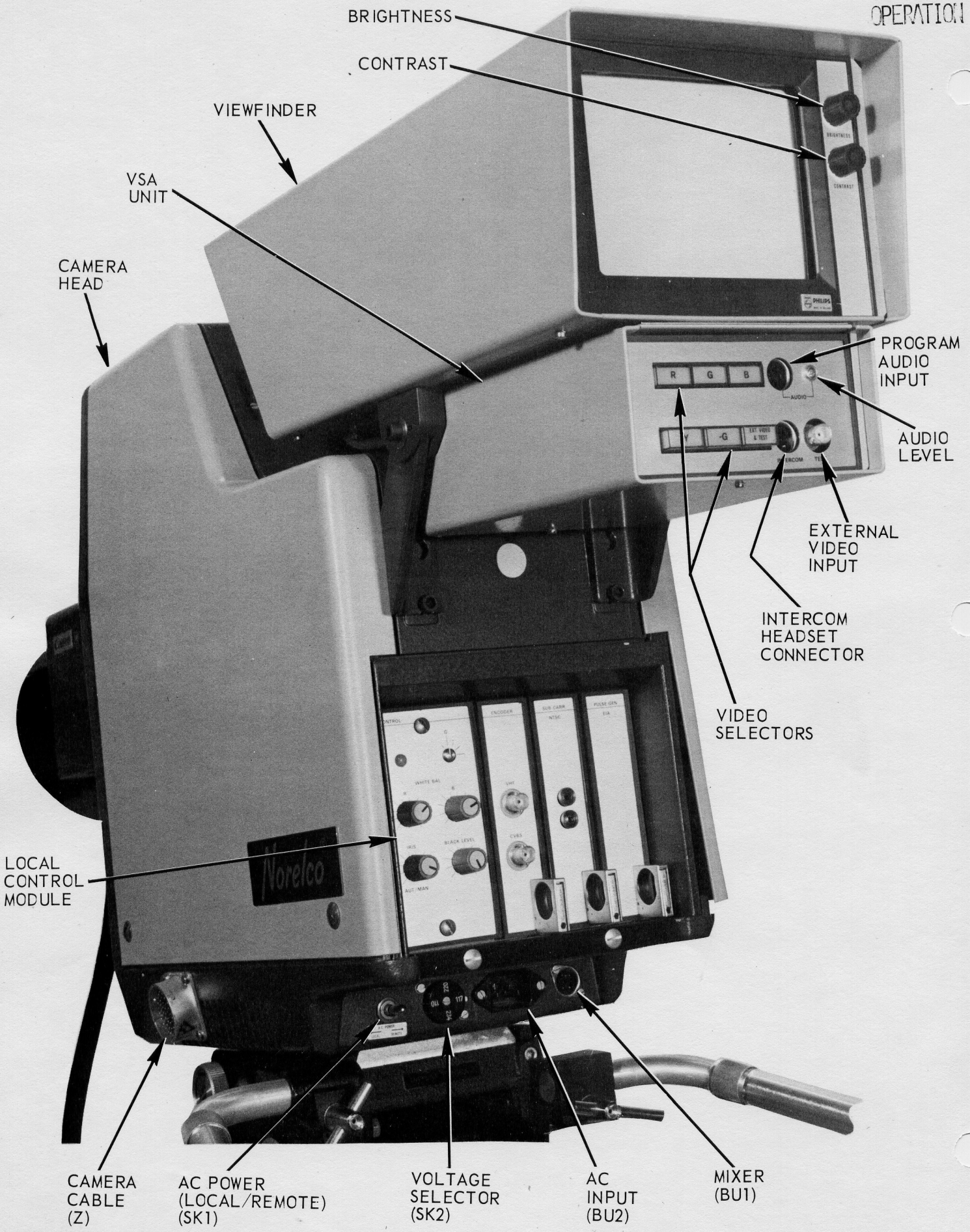


FIGURE 3-1. LDH-1/00S CAMERA HEAD OPERATING FACILITIES

3-1. INTRODUCTION

This section describes operating control functions, subject lighting information and the initial set-up and adjustment procedure necessary for normal operation of the LDH-1/OOS Compact Color Television Camera. Also included are individual set-up procedures for plug-in modules and accessory units. It is assumed that the camera system has been installed as described in Section 2.

