

# installation, operation and maintenance of color-port® gage illuminator system illuminator: series L10i level display: series L30d

These instructions supplement “installation and maintenance of Color-Port Water Level Gages.”

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## CONFORMITY TO STANDARDS

A third party evaluation is in progress to verify conformance to FM, CSA and NEMA 3R requirements.

## SAFETY INFORMATION

1. **\*IMPORTANT\*** It is the user's responsibility to ensure that all connections and wiring comply with all applicable codes, specifications, sales contracts or public laws.
2. **\*IMPORTANT\*** The illuminator name tag lists the required operating voltage. Operation at a voltage other than specified will cause equipment damage.
3. The Color-Port gage operates at the boiler saturation temperature. High surface temperatures can be expected where this equipment connects to the gage. Internal parts are hot. Wait at least 5 minutes after unit has been off before opening. **DO NOT TOUCH UNTIL UNIT HAS COOLED.**
4. The Color-Port gage must be adequately supported to hold the combined weight of illuminator and level display.
5. The illuminator and level display are designed for indoor and outdoor use.
6. Shut off illuminator before doing any maintenance or repairs.

## EQUIPMENT INSTALLATION:

### Receipt Inspection

When equipment is received, equipment should be inspected to determine whether any damage has occurred. If damage has occurred, the damaged parts must be replaced before assembly and installation.

### Tools Required

Phillips screwdriver  
7/16" socket and socket wrench

## ASSEMBLY—PRE-INSTALLATION

1. Check the orientation of the red/green glass. The green glass must be toward the wide side of the gage (see Figure 2).
  - 1.1. If colored glass is oriented correctly no assembly is required.
  - 1.2. If colored glass is not oriented correctly the colored glass retainer must be reversed. To reverse colored glass follow these steps:
    - 1.2.1. Remove screws (Item 13) holding the color glass retainer (Item 8) (see Figure 1).
    - 1.2.2. Rotate retainer so that colored glass is aligned correctly.
    - 1.2.3. Place retainer into illuminator and replace screws.
2. Check that level display adjustment plate (Figure 5, Item 5) is oriented with view slots toward the wide side of the gage.

## INSTALLATION

1. **\*IMPORTANT\*** Ensure that the Color-Port gage is adequately supported to safely hold the combined weight of the illuminator and the level display.
2. Place the illuminator and level display on the Color-Port gage body and secure with 1/4-20 nut.

## ASSEMBLY—POST-INSTALLATION

1. Remove illuminator access door (Figure 1, Item 20). A 1/2" conduit hole is provided in the enclosure bottom for wiring access. Install power supply wiring to the terminal block as shown in Figure 3 for 120 V systems or Figure 4 for 230 V systems. Ensure that wiring is adequate for the illuminator wattage listed on the nameplate.
2. Screw access door shut securely.

## START-UP PROCEDURES

1. Apply the proper line voltage to the illuminator and turn the power switch "on."
2. Adjust the level display adjustment plate (Figure 5, Item 5) to obtain the correct red/green image. If the gage is off-service and drained, all ports should be adjusted until the color just shifts to red. Do not over adjust to the red side or the image may not shift to green when water fills the gage.
3. If there is water in a portion of the gage, adjust for the optimum red/green image.
4. If adjustment cannot be obtained, reverse the orientation of the adjustment plate.

## PRINCIPLE OF OPERATION

The illuminator system consists of two primary components shown in Figure 6:

1. **Series L10i Illuminator**  
This contains the light bulbs and colored glass. See Figure 1 for illuminator assembly drawing.
2. **Series L30d Level Display**  
This focuses the projected image through an adjustable display window. See Figure 5 for level display assembly drawing.
3. **Series L50h or L55h Level Display Hood and Hooded Mirror**

These are optional accessories used to enhance the image for outdoor installations or redirect the image for viewing below the gage.

