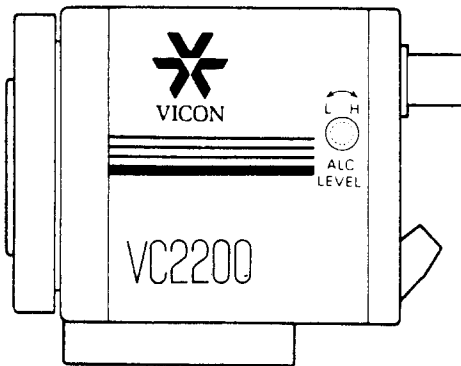




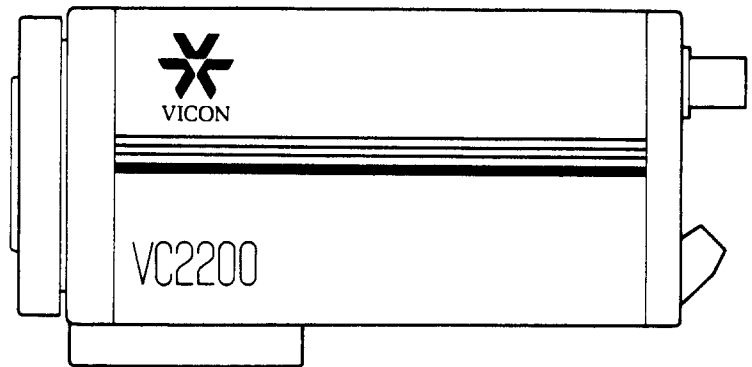
REF. NOTES	SHEET NO.	REV.	SEC.
	X697	1189	2

INSTRUCTIONS FOR INSTALLATION AND OPERATION

MODELS VC2200-12, -12C, -24, -24C, -24G, AND -24GC 1/2-INCH SOLID-STATE BLACK- AND-WHITE CCD CAMERAS



12 VDC MODELS



24 VAC MODELS

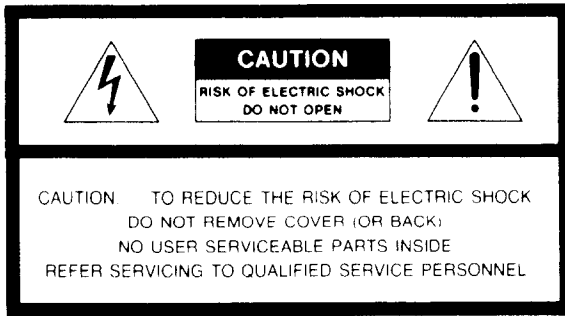
For Customer Use: Enter below the Model No. and Serial No. which are located on the bottom of the camera. Retain this information for future reference.

Model No. _____

Serial No. _____

Vicon part number 8006-8697-00-00

VICON INDUSTRIES INC. 525 BROAD HOLLOW ROAD, MELVILLE, N.Y. 11747
TEL: (516) 293-2200 TELEX: 144581
TOLL FREE 800-645-9116 (OUTSIDE OF NEW YORK)



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION

WARNING (12 VDC MODELS only) – This equipment generates and uses radio frequency energy and, if not installed in accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in residential or commercial installations. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:

To prevent electric shocks and risk of fire hazards, do NOT use other than specified power source.

This installation should be made by a qualified service person and should conform to all local codes.

In necessary, the user should consult the dealer or an experienced radio/television technician for corrective action. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems."

WARNING (24 VAC MODELS only) – This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

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GENERAL

SCOPE

The information in this manual covers the installation, operation, and maintenance of the VC2200 Series 1/2-Inch Solid-State Black-and-White CCD Cameras.

This camera should only be installed by a qualified technician using approved materials and wiring practices in accordance with the National Electrical Code and applicable local wiring ordinances.

INTRODUCTION

The VC2200 Series Black-and-White Cameras have a charge-coupled device (CCD) image sensor and all solid-state circuitry which provide extremely long life and high reliability. The VC2200-12 and -12C are powered by 12 VDC (11~16 VDC). The VC2200-24, -24C, -24G, and -24GC are powered by 24 VAC ($\pm 10\%$).

The VC2200 offers low lag and high burn resistance and is not subject to distortion from magnetic fields. Shock and vibration resistance exceeds all tube-type cameras, and the VC2200 functions reliably in a wide temperature range.

The VC2200 is patent-pending.

External sync capabilities include composite video, composite sync, with automatic switching between internal and external sync sources (horizontal phase is adjustable for $\pm 3\mu\text{sec}$). Manual switching from internal/external sync mode to line-lock sync mode (vertical phase adjustable for $\pm 90^\circ$) is also possible.

Horizontal resolution is 380 TV lines (370 CCIR), and the low light sensitivity is 0.2 foot-candle. (Lens at f/1.4, with IR filter, scene illumination, 50 IRE video output level.) Without the IR filter, sensitivity is 0.05 fc under the same condition.

Product specifications subject to change without notice.