3-2. OPERATING FACILITIES

The operating facilities for the camera system are located on the Camera Head, Local Control Module, Viewfinder, Video Switching and Audio Unit and the Remote Control Unit. Refer to Figures 3-1 and 3-2 for the location of the LDH-1/OOS Camera Head and Remote Control Operating facilities and to Table 3-1 for a tabulation of their functions.

TABLE 3-1

FUNCTION OF OPERATING FACILITIES

NAME	FUNCTION
CAMERA HEAD	
AC POWER 2-position toggle switch, SK1	REMOTE: AC Power is applied from Remote Control Unit. LOCAL: AC Power is applied from Camera Head rear panel connector, BU2.
VOLTAGE SELECTOR 4-position plug, SK2	Provides selection of four operating voltages: 110, 117, 220 or 234 VAC.
AC INPUT 3-prong male connector BU2	Local AC input connector.
MIXER 5-pin female 240° DIN connector BU1	Intercom connector for video mixer and cue output.
CAMERA CABLE 61-pin male connector Z	Remote Control Unit connector.
LENS 10-pin female 270° DIN connector R	Iris drive unit connector.
LOCAL CONTROL MODULE	
GREEN GAIN 5-position switch G	Select green channel gain in 5 steps as follows: Pos 1: -6dB (CCW) Pos 2: 0dB Pos 3: +6dB Pos 4: +12dB Pos 5: +18dB
RED WHITE BAL Potentiometer/push-pull switch	Adjusts red video gain overa a 12dB range. A +12dB boost is provided when knob is depressed.

TABLE 3-1 (Continued)

NAME	FUNCTION
LOCAL CONTROL MODULE (CONT.)	
BLUE WHITE BAL Potentiometer/push-pull switch	Adjusts blue video gain over a 12dB range. A 12dB boost is provided when knob is depressed.
BLACK LEVEL Potentiometer	Adjusts the video output signal black level (RGB or encoder video) from +30% to -45% of peak white.
IRIS (AUT/MAN) Potentiometer/push-pull switch	With knob pulled out, control opens and closes lens aperture. With knob depressed, the iris is automatically controlled and the potentiometer setting determines the mode of operation as follows: Fully CCW: A function of the peak of the most positive video signal. Fully CW: A function of the average of the most positive video signal. Mid Pos: A function between peak and average of the most positive video signals.
VIEWFINDER (VF)	
BRIGHTNESS Potentiometer/Switch	Adjust VF picture brightness and turns VF on and off.
CONTRAST Potentiometer	Adjusts VF picture gain.
GROUND LINK Buss Bar	Connects VF ground to system ground. Removal isolates grounds.

TABLE 3-1 (Continued)

