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LIMITED WARRANTY

3M warrants this product against any defects in material and workmanship, under normal use and storage, for a period of one year from date of purchase. Proof of purchase date will be required with any warranty claim. In the event this product is found to be defective within the warranty period, 3M's only obligation and your exclusive remedy shall be replacement of any defective parts (labor included).

To obtain warranty service, immediately notify the dealer from which you purchased the product of any defects. The dealer has the option of repairing the product or returning it to 3M for repair or replacement. In the USA call 1-800-328-1371 for warranty or repair service.

LIMITATION OF LIABILITY

THE FOREGOING WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND 3M SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS. 3M SHALL NOT BE LIABLE FOR ANY DAMAGES, DIRECT, CONSEQUENTIAL, OR INCIDENTAL, ARISING OUT OF THE USE OR INABILITY TO USE THIS PRODUCT.

Important: The above warranty shall be void if the customer fails to operate product in accordance with 3M's written instructions. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

Testing: This machine was tested against the 89/336/EEC (European Economic Community) for EMC (Electro Magnetic Compatibility) and fulfills these requirements.

Video signal cables: Double shielded coaxial cables (FCC) must be used and the outer shield must be connected to the ground. If normal coaxial cables are used, the cables must be enclosed in metal pipes or in a similar way to reduce the interference noise radiation.

Power Cord: A shielded power cord (supplied) must be used. The outer shield must be connected to the ground.

Video inputs: The input signal amplitude must not exceed the specified level. See Section 9.

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IMPORTANT SAFEGUARDS

1. Read and understand all instructions before using. Pay particular attention to areas where this symbol ⚠ is shown.

   ⚠ **WARNING** – Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

   ⚠ **Caution** – Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

2. Close supervision is necessary when any appliance is used by or near children. Do not leave appliance unattended while in use.

3. Never look directly into the projector lens when the lamp is on. The metal halide lamp produces a strong light which could damage your eyesight.

⚠4. Care must be taken as burns can occur from touching hot parts.

5. Do not operate appliance with a damaged cord or if the appliance has been dropped or damaged — until it has been examined by a qualified serviceman.

⚠6. Position the cord so that it will not be tripped over, pulled or contact hot surfaces.

7. If an extension cord is necessary, a cord with a current rating at least equal to that of the appliance should be used. Cords rated for less amperage than the appliance may overheat.

8. Always unplug appliance from electrical outlet before cleaning and servicing and when not in use. Grasp plug and pull to disconnect.

⚠9. Let appliance cool completely before putting away or when replacing lamp. Loop cord loosely around appliance when storing.

10. Disconnect this unit from its source of supply before replacing the projection lamp.

11. To reduce the risk of electric shock, do not immerse this appliance in water or other liquids.

12. To reduce the risk of electric shock, do not disassemble this appliance, but take it to a qualified technician when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is subsequently used.

13. The use of an accessory attachment not recommended by the manufacturer may cause a risk of fire, electric shock, or injury to persons.

14. Connect this appliance to a grounded outlet.

⚠15. This unit is equipped with optical lenses and should not be exposed to direct sunlight.

16. Keep ventilation openings free of any obstructions.

17. Always remove the lens cap when the projection lamp is on.

SAVE THESE INSTRUCTIONS

The information contained in this manual will help you operate and maintain your 3M MP8020 Multimedia Projector.

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Section 1: Unpack

1-1. Contents of Shipping Box

The 3M™ MP8020 Multimedia Projector is shipped with the necessary cables required for standard VCR, PC, MAC II or laptop computer connections. Carefully unpack and verify that you have all of the items shown below in Figure 1-1.

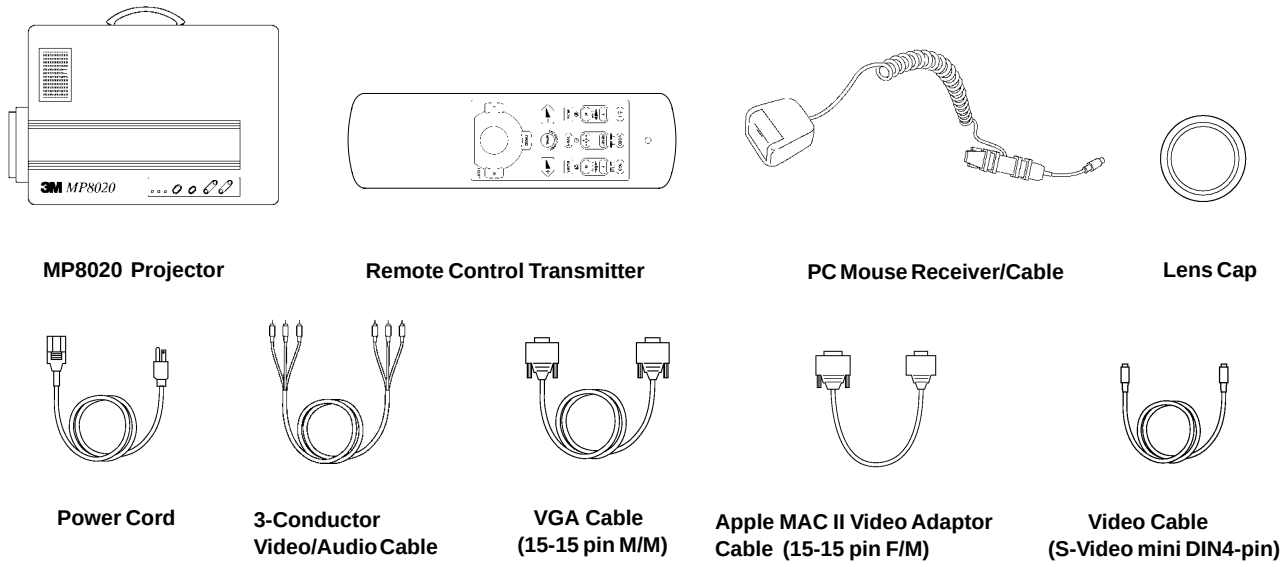


Figure 1-1. Inventory of Shipping Box

1-2. Inventory List

The shipping carton contains the following items illustrated in Figure 1-1. If any of these items are missing, please contact your place of purchase.

- MP8020 Multimedia Projector
- Remote control transmitter (AAA batteries included)
- PC Mouse Receiver (PS/2 adaptor, plug adaptor)
- Lens cap
- Power cord
- 3-Conductor video/audio cable
- VGA cable (15-15 pin male to male)
- Apple MAC II video adaptor cable (15-15 pin female to male)
- Video cable (S-video mini DIN4-pin)

1-3. Keep Your Packing Materials

Save the shipping box and packing materials in the event the MP8020 should require shipping to a 3M Service Center for repair.

1-4. What's Next?

After you have unpacked the MP8020 system and identified all the parts, you are ready to set up the projector.

Take a few minutes to review Section 2 to familiarize yourself with the MP8020 machine characteristics and then turn to Section 3 to set up the projector.

2-1. Machine Characteristics

The MP8020 is a multimedia projector that integrates metal halide lamp and polysilicon display technology into a single unit. It accepts input from two different computer sources and two video/audio sources and projects them in VGA mode.

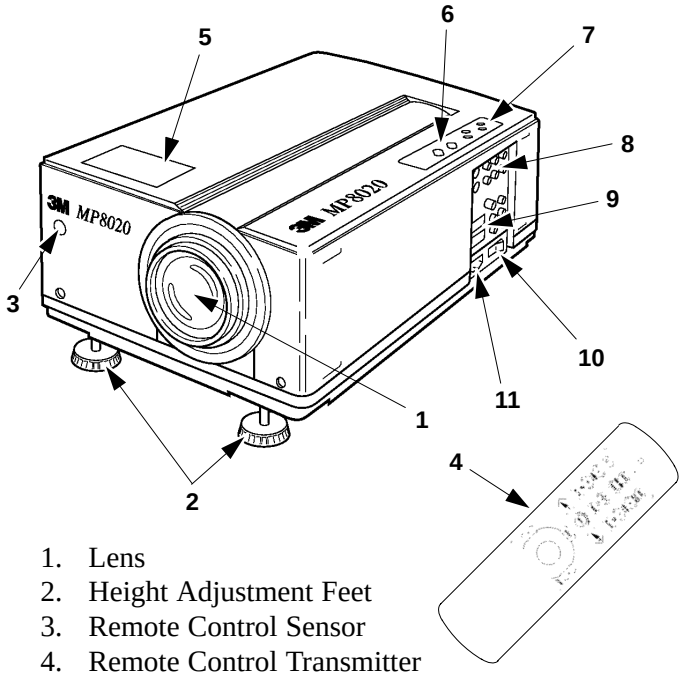
Switching your presentation from a computer to a video image back to a computer simply requires the push of a button on the remote control keypad.