INSTALLATION

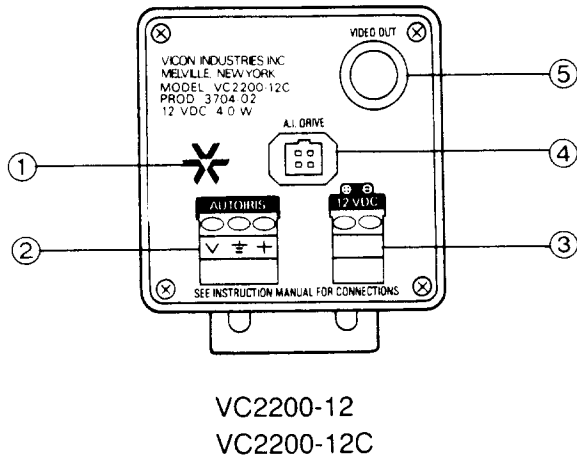
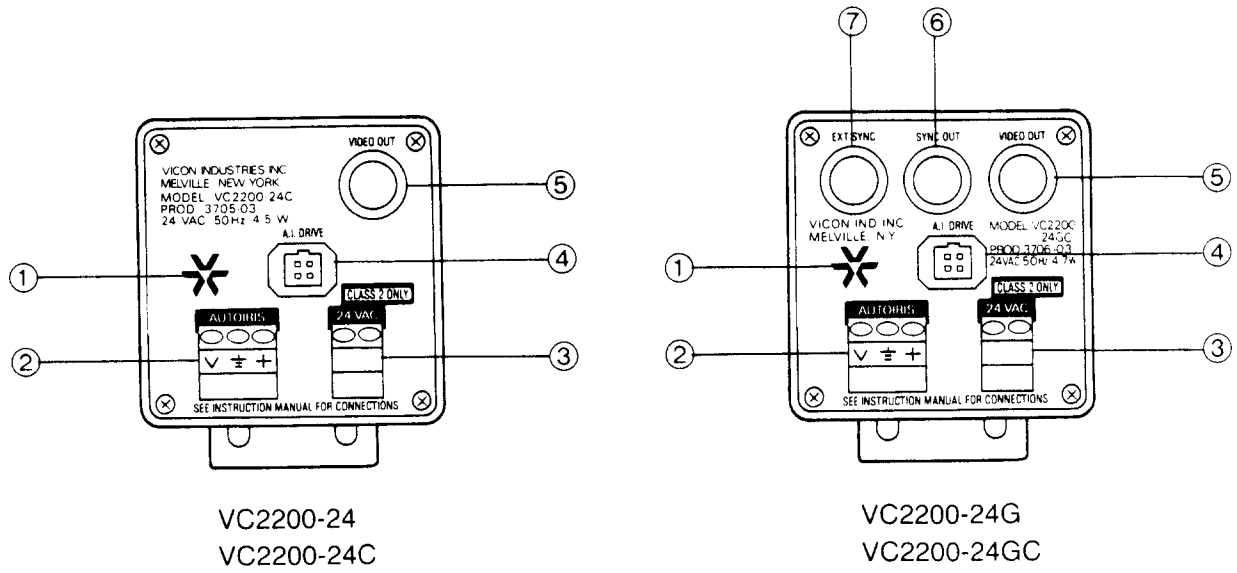


Figure 1
Rear Panel Connectors

Call Out	Description
1	Power LED
2	Autoiris Terminal Block
3	Power Terminal Block
4	Autoiris Connector
5	Video Out BNC Connector
6	Synchronization Signal Out BNC Connector
7	Synchronization Signal In BNC Connector

LENS INSTALLATION

CAUTIONS:

1. **DO NOT** point the camera directly at the sun or bright light. It could damage the pickup device.
2. **DO NOT** wire power terminal block before connecting autoiris cable! Also **DO NOT** remove seal from autoiris terminal block unless instructed to do so in this manual. It prevents accidental connection of the power leads to the autoiris contacts which can damage the camera.

LENS MOUNT TYPE (C OR CS)

All VC2200 camera models feature C and CS lens mount capability. Vicon ships these cameras with the lens mount set to the C position. Use the following procedure to change from one lens mount setting to the other.

1. Loosen FOCUS LOCK screw on the top plate as shown in Figure 2.
2. Set "Back Focus Cam" at the appropriate position:
 - a. C-mount lens as shown in Figure 3
 - b. CS-mount lens as shown in Figure 4.

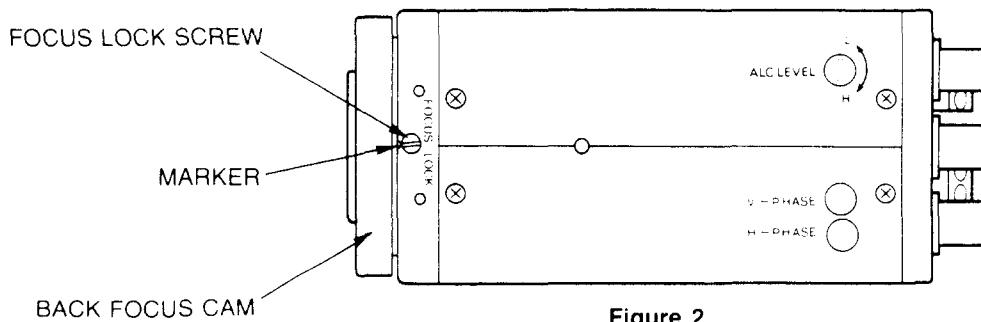


Figure 2

Top View (VC2200-24G shown for illustration)

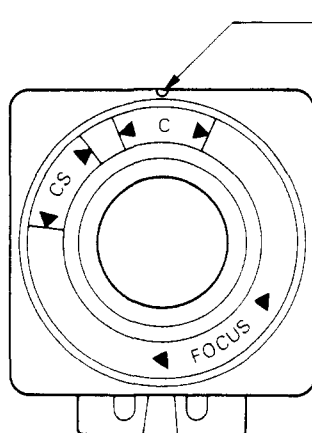


Figure 3

Front View C Mount Position

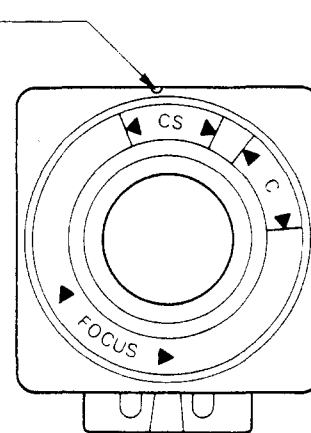


Figure 4

Front View CS Mount Position

MOUNTING THE LENS

Several types of lenses are available. Lens features include motorized zoom and focus, manual focus, automatic iris adjustment (autoiris), and manual iris adjustment. Lenses with motorized zoom and focus have wiring for direct connection to a lens control. The zoom and focus control signals do not connect to the camera.

Lenses with autoiris have a cable that must be connected to the camera. The VC2200 Series cameras are designed to work with both types of autoiris lenses currently on the market. The lenses are distinguished by the location of the circuits that activate the autoiris – in the lens or in the camera. Lenses that contain the circuit must be connected to the VC2200's 3-position terminal block (Figure 1, item 2). Lenses without the circuit use the VC2200's 4-position connector (Figure 1, item 4).