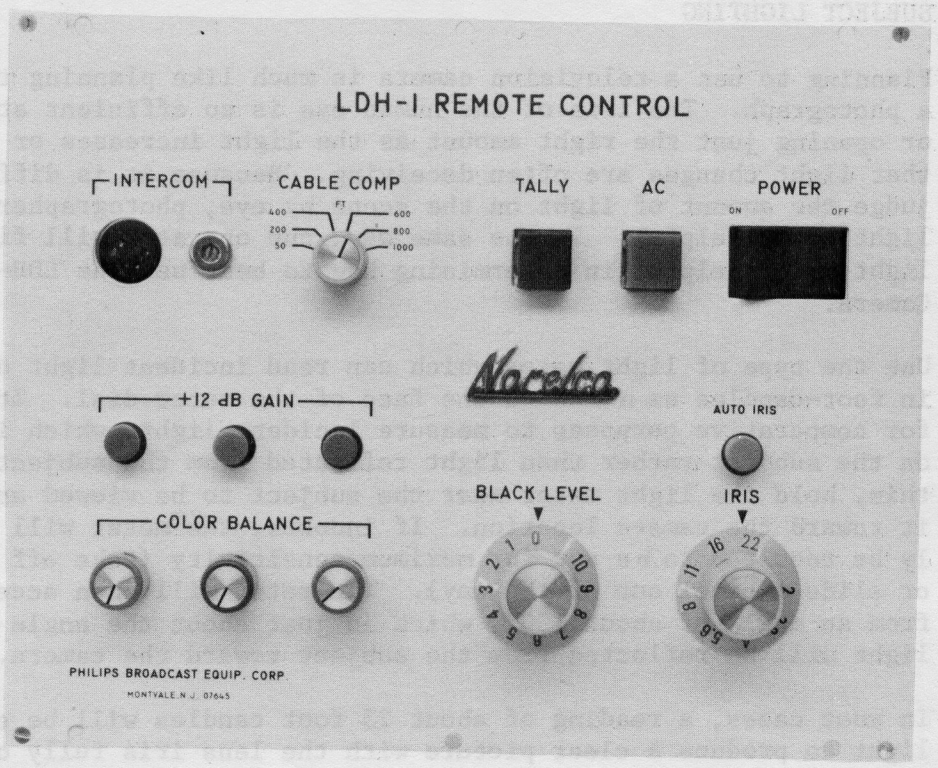
NAME	FUNCTION
VIEWFINDER (VF) (CONT.)	
TERMINATION SWITCH 2-position switch	Selects termination impedance: High pos: when external monitor is used. 75Ω pos: when VBS is applied to VF only.
VBS Loop-thru BNC female connectors	Provides VBS composite signal input to VF and output to external monitor.
VOLTAGE SELECTOR 4-position plug	Provides selection of four operating voltages: 110, 117, 220 or 234 VAC.
FUSE 200mA, 220/234 VAC 400mA, 110/117 VAC	Provides overload protection.
AC INPUT 3-prong male connector BU7	VF power input connector.
VIDEO SWITCHING & AUDIO UNIT	
R: Push-button switch, alternate action with lamp	Selects red video on VF screen. When lit, indicates that camera is on air.
G: Push-button switch, alternate action	Selects green video on VF screen.
B: Push-button switch, alternate action	Selects blue video on VF screen.
Y: Push-button switch, alternate action	Selects luminance signal on VF screen.
-G: Push-button switch, alternate action	Selects minus green video on VF screen.
EXT VIDEO & TEST Push-button switch, alternate action	Selects external video and/or test signal on VF screen.

TABLE 3-1 (Continued)

NAME	FUNCTION
VSA UNIT (CONT.)	
INTERCOM 6-pin female 240° DIN connector BU2	Intercom headset connector.
TEST BNC connector BU3	External (1V p-p) test signal input connector.
AUDIO 5-pin female 180° DIN connector BU1	Program audio microphone input connector.
AUDIO ADJ Potentiometer R51	Adjusts program audio level.
VOLTAGE SELECTOR 4-position plug	Provides selection of four operating voltages: 110, 117, 220 or 234 VAC.
REMOTE CONTROL UNIT	
POWER Rocker Switch S6	Turns on system AC Power when LOCAL/REMOTE switch on Camera Head is set to REMOTE.
AC Pilot lamp DS2	When lit, indicates AC Power is applied to system.
TALLY Pilot lamp DS1	When lit, indicates that camera is on air.
CABLE COMP 6-position rotary switch S1	Selects cable compensation from 50 to 1000 feet.
INTERCOM 5-pin female 240° DIN connector J15	Intercom headset connector.

TABLE 3-1 (Continued)

NAME	FUNCTION
REMOTE CONTROL UNIT (CONT.)	
INTERCOM VOL Potentiometer R6	Adjusts received intercom volume level.
+12dB (RGB) 3 push-button switches, alternate action S2, S3, S4	When depressed, boosts the respective video level 12dB.
GAIN (RGB) Concentric potentiometers R2, R3, R4	Individual RGB video gain adjustments over a 12dB range.
BLACK LEVEL Potentiometer R1	Adjusts the video output signal black level (RGB) or encoded video) from +30% to -45% of peak white.
IRIS Potentiometer R5	Opens and closes lens aperture.
AUTO IRIS Push-button switch, alternate action S5	When depressed, the iris is automatically controlled and the IRIS potentiometer setting determines the mode of operation as follows: Fully CCW: A function of the peak of the most positive video signal. Fully CW: A function of the average of the most positive video signal. Mid Pos: A function between peak and average of the most positive video signal.



FRONT VIEW



REAR VIEW

FIGURE 3-2. REMOTE CONTROL UNIT OPERATING FACILITIES

3-3. SUBJECT LIGHTING

Planning to use a television camera is much like planning to take a photograph. The iris of the human eye is so efficient at closing or opening just the right amount as the light increases or decreases, that light changes are often deceiving. Because it is difficult to judge the amount of light on the scene by eye, photographers find a light meter helpful. In the same way, the operator will find a light meter helpful in determining how to best use the LDH-1/00S Camera.

