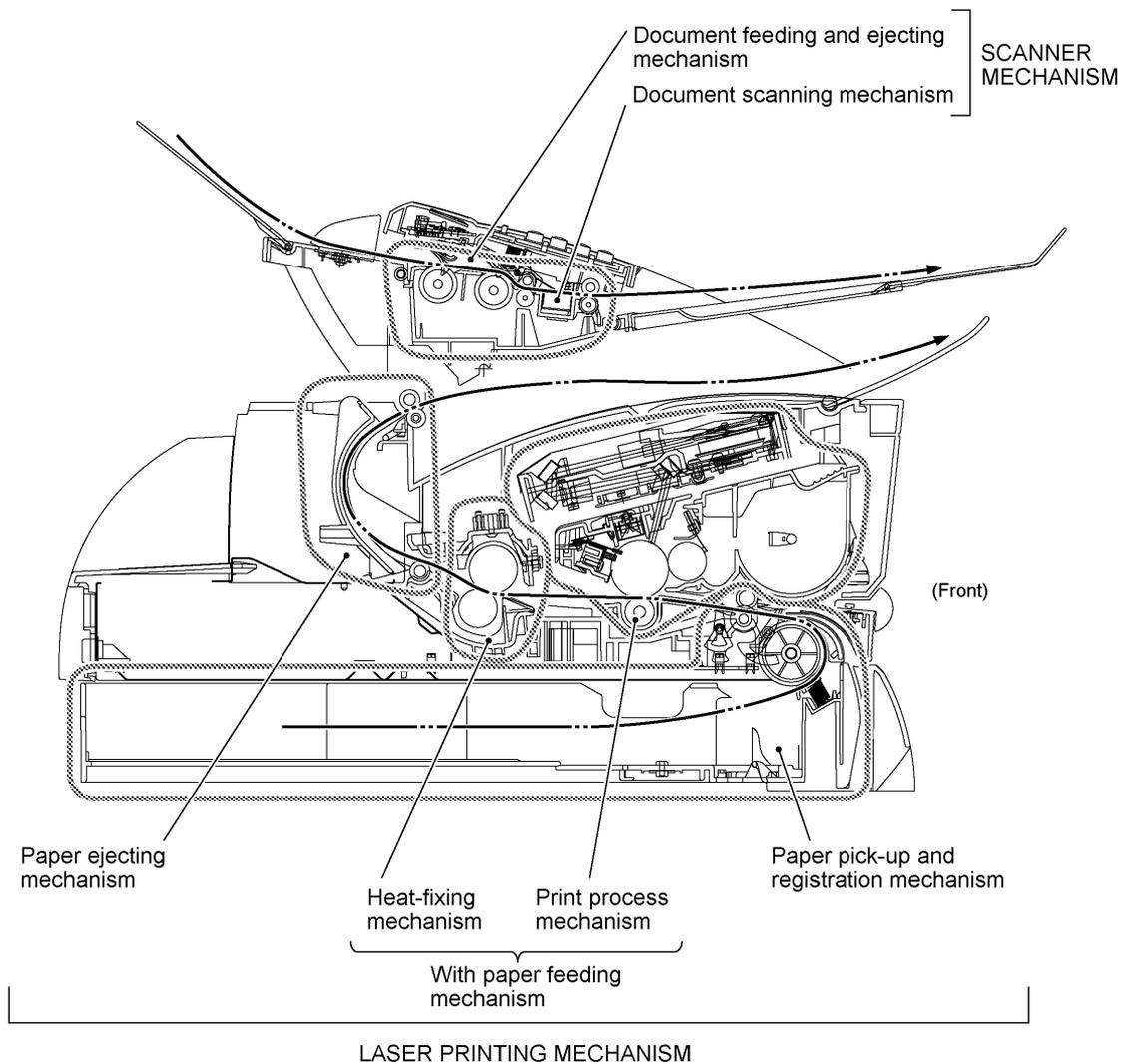
Low- and high-voltage power supplies

AC

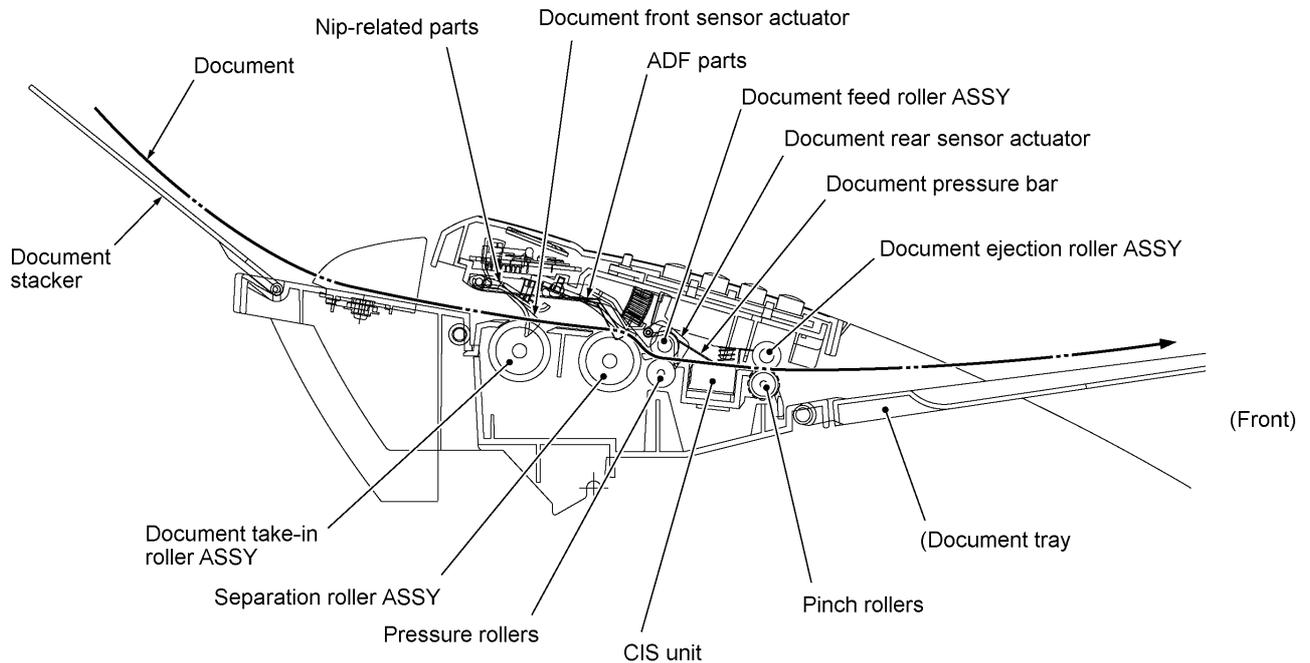*Not provided on those models without handset.

2. MECHANISMS

The facsimile equipment is classified into the following mechanisms:

- ■ SCANNER MECHANISM
  - Document feeding and ejecting mechanism
  - Document scanning mechanism

- ■ LASER PRINTING MECHANISM
  - Paper pick-up and registration mechanism
  - Print process mechanism (consisting of charging, exposing, developing, and transferring processes) with paper feeding mechanism
  - Heat-fixing mechanism with paper feeding mechanism
  - Paper ejecting mechanism

- ■ SENSORS AND ACTUATORS

Document feeding and ejecting mechanism

Document scanning mechanism

SCANNER MECHANISM

(Front)

Paper ejecting mechanism

Heat-fixing mechanism

Print process mechanism

Paper pick-up and registration mechanism

With paper feeding mechanism

LASER PRINTING MECHANISM

2.1 Scanner Mechanism

Nip-related parts

Document front sensor actuator

Document

ADF parts

Document feed roller ASSY

Document rear sensor actuator

Document pressure bar

Document ejection roller ASSY

Document stacker

(Front)

Document take-in roller ASSY

(Document tray

Separation roller ASSY

Pressure rollers

Pinch rollers

CIS unit

2.1.1 Document feeding and ejecting mechanism

This mechanism consists of the document stacker, automatic document feeder (ADF), document ejection roller ASSY, and document sensors. (For details about the sensors, refer to Section 2.3.)

