

Color Monitor



C190

User's Guide

English

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Safety: Read first



Safety: Read first

Before installing this product, read the Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza

Antes de instalar este produto, leia as Informações de Segurança.

Läs säkerhetsinformationen innan du installerar den här produkten.

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Ennen kuin asennat t m n tuotteen, lue turvaohjeet kohdasta Safety Information.

Před instalac tohoto produktu si přečtěte př ručku bezpečnostn ch instrukc .

在安装本产品之前，请仔细阅读 Safety Information (安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

مجب، يجب قراءة دات السلامة

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

製品を設置する前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Antes de instalar este producto lea la información de seguridad.

Antes de instalar este produto, leia as Informações de Segurança.

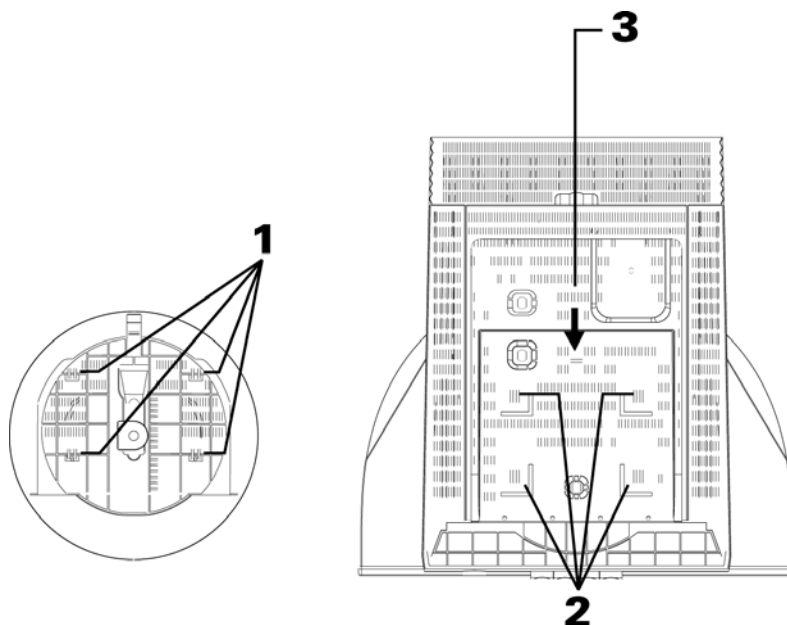
Перед установкой продукта прочтите инструкции по технике безопасности.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Important: Before connecting the monitor, turn off the computer and attached devices. Also ensure the power at the electrical outlet matches the power requirements of the monitor. Refer to the **Specifications** section on page 18 for more details.

Attaching the stand

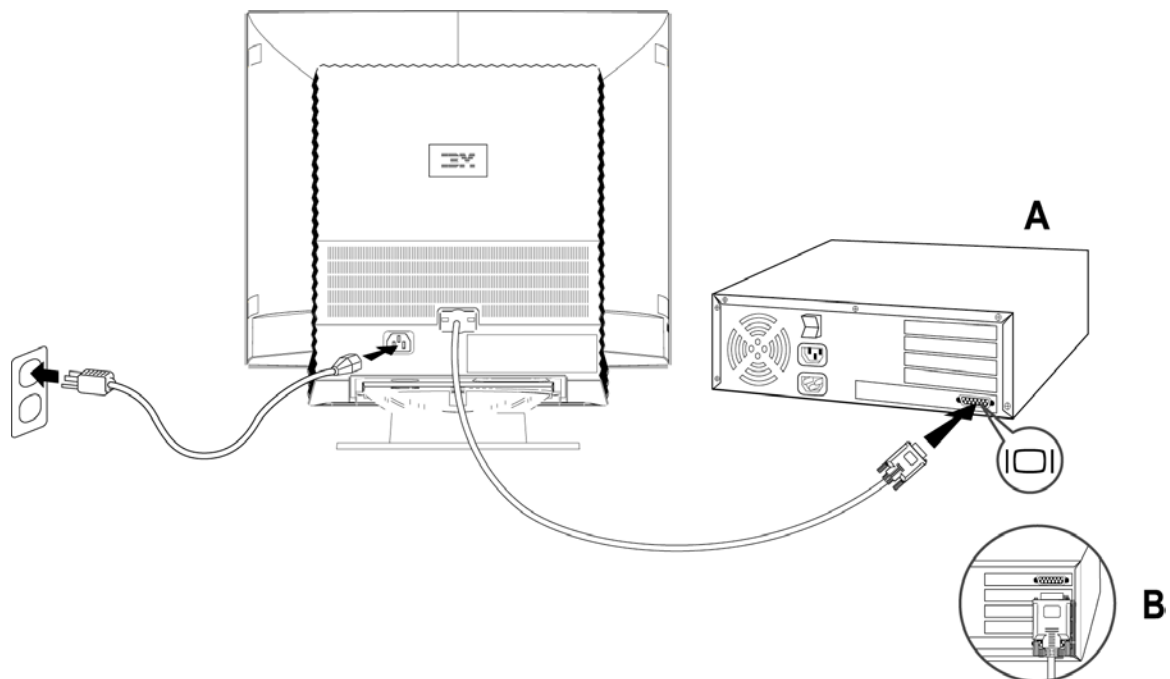
1. Place the monitor face down on a soft surface to prevent the screen being scratched.
2. Insert the hook (1) into the matching slots on the underside of the monitor (2).
3. Slide the base towards the front of the monitor until the latch (3) clicks into the locked position.