## DESIGN SPECIFICATIONS

Electrical power consumption	— 45 watts per port-120 V systems (50 watts per port-230 V systems)
Illuminator enclosure weight	— 1 lb. per in. of gage visibility
Level display weight	— 1 lb. per in. of gage visibility
Electrical rating	— either 120 VAC or 230 VAC

## TROUBLE SHOOTING CHART

Malfunction	Reason	Corrective Action
Dim port brightness	(1) Low voltage	(1) Check voltage at terminal and correct
	(2) Dirty or failed mica in Color-Port gage	(2) Check with Illuminator and level display removed. Follow Color-Port manual maintenance. Mica failure is serious and must be repaired immediately.
	(3) Dirty optics and/or dirty colored glass	(3) Inspect and carefully clean if necessary
	(4) Bulb out	(4) Check bulb tightness or replace
Illuminator will not energize	(1) Power off	(1) Check AC Power, switch, and terminal block
Image is RED for water and GREEN on steam	(1) Colored glass orientation incorrect	(1) Install GREEN glass toward wide side of gage

## OPERATING PROCEDURES

1. The level display should be checked periodically to ensure all ports are lit. If any ports are dim, follow the trouble shooting section of this manual. If any ports are off (dark), follow the maintenance section of this manual for bulb replacement.
2. If it is not required to operate the gage illuminator continuously, it can be turned off to prolong bulb life. Shut off illuminator using switch located on left side of unit.
3. If the system is not functioning properly, see the trouble shooting section of this manual.

## MAINTENANCE

### Bulb Replacement

1. Turn off power.
2. Wait at least 5 minutes before opening the illuminator enclosure access door. The halogen light bulbs operate at high temperatures and require adequate cooling time.
3. Open the access door and replace light bulbs as required. Ensure that the bulb voltage rating matches the operating voltage listed on the cabinet nametag. Use caution and wear protective clothing since light bulbs and other components may still be hot.
4. Replace access door. Turn on AC power. Verify that all lights are illuminated.

### Cleaning

Dirt and oil will reduce the projection of light through the illuminator, Color-Port gage and level display. These components should be cleaned if all light bulbs are confirmed ON and light transmission is low.

1. Illuminator
  - 1.1. Turn off AC power to the illuminator.
  - 1.2. Allow the illuminator to cool for at least 5 minutes.
  - 1.3. Remove the illuminator from the gage.
  - 1.4. Wipe the colored glass with a wet rag to remove all dirt.

- 1.5. Remove the illuminator access door. Remove all light bulbs. Wipe the colored glass with a damp cloth and clean thoroughly.
- 1.6. Replace light bulbs and screw the access door shut.
- 1.7. Bolt the illuminator to the Color-Port.
 

*Note: If the Color-Port gage ports need to be replaced, complete that maintenance before reattaching the illuminator.*
- 1.8. Turn on AC power.

### 2. Color-Port gage

Follow the cleaning and port replacement instructions in the Color-Port Installation, Operation and Maintenance Manual.

### 3. Level Display

- 3.1. Turn off AC power to the illuminator.
- 3.2. Remove the level display from the Color-Port gage.
- 3.3. Use a wet rag to carefully clean the focusing lens (item 2) and view screen. (item 5)
- 3.4. Bolt the level display to the Color-Port gage.
 

*Note: If the Color-Port gage ports need to be replaced, complete that maintenance before attaching the level display.*
- 3.5. Turn on AC power to illuminator.

### Allowable Modifications:

The illuminator or level display are not to be modified in any way. Any modification will void all warranties, and could result in equipment damage or serious personal injury.

## Packaging, Storage and Transportation

### Packaging

The illuminator and level display contain fragile components and must be handled with care. These units must be packed to prevent damage during transportation. If damage to the colored glass or lens should occur during shipment, consult spare parts section of the manual or contact the factory

### Storage

1. The illuminator and level display can be stored outside. These units are not affected by temperature or humidity.
2. Remove the light bulbs from the illuminator prior to extended storage.

### Transportation

1. See the design specification section in the manual for the weight of the components.
2. Since these components contain fragile parts, care should be taken to ensure that the units arrive undamaged. After unpacking units, each unit should be inspected and any damaged parts should be replaced before assembly and installation.

### Spare Parts

1. The only recommended spare part is light bulb (Figure 1, Item 22). Ensure that lamps for the proper operating voltage are specified.
2. Contact the factory if it is necessary to obtain other replacement parts.

### To Order Parts

1. Give series number, voltage and wattage from nameplate. Give gage visibility.
2. Give description and reference number from parts list.
3. For replacement parts consult factory.