Use the type of light meter which can read incident light directly in foot-candles as noted on the face of the meter dial. It is best for comparative purposes to measure incident light, which is falling on the subject rather than light reflected from the subject. To do this, hold the light meter near the subject to be viewed and point it toward the camera location. If indoors, the meter will most likely be required to be set for maximum sensitivity (take off the cover, or slide a panel out of the way). The meter will then accept light from an angle of about 130°, which is just about the angle from which light will be reflected from the subject toward the camera.

In most cases, a reading of about 25 foot candles will be enough light to produce a clear picture with the lens iris fully open. Some snow or graininess may be present but should not affect picture detail.

Increasing incident light will result in a very clear, sharp picture, with almost no snow. Extremely bright light, such as outdoors on a sunny day, must be reduced by closing the lens iris.

Typical light levels in selected areas are listed in Table 3-2.

TABLE 3-2
TYPICAL LIGHT LEVELS

SUBJECT	INCIDENT FOOT CANDLES (APPROX.)
Outdoors, sunny day	10,000
Outdoors, overcast	200
Open office area	25 - 50
School classroom	30
Hotel lobby	20
Hotel corridor	10
Department store, main floor	10 - 20
Department store, upper floor	5 - 15

3-4. SET-UP PROCEDURE OUTLINE

The complete set-up procedure is outlined below for ease in locating selected adjustments.

PAR.	TITLE	PAGE
A.	Presetting Controls	3-10
B.	Turning On Camera System	3-16
C.	Supply Voltage Measurements	3-16
D.	Mesh Voltage Adjustment	3-16
E.	Target Voltage Preset	3-17
F.	Camera Tube Rotation	3-17
G.	Manual Lens Iris Drive Adjustment	3-18
H.	Saturating the Vidicon Target	3-18
I.	Back Focus Adjustment	3-18
J.	Beam Alignment	3-20
K.	Symmetry of Vertical Parabola	3-21
L.	Dynamic Focus Board Adjustments	3-21
M.	Picture Size and Linearity	3-23
N.	Beam Adjustment	3-24
O.	Streaking	3-25
P.	Registration	3-25
Q.	Target Voltage Adjustment	3-26
R.	Dark Current Compensation	3-26
S.	De-Gamma Adjustment	3-29
T.	Gain Adjustment	3-29
U.	Gamma Black and Black Level Adjustment	3-30
V.	Gamma and Output Amplitude Adjustments	3-32
W.	White Clipper	3-33
X.	Horizontal Contour Correction	3-34
Y.	Automatic Iris Control Adjustment	3-34
Z.	Monochrome Level	3-34

3-5. SET-UP PROCEDURE

The paragraphs to follow describe the complete set-up procedure to properly set-up and prepare the LDH-1/00S Camera System for operation. It is assumed that the system is installed as described in Section 2, Installation, and the AC power is OFF. Also, all the plug-in modules must be properly installed.

The following Test Equipment is required to perform the set-up procedure:

EIA Color Registration Chart (formerly Retma)
Linearity (Ball) Chart
Linear Reflectance Chart (Gray Scale)
Logarithmic Reflectance Chart (Gray Scale)
VSA Unit (Type LDH 8000/00S)
TV Monitor (B/W or Color) or Viewfinder (Type LDH 2103/05)
Oscilloscope (Dual trace with 10:1 probes and delayed sweep)
DC voltmeter 100 meg ohm input impedance (e.g., H.P. 410C)

A. PRESETTING THE CONTROLS (Figures 3-3 to 3-6)

Before proceeding, set the controls as indicated in Table 3-3 if a complete set-up of the camera is planned; otherwise, set only the controls required. The camera has been factory aligned, and it should not be necessary to perform the complete set-up procedure. Selected procedures may be done without performing the entire set-up procedure.