The MP8020 Multimedia Projector offers the following features:

- Easy to set up and use
- Portable (suitcase-style carrying handle)
- Metal halide projection lamp
- Lamp output 300 lumens
- 640 x 480 VGA image
- Ability to display 16.7 million colors
- Two computer input connections
- Two video input connections
- Power zoom
- Power focus
- Full function remote control
- Lighted control panel keypad (push button back-lit remote control keypad)
- Built-in speaker (3 Watts)
- Horizontal and vertical image inverting function allows table top or ceiling mount
- On-screen menu displays in your choice of seven different languages
- On-screen menu to adjust video image brightness, tint, color, contrast, sharpness, video system
- On-screen menu to adjust RGB (computer) image brightness, sharpness, horizontal phase and horizontal size
- Automatic keystone correction

2-2. Parts Identification List

The numbers shown below correspond to the names of the projector parts in Figure 2-1.



1. Lens
2. Height Adjustment Feet
3. Remote Control Sensor
4. Remote Control Transmitter
5. Built-In Speaker
6. Indicator Lights
   a. On
   b. Lamp
   c. Temp
7. Control Panel Keypad
   a. Focus button
   b. Zoom button
   c. Input button
   d. Standby/On button
8. Video/Audio Input Terminals
   a. S-Video1/S-Video2 (Mini DIN 4-pin)
   b. Video1/Video2 (RCA Jack)
   c. BNC (Video)
   d. Audio-L/Audio-R (RCA Jack)
9. RGB (computer) Input Terminals
   a. RGB1/RGB2 (D sub 15-pin)
   b. Audio-L/Audio-R (RCA Jack)
10. Power Switch
11. Power Cord Connector

Figure 2-1. Identifying MP8020 Projector Parts

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3-1. Cable Connections

It only takes a few minutes to connect the 3M™Multimedia Projector MP8020 to your computer, VCR or other video device (Figure 3-1).

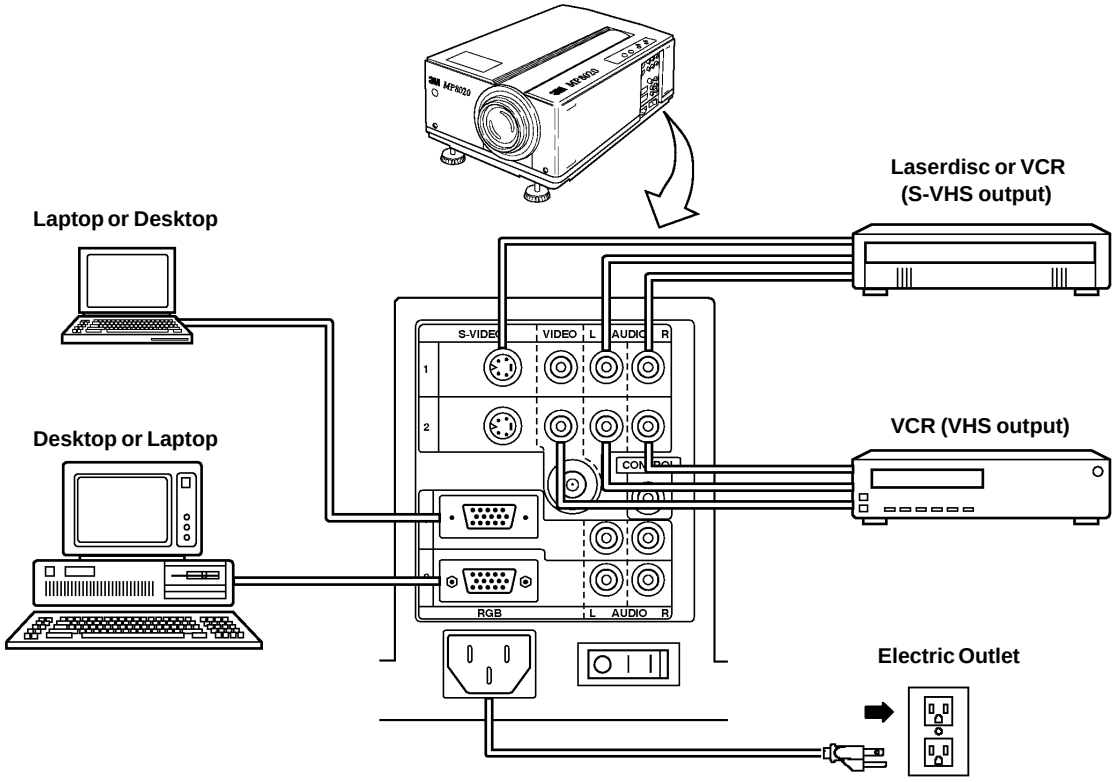

Figure 3-1. Typical Cable Configuration

Terminal Connection Panel

Take a moment to look over the input connection terminals (Figure 3-2) on the side of the projector. Connect your first input source to the *Terminal 1* connectors and your second input source to the *Terminal 2* connectors.

The terminal connectors for VIDEO/AUDIO1 are: S-Video, Video, Audio-L, and Audio-R.

The terminal connectors for VIDEO/AUDIO2 are: S-Video, Video, BNC, Audio-L, and Audio-R.

The terminal connectors for RGB1 (computer) and RGB2 (computer) are: RGB, Audio-L, and Audio-R.

Note

The CONTROL terminal is not used.

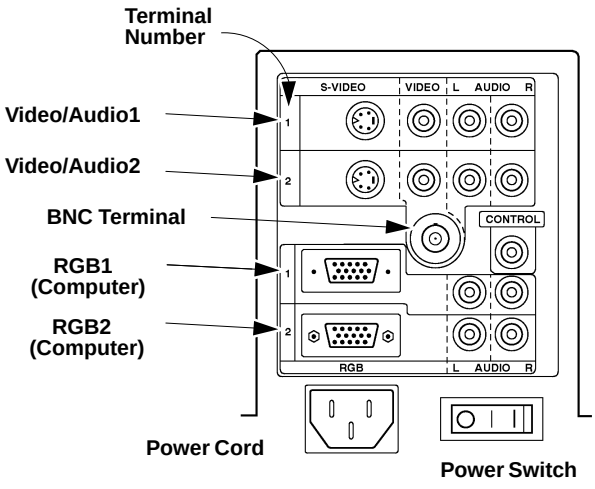

Figure 3-2. Input Connection Terminals

Power Connection

⚠ Caution

To prevent damage to equipment, all power to the MP8020 and input sources must be turned OFF during cable hook up.

The power cord (Figure 3-3) is detachable from the projector and has different connection plugs on each end. Plug the female end into the power cord terminal on the projector and the male end into a properly grounded electrical outlet.

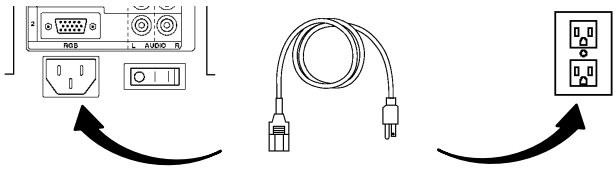

Figure 3-3. Connecting the Power Cord

RGB (Computer) Input Connection

There are two input jacks available for connecting either desktop or laptop computers. Find the cable that fits your computer type. The MP8020 comes with two computer input cables. The first cable (Figure 3-4) fits IBM® PC and compatible VGA video systems, and the other cable (Figure 3-5) fits on the end of the first cable and adapts it to fit Apple®MAC II computers.