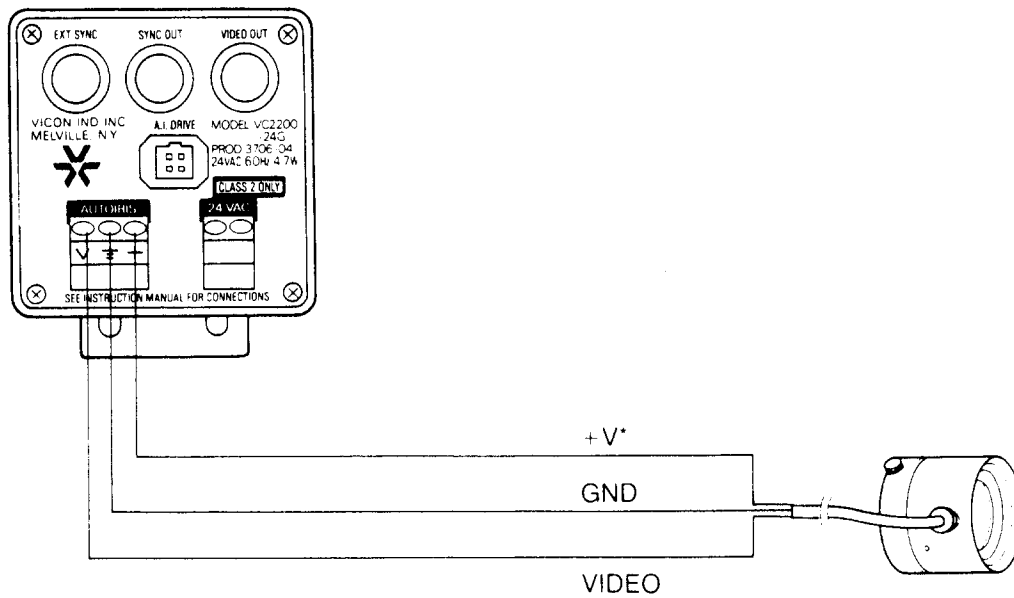
Manual iris lenses have no electronic iris circuits.

To install a lens proceed as follows:

1. Remove plastic lens mount cap installed in the lens opening.
2. Clean the glass surface of the CCD and the front and rear lens surfaces with methyl alcohol or quality lens cleaning solution and a soft lint-free optical tissue. Do not apply solution directly on the CCD. Put a drop on a lens tissue.
3. Check the lens mount settings (Figure 3 or 4). Make sure it is at the correct position (C or CS). If necessary, change the mount setting. Refer to "Lens Mount Type" (page 5).
4. Screw lens finger-tight into the mount. (Refer to the lens instruction manual for more details.)


NOTE: If the lens has a manual iris adjustment, this completes the lens mounting procedure. If the lens has an autoiris feature, proceed as follows.

5. Remove three (3) screws securing the mounting base cover to the VC2200 camera. Route the autoiris cable through the mounting base as shown in Figure 7. If the lens cable is not long enough to reach the rear panel autoiris connector, run the cable straight through the mount. Replace the mount cover and secure with three (3) screws.
 6. Determine the type of autoiris lens. If it has a built-in autoiris circuit, perform Step 7. If it relies on circuits within the camera, perform Step 8.
- CAUTION:** Vicon places a sticker over the autoiris terminal block. **DO NOT REMOVE THIS STICKER EXCEPT AS INDICATED IN THE FOLLOWING STEPS.** This prevents accidental wiring of power inputs to the autoiris terminals which can damage camera circuits.
7. Autoiris lens with autoiris circuit built into the lens.
 - a. Remove the sticker covering the autoiris terminal block (Figure 1, item 2) and connect the autoiris wires as shown (Figures 5 and 6). **DO NOT CONNECT THE POWER CABLE AT THIS TIME.**
 - b. After all video and power connections have been completed, adjust the autoiris potentiometers located on the lens according to the lens instruction manual.
 8. Autoiris lens that uses the VC2200's autoiris circuits.
 - a. Insert the autoiris cable connector into the VC2200's rear panel 4-position DIN connector (Figure 1, item 4).
 - b. After all video and power connections have been completed, set autoiris signal level using the "VC2200 Autoiris Sensitivity Adjustment."



* MAX 100 mA OUTPUT. +V=9 (±0.35) V

Figure 5
Connection for Autoiris Lens

Loosen the terminal screws with a  screwdriver to make a space in the slots. Insert the stripped lens cable ends into each slot, and tighten the terminal screws with the screwdriver.