### Warranty

1. See sales order acknowledgments for Terms and Conditions of Sale.
2. For service call factory.

### Parts and Materials

Item No.	Description
1	Housing, Illuminator, Stainless Stl.
2	Lampholder Bracket
3	Lampholder
4	Wire Assembly, Blk
5	Wire Assembly, Wht
6	Terminal Block
7	Screw, Pan M3 x 30mm
8	Colored Glass Retainer
9	Colored Glass Retainer Clip
10	Screw, Pan M3 x 10mm
11	Red Glass
12	Green Glass
13	Screw, Pan, M5 x 16mm
14	Switch Assembly
15	Wire, GRN, 12 GA.
16	Ring Terminal
17	Locknut
18	Name Plate
19	Drive Screw
20	Door, Stainless Stl.
21	Handle
22	Lamp
23	Ground Label
24	Resistor
25	Heat Shrink Tubing

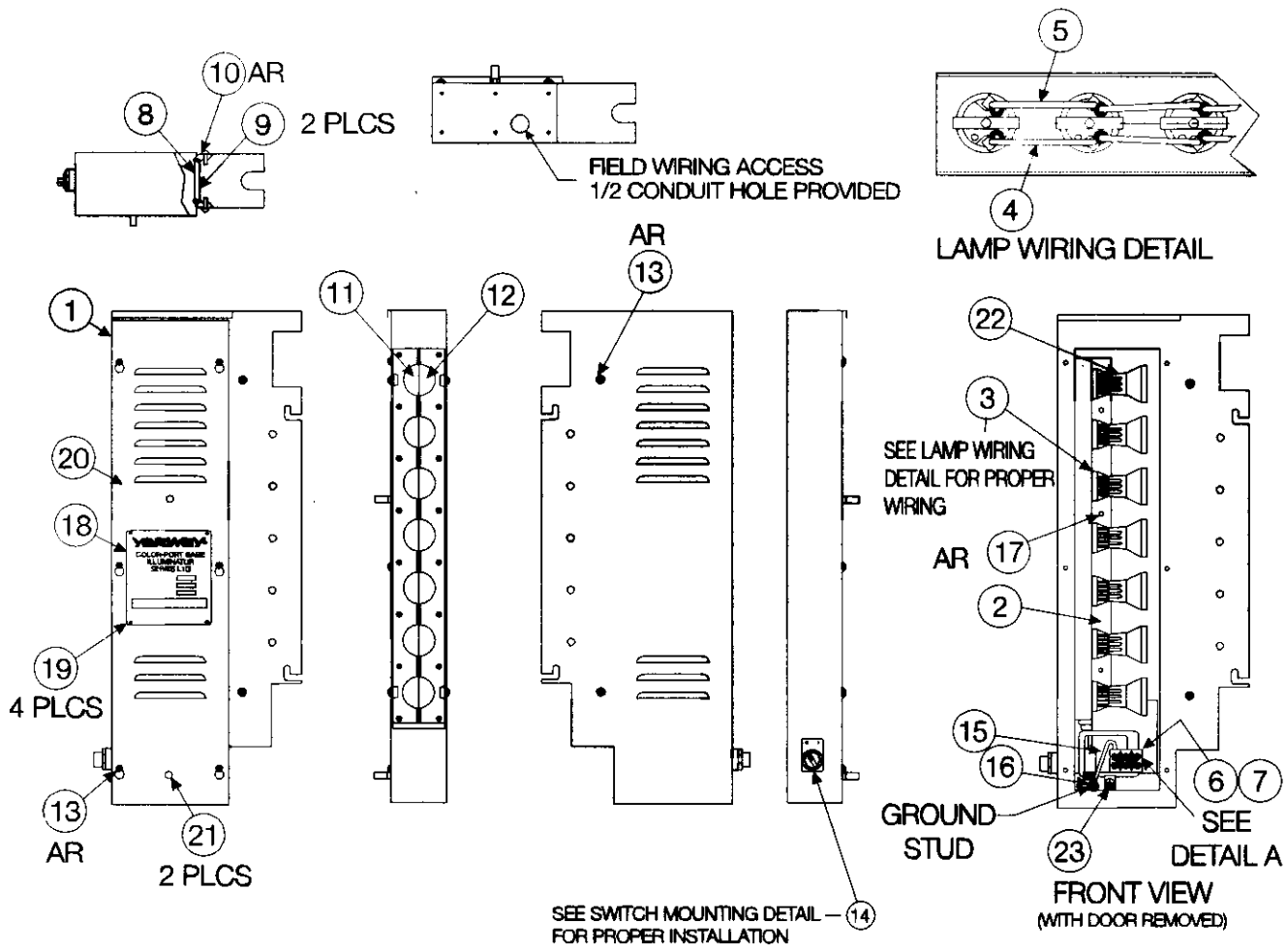


Figure 1—Series L10i Illuminator

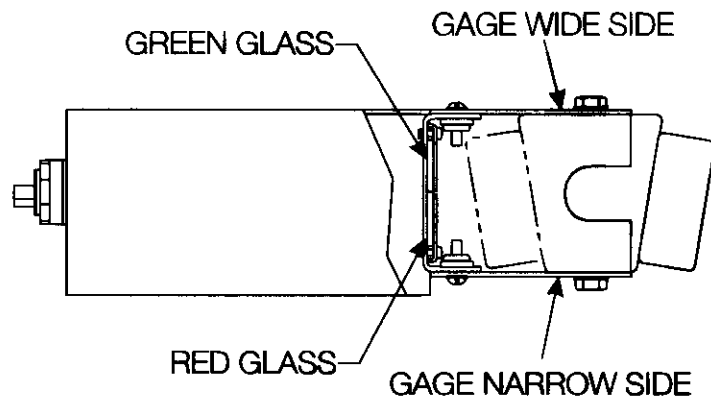


Figure 2—Red/Green Colored Glass Orientation

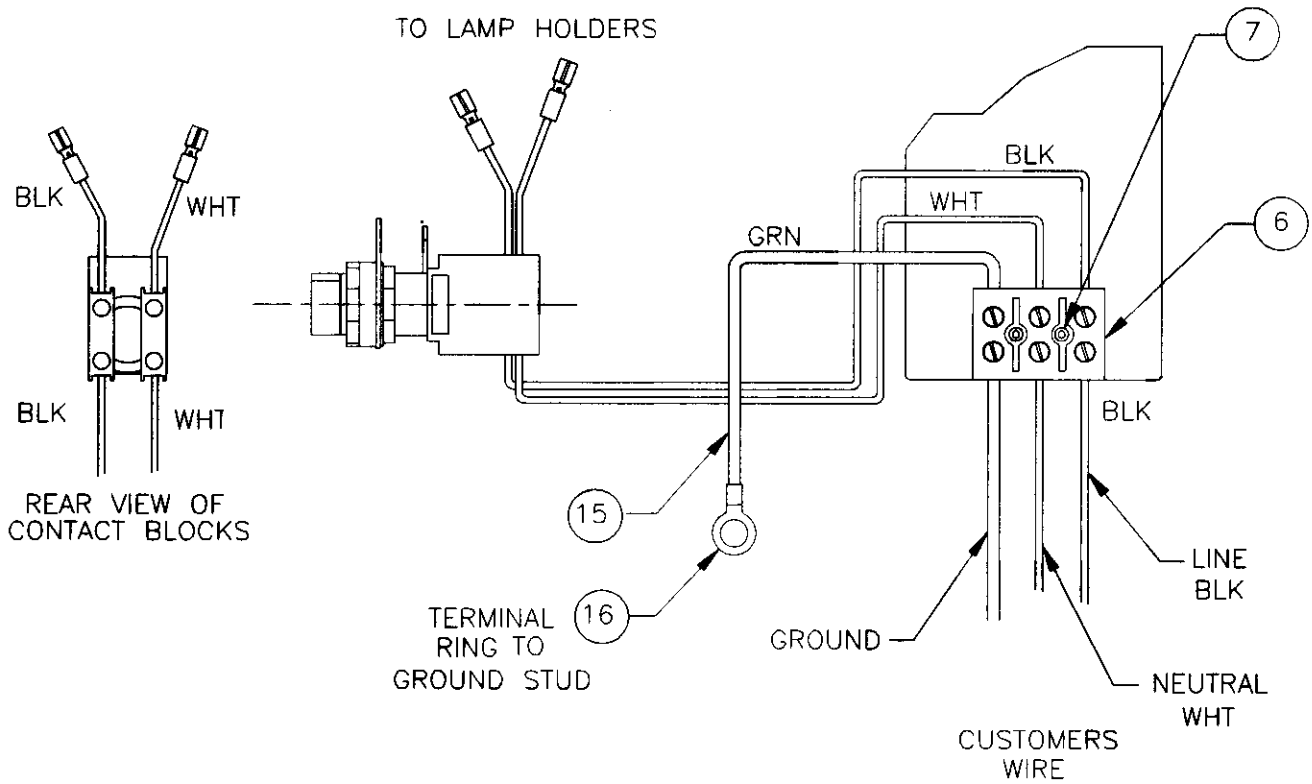