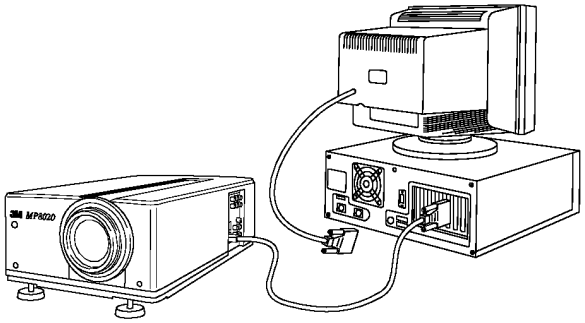

Figure 3-4. IBM PC Computer

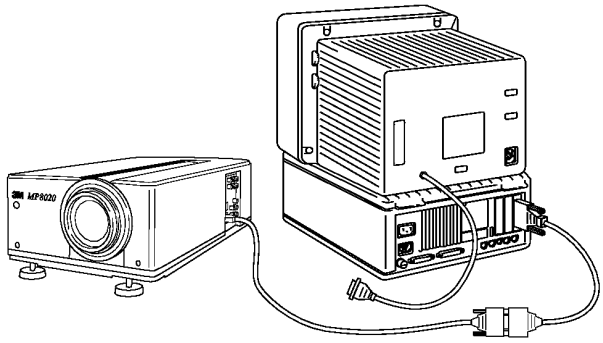

Figure 3-5. MAC II Computer

S-Video Connection

Some video devices can generate S-VHS video, or S-Video (Y/C). The MP8020 will accept this signal through the S-VIDEO1 or S-VIDEO2 connectors. The S-VHS cable has identical round four-pin connectors on either end (Figure 3-6). Connect one end to the S-Video jack on the input source device, and the other end to the S-VIDEO1 or S-VIDEO2 terminal on the MP8020. Remember to connect the audio cables for sound output.

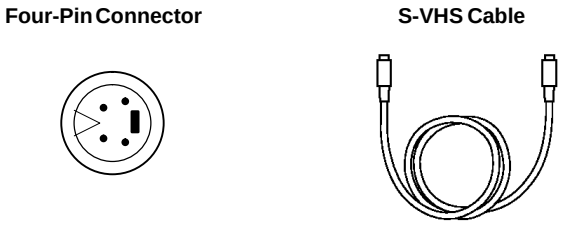

Figure 3-6. S-Video Input

Video/Audio Connection

Find the small, circular connector on your camcorder laserdisc player, VCR, or other video source marked VIDEO OUT, TO MONITOR, or something similar.

Use the 3-conductor video/audio cable and insert the video (white) connector into the video output jack of your video source device, and the other end into the MP8020's VIDEO1 or VIDEO2 connector.

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Next, find the AUDIO OUT terminals on your VCR or other audio source. Insert the left and right audio cable connectors (Figure 3-7) to the input source, and connect the other end to the AUDIO-L and AUDIO-R terminals on the MP8020.

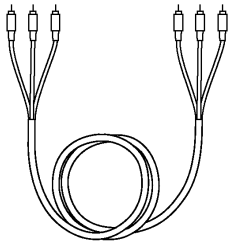

Figure 3-7. 3-Conductor Video/Audio Input Cable

Note

The MP8020 projector is not a stereo device. Stereo sound channeled through it becomes monophonic due to an internal sound mixer that converts stereo to mono.

If you are giving a multimedia presentation that is complete with stereophonic sound, then you may want to consider connecting your audio source to a high-quality stereo system. Of course, if you route your audio cables this way, the MP8020 audio controls or buttons will not function.

BNC Connection

The MP8020 projector has a single BNC connector. The BNC cable, available at most electronic stores, can be used for video input. Connect one end to the BNC jack on the input source device, and the other end to the BNC jack (terminal 2 only) on the MP8020. Remember to connect the audio cables (RCA type connectors) for sound output.

Mouse Receiver Connection

The MP8020 remote control receiver can be used to control the mouse button functions on your computer. ***The "Mouse Receiver" must be installed for this feature to function***. The mouse receiver can be connected to either a serial port (Figure 3-8) or mouse port (Figure 3-9) on your computer. For either serial port (Figure 3-10) or mouse port (Figure 3-11) connections, the computer mouse can be hooked into the loop allowing both the computer mouse and MP8020 mouse buttons to function. ***Always remember to power down your computer before making any cable connections.***

Note

Serial computer mice with a large power requirement (20 mA or greater) may not be compatibile.

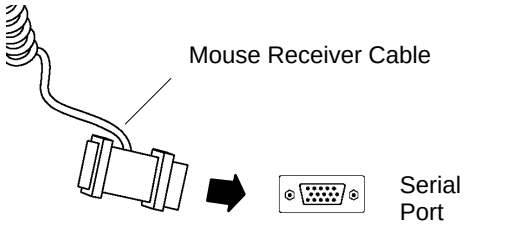

Figure 3-8. Mouse Receiver to Serial Port

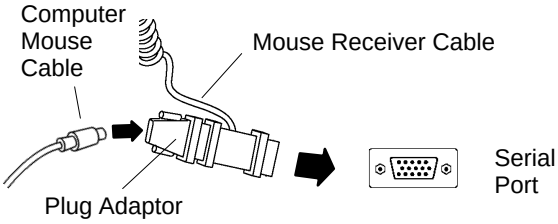

Figure 3-10. Mouse Loop-Through Connection

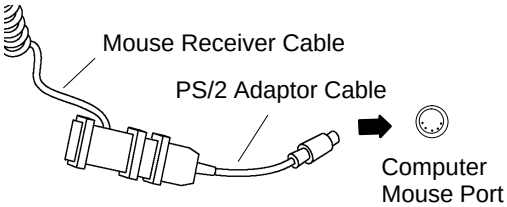

Figure 3-9. PS/2 Cable to Mouse Port

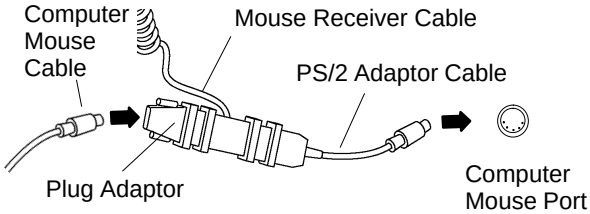

Figure 3-11. Mouse Loop-Through Connection

3-2. Projector Set Up

The meeting room is your operating environment and any stray light hitting the projection screen will become glare. It is best to use a meeting room without wide-open windows. If there are “light stripes” from venetian blinds, try to find a viewing area that’s away from them – and remember, the light stripes will move as the hour changes.

Ambient Light

Whenever you have a choice, light the room from the rear, away from the projection screen. The MP8020 has a brightness adjustment to achieve the best image possible.

Distance to Viewing Screen

The MP8020 can be used in a small or large meeting room to project a quality image from 46 cm (18 inches) to 762 cm (300 inches) in size. The distance between the projector and the viewing screen (see *“a”* in Figure 3-15) and the zoom lense setting (minimum to maxium) will determine the size of the projected image. Refer to the table in Section 9-2 to determine how far away from the viewing screen you need to place the projector to fill the screen with the projected image.

Remember that increasing the projector-to-screen distance also decreases the image’s brightness dramatically. In other words, as the image grows larger, it also grows dimmer.

For best results, experiment to find the right combination of projector-to-screen distance and room lighting.

Ceiling Mount Considerations

An optional ceiling mount bracket (Figure 3-12) is required to install the MP8020 from the ceiling. For this type of installation, the image must be inverted. Refer to section *4-4 Inverting the Image* for more details.

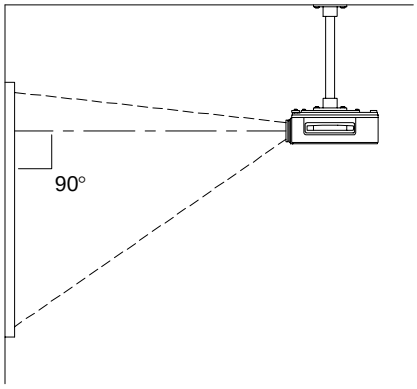

Figure 3-12. Optional Ceiling Bracket

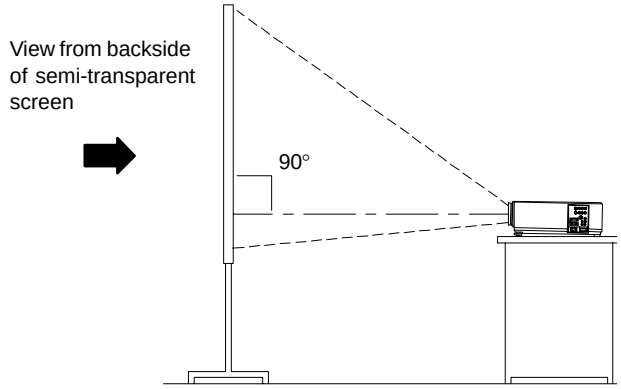

Figure 3-13. Rear Projection Viewing

Rear Projection

A semi-transparent screen (Figure 3-13) can be used to project an image and view it from the backside of the viewing screen. For this type of installation, the image must be inverted. Refer to section 4-4 *Inverting the Image* for more details.

