

installation, operation and maintenance for illuminator Model 4000I

This manual has been prepared as an aid and guide for personnel involved in installation or maintenance. All instructions must be read and understood thoroughly before attempting any installation, operation or maintenance. Failure to follow *any* instructions could possibly result in a malfunction of the illuminator resulting in a loss of ability to read liquid level or failure of the liquid level gage, with resulting leakage causing property damage, physical injury or electrical shock to personnel.

CAUTION: Yarway Corporation does not have control over the manner in which its illuminator is handled, installed, or used, and Yarway Corporation cannot and does not warrant or guarantee that an illuminator is suitable or compatible with the user's specific application.

WARNING: Safety glasses should be worn when installing, servicing or operating an illuminator.

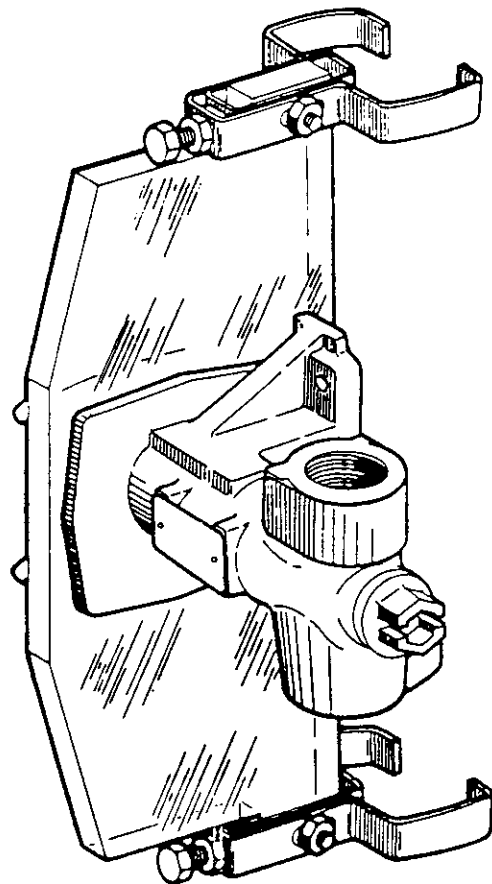
INTRODUCTION

Features and Specifications

Yarway illuminator Model 4000I is designed to be readily mounted and able to fit a Model 4300 & 4600 Yarway Corporation liquid level gage, and will provide uniform light distribution over the entire length of the liquid level gage.

Yarway Corporation illuminators are available for single body gages. When multi body gages are used, one illuminator per body section is required.

Yarway Corporation illuminators are provided with an aluminum bulb housing to contain a bulb and provide housing for electrical connections.



Model 4000I

Design Ratings

The standard illuminator rating is 58 watt at 115 VAC. The optional illuminator rating is 58 watt at 230 VAC.

Application Data

For specific application data, the user should consult the Yarway Corporation product proposal for the specific model and size illuminator, or should request Yarway Corporation to supply the applicable technical data bulletin.

WARNING: Under no circumstances should this design rating or application data be exceeded. Exceeding design ratings or application data may cause property damage or physical injury to personnel.

INSPECTION AND PERFORMANCE

Receiving Inspection

Exercise care in handling illuminator parts to avoid scratching, denting, or otherwise damaging the polished edge of the reflector. Any marks on the polished edge, as well as dirt, paint, or tape, will result in a reduction of light output.

Upon receipt of an illuminator, check all components carefully for damage incurred in shipping. If damage is evident or suspected, do not attempt installation. Notify carrier immediately and request a damage inspection.

User's Rating Inspection

The user should confirm:

1. That the illuminator size, rating and model number stamped on nameplate conforms to the description on the user's purchase order.
2. That the operating conditions described in the purchase order agree with the actual operating conditions at the installation site.
3. That the actual operating conditions at the installation site are within the application data shown on the Yarway Corporation Technical Data Bulletin, product proposal referred to above or product nameplate data.
4. That the materials of construction of the illuminator are compatible with the surrounding atmosphere in the specific application.

CAUTION: If the size, model, or performance data of the illuminator as received does not conform with any of the criteria above, do not proceed with the installation. Contact Yarway Corporation for instructions.

INSTALLATION

Installation should only be undertaken by qualified experienced personnel who are familiar with this equipment and have read and understand all the instructions in this manual.

WARNING: Do not proceed with installation of an illuminator to a liquid level gage unless:

1. The gage has been permanently mounted and tested per the Installation/Operation/Maintenance Instructions included with the gage.
2. The gage has been relieved of all pressure or vacuum, has been allowed to reach ambient temperature, and has been drained or purged of all fluids. Failure to do so can cause serious personal injury to personnel.

Refer to the Yarway Corporation product proposal to obtain dimensional information for the specific size and model illuminator.