Figure 3—120 VAC Wiring Diagram

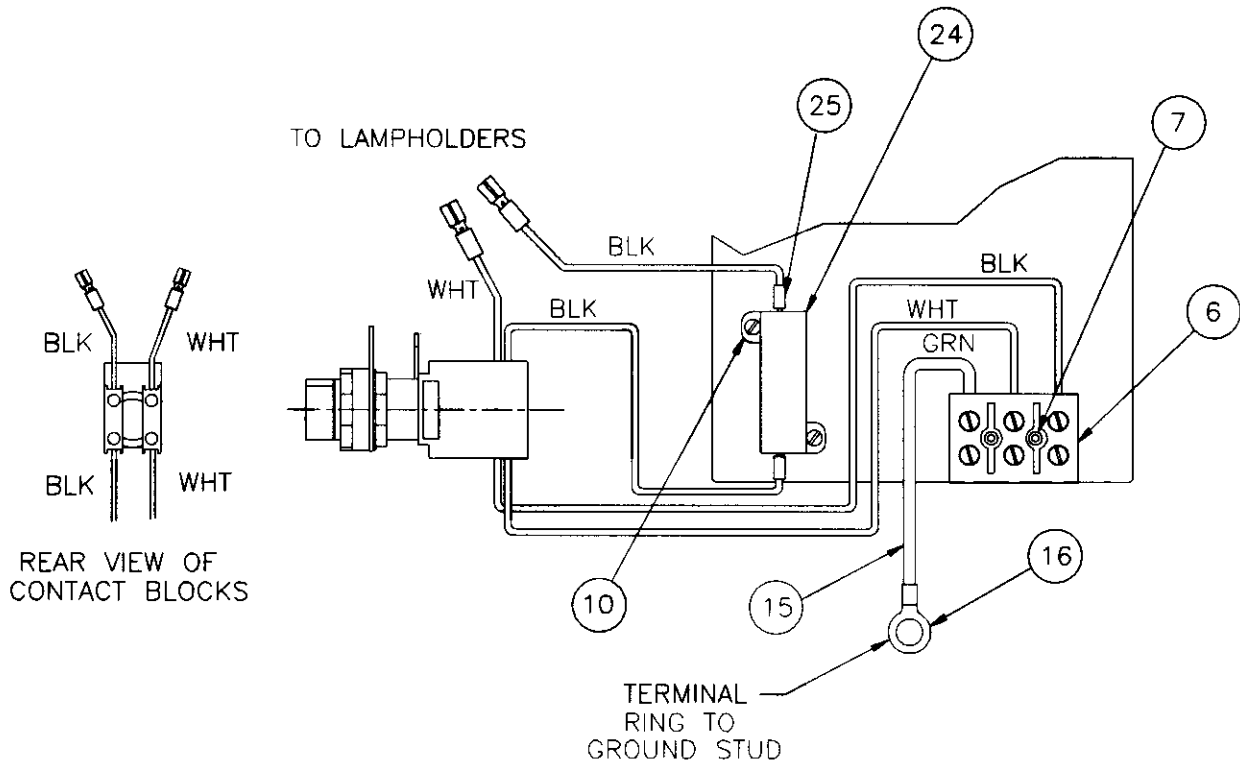
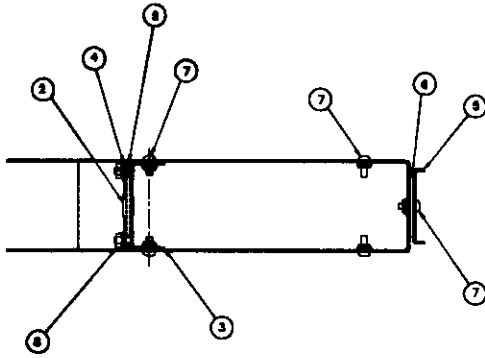


Figure 4—230 VAC Wiring Diagram

Gage Visibility	"A"
12-1/2 [317]	17-1/4" [438]
15-1/2 [394]	20-3/4" [527]
18 [457]	23" [584]
21 [533]	25-3/4" [654]
29-1/2 [749]	34-1/2" [876]
35 [889]	40-1/8" [1019]
38 [965]	43-1/8" [1095]
49-1/2 [1257]	54-5/8" [1387]
44 [1118]	48-7/8 [1241]