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Projector to Viewing Screen Alignment

The size of the projection screen and the distance of the projector to the screen are important considerations for determining the best placement of the projector. After the best projector to screen distance has been determined, the position of the projection screen in relation to the center of the projection lens must be considered.

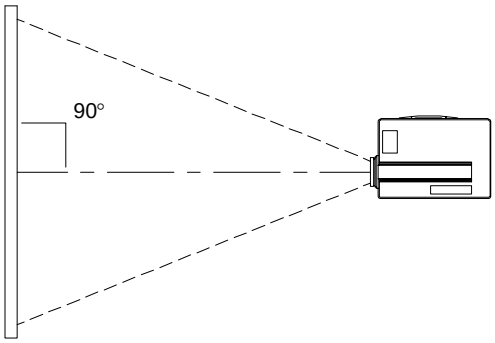


Figure 3-14. Top View

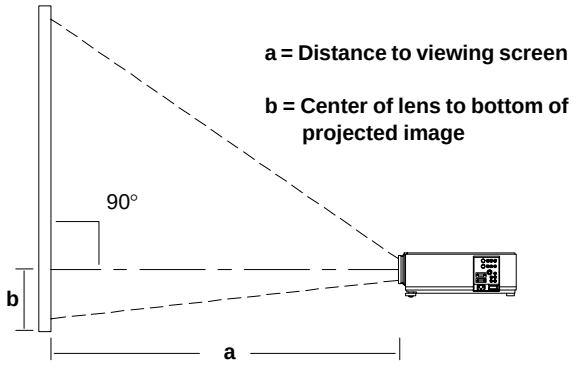


Figure 3-15. Side View

Measured from the center of the projection lens (Figure 3-14), the projected image should be split equally left to right. For best results, rotate the projector until the image on the projection screen is perpendicular (90°) from the lens.

Measured from the center of the projection lens, the top to bottom projected image (Figure 3-15) is projected with most of the image above the center of the lens and a small amount below the center of the lens. The position of the projected image to the center of the lens is an important consideration for the vertical placement of the projection screen.

Use the table below to calculate the approximate distance (refer to "b" in Figure 3-15) from the center of the lens to the bottom of the projected image. Both normal and ceiling mount applications are affected by this distance.

Screen	a		b
	Minimum	Maximum	
102 cm (40 in.)	137 cm (53 in.)	223 cm (87 in.)	8 cm (3 in.)
152 cm (59 in.)	209 cm (82 in.)	340 cm (133 in.)	13.2 cm (5 in.)
203 cm (79 in.)	282 cm (110 in.)	455 cm (177 in.)	17.5 cm (7 in.)
254 cm (99 in.)	353 cm (138 in.)	569 cm (222 in.)	22.1 cm (8.6 in.)
305 cm (119 in.)	427 cm (167 in.)	685 cm (267 in.)	26.4 cm (10 in.)
381 cm (149 in.)	533 cm (208 in.)	858 cm (335 in.)	33 cm (13 in.)
508 cm (198 in.)	714 cm 278 in.)	1149 cm (448 in.)	43 cm (17 in.)

Adjusting the Projector Elevation

The elevation can be adjusted by turning the foot adjuster to raise or lower the angle of the projector.

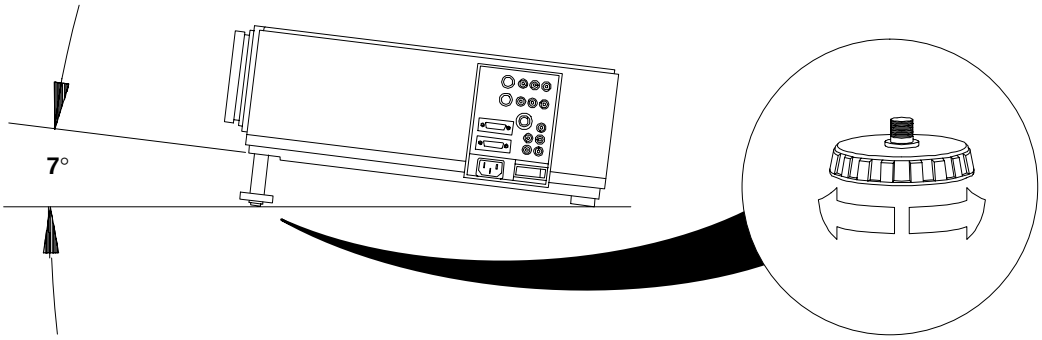


Figure 3-16. Side View

Note

Both adjusting feet must be raised or lowered the same amount to project a level image on the viewing screen. The elevation can be adjusted up to seven degrees.

3-3. Now What?

Your MP8020 is now connected and ready to power on. Turn to Section 4 for details on operating the projector.

4-1. Turning On the Projector

Read the Important Safeguards before operating the MP8020 projector.

Refer to Section 3 to make all cable connections. When the input cables and power cords are connected, turn on the power, adjust the size and focus of the projected image and begin your presentation.

Power On: Turn on the projector power, then turn on the power to your input sources. The projector power switch is located in the lower right corner of the input terminal panel.

Press the power switch to ON to apply power to the projector. **|** = ON **O** = OFF

⚠ Caution
Allow a projector that has been stored in a cold place to warm up to operating temperature 0°C to 35°C (32°F to 95°F) before applying power.

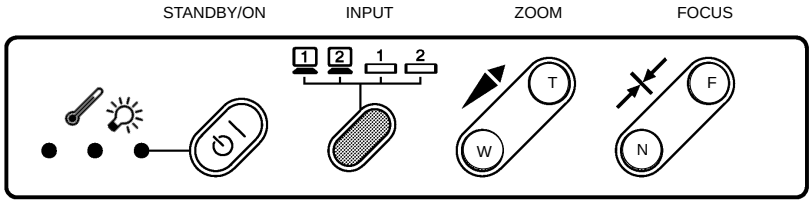
The ON indicator on the projector control panel will turn orange, indicating the unit is in the *standby mode*.

Note

The lamp does not energize in the standby mode.

Remove Lens Cap: Remove the lens cap from the projection lens before energizing the lamp.

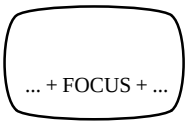
Projector Control Panel: The projector control panel is located on the top of the projector. Use these buttons to control the projector functions or use the remote control.



Energize Lamp: Press the STANDBY/ON button to energize the lamp. The ON indicator will blink as the metal halide lamp warms up. It takes a few moments for the lamp to reach its full light output. When the lamp is ready, the ON indicator turns solid green.

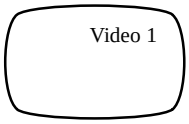
Zoom: Press the ZOOM button to adjust the image size to fill the screen. If you cannot make the image fill the screen, move the projector further back from the screen.

Focus: Press the FOCUS button to adjust the sharpness of the image. The following on-screen display will appear:



Press and hold down the FOCUS button until the image becomes sharp and clear.

Select Input: Press the INPUT button to select the desired video or computer source. The following on-screen message will appear:



Press the INPUT button again to select the next input source (VIDEO2, RGB1, RGB2).

The following *Error Messages* may display if there is a video input problem:

NO INPUT DETECTED Cables are not connected to input jacks or input source is off.

SYNC IS OUT OF RANGE The connected input source is not compatible with the MP8020.

Volume Adjustment: Use the remote control to adjust the speaker volume. Press and hold to decrease or to increase the volume level. The volume cannot be adjusted while displaying an on-screen menu.

Note

Press the MUTE button on the remote control to silence the volume. Press MUTE again to return the sound.

4-2. Adjusting the Picture

The projected image can be adjusted using the remote control.

For *video signals* you can adjust:

- Brightness (dark to light)
- Tint (red to green)
- Color (low to high)
- Contrast (low to high)
- Sharpness (low to high)
- Language (menus display in seven languages)
- Image Inversion (horizontal/vertical)
- Video System (AUTO, NTSC, PAL, SECAM)

For *RGB (computer) signals* you can adjust:

- Brightness (dark to light)
- Contrast (low to high)
- Horizontal Phase (decrease image flicker)
- Horizontal Size (increase or narrow image)
- Image Inversion (horizontal/vertical)
- Language (menus display in seven languages)

Press the MENU button to display the on-screen menu (Figure 4-1) for the currently selected input device.

Note

The mouse buttons (L-Left, R-Right and Drag) are disabled while the on-screen menu displays.