Connecting your monitor

1. Connect the signal cable to the video port on the back of your computer (figure A). Your computer may have a video adapter card installed. In this case, attach the signal cable to the connector on the video adapter card (figure B)
2. Connect the power cord to the monitor first, and then firmly insert the plug into a properly grounded electrical outlet.
3. Turn on the monitor, and then the computer.

If your monitor does not seem to be working correctly, refer to the Troubleshooting section for help.



Workplace preparation

Positioning the monitor

Choose a suitable place to position the monitor where it is not near fluorescent desk lighting or any equipment that produces magnetic fields that could cause interference. Ensure that the furniture or equipment can support the weight of the monitor. Allow at least 2 inches (50mm) ventilation space around the monitor.

Height

Position the monitor so that the top of the screen is slightly below your eye level when you sit at your workstation.

Orientation

Choose a position that gives the least reflection from lights and windows, usually at a right angle to any windows. Position the monitor directly in front of you so that you do not have to twist your body. Tilt the monitor to a comfortable viewing angle.

Working Practices

Rest

Take regular breaks. Vary your posture, and stand up and stretch occasionally, as prolonged use of computer workstations can be tiring.

Back

Sit back in the chair and use the backrest.

Hands

Use a light touches on the keyboard, keeping your hands and fingers relaxed. Allow a space in front of the keyboard to rest your wrists when not typing. Consider using a wrist pad.

Eyesight

Working with monitors, in common with any prolonged close work, can be visually demanding. Look away from the screen, periodically and have your eyesight checked regularly.

Screen settings

Set the screen brightness and contrast to a comfortable level. You may have to adjust this as the lighting changes during the day. Many application programs let you select color combinations, which can help you to view in comfort.

Installing the Device Driver

Installing the Device Driver for Windows 95 or Windows 98

To install the device driver in Microsoft® Windows®95 or Windows98, do the following:

Note: You must download files from the IBM Monitor CD to use the Plug and Play feature in Windows 95 or Windows 98.

1. Turn off the computer and all attached devices.
2. Ensure that the monitor is connected correctly.
3. Turn on the monitor and then the system unit. Allow your computer to start the Windows 95 or Windows 98 operating system.

Your computer's Plug and Play code might warn you that your system hardware has changed. This means that it has detected your new monitor for the first time.

4. Open the **Display Properties** window by clicking **Start, Settings, Control Panel** and then double clicking on the **Display** icon.
5. Click the **Settings** tab.

If you are using Windows 95:

6. 1. Click the **Change Display Type** button.
2. Click the **Change Monitor Type** button.