Reference	Description
1	Housing, Stainless Stl.
2	Lens
3	Lens Holder Bracket
4	Lens Retainer
5	Adjustment Plate
6	View Screen
7	Screw, M5 x 16mm LG
8	Lock Nut, M5
9	Spacer
10	Nameplate
11	Drive Screws
12	Viewing Systems Logo
13	Yarway Logo



SECTION A-A  
SCALE 2/1

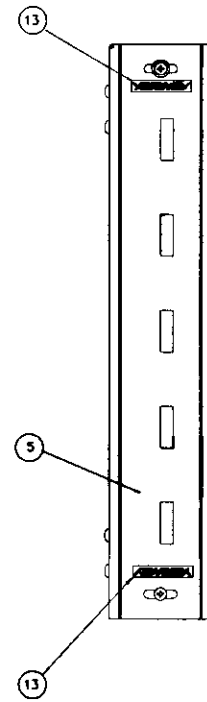
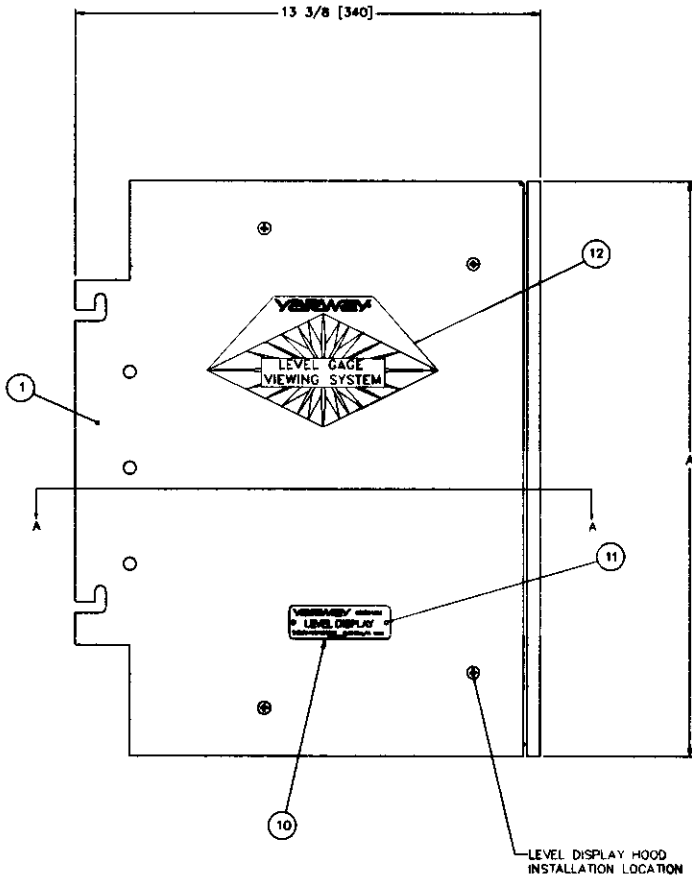
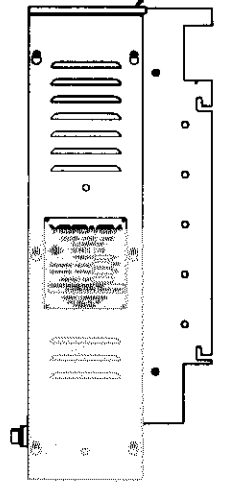
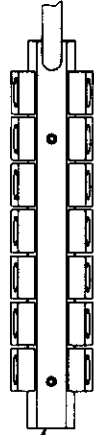


Figure 5—Series L30d Level Display

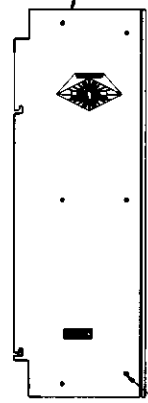
SERIES L10i  
ILLUMINATOR SECTION



LEVEL GAGE



SERIES L30d  
LEVEL DISPLAY  
SECTION



INSTALLATION LOCATION  
FOR OPTIONAL LEVEL DISPLAY HOOD  
OR HOODED MIRROR

Figure 6—Illuminator System



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