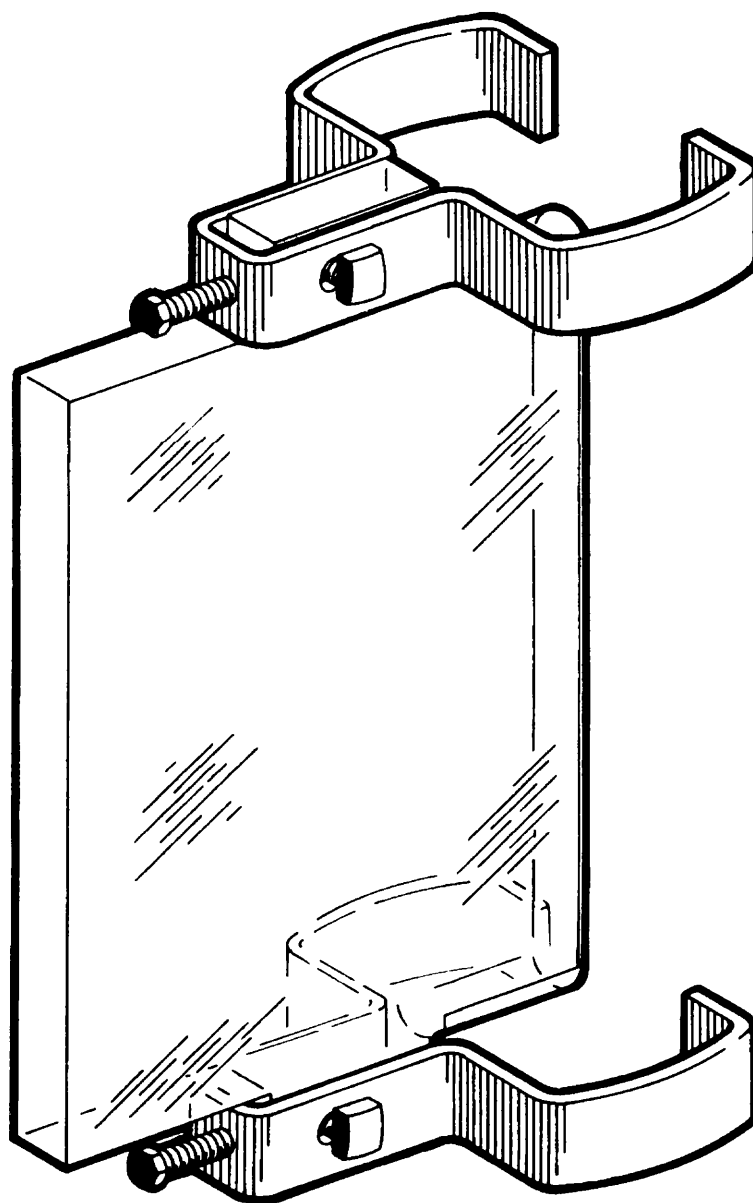


PENBERTHY®

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Issued 11/94  
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# ● Frost Proof Extension



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Installation / Operation / Maintenance Instructions

# PENBERTHY

## INSTALLATION/OPERATION/MAINTENANCE FOR FROST PROOF EXTENSIONS

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



### CAUTION



Penberthy does not have control over the manner in which its frost proof extension is handled, installed, or used, and Penberthy cannot and does not warrant or guarantee that a frost proof extension is suitable or compatible with the user's specific application.



### WARNING



Safety glasses should be worn when installing a frost proof extension.

## I. INTRODUCTION

### A. Features and Specifications

Penberthy frost proof extensions are designed to be readily mounted and able to fit all vision slot lengths of Series L, M, H, and LC liquid level gages. Penberthy frost proof extensions will extend the viewing window glass out beyond the range of frost build up.

### B. Design Ratings

Penberthy frost proof extensions are available in three different extension sizes to handle the temperature ranges as listed below:

| Temperature Range | Extension Size |
|-------------------|----------------|
| -60°F to +150°F   | 2 in.          |
| -140°F to +150°F  | 4 in.          |
| -220°F to +150°F  | 6 in.          |

### C. Application Data

**Note:** For specific application data within the design limits stated above, the user should refer to Penberthy product proposal, or should request Penberthy to supply the applicable technical data bulletin.



### WARNING



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

## II. INSPECTION AND PERFORMANCE CONFIRMATION

### A. Receiving Inspection



### CAUTION



Exercise care in handling extension parts to avoid scratching, denting or otherwise damaging the polished edge of the extension. Any marks on the polished edge, as well as dirt, paint, or tape, will result in a reduction of ability to read liquid level.