• If you are using Windows 98:

6. 1. Click the **Advanced** button.
2. Click the **Monitor** tab.
3. Open the **Upgrade Device Wizard** window by clicking on **Change** button and then select the **Next** button.
4. Click "Display a list of the known drivers for this device so that I can choose a specific driver" and then select the **Next** button.
7. Insert the IBM Monitor CD into the CD drive and click the **Have Disk** button.
8. Click **OK**.
9. Ensure that the CD drive letter is selected, and then select "DRIVERS" folder.
10. Select **IBM C190 CRT monitor** and click **OK**. The files will be copied from the CD to your hard disk drive.
11. Close all open windows and remove the CD.
12. Restart the computer.
The system will automatically select the maximum refresh rate and corresponding Color Matching Profiles.

Installing the Device Driver for Windows 2000 or Windows Me

To install the device driver in Microsoft® Windows®2000 Professional or Microsoft Windows Millennium Edition (Me), do the following:

Note: You must download files from the IBM Monitor CD to use the Plug and Play feature in Windows 2000 or Windows Me.

1. Turn off the computer and all attached devices.
2. Ensure that the monitor is connected correctly.
3. Turn on the monitor and then the system unit. Allow your computer to start the Windows 2000 or Windows Me operating system.
4. Open the **Display Properties** window by clicking **Start, Settings, Control Panel** and then double-clicking the **Display** icon.
5. Click the **Settings** tab.
6. Click the **Advanced** button.
7. Click the **Monitor** tab.
8. Click the **Properties** button.
9. Click the **Driver** tab.
10. Open the **Upgrade Device Driver Wizard** window by clicking on **Update Driver** and then click the **Next** button.
11. Select "Display a list of the known drivers for this device so that I can choose a specific driver" and then click the **Next** button.
12. Insert the IBM Monitor CD into the CD drive and click the **Have Disk** button.
13. Click **OK**.
14. Ensure that the CD drive letter is selected, and then select the "DRIVERS" folder.
15. Select **IBM C190 CRT monitor** and click **OK**. The files will be copied from the CD to your hard disk drive.
16. Close all open windows and remove the CD.
17. Restart the computer.

The system will automatically select the maximum refresh rate and corresponding Color Matching Profiles.

Installing the device driver in Windows XP

To install the device driver in Microsoft® Windows XP, do the following:

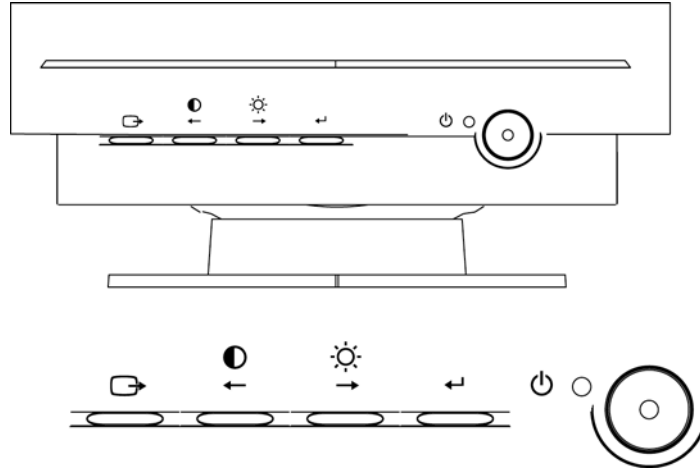
Note: You must download files from the IBM Monitor CD to use the Plug and Play feature in XP.

1. Turn off the computer and all attached devices.
2. Ensure that the monitor is connected correctly.
3. Turn on the monitor and then the system unit. Allow your computer to start the Windows XP operating system.
4. Open the **Display Properties** window by clicking **Start, Settings, Control Panel** and then double-clicking the **Display** icon.
5. Click the **Settings** tab.
6. Click the **Advanced** button.
7. Click the **Monitor** tab.
8. Click the **Properties** button.
9. Click the **Driver** tab.
10. Open the **Hardware Update Wizard** window by clicking on **Update Driver** and then click the **Next** button.
11. Select "Install from a list or Specific location (Advanced)" and then click the **Next** button.
12. Insert the IBM Monitor CD into the CD drive and click the **Have Disk** button.
13. Click **OK**.
14. Ensure that the CD drive letter is selected, and then select the "DRIVERS" folder.
15. Select **IBM C190 CRT monitor** and click **OK**. The files will be copied from the CD to your hard disk drive.
16. Close all open windows and remove the CD.
17. Restart the computer.