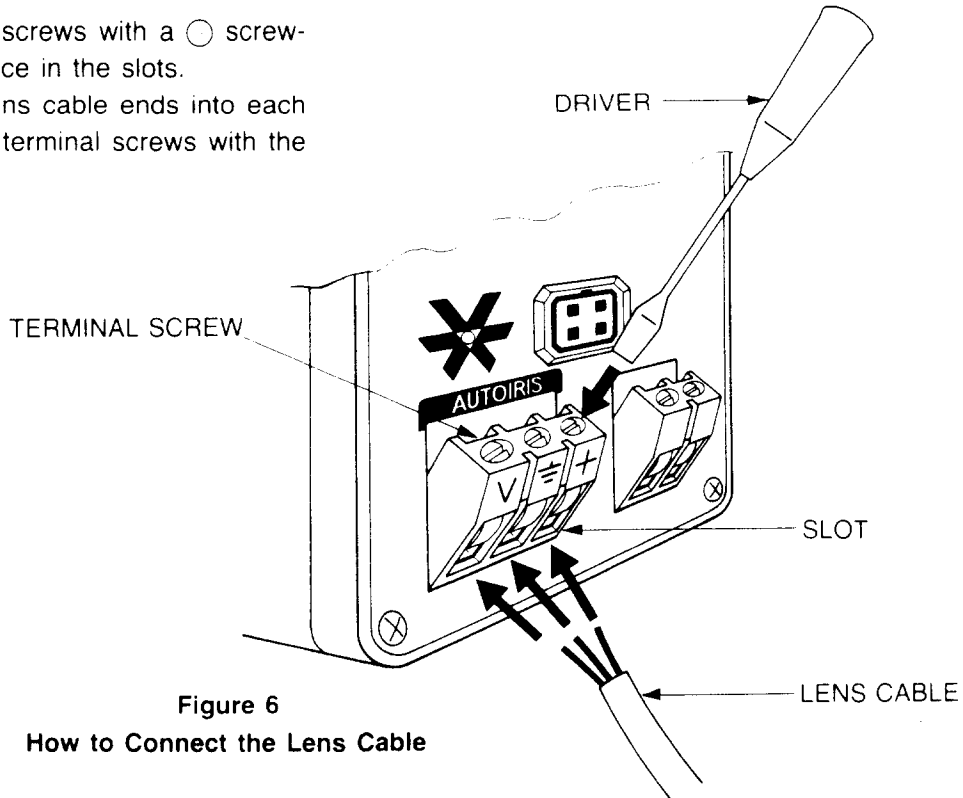


Figure 6
How to Connect the Lens Cable

VC2200 Autoiris Sensitivity Adjustment (Autoiris lenses without built-in circuits)

Autoiris lenses without built-in autoiris circuits depend on the camera for iris control signals. Vicon has included these circuits in the VC2200 cameras. Use the following procedure to adjust the signal level.

1. Connect the camera to a monitor and supply power to the VC2200 camera.
2. Turn monitor brightness and contrast controls to a fully counterclockwise position.
3. Turn monitor brightness and contrast controls clockwise one-quarter turn. (While these adjustments are fairly relative, i.e., they differ from one monitor to another, the settings are adequate for initial adjustment.)

4. Focus camera at a scene having approximately equal amounts of light and dark objects. Do not include glare or bright reflections in the scene.

NOTE: This is not a brightness adjustment. The autoiris brightness level is set properly at the factory. It should maintain a video signal of about one volt.

5. Locate the ALC (L/H) potentiometer (Figure 10). It is recessed in the camera top (on some models it may be on one side of the camera). Remove the protective grommet. Use a plastic "tweezer" screwdriver to adjust the iris for optimum contrast without any bleaching effect on the light areas.

MOUNTING THE CAMERA

The VC2200 is equipped with a mounting base that may be attached to either the top or the bottom of the camera. The mounting base is attached to the bottom of the camera at the factory.

When it is necessary to relocate the mounting base to the top of the camera, remove the three (3) screws from the mounting base. Locate three (3) mounting holes on top of the camera. Secure the mounting base to the camera top using three (3) screws. See Figure 7. Position the camera at any required angle and bolt it to a suitable mounting surface using 1/4-20 bolts.

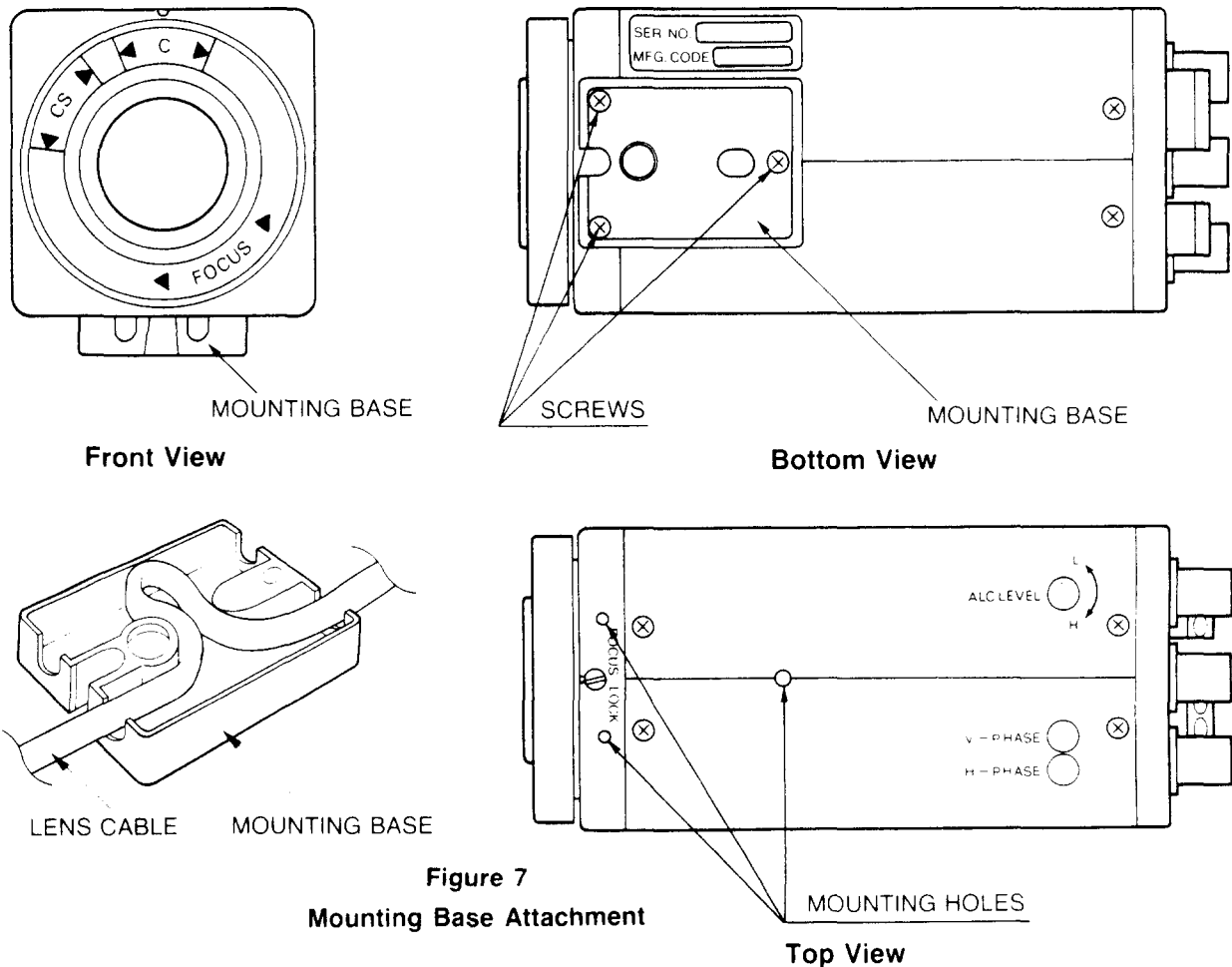


Figure 7
Mounting Base Attachment

VIDEO CONNECTION

Connect a high-quality 75-ohm coaxial cable (RG-59B/U) from the camera rear panel BNC connector to a monitor, video switcher, video tape recorder, or distribution amplifier (see Figure 1). Be sure the last video signal equipment in the series is terminated in 75 ohms.