Inspection and Cleaning of Gage Glass

Yarway Corporation recommends that prior to installation of an illuminator to a gage, that the gage glass be cleaned and inspected per instructions as follows:

1. Clean glass within vision slot using a non-abrasive household cleaner. DO NOT use a wire brush, metal scraper, or any device which could scratch the glass.
2. Inspect the surface of the glass for any signs of clouding, etching, scratching or physical damage such as bruises, checks, or erosion that penetrates the outer surface of the glass. Shining a light at approximately a 45° angle will aid in detecting some of these conditions, which will glisten more brightly than the surrounding glass when reflecting light. Detection of any such problem areas or surface wear is sufficient evidence of damage. Do not proceed with installation with damaged glass.

Installation of Unit to Gage

Study all the parts and compare them to the exploded view Figure 4.

1. Mount illuminator to gage as shown in Figures 1 and 2.
2. Thread nut onto end bolt and place washer over end bolt until it contacts the nut.
3. Insert end bolt through the end hole in the upper mounting bracket and thread nut onto end bolt a few turns.
4. Repeat steps 1 and 2 for the lower bracket.
5. Slip reflector bracket over top end of the reflector so that the indentation on the end of the reflector bracket is facing in the direction of the end bolt.
6. Place the upper mounting bracket over the reflector bracket and insert thru bolt through both brackets and the hole in the reflector.
7. Install washer over end on the thru bolt and thread on nut hand tight.
8. While holding reflector in place to gage, slip upper bracket over the top end of the gage cover and hand tighten end bolt to hold reflector in place.

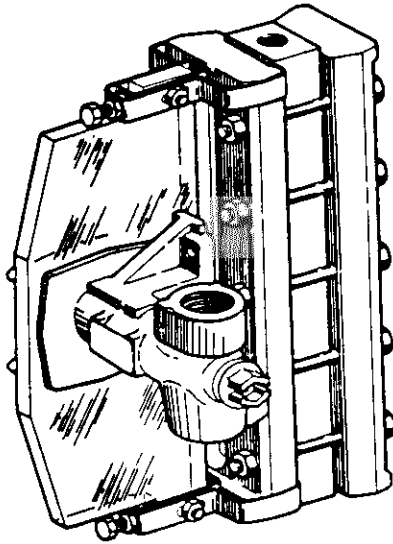


Figure 1

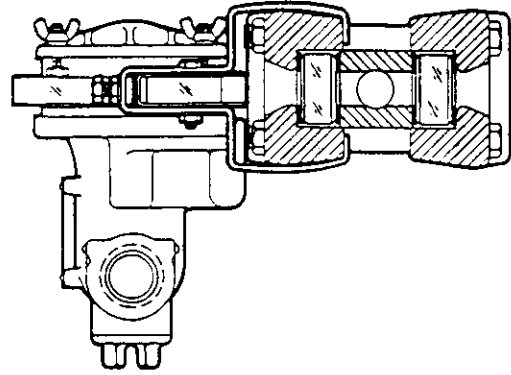


Figure 2

9. Slip mounting and reflector brackets over lower end of gage and illuminator and insert thru bolt through both brackets and the hole in the lower end of the reflector and install washer and nut hand tight.
10. Adjust reflector so that it aligns with the vision slot of the gage and wrench tighten end bolts one turn beyond hand tight and secure end bolt by tightening nuts.
11. Wrench tighten thru bolts.

Electrical installation

Do not proceed with electrical installation unless:

1. The illuminator has been mounted to the gage according to all instructions under "Installation of Unit to Gage" above, and is grounded.
2. The electrical installation should be performed by a qualified electrician and comply with applicable codes (refer to National Electric Code NFPA-7 current edition).
3. The conduit is run in such a manner that it is not supported by or does not serve as a support for the illuminator.

WARNING: Failure to follow any of the above instructions can result in damage to illuminator or gage glass breakage causing serious personal injury or electrical shock to personnel.

OPERATION

Pre-Operational Check

1. Assure that all installation procedures have been completed.
2. Check that illuminator has sufficient light output over the entire visible length of the liquid level gage.

Operating

Gages should be brought into service slowly. The glass used in Yarway Corporation gages is tempered and can stand minimal thermal shock or mechanical stress. To avoid excessive thermal shock and mechanical stress on the glass, the connecting valves should be opened slightly, and the gage temperature and pressure allowed to slowly equalize with the vessel.

MAINTENANCE

Maintenance should only be undertaken by qualified experienced personnel who are familiar with this equipment and have read and understand all the instructions in this manual.

WARNING: Do not proceed with any maintenance on illuminator unless:

1. The liquid level gage to which the illuminator is mounted has been relieved of all pressure or vacuum, has been allowed to reach ambient temperature, and has been drained or purged of all fluids.
 2. Electrical power has been turned off.
- Failure to do so can cause serious personal injury or electrical shock to personnel.

Preventative Maintenance

The user must create maintenance schedules, safety manuals and inspection details for each specific installation of an illuminator.

On all installations, the following items should be regularly evaluated by the user for purposes of maintenance.