The system will automatically select the maximum refresh rate and corresponding Color Matching Profiles.

User Controls

The image is already optimised for many display modes. However, the controls can be used to adjust the image to your liking.



OSD Key Function

Icon	Control	Description
	Power switch	Switches the monitor on and off.
	OSD/OK	Activates the On-Screen-Display/ Select control icon / Save Adjustment
	Move right; Brightness adjustment selection	Moves the highlight to the icon to the right, or on adjustment screens increases the effect of the adjustment.
	Move left; Contrast adjustment selection	Moves the highlight to the icon to the left, or on adjustment screens decrease the effect of the adjustment.
	Exit	Exit OSD control.


Hotkey Functions

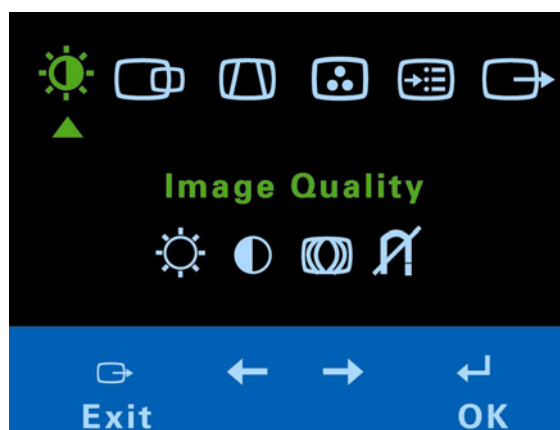
Brightness and contrast can be adjusted as follows, without the need to display the OSD: Select the function and use the buttons to adjust. If adjustment is not made within 15 seconds, the current settings will be saved and the control screen will disappear automatically.



Icon	Control	Description
	BRIGHTNESS	Adjusts the background brightness
	CONTRAST	Adjusts the contrast between foreground and background

On-Screen-Display







Activating the On-Screen-Display

The monitor controls are accessed by pressing button  to enable OSD (On-Screen-Display). The main menu will be displayed as follows.



Each Sub-Menu icon is selected by highlighting it via the “←” “→” control and pressing button “”. To exit the main or Sub-Menu then press the exit button “”.

Main OSD menu controls

ICON	Control	Function instruction
	Image Quality	Adjusts Brightness, Contrast, Moiré, and Degauss.
	Image Position/Size	Adjusts Horizontal / Vertical Position, Horizontal/Vertical Size, Zoom and Rotation.
	Image Shape	Adjusts Parallelogram, Trapezoid, Pincushion, Pincushion balance, and Geometry reset.
	Color	Adjusts Preset color point, Custom, Reset User color.
	Options	Adjusts Information, Menu Languages, Accessibility, Factory Default, Menu Position
	Exit	Closes the OSD menu.

OSD functions



Note: After a function is selected, use the “←” “→” buttons to increase or decrease the adjustment. If the OK  or Cancel  button is not pushed within the menu time out period, the current setup will be saved and the control screen will disappear automatically.

Image Quality












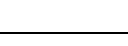

	Image Quality		
Sub menu			
Icon	Control	Function	Sub menu function
	Brightness	Adjusts overall screen brightness.	Left 
			Right 
	Contrast	Adjusts difference between light and dark areas.	Left 
			Right 
	Moiré	Reduces elliptical or wavy interference patterns.	Horizontal  / 
			Vertical  / 
			Save
	Degauss	Demagnetizes screen to reduce image distortion.	Yes/No Option

Image Position/Size




























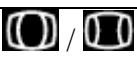







	Image Position/Size		
Sub menu			
Icon	Control	Function	Sub menu function
	Horizontal Position	Moves image left or right	Left 
			Right 
	Vertical Position	Moves image up or down	Left 
			Right 
	Horizontal Size	Adjusts image width	Left 
			Right 
	Vertical Size	Adjusts image height	Left 
			Right 
	Zoom	Adjusts image width and height	 / 
	Rotation	Turns image clockwise or counterclockwise.	 / 