NOTE: If the camera is mounted on a pan and tilt or scanner, allow enough loop in the cables to prevent wire fatigue when flexing occurs.

EXTERNAL SYNC CONNECTION

(VC2200-24G and -GC models only)

Supply a composite video signal or composite sync signal, which is used as an external sync reference signal, to the EXT SYNC connector to perform genlock operation with other equipment. See Figure 1.

NOTE: To insure genlock operation, be sure the external sync signal level is between 0.2 and 2.0 V p-p. (Use RG-59B/U.)

The genlock operates when composite signal is applied from any external sync source.

The sync signal at the SYNC OUT connector is generated by the VC2200 and can be used to drive other cameras or video equipment with genlock capability. The output signal at the SYNC OUT connector is a composite sync signal (2.0 V p-p, 75 ohms terminated). See Figure 1.

NOTE: (VC2200-24 VAC models only) Select internal/external sync by setting the SYNC MODE switch to the INT/EXT position. See Figure 12.

POWER CONNECTIONS

• VC2200-24 VAC Models

NOTE: Do not apply power until connections are completed.

The VC2200 is powered by 24 VAC ($\pm 10\%$). Refer to Figures 1 and 8. (24 VAC line is completely isolated by transformer.)

For 24 VAC installations, connect the power cable to the terminals marked 24 VAC. See Figure 8. (Usable only with the source which meets Class 2 Specifications.)

The camera will be operational, as indicated by the POWER LED on the rear panel, whenever power is applied.

• VC2200-12 VDC Models

NOTE: Do not apply power until connections are completed.

The VC2200 is powered by 11~16 VDC. Refer to Figures 1 and 8.

The camera will be operational, as indicated by the POWER LED on the rear panel, whenever power is applied.

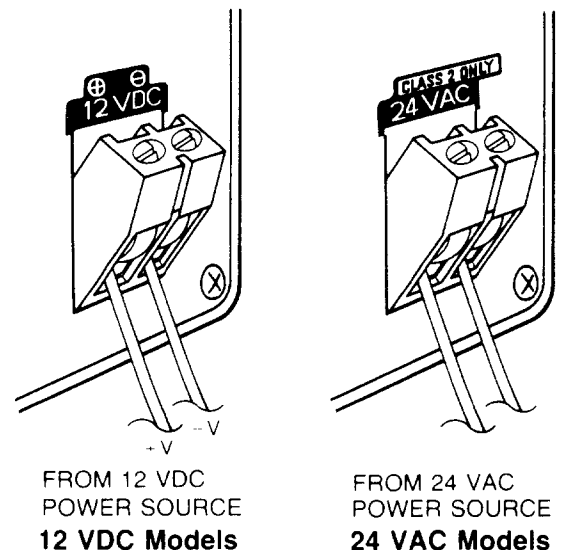


Figure 8
Power Terminal Blocks

MECHANICAL FOCUS ADJUSTMENT

The VC2200 has been factory adjusted for proper mechanical focus. However, when the lens is mounted, it may be necessary to readjust the back focus.

FIXED-FOCAL-LENGTH LENSES

1. Mount lens on camera. Complete power and video connections.
2. Set the focus ring to infinity (∞) and open the iris completely.

NOTE: The illumination level may have to be reduced to permit opening the iris.

3. Loosen the focus lock screw (Figure 9).
4. Position the camera to view an object greater than 35 feet (10 m) away.
5. Turn back focus cam to obtain the sharpest possible image.
6. Retighten the focus lock screw.

ZOOM LENSES

1. Follows steps 1 through 4 as explained in the procedure for FIXED-FOCAL-LENGTH LENSES.
2. Set the lens to its maximum telephoto position and adjust the lens focusing ring to the sharpest possible image.
3. Set the lens to its maximum wide angle position and adjust the back focus cam (Figure 9) on the camera for the sharpest possible image.
4. Repeat steps 2 and 3 until sharpness remains stable during zooming.
5. Retighten the focus lock screw.

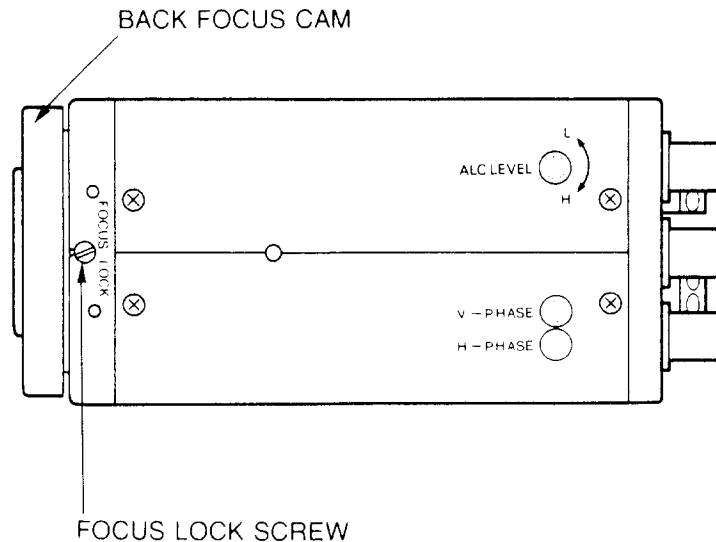


Figure 9
Mechanical Focus Adjustment Screws

ADJUSTMENTS

Adjust the camera's settings depending on the shooting conditions. Adjustment controls located on the top plate surface (24 VAC only) or the side plate surface (12 VDC only) of the camera include:

- ALC for lens (see "Lens Installation" section)
- Horizontal phase (VC2200-24G and -24GC models only)
- Vertical phase (24 VAC models only)

The holes for these adjustment controls are covered with grommets.

