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MP390

SERVICE MANUAL

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Service Manual

MultiPASS MP360/MP370/MP390

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Jan 7 2004

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

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Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

Symbols Used

This documentation uses the following symbols to indicate special information:

Symbol	Description
	Indicates an item of a non-specific nature, possibly classified as Note, Caution, or Warning.
	Indicates an item requiring care to avoid electric shocks.
	Indicates an item requiring care to avoid combustion (fire).
	Indicates an item prohibiting disassembly to avoid electric shocks or problems.
	Indicates an item requiring disconnection of the power plug from the electric outlet.
 Memo	Indicates an item intended to provide notes assisting the understanding of the topic in question.
 REF.	Indicates an item of reference assisting the understanding of the topic in question.
	Provides a description of a service mode.
	Provides a description of the nature of an error indication.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

In the diagrams,  represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow  indicates the direction of the electric signal.

The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine."

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Chapter 1 General Description

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1.1 Features

1.1.1 Overview

0002-2325

Picture Quality Color Printer

High quality printing can be accomplished with the Canon Bubble Jet (BJ) method using the maximum 4800 dpi X 1200 dpi resolution.

Various media can be printed at high speed that is maximum 12 pages/minute in black and white or pages/minute in color.

Convenient ASF

Up to 100 letter, legal and A4 size sheets, 30 OHP films, and 10 envelopes can be set in the ASF.

Copy Function

This machine can be used as a copier which achieves the recording resolution of 600 dpi X 600 dpi for black and white copying or 1200 dpi X 1200 dpi for color copying.

Full Color & 256 Gradation Grayscale Scanner

Using MP Toolbox or MP Drivers (ScanGear and WIA driver), full color and 256-gradation grayscale images with a quality of 25-9600 dpi can be read into a computer.

Photo Printing (MP370, MP390 only)

By connecting this machine to a digital camera with USB cable, photos can be printed out directly from the digital camera (without using a computer). Moreover, photos can be printed out from Memory Card by inserting Memory Card into a card slot of the machine.

1.2 Specifications

1.2.1 General Specifications

0004-3559

T-1-1

Item	MP390
General Specifications	

Item		MP390
	Printer	YES
	Scanner	YES
	Copy	YES
	Fax	YES
	Memory Card	YES
	Memory Card Slot	Direct
	Applicable Media	
	PCMCIA(ATA)	NO
	Compact Flash	TYPE I/II
	Micro Drive	YES
	Smart Media	YES
	Memory Stick	YES
	SD/MMC	YES
	xD-Picture Card	YES (via. CF Adapter)
	Data Storage	
	READ	YES
	WRITE	YES
	Scan To Memory Card	NO
	Photo-Direct print	YES
	Applicable Image	
	DCF	YES
	CIFF	YES
	JFIF	YES
	TIFF (RAW-RGB/YCC) in compliance with Exif	NO
	Print Mode	
	INDEX	YES
	All Image	YES
	Select Range	YES
	DPOF	YES
	2 frames	NO
	4 frames	NO
	8 frames	NO

Item		MP390
Power Consumption	Maximum	Approx. xxW
	Standby	Approx. xxW
Noise	Standby	None
	Copy	48 dB(A) max.
Durability	Unit	4,000 sheets or 5 years
	Scanning Section	4,000 sheets
	Printing Section	4,000 sheets
External Dimension	Including Tray	17 7/8(W) in x 21 1/2 in.(D) x 11 1/4 in.(H) (454(W)x547(D)x286(H))
	No Tray	17 7/8(W) in x 14 1/8 in.(D) x 9 7/8 in.(H) (454(W)x358(D)x249(H))
Weight	Standard	Approx. 18.5lb./8.4 kg

1.2.2 Scanner Specifications

0004-5151

T-1-2

Item			MP390
Reading System			Flatbed
Reading System	Sensor Type		1200dpi staggered CCD
ADF			NO
Resolution	Optical Resolution		1200*2400dpi max
	Reading Resolution		9600*9600dpi max
Gradation			
bit	Color	Input	48bit
		Output	24bit
	Gray	Input	16bit
		Output	8bit

Item		MP390
Maximum Document Size		8 1/2in. x 11 3/4in. (216mm×297mm)
Effective Scanning Width		8 1/2 in. (214mm)
Local Scan Driver		YES
	TWAIN	YES
	WIA (Windows XP)	YES