1. Reflector, for signs of dirt build up, scratches or breakage.

2. Mounting brackets or cover wing nuts, for signs of loosening.

The user must determine upon evaluation of his or her own operating experience an appropriate maintenance schedule necessary for his or her specific application. Realistic maintenance schedules can only be determined with full knowledge of the services and application situation involved.

Maintenance Procedures

1. Access to maintenance items.

Maintenance Item	Follow Steps Below	
	Disassembly	Reassembly
Glass Lens Cleaning	a thru c	d thru f
Bulb Replacement	a thru d	c thru f
Reflector Cleaning	e thru j	a thru f
Illuminator to Gage	e thru j	g

2. Cleaning.

- a. Reflector. Wash with a non-abrasive soap or detergent and water using a soft, grit-free cloth or sponge. When cleaning grease and oil from reflector, use only hexane, kerosene, or aliphatic naphtha (no aromatic content) and a soft, grit-free cloth.

DO NOT use solvents such as acetone, benzene, carbon tetrachloride, dry cleaning fluid, or lacquer thinners since they will attack the surface of the reflector. After surface has been cleaned and rinsed of all foreign particles, it may be dried with a clean damp chamois or grit-free cloth.

Important: Do not use hard, rough cloths on edge of reflector because they will scratch the polished surface. The scratches will result in reduced light output of the illuminator.

- b. Lens. Wash with commercial glass cleaner. DO NOT use a wire brush, metal scraper, or any device which might scratch the glass.

Disassembly

- a. Hold illuminator firmly, loosen and remove wing nuts and washers.
- b. Slide cover off studs.
- c. Carefully remove glass lens.
- d. Unscrew and remove lamp.
- e. Remove conduit fittings and disconnect wires.
- f. Remove nuts and slide studs out of reflector.
- g. Loosen end bolt nuts.
- h. Loosen end bolts.
- i. Loosen and remove thru bolt, washer and nut from the lower bracket and remove both brackets.
- j. While holding reflector to keep it from falling, loosen upper thru bolt and remove reflector along with the upper bracket assembly intact from the gage.

Reassembly

- a. Slide reflector onto studs.
- b. Replace reflector nuts and tighten.
- c. Replace bulb.
- d. Replace lens.
- e. Replace cover by sliding into position on studs making certain that the lip on the cover slips inside the lens to provide proper location of the lens.
- f. Replace washers and wing nuts. Tighten wing nuts in a sequence as shown in Figure 3, until they bear on the cover, then turn wing nuts an additional $\frac{1}{4}$ to $\frac{1}{2}$ turn.

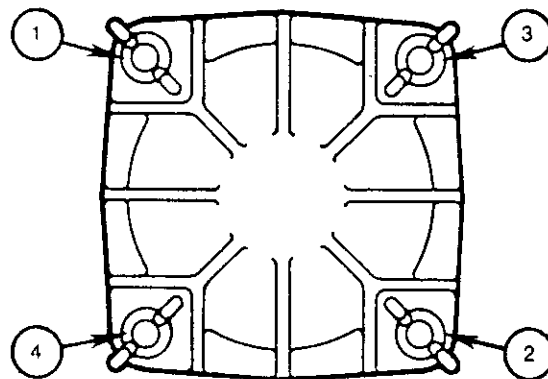


Figure 3

REMOVAL-DISASSEMBLY-REASSEMBLY

WARNING: Do not proceed with the disassembly of an illuminator unless:

1. The liquid level gage to which the illuminator is mounted has been relieved of all pressure or vacuum, has been allowed to reach ambient temperature, and has been drained or purged of all fluids.
2. Electrical power has been turned off.

Failure to do so can cause serious personal injury or electrical shock to personnel.

NOTE: When tightening wing nuts, pressure should be applied on the center of the domed portion of the cover and the glass.

Important: Care should be taken when tightening wing nuts. Excessive tightening or uneven tightening will cause the glass to break.

- g. Assemble illuminator to gage per "Installation of Unit to Gage".

Refer to "Operation" section when returning illuminator to service.



Figure 4

Illuminator Parts List

Part No.	Item	Min. Qty. Spare Parts	Part No.	Item	Min. Qty. Spare Parts
1	Body	-	14	Nut, Thru Bolt	-
2	Cover	1	15	Washer, Thru Bolt	-
3	Reflector	1	16	Nut, End Bolt	-
4	Lens	1	17	Nut, Wing	-
5	Plug	-	18	Washer, Wing Nut	-
6	Plate, Backing	1	19	Nut, Reflector	-
7	Gasket	1	20	Nameplate	-
8	Bracket, Mounting	-	21	Screw, Nameplate	-
9	Bracket, Reflector	-	22	Stud	-
10	Thru Bolt	-	23	Housing, Lamp	1
11	End Bolt	-	24	Lamp, Clear A-19	1
12	Nut, End Bolt	-	25	Clip, Lamp	-
13	Washer, End Bolt	-	26	Screw, Clip	-



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