Move the TRACKBALL up/down to highlight the menu item (brightness, tint, color, etc.) that you wish to adjust. Now move the TRACKBALL or press or to adjust the setting to the desired level. The screen image will change as you increase or decrease the setting.

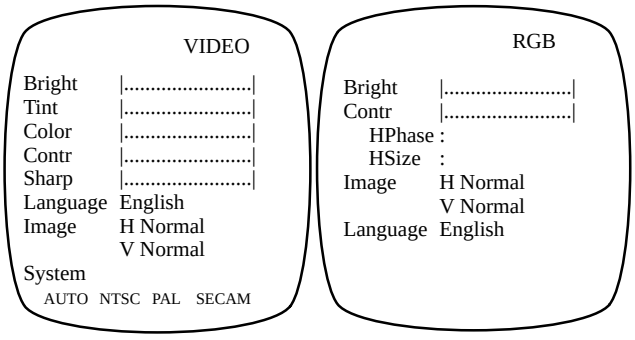


Figure 4-1. Video/RGB On-screen Menus

Note

If you want to return the adjustments to the default settings, press the RESET button and the message "NORMAL" will display.

When you are done adjusting the picture, press the MENU button to remove the on-screen menu from the display and return control to the mouse buttons.

4-3. Memory Function

The MP8020 will retain all picture adjustment settings you make until you either change them again or return all settings to the factory default. To return picture adjustments back to the factory settings, press the MENU (MENU) button to display the on-screen menu and then press the RESET button

4-4. Inverting the Image

The image can be inverted for ceiling mounted applications. Press the MENU (MENU) button on the remote control to display the on-screen menu (Figure 4.1). Use the TRACKBALL to move down the menu and highlight the *Image* lines (H-Normal and V-Normal). Use the TRACKBALL or press ◄- or ►+ to move left or right and invert the image horizontally (H-Normal changes to H-Invert). Move left or right again to invert the image vertically (V-Normal changes to V-Invert).

Note

Each time you move left or right, the horizontal image first and then the vertical image will alternate changing their image inversion setting.

4-5. Image Position

The image can be moved vertically or horizontally to center it on the projection screen. When a projected image is displaying (*normal* operating mode), press the UP/DOWN ▲ ▼ arrow to move the image vertically or LEFT/RIGHT ◄ ► arrow to move it horizontally.

Note

*An image **must be** displaying (normal operating mode) to adjust the vertical and horizontal position. If a menu is displaying (menu operating mode), the arrow buttons will adjust only the menu settings.*

4-6. Language

The MP8020 will display the on-screen menus in the following languages:

- English
- French
- Spanish
- German
- Italian
- Dutch
- Norwegian

Press the MENU (MENU) button on the remote control to display the on-screen menu (Figure 4.1). Use the TRACKBALL to move down the menu until the *Language* line is highlighted. Use the TRACKBALL or press ◄- or ►+ to scroll through a list of names for each available language. To display the menu in the selected language, use the TRACKBALL to move to the next menu line.

Note

The selected language does not display until after you exit the LANGUAGE line.

4-7. Video System

The MP8020 has an automatic video selection function that will choose the correct video system or you can manually select the video system.

On the remote control, press the MENU button to display the on-screen menu (Figure 4.1) and press the VIDEO button to display the Video 1 or Video 2 menu. Use the TRACKBALL to move down the menu to the *System* line (AUTO, NTSC, PAL, SECAM). Use the TRACKBALL or press or to select either *AUTO* (for automatic system detection) or *NTSC, PAL* or *SECAM* to choose a specific system.

4-8. Turning Off the Projector

Press the STANDBY/ON button to switch the projector to the standby mode. The lamp will shut off and the green indicator on the projector panel will turn to orange. Wait until the cooling fan motor cycles off before you press the Power Off switch (Figure 3-2).

Note

Switching the power off before the fan has cycled off, will decrease the life of the projection lamp.

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5-1. How to Operate the Remote Control

The remote control keypad (Figure 5-1) has the same buttons as the projector control panel, plus additional buttons to control different projector and mouse functions (mouse receiver must be connected). To use the remote control, aim the remote toward the projection screen and press the desired button. The remote signal will bounce off of the projection screen (Figure 5-4) and back to the sensor on the MP8020 or mouse receiver.

Note

For best results, always use fresh batteries in the remote control. If all of the buttons illuminate and do not shut off after 5 seconds, the batteries may need to be replaced. See "Replacing the Batteries."

Remote Control Buttons

The remote control transmitter has two operating conditions that are indicated by a red LED lamp. If the LED is *OFF*, the remote is in the NORMAL mode of operation and will control normal projector and mouse button functions. If the LED is *FLASHING*, the remote is in the MENU mode of operation and will control the trackball used to make changes to on-screen menus.

Note

When the MP8020 projector is in the MENU mode (on-screen Menu is being displayed), the remote control must also be in the MENU mode (LED is flashing) or the remote control buttons will not operate properly. Press and hold the MENU button for two seconds to switch the remote to the MENU mode.

○ *LED is Off* – the remote is in the Normal mode. When a normal video or computer image is being displayed and the LED is off, the remote buttons control normal projector functions (volume, focus, etc.) and normal mouse functions (left/right, trackball, drag) for the computer (RGB) input source.

☀ LED is *FLASHING* – the remote is in the MENU mode. When an on-screen menu is being displayed and the LED is flashing, the remote trackball controls the cursor movement for making changes to the menu. The LED will automatically stop flashing and return to the normal mode after five seconds of inactivity.

⏻ Switches the projector between projection (power on, lamp on) and standby (power on, lamp off) modes.

VIDEO RGB Selects the desired input source. Press VIDEO for video sources or RGB for computer input sources.

RESET Press and hold down for five seconds to display the total number of hours of lamp usage for the current lamp (*NORMAL* operating mode) or press to return the picture adjustment settings to the factory defaults (*MENU* operating mode). See MENU button. Also used with TIMER button.

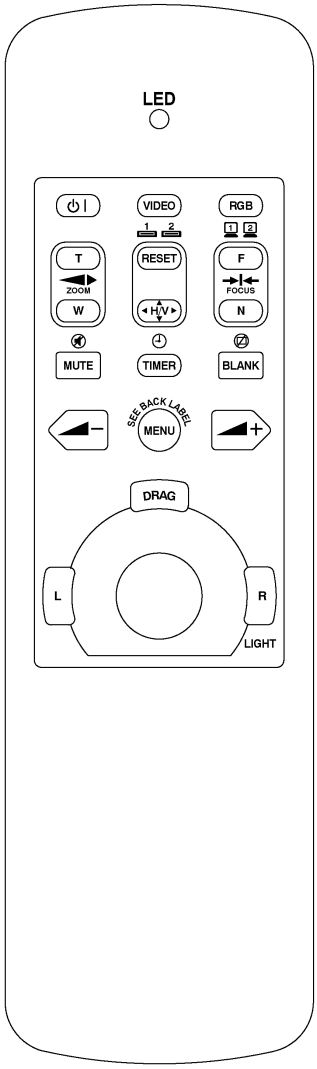

Figure 5-1. Remote Buttons

When the projector is displaying a video or computer image, press the H/V button to switch to the MENU mode and the LED will begin flashing. Move the trackball left/right to adjust the image horizontally or up/down to adjust the image vertically. When changes are complete, press the H/V button to return to the NORMAL mode.

Note

The LED will stop flashing and return the remote control transmitter to the NORMAL mode after five seconds of inactivity.

ZOOM

Sizes the picture to fit the screen. Press W to make the projected image wider or T to reduce the image size.

FOCUS

Press F or N to focus the image.

MUTE

Turn the audio (speaker) sound ON (mute bar turns green) or OFF (mute bar turns red).

TIMER

This button displays a digital countdown clock in the upper left corner of the projection screen. Minutes are displayed on the left and seconds on the right. You can set the timer for the desired number of minutes to be counted down. *Seconds cannot be set – they are a display only field.*

Clock Display

00:00

Minutes : Seconds

Figure 5-2. Clock

When the projector is in the *Normal* mode:

a. ess TIMR to dispay te cock. Fiue 5-2.
b. Press the RESET button to position the cursor in the left most minutes column.
c. Press and hold RESET to put the remote in menu mode (*LED will flash*).
d. Move the track ball up/down to change the digit.
e. Move the track ball left/right to move to the next column.
. Press RESET to start the clock.

To reset the clock for a different amount of time, repeat steps b-f. To remove the clock display from the projection screen, press TIMER.

BLANK

Press to blank the screen (screen turns blue). Press again to return the normal display.