1.2.3 Printer Specifications

0004-5153

T-1-3

Item		MP390
ASF		YES
	Size	A4, A5, B5, 4"*6", L size, LTR, LGL
Printing Resolution		4800X1200 dpi
Printing Speed	sec./page	18 ppm (BK) 12 ppm (Color)
Printing Direction		Bi-direction
None printable area (mm)		1/8in.(3.4mm) right/left edge, 1/ 8in.(3mm) top, 1/4in.(5mm) bottom
	Envelop	1/8in.(3.4mm) right/left edge, 1/8in.(3mm) top, 1in.(26.5mm) bottom
Printing Cartridge		ZF533
	Product Name	BCI-24BK BCI-24Color
Ink Remaining Detection		YES
	Detection Method	Warning by counting dots 3 steps (indication)
Paper Capacity		50 pages
Borderless Printing		YES
Silent Mode Printing		YES

Item	MP390
CD-R Label Printing	NO

1.2.4 Copy Specifications

0004-5155

T-1-4

Item		MP390	
Copy Print Resolution	Black & White	600*600 dpi	
	Color	1200*1200 dpi	
Copy speed	Ink Jet	Black & White (Fast)	18ppm
		Color (Fast)	12ppm
Grey Scale		64 scales	
Scanning Density Adjustment		YES	
	Manual	9 positions	
Multiple Copies		99	
Reset RE Ratio		YES	
	Enlarge	Max.	YES
		5" x 7" to LTR	YES
		4" x 6" to LTR	YES
	Reduction	100%	YES
		A4 to LTR	YES
		Min.	YES
Zoom		YES	
	Zooming Range	25-400%	
	Auto Magnification Selection	YES	
Image Quality	B & W	FAST, NORMAL, FINE	
	Color	FAST, NORMAL, FINE	
Energy Saving Mode		YES	
Image Combination		YES	

	2 in 1	YES
	4 in 1	NO
Image Repeat (Auto/Manu)		YES/YES
Mirror Image		YES
Seal Copy		YES
Name Card Copy		YES
Postcard Copy		YES
Borderless Copy		YES
Poster		NO
Fit to page		YES
Entire Document		YES

1.2.5 Communication Specifications

0004-6704

T-1-5

Item		MP390
Applicable lines	PSTN	YES
	Others (Private Line,etc)	NO
Transmission method		Half-duplex
Error correction		ITU-T ECM
Transmission control protocol		ITU-T T.30 binary protocol ITU-T V.8 protocol, V.34 protocol
Coding method	Black/white	MH,MR,MMR,JBIG
	Color	JPEG
Modem	Modem IC	CONEXANT FM336Plus
	Speed	33.6kbps

Item		MP390
Modulation method	G3 image signals	ITU-T V.27ter(4.8k, 2.4k bps) ITU-T V.29(9.6k, 7.2k bps) ITU-T V.17(14.4k, 12.0k, TC9.6k, TC7.2k bps) ITU-T V.34(33.6k, 31.2k, 28.8k, 26.4k, 24.0k, 21.6k, 19.2k, 16.8k, 14.4k, 12.0k, 9.6k, 7.2k, 4.8k, 2.4k bps)
	G3 procedure signals	ITU-T V.21(No.2) (300 bps) ITU-T V.8 300 bps ITU-T V.34 1200 bps, 600 bps
Minimum transmission time		10 ms(G3), 0ms(ECM)
Transmission output level		From -8 to -15 dBm
Receive input level		From -3 to -43 dBm

T-1-6

**Time required
for
transmission
protocol**

Mode	Pre-message*1 protocol	Post-message*2 protocol (between pages)	Post-message*3 protocol (after pages)
V.8/V.34	approx.6 sec.	approx.1 sec.	approx.1 sec.
T.30	approx.12 sec.	approx.4 sec.	approx.3.5 sec.

*1 Time from when other facsimile is connected to the line until image transmission begins.

*2 Post-message (between pages): Time from after one document has been sent until transmission of the next document starts if several pages are transmitted.

*3 Post-message (after last pages): Time from after image transmission is completed until line is switched from facsimile to telephone.

1.2.6 Color Communication Specification

0004-6708

T-1-7

Item		MP390
Color Communication	Scanning document size	A4
	Printing paper size	A4
	Resolution	200dpi
	Coding	JPEG
	Color space	CIE-LAB
	Picture element	8bit
	Sub sample	4:1:1(=LAB)

1.2.7 Function

0004-6711

T-1-8

Item		MP390	
Dialling	Numeric button	YES	
	Hook button	NO	
	Auto dialling	YES	
		One-touch	NO
		Coded speed	YES(40)
		Programmable Number of Digits	40
		Group dialling	NO
	Redial	YES	