Image shape

	Image Shape			
Sub menu				
Icon	Control	Function	Sub menu function	
	Parallelogram	Leans image to the left or right.	Left	
			Right	
	Trapezoid	Adjusts top or bottom image width.	Left	
			Right	
	Pincushion	Expands or contracts image sides.		
	Pincushion balance	Moves image center left or right.		
	Geometry reset	Resets image shape to original settings	Yes/No Option	

Color

	Color			
Sub menu				
Icon	Control	Function	Sub menu function	
	Preset Color Point	Select from standard white color	With three choices 9300K / 6500K / 5500K	
	Custom	Adjusts red green and blue intensity	Red / Green / Blue / Save	
	Reset User Color	Resets custom color to original value	Yes / No Option	

Options

	Options			
Sub menu				
Icon	Control	Function	Sub menu function	
	Information	Shows resolution, refresh rate, product details.		
	Menu Language	Changes language of menu.	English, French, Italian, German, Spanish.	
	Accessibility	Changes Menu timings	Button repeat rate	Off /Default/Slow Option
			Menu time out	5/10/15/20/25/30 second options
	Factory Default	Resets monitor to original settings	Yes / No Option	
	Menu Position	Adjusts menu location.	Horizontal	 / 
			Vertical	 / 
			Save	
	Exit.	Closes the OSD menu.		

Further information

Display modes

The display mode and monitor uses are controlled by the computer. Therefore, refer to your computer documentation for details on how to change display modes.

The image size, position and shape may change when the display mode changes. This is normal and the image can be readjusted using the monitor controls.

To ensure flicker-free operation, select the highest (non-interlaced) refresh rate both the computer and the monitor can support, (generally 75 Hz or higher), for the addressability that your application requires.

For the display modes listed below, the screen image has been optimised during manufacture.

Resolution	Refresh Rate	Horizontal Frequency
720 x 400	70Hz	31.5kHz
640 x 480	60Hz	31.5kHz
640 x 480	85Hz	43.3kHz
800 x 600	75Hz	46.9kHz
800 x 600	85Hz	53.7kHz
1024 x 768	75Hz	60.0kHz
1024 x 768	85Hz	68.6kHz
1280 x 1024	75Hz	80.0kHz
1280 x 1024	85Hz	91.1kHz
1600 x 1200	75Hz	93.8kHz

Table1. Factory Preset Mode

Power Management

To benefit from power management, the monitor must be used in conjunction with a computer that implements the Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS) Standard.

The power management feature is invoked when the computer recognizes that you have not used your mouse or keyboard for a user-definable period of time. There are several states as described in the table below.

State	Power indicator	Screen	Restoring Operation	Compliance
On	Green	Normal	Press a key or move the mouse.	ENERGY STAR®
Off	Amber	Blank		

Troubleshooting

If you have a problem setting up or using your monitor, you may be able to solve it yourself. Before calling your retailer or IBM you should try the suggested actions that are appropriate to your problem.

Problem	Possible Cause	Suggested Action	Reference
Screen is blank and power indicator is off.	No power to monitor.	<ul style="list-style-type: none"> • Ensure the electrical outlet and the monitor are both switched on. • Check power cord is firmly plugged into the monitor and the electrical outlet. • If the power cord plug has a removable fuse, replace it. • Try another power cord. • Try another electrical outlet. 	Connecting you monitor starting on page 4.
Screen is blank and power indicator is steady green.	Brightness and Contrast may be too low.	<ul style="list-style-type: none"> • Adjust brightness and contrast. 	User controls section starting on page 9.
SIGNAL OUT OF RANGE message is displayed.	Display mode of the computer is outside the range of the monitor.	<ul style="list-style-type: none"> • Reconfigure the computer to use a supported display mode. 	Further information section starting on page 14.
CHECK SIGNAL CABLE message is displayed.	Video cable connection.	<ul style="list-style-type: none"> • Check the signal cable is firmly connected to the computer. • Check no pins are bent in the signal cable connector. 	
Screen is blank and power indicator is amber.	The monitor is in Power Management Standby/Suspend or Off state.	<ul style="list-style-type: none"> • Press any key on the keyboard or move the mouse to restore operation. 	
	No video signal from the computer.	<ul style="list-style-type: none"> • Check the computer is powered on. • Check the signal cable is firmly connected to the computer. • Check no pins are bent in the signal cable connector. 	
Image appears to be flickering.	The monitor is operating in an interlaced or low refresh rate display mode.	<ul style="list-style-type: none"> • Reconfigure the computer to use a non-interlaced display mode with a refresh rate of at least 75 Hz. 	Further information section starting on page 14.