This set-up procedure is based on using either the Local Control Module or Remote Control Unit, hereafter referred to as the control panel. If the Remote Control Unit is being used, be sure that the Local Control Module is disconnected and that plug (F) is connected to receptacle (F2). Also, be sure that the power switch on the Camera Head is in the Remote position. Where possible, the controls on these panels are referred to with the common names indicated as follows:

LOCAL CONTROL MODULE	REMOTE CONTROL UNIT	COMMON NAME
G	Color Balance (G)	Green Gain
White Bal R	Color Balance (R)	Red Gain
White Bal B	Color Balance (B)	Blue Gain
Iris (Aut/Man)	Iris (Auto Iris)	Iris
Black Level	Black Level	Black Level

TABLE 3-3

INITIAL CONTROL SETTINGS

CONTROL	SETTING
VIDEO BOARD (clad side)	
White Clipper (R82, R282, R482)	CW
Gamma SW (RGB Channels)	VID (when using Vidicons) PLUMB (when using Plumbicons)
Red Gain (+15dB) (Jumpers)	Off
Blue Gain (+15dB) (Jumpers)	Off
Ink Black Level	CW
SCANNING BOARD (clad side)	
Beam (R172, R186, R193)	CW (tubes cut off)
Target (R201, R203, R205)	CW (OVdc)
DCC POS (R36, R56, R75)	CW
Master H Amplitude (R103)	CCW
Master V Amplitude (R22)	CW (overscan)
LOCAL CONTROL MODULE (if connected)	
White Balance (R)	Mid-range and pull out
White Balance (B)	Mid-range and pull out
G (5 position switch)	CCW (low gain)
Black Level	CW (high)
Iris	CCW (closed) and pull out (manual)
REMOTE CONTROL UNIT (if part of system)	
+12dB Gain (RGB)	Off (button up)
Color Balance (RGB)	Mid-range
Black Level	CW
Iris	CCW
Auto Iris	Off (released)