Press to decrease or to increase the speaker volume (NORMAL mode) or to move left/down or to move right/up to adjust the setting of an on-screen menu line. See MENU button.

MENU

The menu button is used to switch the projector and remote control between the *NORMAL* (*Video image and* LED is *Off)* and *MENU (On-screen Menu and LED is flashing)* operating modes.

NORMAL Mode: (***Video image being displayed, LED is Off***) The normal operating mode is used to display normal video images from your video or computer sources. Use the remote control buttons to adjust the focus and volume levels of the projector and operate the mouse key functions (trackball, drag, left/right) to control the video presentation.

MENU Mode: (***On-screen Menu being displayed, LED is FLASHING***) The MENU operating mode is used to display on-screen Menus. These menus allow you to adjust the MP8020 projector settings for best performance.

To make a projector setting change from the on-screen menu:

a. ess and eease te MN button to dispay te on-sceen menu.
b. ess and od te MN button o to seconds to cane te emote to te MN mode. *The LED on the remote will flash the entire time the remote is in the menu mode.*
c. Moe te tackba to make te desied canes on eac Menu ine.
d. ess te Menu button to etun to te NORMAL mode.
e. ait ie seconds o te LD to stop asin emote automaticay etuns to Noma mode.

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Using the Mouse Buttons

The mouse receiver must be connected before the remote control buttons will operate the mouse functions. See Mouse Receiver Connection.

Note

Remember to reboot the computer after the mouse receiver has been connected.

There are three mouse buttons L-Left, R-Right and DRAG and a TRACKBALL for controlling mouse functions. See Figure 5-3. When the MENU button is in the *normal* operating mode, these buttons perform the same functions as the mouse buttons. When the MENU button is in the *MENU* mode the L-Left and DRAG buttons are disabled.

TRACKBALL: The trackball controls the position of the on-screen cursor or pointer.

L – Left Mouse Button: In *NORMAL* operating mode, this button has the same function as a left mouse button. In *MENU* mode, this button is disabled.

R – Right Mouse Button: In *NORMAL operating* mode, this button has the same function as a right mouse button. In *MENU* mode (*video image and flashing LED*), this button will light all of the remote control buttons for five seconds.

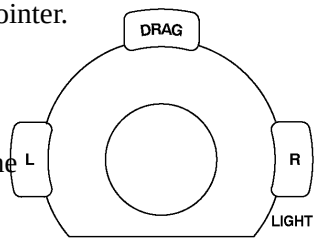

Figure 5-3. Mouse Buttons

Note

If the backlighting does not shut off in five seconds, this is an indication of low batteries.

DRAG: Use this button to hold and drop an object so it can be moved to a new position on the screen. This button is disabled in MENU mode.

a. Press and release the DRAG button to select a highlighted object (similar to pressing down and holding a normal mouse key button).
b. Use the TRACKBALL to move the object to a new position.
c. Press the DRAG button again to release the object.

Mouse Receiver

Set the mouse receiver on top of the MP8020 projector with the sensor facing the projection screen. Point the remote control at the projection screen to bounce the signal off of the screen and back to the mouse receiver.

Note

The mouse receiver must be positioned so that the remote control signal can enter the sensor. You can either bounce the signal off of the projection screen or rotate the mouse receiver to aim the remote directly at it. Aiming the remote directly at the receiver will increase the effective signal distance.

For best results, always use fresh batteries in the remote control transmitter.

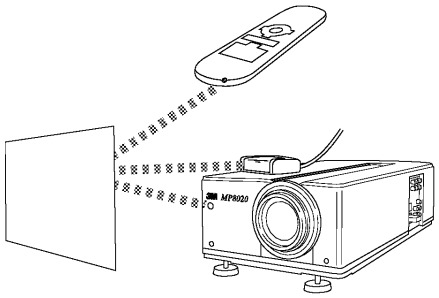

Figure 5-4. Using the Remote Control

Replacing the Batteries

The remote control uses three AAA batteries. The battery cover is located on the back of the remote control. Slide the door open to access the battery compartment. Make sure the polarity (+/–) on each battery matches the decal in the battery compartment.

Batteries Low: All the buttons on the remote control will illuminate when the batteries are low in power and need to be replaced.

6-1. Metal Halide Projector Lamp

If the projected image appears dark or the LAMP indicator light comes on, the lamp may be getting old and in need of replacement.

Under normal operating conditions, the lamp should last approximately 700 hours. However, after time the lamp will slowly grow dimmer. For best results, replace the lamp after 700 hours of usage.

Note

The LAMP indicator will come on when the lamp becomes too hot. If this happens, turn the power off and let the projector cool. Now, turn the power on and if the LAMP indicator comes on again, call customer service or your dealer.

6-2. Replacing the Lamp

To replace the lamp, you will need the following:

- Phillips screwdriver
- Standard #2 screwdriver
- Metal halide lamp

Note

Contact your dealer or customer service and ask about lamp recycling.

Power OFF: Press the Standby/ON button and wait for the fan motor to cycle off. Then, turn off the power switch and unplug the power cord.

⚠ WARNING

Unplug projector. Lamp and adjacent metal parts are <u>extremely</u> hot! To avoid burns to your fingers, allow the projector to cool for at least 1 hour before replacing the lamp.

Remove Lamp Access Door: The lamp access door is located on the back of the machine on the right side (Figure 6-1). Use a phillips screwdriver to unscrew the lamp cover retaining screw and gently open the cover and set it aside.

Note

The screw is a self-containing screw that cannot be removed from the cover.

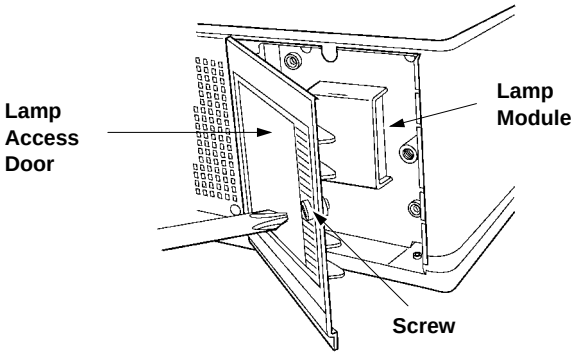

Figure 6-1. Lamp Access Door

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Retaining Screws: Use a standard screwdriver to unscrew the lamp module retaining screws (Figure 6-2).

Note

There are two lamp module screws that must be loosened. These screws are self-containing screws that cannot be removed from the lamp module.

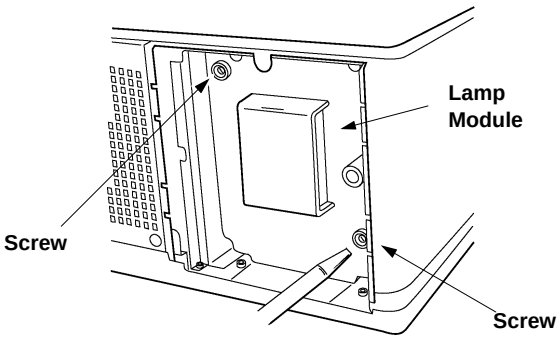

Figure 6-2. Lamp Module Retaining Screws

Remove Lamp Module: Grasp the lamp module with one hand and the projector body opening with the other hand (Figure 6-3). Apply upward pressure to the projector body as you slide the lamp out.

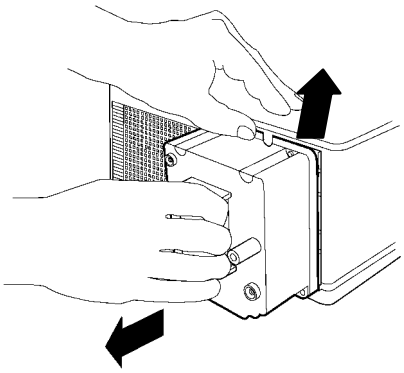

Figure 6-3. Slide Lamp Out to Remove

Insert Lamp Module: Carefully insert the new lamp module into the opening and slide it all the way back into place (Figure 6-4). Check the lamp module to be sure that it is fully inserted and flush against the back wall.

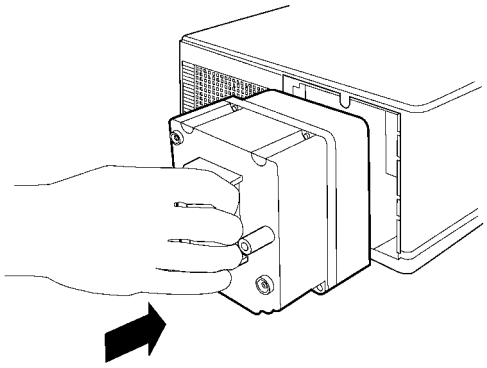

Figure 6-4. Slide Lamp In to Insert

Tighten the lamp module retaining screws to secure the lamp module in place (Figure 6-2).