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

### B. User's Rating Inspection

The user should confirm:

1. That the frost proof extension size and length 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 Penberthy Technical Data Bulletin or product proposal referred to above.
4. That the materials of construction of the frost proof extension are compatible with the surrounding atmosphere in the specific application.



### CAUTION



If the size or length of the frost proof extension as received does not conform with any of the criteria above, do not proceed with installation. Contact an authorized Penberthy distributor for direction on what to do.

## III. INSTALLATION

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



### CAUTION



Do not proceed with installation of a frost proof extension to a liquid level gage unless:

- a. The gage has been permanently mounted and tested per the Installation/Operation/Maintenance Instructions included with the gage.
- b. 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.

The user should refer to Penberthy product proposal to obtain dimensional information for the specific size frost proof extension.

#### A. Inspection and Cleaning of Gage Glass

Penberthy recommends that prior to installation of a frost proof extension to a gage, that the gage glass be cleaned and inspected per instruction as follows:

1. Clean glass within the 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 deep physical damage such as bruises, checks, or corrosion that extends through the outer surface of the glass into the interior. 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.

#### B. Use of Clear Silicone Rubber Sealant

Penberthy supplies a tube of clear silicone rubber sealant to be applied around the exterior of the extension where the extension and the gage glass come in contact. The sealant, when applied according to these instructions, will form a barrier against moisture.

Frost proof extension applications where a clear silicone rubber sealant is not used, may be subject to partial or total loss of visibility due to freezing of moisture between gage glass and extension.

#### C. Familiarization

Study all the parts and compare them to the exploded view in Figure 1. Notice that the extension is not symmetrical. The extension face with the rounded corners is made to fit into the vision slot of the gage cover.

#### D. Installation of Extension to Gage

1. When using the silicone rubber sealant, Penberthy recommends that the user follow all directions on the rubber sealant package. Attach the nozzle and prepare for application by cutting the tip at the 1/4 mark.
2. Insert end bolt into bracket and thread nut a few turns for both upper and lower brackets.
3. While holding the extension in place to gage, slip brackets over ends of the gage and hand tighten end bolts to hold the extension in place.
4. Insert thru bolts into brackets and hole in extension. Attach nuts and hand tighten.
5. Apply a 1/4" wide bead of the clear rubber sealant completely around the extension where the extension and the gage glass come in contact, making sure there are no gaps.
6. Wrench tighten end bolts one turn beyond hand tight.
7. Wrench tighten thru bolts.



### WARNING



**Failure to follow any of the above instructions may result in damage to frost proof extension or gage glass breakage with resulting property damage or physical injury to personnel.**

## IV. OPERATION

### A. Pre-Operational Check

1. Assure that all installation procedures have been completed.
2. Assure that frost proof extension is sufficiently visible over the entire length of the liquid level gage.

### B. Operating



### CAUTION



**Liquid level gage assemblies must be brought into service slowly to avoid excessive stress on gage glass caused by hydraulic shock, thermal shock, or mechanical loads. The connecting valves must first be opened slightly, and the gage pressure and temperature allowed to slowly equalize with the vessel. The connecting valves should then be opened all the way.**

## V. MAINTENANCE

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



### CAUTION



**Do not proceed with any maintenance on frost proof extension unless the liquid level gage to which the frost proof extension 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.**

### A. Preventative Maintenance

The user must create maintenance schedules, safety manuals, and inspection details for each specific installation of a frost proof extension.

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

1. Extension, for signs of dirt build up, scratches, or breakage.
2. Mounting brackets, for signs of loosening.
3. Build up of frost between gage glass and extension.

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

## B. Maintenance Procedures

### Cleaning of Extension

Clean extension with a non-abrasive soap or detergent and water using a soft, grit-free cloth or sponge. When cleaning grease and oil from extension, 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 extension. After the surface has been cleaned and rinsed of all foreign particles it may be dried with a clean, soft, damp chamois or grit-free cloth.



### CAUTION



Do not use hard, rough cloths on edge of extension because they will scratch the polished surface. The scratches will result in reduced visibility of the frost proof extension.

## C. Removal-Disassembly-Reassembly



### CAUTION



Do not proceed with the disassembly of frost proof extension unless the liquid level gage to which the frost proof extension 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.

#### 1. Disassembly

- Loosen and remove bracket thru bolts.
- Loosen bracket end bolts and remove brackets while holding extension to keep it from falling.
- Remove extension.
- Remove sealant, if any, from vision slot of gage by pulling out with bare hands or with the aid of a wood scraper.