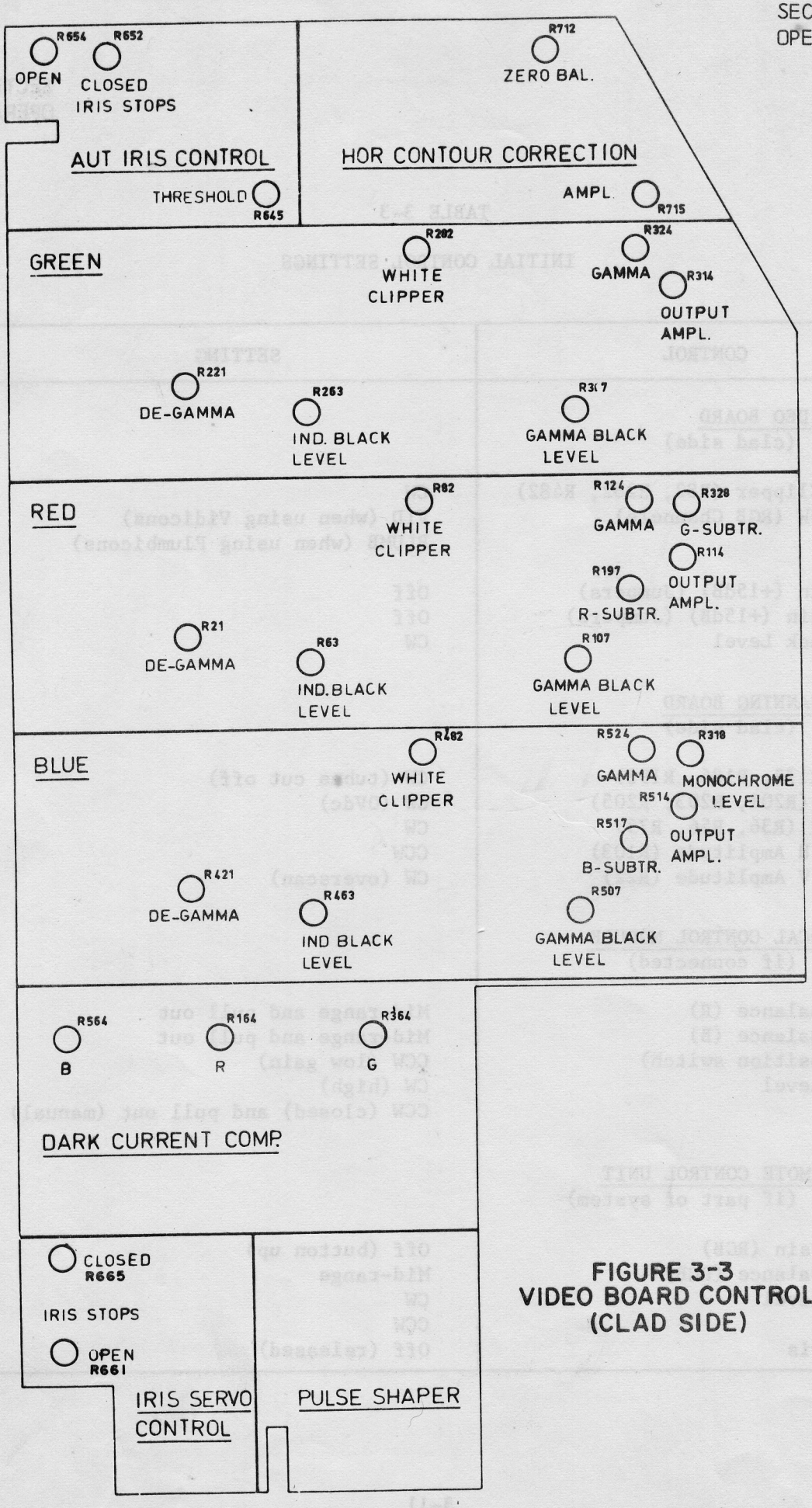


FIGURE 3-3
VIDEO BOARD CONTROLS
(CLAD SIDE)