Item		MP390	
Transmission	Dual access		YES
		Max. File No. of Reservation	1
	Polling Tx		NO
	Broadcast transmission		NO
	Delayed Tx		NO
	Confidential Tx		NO
	Relay broadcasting originating		NO
	Relay broadcasting		NO
Reception	FAX/TEL switching		YES
		Method	CNG detection
		Message	NO
		Pseudo CI	NO
		Pseudo ring	YES
		Pseudo ring back tone	YES
	Built in answering machine		NO
	Answering machine connection		YES
	Remote Rx		YES
	Telephone exchange function		NO
	Speaker phone		NO
	Memory lock Rx		NO
	Polling Rx		NO
	Confidential Rx		NO
Reduction setting for Rx		YES	
	Automatic reduction	70 to 100%	

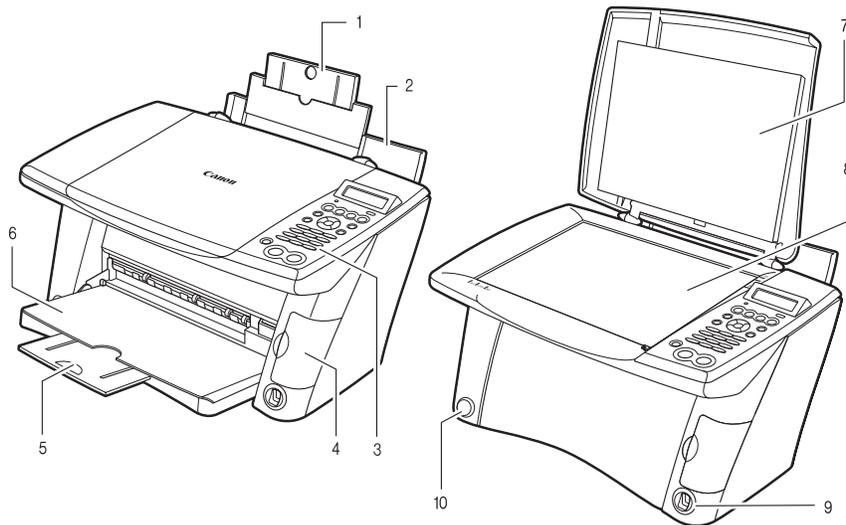
Item		MP390	
Memory backup	Backup contents	Dial registration data User data Service data Time, etc.	
	Backup IC	128kbit SRAM	
	Backup device	Lithium battery DC 3.0V/ 600mAh	
	Battery life	life Approx.5 years	
	Image data backup	NO	
	Image memory	Approx.?? MB	
Activity management	User report	Activity management report	YES(Every 20 communications)
		Activity report (Tx/Rx)	YES
		Directory dial list	YES
		One-touch speed dialling list	NO
		Coded speed dialling list	NO
		Group dialling list	NO
		Memory clear list	YES
		User's data list	YES
		Document memory list	YES
		Multi activity report	NO
	Service report	System data list	YES
System damp list		YES	

1.3 Overview

1.3.1 External View

0004-4359

Exterior



F-1-1

1. Tray extension

Supports paper loaded in the multi-purpose tray. Pull it out before loading paper.

2. Multi-purpose tray

Used to load paper.

3. Operation panel

Displays the operating status of the machine. It is also used to change or check the settings of each function. For details,

4. Card slot cover

Covers the card slot. Open this cover when inserting a memory card or CompactFlash card adapter containing a memory card into the card slots.

5. Tray extension

Supports printouts. Grasping the notch, pull this out before copying or printing. When not being used, keep it closed in the paper output tray.

6. Paper output tray

Printouts are output to this tray. Open the tray before you start copying or printing, by pressing the Open button. If closed, the tray will automatically open when the machine starts to copy or print. When not being used, keep it closed in the machine.

7. Document cover

Covers the platen glass. Open this cover when loading a document on the platen glass.

8. Platen glass

Used to load a document to be processed.

9. Direct print port (for digital camera)

digital camera or digital video camcorder to the machine when printing images directly from the camera.