### CAUTION



DO NOT use a wire brush, metal scraper, or any device which could scratch the gage glass within the vision slot.

|      |           |
|------|-----------|
| 137  | Bolt      |
| 4    | Nut       |
| 137A | Bolt      |
| 4A   | Nut       |
| 73   | Bracket   |
| 74   | Extension |

- Remove sealant from extension by peeling off with bare hands. DO NOT use any scraping or abrasive device. Clean extension per Section V. Paragraph B. above.

#### 2. Reassembly

Refer to Section III. Installation and Section IV. Operation when returning to service.

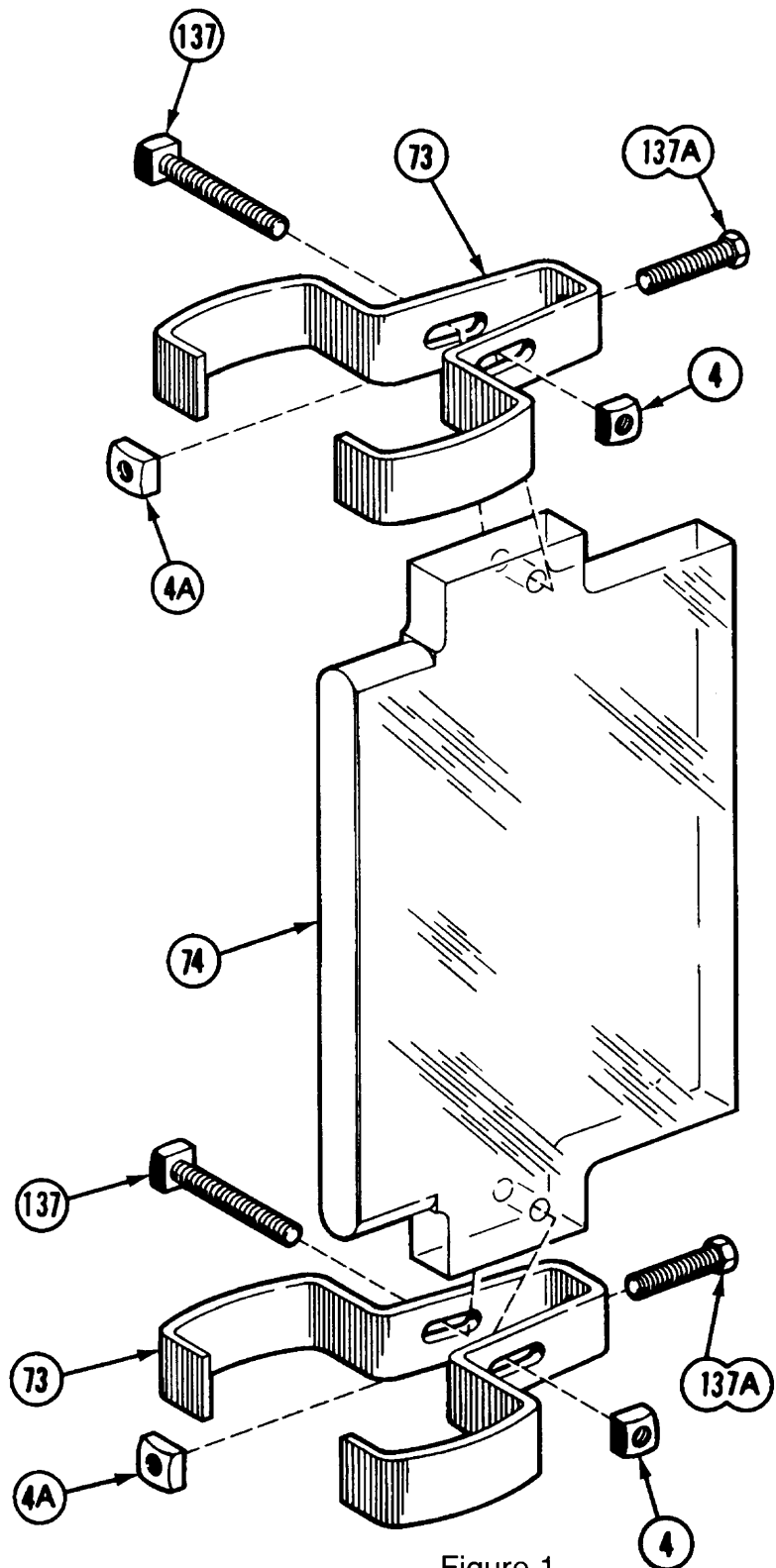


Figure 1

## PENBERTHY

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