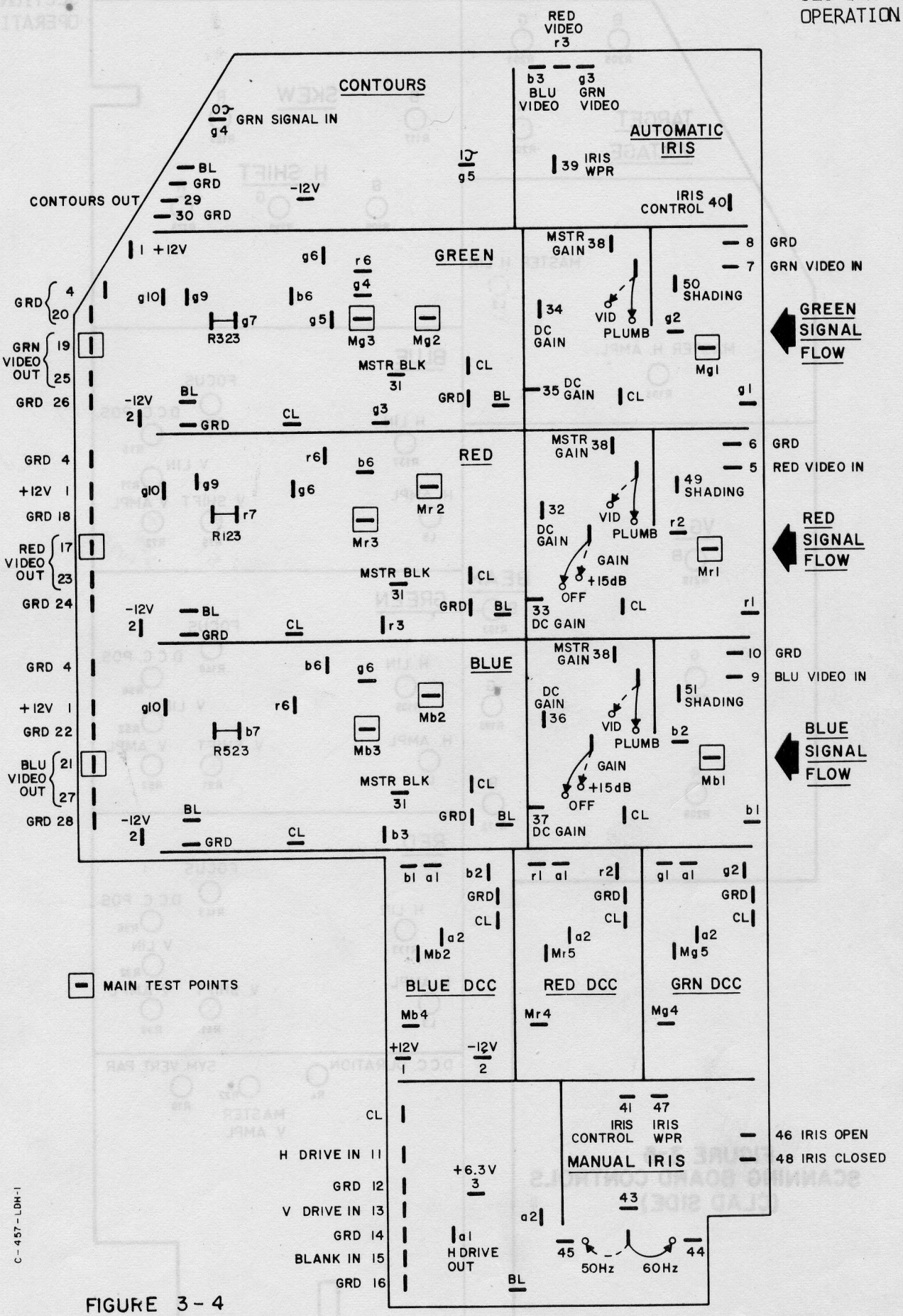


FIGURE 3-4
VIDEO BOARD TEST POINTS
(COMPONENT SIDE)

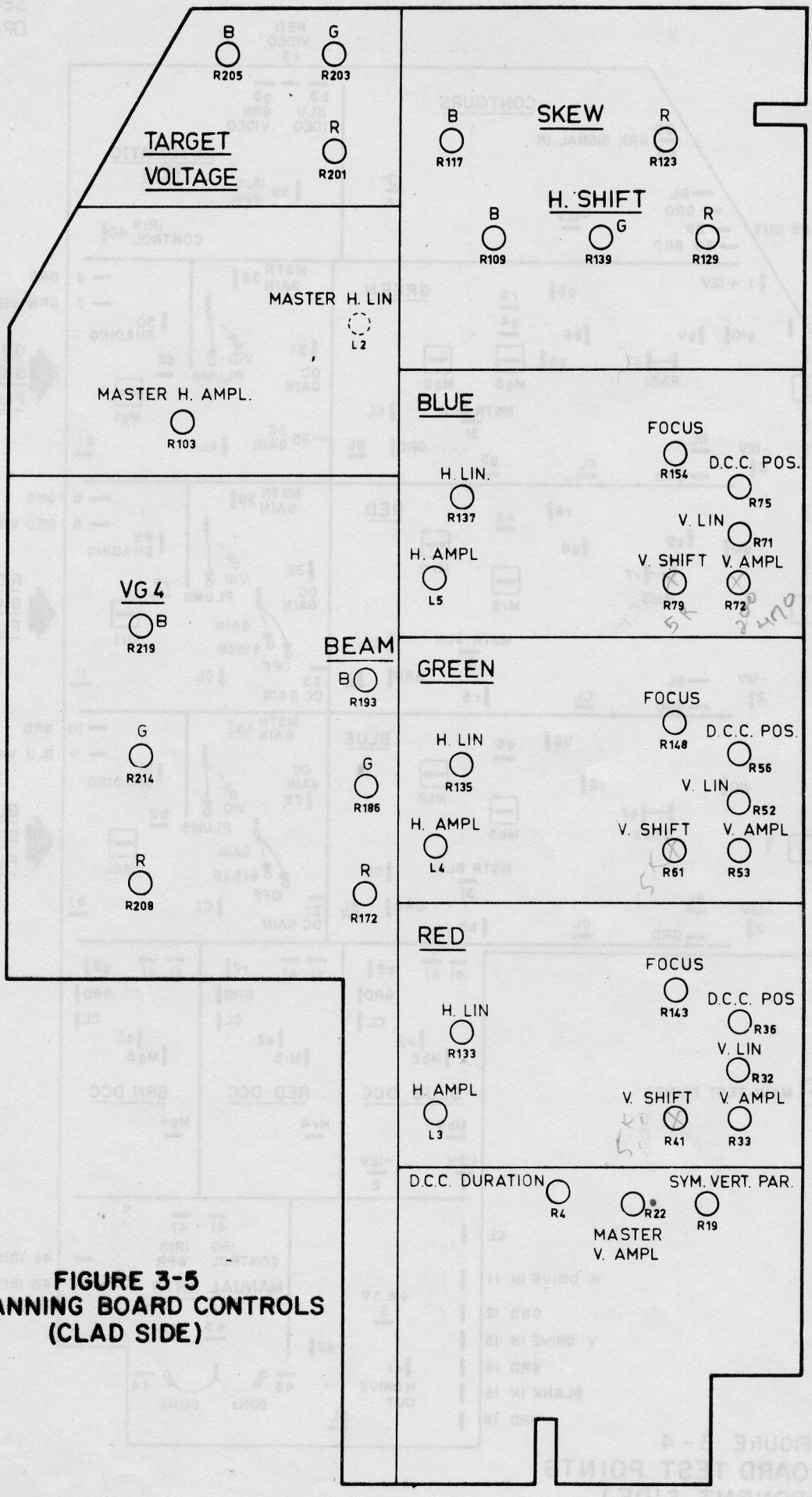


FIGURE 3-5
SCANNING BOARD CONTROLS
(CLAD SIDE)