Controls located below the top plate include:

- Automatic Gain Control (AGC) (All models)
- Sync mode (24 VAC models)

ALC CONTROL

Refer to "VC2200 Autoiris Sensitivity Adjustment" (page 9) for details.

HORIZONTAL PHASE (EXT) CONTROL

(VC2200-24G and -24GC only)

Horizontal phase may need to be adjusted when the camera is installed to operate with an external sync signal. (Horizontal phase is adjustable over the range $\pm 3 \mu\text{sec.}$) Make this adjustment when the horizontal phase of the camera does not match with other cameras (or systems). See Figure 10. For correct adjustment, use a multichannel oscilloscope. Horizontal phase can only be adjusted when the camera is genlocked to an external sync signal.

NOTE: Genlock operation is not possible using a jittery input signal, such as the playback signal from a video recorder.

VERTICAL PHASE (LINE LOCK) CONTROL

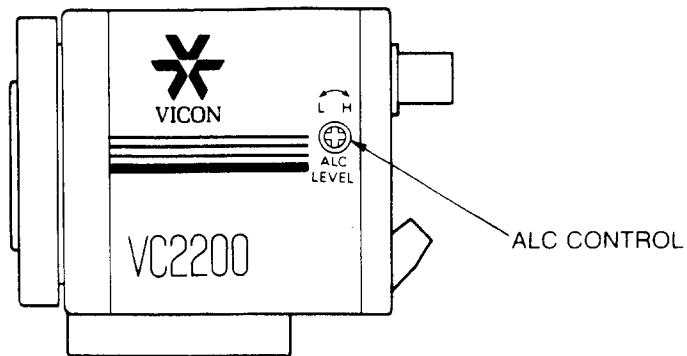
(24 VAC models only)

If the camera is to be used in the LINE-LOCKED mode, the vertical phase may require adjustment to synchronize the vertical phase of the camera with other cameras in the system. (Vertical phase is adjustable over the range of $\pm 90^\circ$). Make this adjustment when the vertical phase of the camera does not match with other cameras (or systems). See Figure 10. For correct adjustment, use a multichannel oscilloscope. This vertical phase adjustment can only be made when the camera is operating in the LINE-LOCKED mode.

NOTES: Cameras designed to EIA RS-170 specifications cannot be line-locked to a 50Hz power source, and CCIR cameras cannot be line-locked to a 60Hz source.

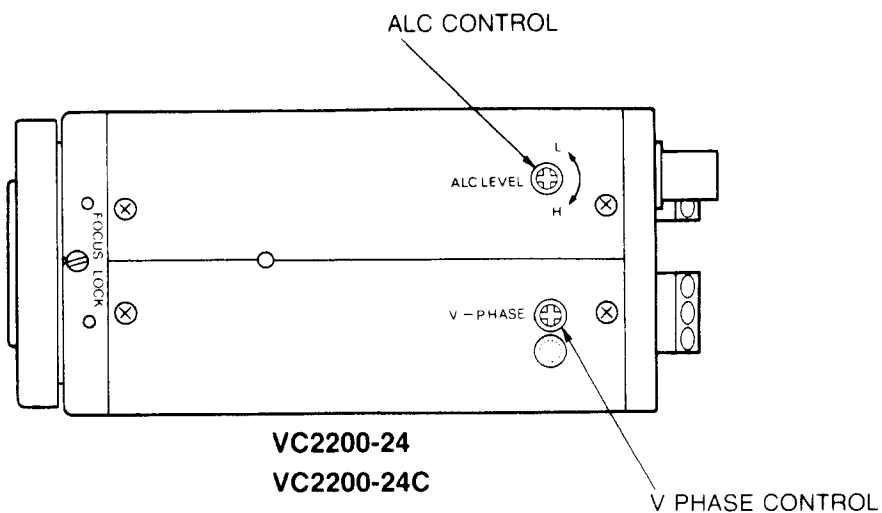
When adjusting the vertical phase (LINE LOCK), to observe the 24 VAC waveform, connect the positive pin of the oscilloscope probe to either of the 24 VAC connectors.

Side View



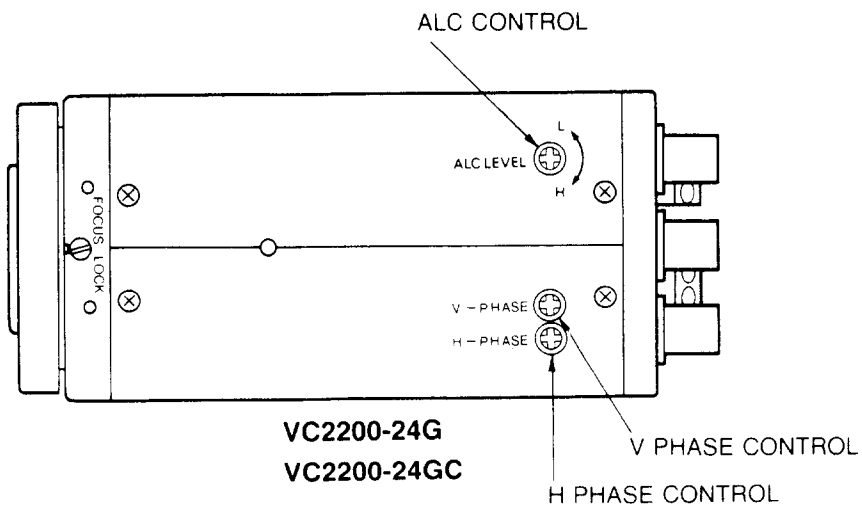
VC2200-12
VC2200-12C

Top View



VC2200-24
VC2200-24C

Top View



VC2200-24G
VC2200-24GC

Figure 10
Adjustment Controls

AUTOMATIC GAIN CONTROL (AGC)

The AGC circuit incorporated into the camera boosts the sensitivity automatically when the scene illumination is insufficient.