Insert the hinge tabs on the left side of the lamp access door, then close and tighten the retaining screw to secure the door (Figure 6-1).

7-1. Cleaning

For best performance, keep your projector free of excess dust and surface dirt.

Daily Cleaning

Use a soft cloth to remove dust from the projector housing.

Cleaning the Projection Lens

Use 3M™ Overhead Cleaner 676 to remove surface dirt and smudges from the projection lens (Figure 7-1).

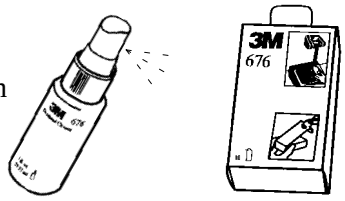

Figure 7-1. Cleaning the Lens

Cleaning the Air Filter

For best performance, clean the air filter every 100 hours of operations.

Unplug the power cord and stand the projector upright with the bottom facing you.

Unscrew two retaining screws and pull down and out on the handle to free the air cleaner door (Figure 7-2).

Carefully pry out tabs and lift up on the retaining frame to free the air cleaner (Figure 7-3).

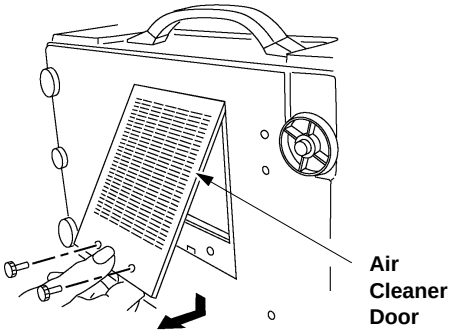

Figure 7-2. Pull Down and Out to Remove Door

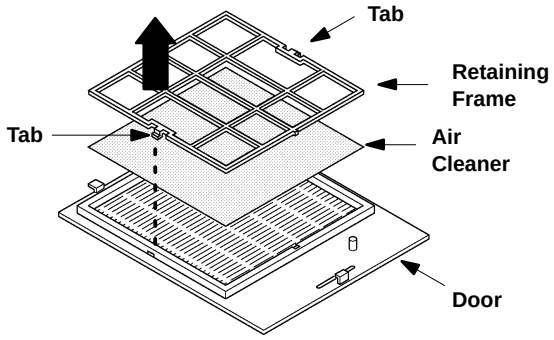

Figure 7-3. Remove Retaining Frame

Use a vacuum cleaner to remove the dust and dirt from the air cleaner screen (Figure 7-4).

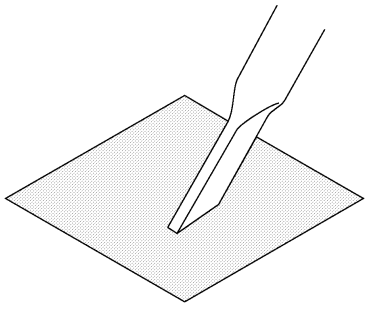

Figure 7-4. Vacuum Air Cleaner Filter

⚠ Caution

To avoid damaging the internal projector components, do NOT vacuum the inside of the projector.

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Insert the air cleaner in the door (Figure 7-5), position the retaining frame over the air cleaner and push the tabs down into the tab slots to hold the air cleaner and frame to the door.

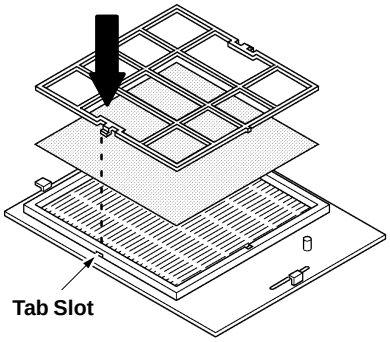

Figure 7-5. Insert Frame and Air Cleaner

Insert the hinge tabs on the door into the slots in the projector body and swing the door down. Push on the handle to fully engage the door latch and then tighten the retaining screws to secure the door. (Figure 7-6).

Note

The air cleaner door must be closed and latched or power to the lamp will be shut off and the LAMP indicator will come on.

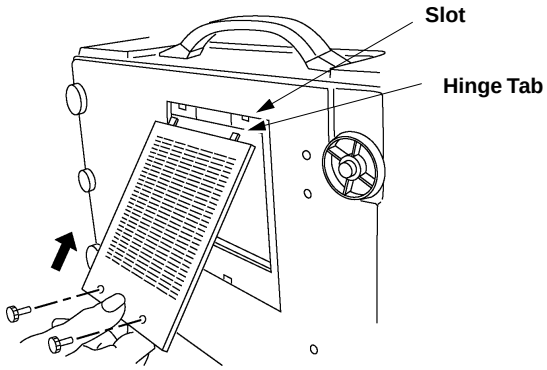

Figure 7-6. Insert Door and Close Tightly

Section 8: Troubleshooting

The MP8020 has been designed to be as simple and trouble-free to use as possible. If you should run into problems operating the projector, please review the troubleshooting information below.

Problem	Possible Solutions
Power does not come on	• Power cord must be plugged into an electric outlet. • Power switch must be turned on.
No picture and sound	• Set the projector to the correct input source. • Check all cable connections from input source to projector. • Make sure the input source power is on.
Picture displays but no sound	• Check all cable connections from input source to projector. • Press the + button on the remote control keypad to increase the volume. • Press the MUTE button on the remote control keypad.
Sound but no picture	• Check all cable connections from input source to projector. • Adjust the picture brightness. Press the MENU button on the remote control keypad.
Weak color, incorrect tint	• Adjust the picture color and tint. Press the MENU button on the remote control keypad.
Picture is dark	• Adjust the picture brightness and contrast. Press the MENU button on the remote control keypad. • Lamp may need replacement. Call customer service for assistance. See Service Information below.
Picture is not sharp and clear	• Adjust focus from projector panel or remote control.
LAMP indicator is solid red	• Turn the power off and let the projector cool. If the LAMP indicator comes on again there may be a problem with the lamp. Call customer service for assistance. See Service Information below.
LAMP indicator is blinking red	• Check the air cleaner to make sure it is fully closed and latched.
TEMP indicator is red	• Turn the projector off and let it cool. Check the ventilation holes for blockage.
Remote control does not operate	• Replace old batteries with fresh AAA batteries. • The polarity of the batteries (+/–) must match the decal on the remote control. • Point the remote control toward the projection screen so the signal will bounce back to the projector. Also make sure the remote control sensor on the front of the projector is not blocked from receiving the signal.

8-1. Service Information

For product information, product assistance, service information, or to order accessories, please call:

In U.S. or Canada: **800-328-1371**

In other locations, contact your local 3M Sales office.