Problem	Possible Cause	Suggested Action	Reference
	The monitor may be affected by interference from nearby equipment.	<ul style="list-style-type: none"> • Move fluorescent desk lighting or any equipment that produces magnetic fields further away from the monitor. • If another monitor is close by, separate the two monitors by at least 300mm (12 in.) for optimal performance. 	
Image appears to be discolored.	The monitor may be affected by interference from nearby equipment.	<ul style="list-style-type: none"> • Move any equipment that produces magnetic fields (For example, sub woofer loud speakers) further away from the monitor. • If another monitor is close by, separate the two monitors by at least 300mm (12 in.) for optimal performance. 	
	Magnetization of monitor components has built up.	Degauss the monitor using OSD manual demagnetize function. This function can only be used once in a 30 minute period.	

Further help

If you are unable to correct the problem yourself, you may seek further help as follows:

Call IBM HELPCENTER.

In the US call 1-800-772-2227

In Canada (Toronto only) call 416-383-3344

(All other areas) call 1-800-565-3344

In other countries, contact your dealer, retailer, or other IBM authorized servicer.

Before calling please have available as much of the following information as possible:

1. Type, model and serial number from the label on the back of your monitor.
2. Purchase receipt.
3. Description of problem.
4. Computer type and model.
5. System configuration (additional hardware etc.).
6. System BIOS version number.
7. Operating System and version number.
8. Display driver version number.
9. Video Adapter Type

If possible, stay by your computer system. Your technical support representative might want to go through the problem with you during the call.

More help, late- breaking news and details of the latest accessories for these products may be found on the Worldwide Web at:

<http://www.pc.ibm.com/us/accessories>

Specifications

The C190 (MT6739) color monitor uses a 19-inch FFSSM CRT with a viewable image size of 457.3mm (18.0 in.).

Dimensions	Width: Depth: Height:	456 mm (17.95 in.) 458 mm (18.03 in.) 468 mm (18.42 in.)
Weight	Packing: Unpacking:	24.6 kg (54.23 lb) 21.25 kg (46.85 lb)
Tilt Swivel	Forward tilt: Backward tilt: Swivel:	4.5° 15° +90°/-90°
Image	Maximum Height: Maximum Width: Dot Pitch:	274.5 mm (10.80 in.) 365.8 mm (14.40 in.) 0.25 mm (0.0098 in.)
Power Input	Supply Voltage: Max Supply Current:	100-240 V ac, 50-60Hz 1.6A at 100 V ac
Video Input	Input Signal: Horiz. Addressability: Vert. Addressability: Clock Rate	Analog Direct Drive, 75 ohm 0-0.7 V 1600 pels (maximum) 1200 lines (maximum) 202.5 Mhz
Communications	VESA DDC	2B
Synchronization Range	Horiz. Frequency: Vert. Frequency:	30 kHz-96 kHz 50 Hz-160 Hz
Power Consumption (Typical)	Normal Operation: Off:	<100 W <2 W
Environment	Operating Temperature: Storage Temperature: Shipping Temperature: Operating Humidity: Storage Humidity: Shipping Humidity: Emissions:	5 to 40 °C (41 to 104 °F) -20 to 65 °C (-4 to 149 °F) -20 to 65 °C (-4 to 149 °F) 10 to 90 % 10 to 95 % 10 to 95 % TCO03/TCO99

Service Information

The following parts are for use by IBM Service, or IBM authorized dealers, to support the customer warranty. Parts are for service use only.

Part Number	Machine type-6739	Description
31P9687	6739 K0N	Two Tone Black
31P9688	6739 60N	Stealth Black
31P9721	6739 70N	Stealth Black
31P9689	6739 K0E	Two Tone Black
31P9690	6739 60E	Stealth Black
31P9691	6739 K0S	Two Tone Black
31P9692	6739 60S	Stealth Black
31P9696	Tilt/Swivel	Stealth Black

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