An on-off switch is provided for the AGC circuit. This switch is set to the ON position at the factory. If it is necessary to turn the AGC off, set the AGC switch to the OFF position using the "How to Open the Case" procedure (Figure 11). See Figure 12 for the location of the switch.

SYNCHRONIZATION

All VC2200 camera models are equipped with internal synchronization. In addition, all 24 VAC models have switch selectable LINE LOCKING synchronization. This synchronizes the camera to the 60Hz AC line power signal (50Hz for CCIR cameras). The VC2200-24G and -24GC feature an external BNC connector to permit synchronization by external equipment.

12 VDC Models

These rely solely on an internal clock for synchronization. There is no sync switch to set on these cameras.

VC2200-24 and -24C Models – Line Locking or Internal Sync.

The VC2200-24 and -24C can operate either on internal sync or use power line phase-locked sync (line-locked sync). Access the internal switches using the "How to Open the Case" procedure (Figure 11). Set the sync switch (Figure 12) to the appropriate position (LINE LOCK or INTERNAL).

VC2200-24G and -24GC Models – Line Locking or Internal Sync.

The VC2200-24G and -24GC can operate either on internal sync, external sync or use power line phase-locked sync (line-locked sync).

When the camera detects a signal at the external sync BNC connector, it automatically synchronizes to that signal.

Internal Sync: the sync switch must be set to the INTERNAL position.

Line-Locking Sync: the sync switch must be set to LINE LOCK position. It then synchronizes to the power line signal.

Sync Switch Setting: to set the switch, access the internal switches using the "How to Open the Case" procedure (Figure 11). Set the sync switch (Figure 12) in the appropriate position (LINE LOCK or INTERNAL)

HOW TO OPEN THE CASE

1. Remove the four (4) screws (a) shown in Figure 11.
2. Loosen the three (3) screws (b) shown in Figure 11 to remove the mounting base.
3. Remove the four (4) screws (c) shown in Figure 11 to detach the right and left cases.