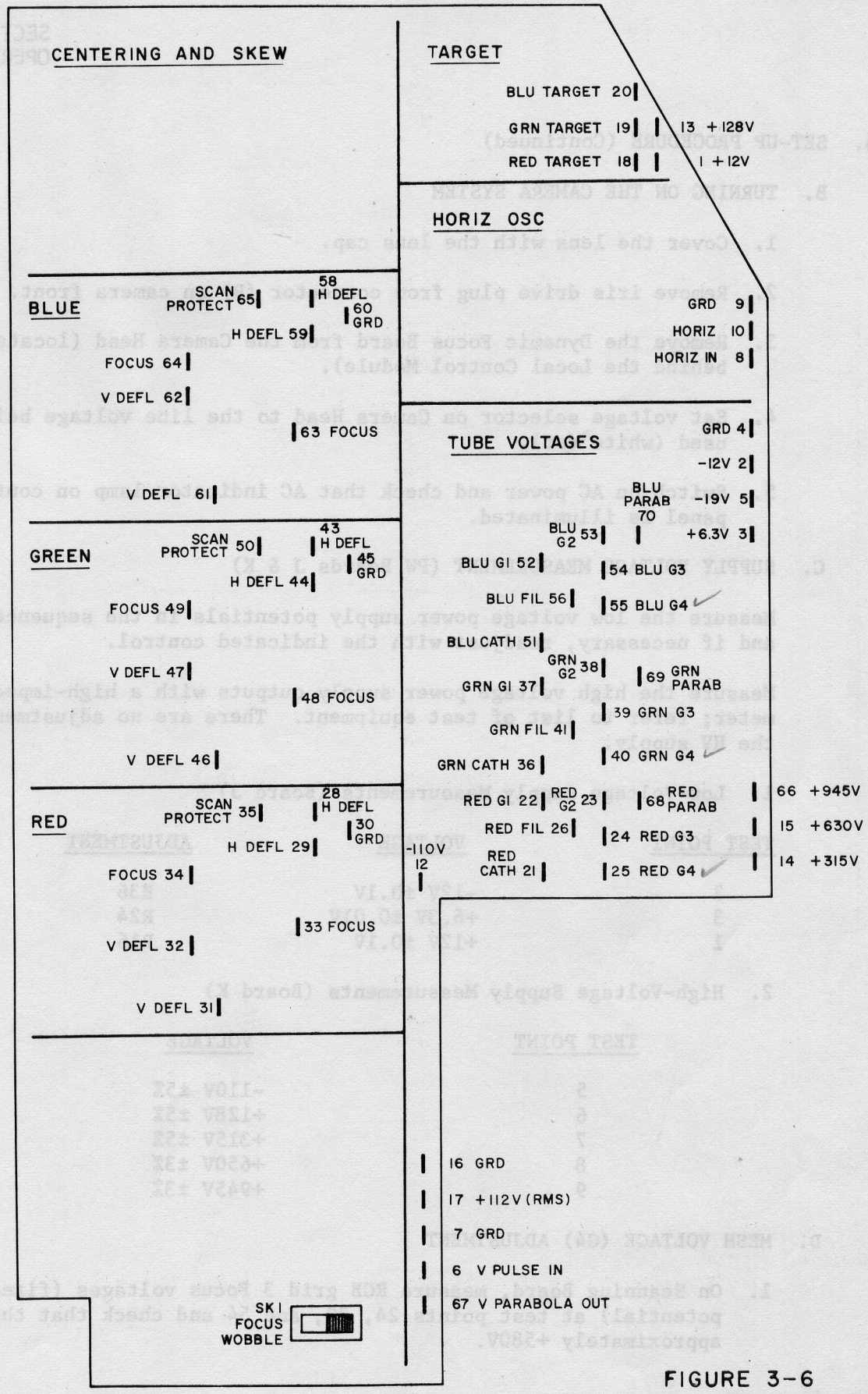


FIGURE 3-6
SCANNING BOARD TEST POINTS
(COMPONENT SIDE)