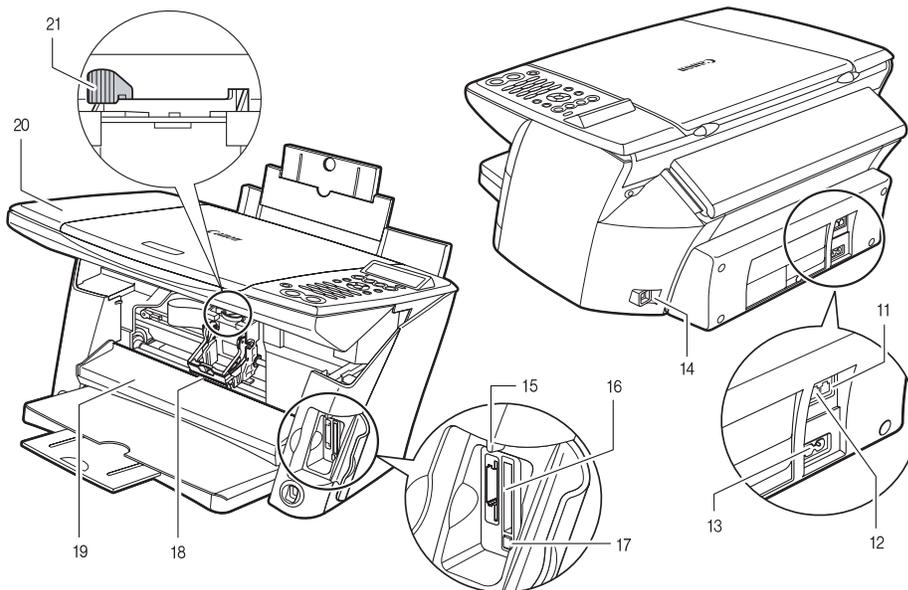
10. Open button

Press this button to open the paper output tray accommodated in the machine.



The paper output tray will not open when the machine is placed on a tilted surface.

Rear view and interior



F-1-2

11. External device jack

Connects the external device.

12. Telephone line jack

Connects the telephone line.

13. Power connector

Used to connect the power cord to the machine.

14. USB connector (for computer)

Used to connect a computer to the machine when printing or faxing from or scanning to the computer.

15. Access lamp

Lights when a memory card is inserted into the card slot. This lamp flashes while the machine is reading or writing data from/to the memory card. When the machine finishes reading or writing the card, the lamp shuts off.

16. Card slot

Insert a memory card or CompactFlash card adapter containing a memory card into these slots when photo printing. The machine is equipped with two kinds of card slots.

17. Memory card eject button

Press this button to remove the CompactFlash card adapter, Microdrive memory card, or CompactFlash from the card slot.

18. Print head holder

Used to install a print head.

19. Inner cover

Open this cover when setting the paper thickness lever, replacing the ink tanks, or clearing a paper jam.



Printing with the inner cover open may result in injury.

20. Scan unit

Lift this unit until it locks into place when the inner cover needs to be opened.

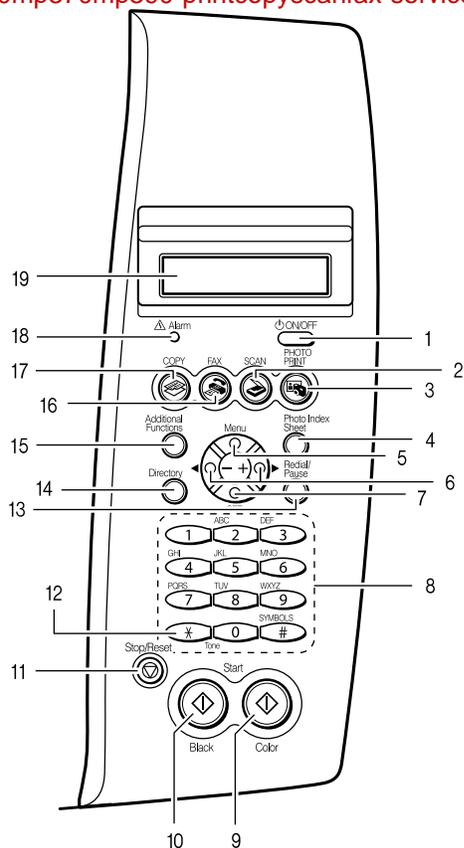
21. Paper thickness lever

Switches the distance between the print head and paper according to the paper type. Adjust the lever to the position appropriate for the paper loaded.

1.3.2 Operation Panel

0004-4367

The followings are the names and functions of keys on the operation panel.



F-1-3

1. [ON/OFF] key

Turns the machine ON and OFF. Before turning ON the machine, make sure the scan unit is closed. When turning ON and OFF, keep the key pressed for at least one second.

2. [SCAN] key

Switches the machine to scan mode. In scan mode, the machine scans a document to your computer according to the settings selected. This key is used when the machine is connected to a computer.

3. [PHOTO PRINT] key

Switches the machine to photo print mode.

4. [Photo Index Sheet] key

Switches the machine to Photo Index Sheet mode.

5. [Menu] key

Accesses the settings to customize operation of your machine.

6. [◀(-)], [▶(+)] keys

Scroll through menu selections, and increase or decrease the number of copies or the image file number.

7. [Set] or [OK] key

Selects or confirms settings. Also, press this key to recover to standby mode after correcting paper jams and other errors that stop printing.

8. Numeric keys

Enter numerical values such as the number of copies, as well as fax/telephone numbers and characters.