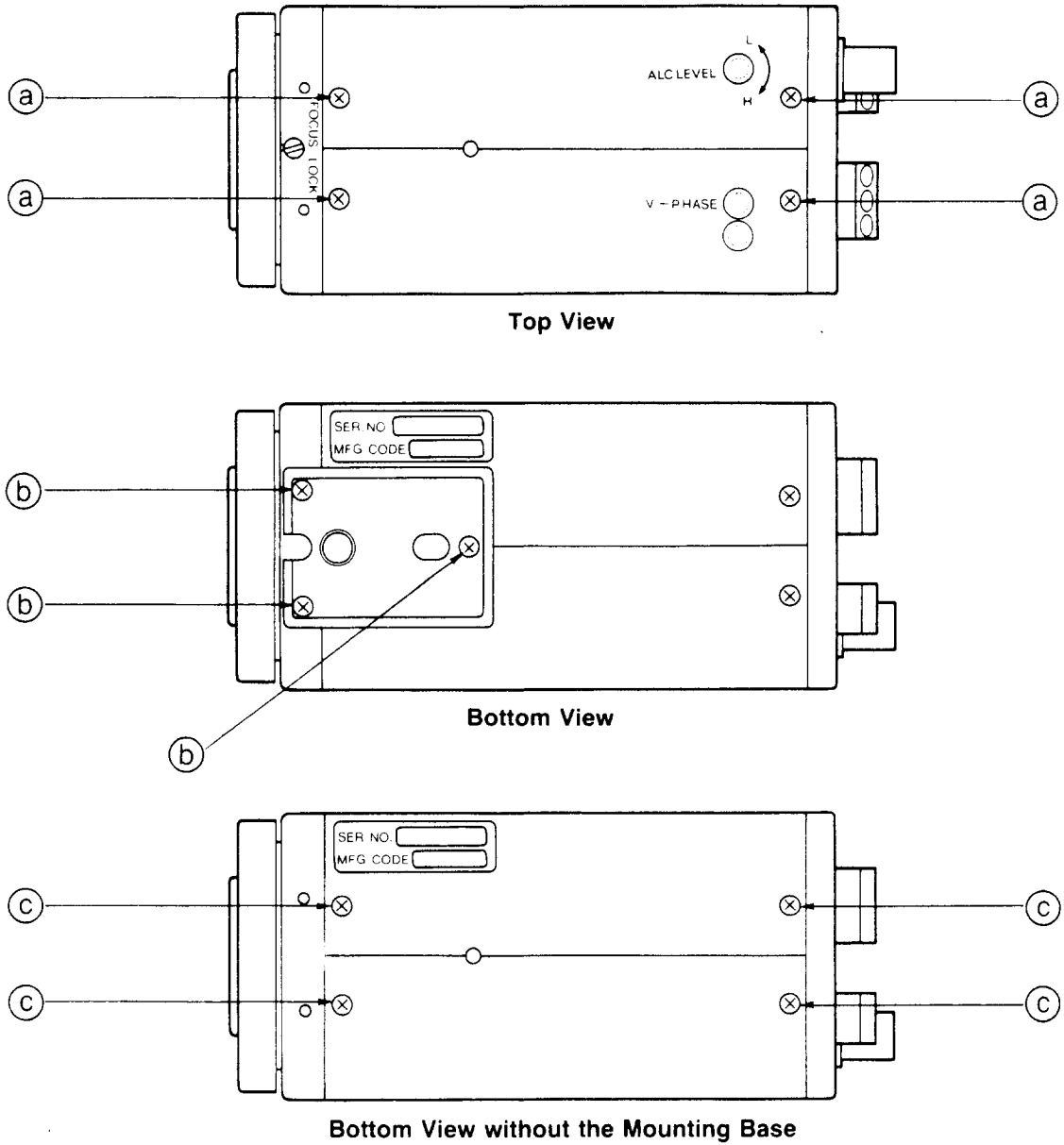


Figure 11
How to Open the Case

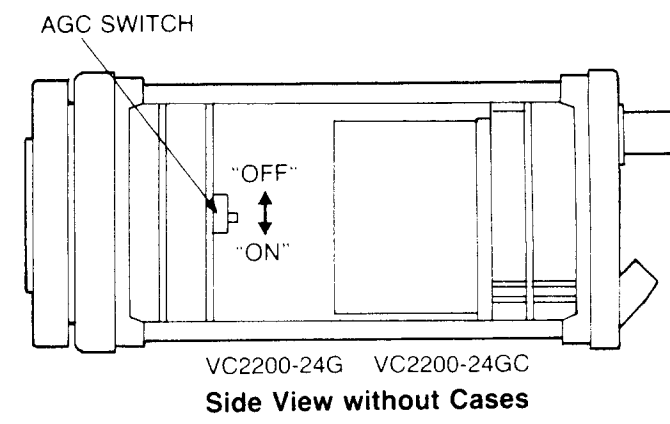
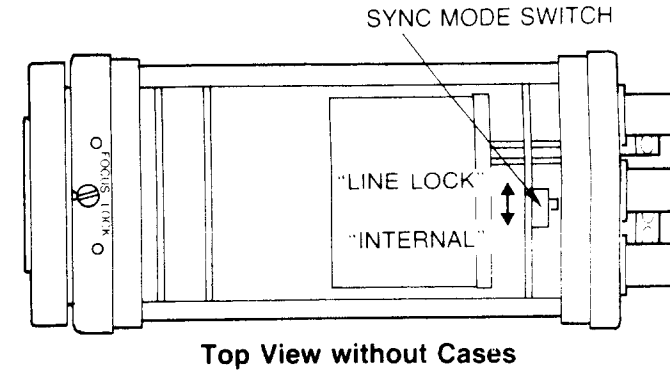
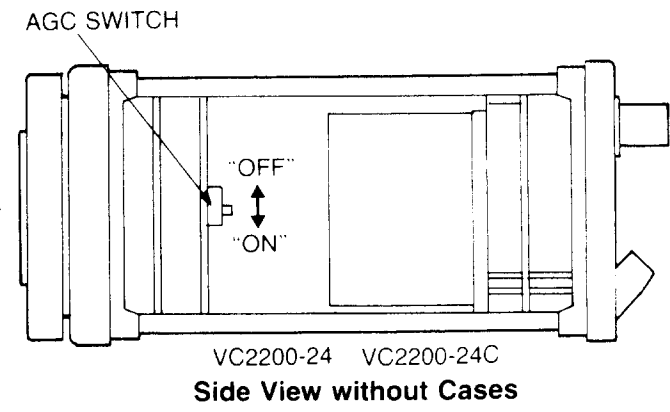
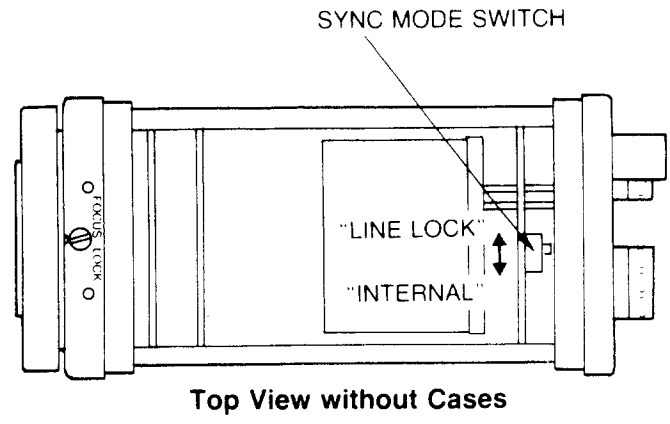
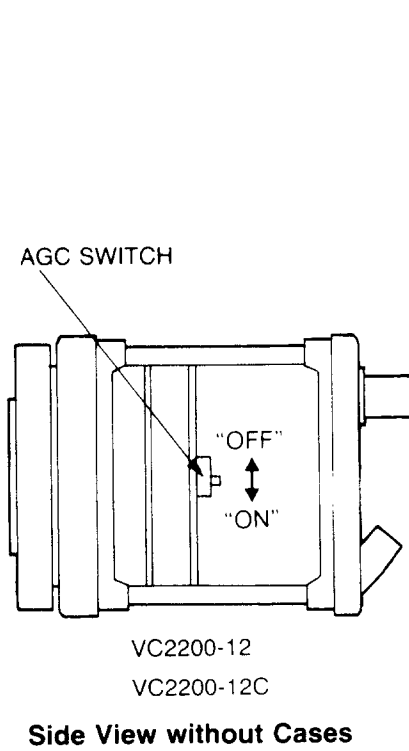


Fig 12
AGC Switch and SYNC Mode Switch

MAINTENANCE

The VC2200 does not require scheduled maintenance.

SERVICE

SHIPPING INSTRUCTIONS

You must have a Return Authorization (RA) number to return a unit to Vicon.

If a unit must be returned to the factory:

1. Obtain RA number from one of the following locations:

VICON INDUSTRIES INC.
525 Broad Hollow Road
Melville, New York 11747
516-293-2200
800-645-9116

VICON INDUSTRIES INC.
Southeastern
Regional Office
3010 Business Park
Dr., Ste. B Norcross,
Georgia 30071
404-449-0499
800-824-8479

VICON INDUSTRIES INC.
Western Regional Office
950 West Central Ave.,
Unit C Brea,
California 92621
714-990-3858
800-648-1832/33

VICON INDUSTRIES
(U.K.) LTD.
Gunstore Road
Hilsea, Portsmouth
Hampshire PO35JP,
England
(0705) 665312

2. Include the RA number, the name of the person who issued the number, and your company's name and address with your returned unit. The Vicon RA number **MUST** appear on any correspondence concerning the unit being shipped.
3. Include a brief description of the installation.
4. Fully describe the problem and the circumstances under which it occurs.
5. Indicate the unit's original date of purchase.
6. Attach all the above information to the unit.
7. Pack the unit carefully, using the original shipping carton or its equivalent, for maximum protection.
8. Mark the RA number on the outside of the carton, preferably on the shipping label.