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9-1. Specifications

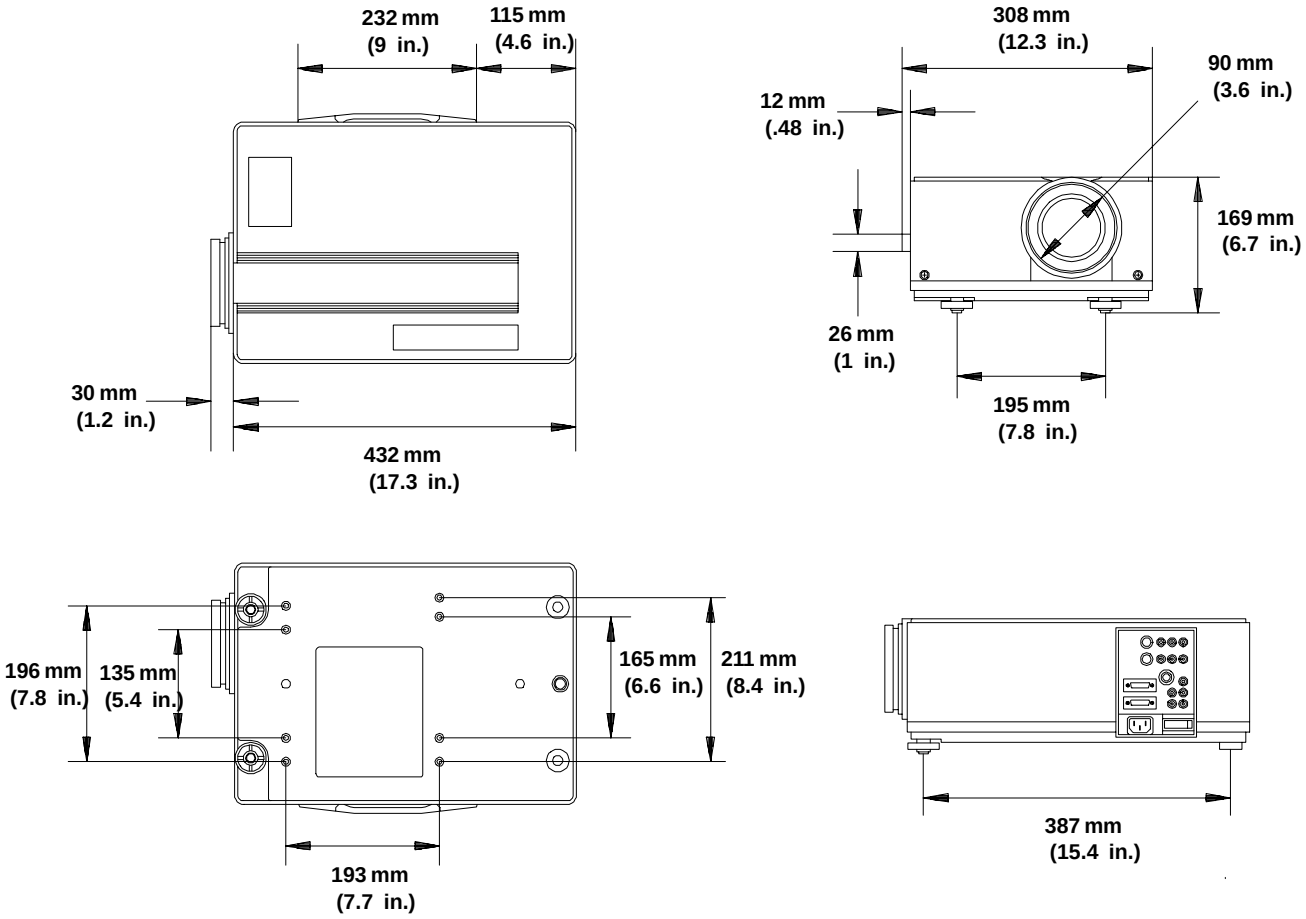
Width	32 cm (12.59 inch)
Height	17 cm (6.66 inch)
Depth	46 cm (18.16 inch)
Weight	10.4 kg (23.2 lbs)
Panel size	3.3 cm (1.3 inches)
Number of pixels	311,696 pixels (H644 X V484)
Zoom lens	F/Number: F/3.0–F/3.8 Focal Length: F=46.5-74.4 mm
Metal halide lamp	250W, 300 lumens, rated at 700 hours
Power supply	100-120VAC, 50/60Hz 198-264VAC, 50/60Hz
Power consumption	Maximum 350W
Storage temperature range	–20°C to 60°C (–4°F to 140°F)
Operating temperature range	0°C to 35°C (32°F to 95°F)
Input terminals	S-Video: Mini DIN4-pin terminal Video: RCA jack BNC terminal (Video 2 only) Audio: RCA jack RGB: D sub15-pin shrink terminal
Input signals	S-Video: Luminance 1.0V peak to peak , 75Ω termination Chroma 0.286V peak to peak (burst signal) 75Ω term. Video: 1.0V peak to peak, 75Ω termination Audio: 200mvRMS, across 20kΩ
RGB (computer) input	Audio: RCA jack
Batteries for remote control	Three AAA, 1.5 Volt

9-2. Projector-to-Screen Distances

Distance to Screen		223 cm (7.3 ft)	341 cm (11.2 ft)	436 cm (14.9 ft)	570 cm (18.7 ft)	686 cm (22.5 ft)	860 cm (28.2 ft)	1173 cm (38.5 ft)
Screen Diagonal	*Min Zoom*	102 cm (40 in)	152 cm (60 in)	203 cm (80 in)	254 cm (100 in)	305 cm (120 in)	381 cm (150 in)	508 cm (200 in)
	Max Zoom	160 cm (63 in)	244 cm (96 in)	325 cm (128 in)	406 cm (160 in)	490 cm (193 in)	612 cm (241 in)	836 cm (329 in)
Screen Width	*Min Zoom*	81 cm (32 in)	122 cm (48 in)	163 cm (64 in)	203 cm (80 in)	244 cm (96 in)	305 cm (120 in)	406 cm (160 in)
	Max Zoom	130 cm (51 in)	196 cm (77 in)	259 cm (102 in)	325 cm (128 in)	391 cm (154 in)	490 cm (193 in)	668 cm (263 in)
Screen Height	*Min Zoom*	61 cm (24 in)	91 cm (36 in)	122 cm (48 in)	152 cm (60 in)	183 cm (72 in)	229 cm (90 in)	305 cm (120 in)
	Max Zoom	97 cm (38 in)	147 cm (58 in)	196 cm (77 in)	244 cm (96 in)	295 cm (116 in)	366 cm (144 in)	500 cm (197 in)

9-3. Physical Dimensions

The MP8020 projector has the following physical dimensions:



9-4. Computer Video (RGB) Input Signal

The following table lists the ranges for the computer video (RGB) input signals.

		fH (kHz)			
		15~20 kHz	20~28 kHz	28~33 kHz	33~40 kHz
fV (Hz)	45~64 Hz	NTSC	PC98 640 x 400	VGA 640 x 480	
	64~70 Hz	—	—	VGA 640 x 400 640 x 350	MAC 13V 640 x 480
	70~80 Hz	—	—		VESA 72 Hz 640x 480
	80~85 Hz	—	—	—	VESA 84 Hz 640 x 400

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9-5. Computer Video (RGB) Input Terminal

The following illustration (Figure 9-1) shows the terminal connections for the D-sub 15 pin HD connector. Refer to the table below for a description of the wire to pin connections.

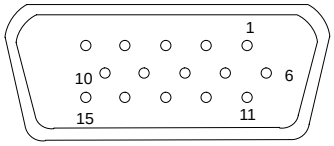

Figure 9-1. D-sub 15 pin HD Connector

Pin #	Description	Pin #	Description
1	Video signal (red)	9	N.O.
2	Video signal (green)	10	Ground
3	Video signal (blue)	11	Ground
4	N.O.	12	N.O.
5	Ground	13	Horizontal/composite sync signal
6	Ground (red)	14	Vertical sync signal
7	Ground (green)	15	N.O.
8	Ground (blue)		

9-6. S-Video Input Signal Terminal

The following illustration (Figure 9-2) identifies the terminal connections for the Mini DIN4-pin.

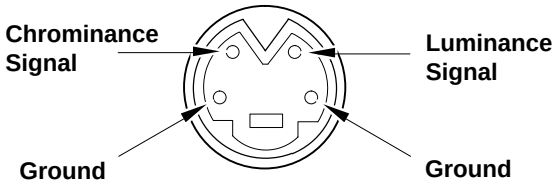

Figure 9-2. S-Video Input (Mini DIN4-pin)

Video input signal terminals are detected by the MP8020 in the following order of priority:

a. S-ideo input temina
b. RCA ack input temina
c. BNC connecto temina (VIDO2 ony)

10-1. MP8020 Multimedia Projector Accessories

If you wish to purchase accessories or replacement parts for the 3M MP8020 Multimedia Projector, please refer to the following list:

Accessory Parts List

Part Description	Part Number
Metal Halide Lamp Module, 250W	78-6969-8131-1
Power Cord	26-1009-7103-0
VGA Cable (15–15 pin M/M)	26-1011-3421-6
Apple MAC II Video Adaptor Cable (15-15 pin F/M)	26-1011-3422-4
Video Cable (S-Video mini DIN-4pin)	26-1011-3419-0
P.C. Trackball Remote Kit (*remote, P.C. mouse receiver, PS/2 adaptor, batteries, plug adaptor, pouch*)	78-6969-8142-8
MAC Trackball Remote Receiver (*receiver only*)	78-6969-8128-7
Lens Cap	26-1011-3418-2
3 Conductor Video/Audio Cable	26-1011-3420-8
Soft Cover Travel Case	78-6969-8130-3

How to Order

Please order these parts through your dealer, or contact 3M Customer Service at the following number:

In U.S. or Canada: **1-800-328-1371**

In other locations, contact your local 3M Sales office.

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