If you set documents on the document stacker with their faces down and start scanning operation, then the scanner motor rotates so that the ADF (which consists of the document take-in roller ASSY, nip-related parts, separation roller ASSY, and ADF parts) feeds those documents into the equipment, starting from the bottom sheet (first page) to the top (last page), page by page. Each document advances with the document feed roller ASSY to the scanner, and then it is fed out of the equipment with the document ejection roller ASSY.

2.1.2 Scanner

The scanner uses a contact image sensor (CIS) unit which consists of an LED array illuminating documents, a self-focus lens array collecting the reflected light, a CIS PCB carrying out photoelectric conversion to output picture element data, and a cover glass on which a document advances. When the document passes between the document pressure bar and the cover glass, it is scanned.

2.2 Laser Printing Mechanism

2.2.1 Paper pick-up and registration mechanism
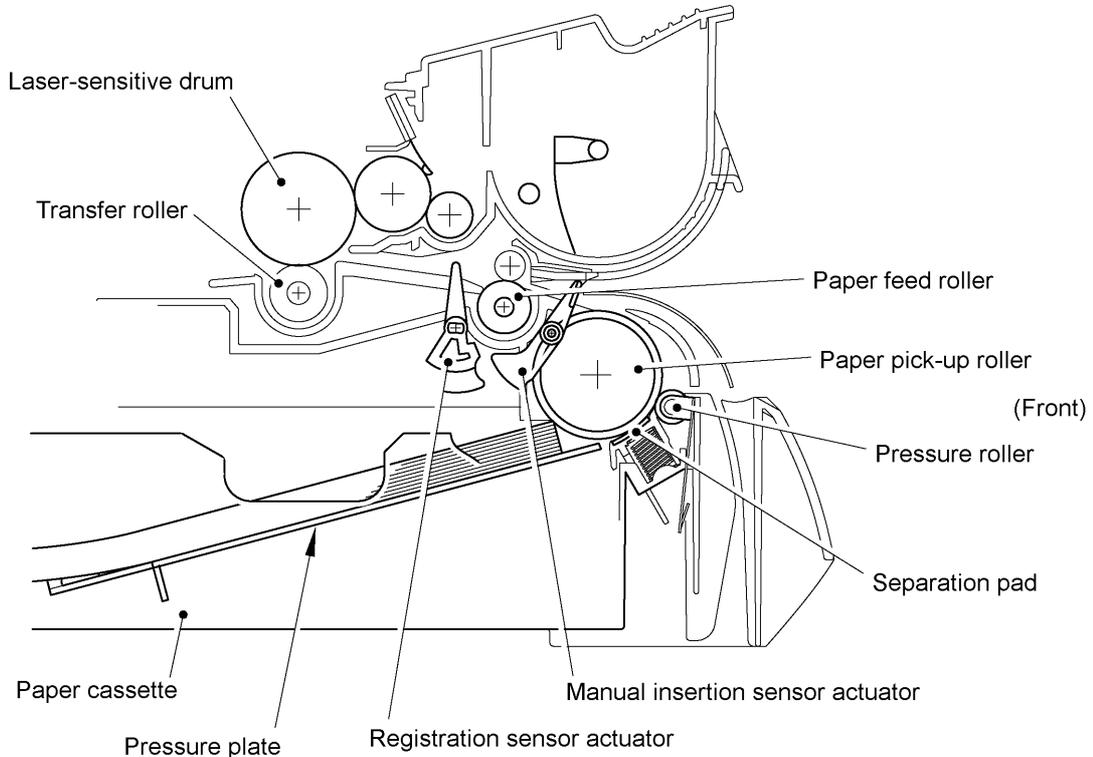
At the 1st stage, the controller drives the main motor without energizing the solenoid so that the paper feed roller simply idles.

At the 2nd stage, the controller energizes the solenoid so that the paper feed roller no longer rotates and the paper pick-up roller starts rotating to pick up paper into the equipment, a sheet at a time. After the leading edge of the pulled-in paper passes through the manual insertion sensor actuator, the paper is further fed for the specified time length. Accordingly, the leading edge will reach the paper feed roller where the paper skew will be eliminated.

At the 3rd stage, the controller deenergizes the solenoid to rotate the paper feed roller for feeding paper to the transfer block in the drum unit.

When the leading and trailing edges of the paper pass through the registration sensor actuator, the sensor signals them to the controller. According to those signals, the controller may determine the first print position on the paper.