

MANUAL FOR INSTALLATION AND MONITORING OF UNDERGROUND STORAGE TANKS WITH FACTORY INSTALLED ANODES



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1. SCOPE

This guide applies only to the installation and monitoring of underground fuel oil tanks manufactured by Granby Steel Tanks to UL-58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids.

These tanks must be installed in accordance with NFPA 31 Standard for the Installation of Oil-Burning Equipment, NFPA 30 Flammable and Combustible Liquids Code and in compliance with any applicable local codes or regulations.

The instructions in this document are intended as recommended guidelines only for tank installation. For more specific installation instructions, please refer to your local code enforcement agency.

2. PREFACE

Information contained herein is abstracts of standard ULC-S-603.1 and ULC-S-603.

These standards are available from:

Underwriters Laboratories of Canada
7 Course Road
Scarborough, ON M1R 3A9

Telephone: (416) 757-3611
Fax: (416) 757-9540
<http://www.ulc.ca>

Installers and owners have to comply with the requirements of the above mentioned standards and published regulations of the authorities having jurisdiction.

Useful information is also available from Petroleum Equipment Institute, Publication PEI/RP-100-86 "Recommended Practices for Installation of Underground Liquid Storage Systems".

3. PREPARATION

3.1. Upon receipt of storage tank (s), the installer should verify the availability of the following accessories and materials:

- outside coating patching kit**;
- monitor collar kit **;
- special sealing compound compatible with steel to nylon threaded pipe joints;

** Supplied by tank manufacturer

3.2. The excavation will present smooth surfaces and provide the following minimum clearances:

- 300 mm around single tank and 600 between adjacent tanks.
- 150 mm below tank expected bottom elevation.
- All tanks subject to high water table uplift must be held by straps and concrete slab assembly or equivalent appropriate system.

4. TANK INSPECTION

Inspect the tank immediately upon receipt. Minor dents and scratches may be acceptable. Do not install the tank if damages are thought to affect the integrity and performance of the tank. Contact your distributor.

5. TANK HANDLING

The tank is to be lifted by means of the lifting lug(s) provided on the top of the tank. Do not drop or use this utility tank to transport any product or move the tank unless it is empty.

6. TANK INSTALLATION

Authorities having jurisdiction should be consulted before the installation of the tank. The installer shall ensure that all applicable Codes are met prior to installation.

In most jurisdictions, installation by a technician recognized by the authority having jurisdiction is mandated. Do-it-yourself installations are not recommended and must be inspected by the authority having jurisdiction prior to placing in service.

The bottom of excavation must be provided with a layer of clean sand or gravel type "B", properly tamped or compacted at the anticipated slope.

The tank will have been touched up for handling scratches (if any). It will be fitted with slings attached at lifting lugs only and lowered carefully in position (strapped if required).

After second inspection for scratches and patching if necessary, factory attached anodes will be wetted and backfilled in about 600 mm layer, properly tamped or compacted is executed, up to top of tank leaving connections exposed.

The fill pipe will now be installed at the 2" connection close to tank end and monitor collar will be mounted with wire connected to brass bolt and wire connector on tank (see sketch 2).

Note

The tank leak testing will be done during installation at the stage specified by the authority having jurisdiction and at the following air pressure (except as specified).

Tank Diameter	Air Pressure PSI (kPa)
1750 mm and less	30 min – 35 max
1750 mm to 2990 mm	20 min – 30 max
3000 mm and above	10 min – 20 max

It is recommended that tank be ballasted in case of heavy rain, storm or high water table, except if it is anchored adequately.

Upon completion of piping and leak testing, backfilling is completed and top surface is applied.

Only labelled tanks bearing the UL listing mark with a serial number are eligible for warranty and installation. Under no circumstances shall a used tank of any design be installed.

7. Protection System Testing

7.1. The potential difference of the tank with respect to magnesium anodes will be measured with a 10 mega ohm voltmeter and copper-copper sulphate cell at the following time intervals :

- upon installation completion;
- six months after installation;
- every two years thereafter.

7.2. All potential readings of 850 mill volts and more, measured as indicated on sketch no.1, indicates that galvanic protection is functioning satisfactorily.

7.3. All readings must be recorded on the Potential records sheet (page 5).

7.4. Condensation

Condensation can form in the tank during the shipping and storing processes. All water and ice should be removed from the tank prior to installation.

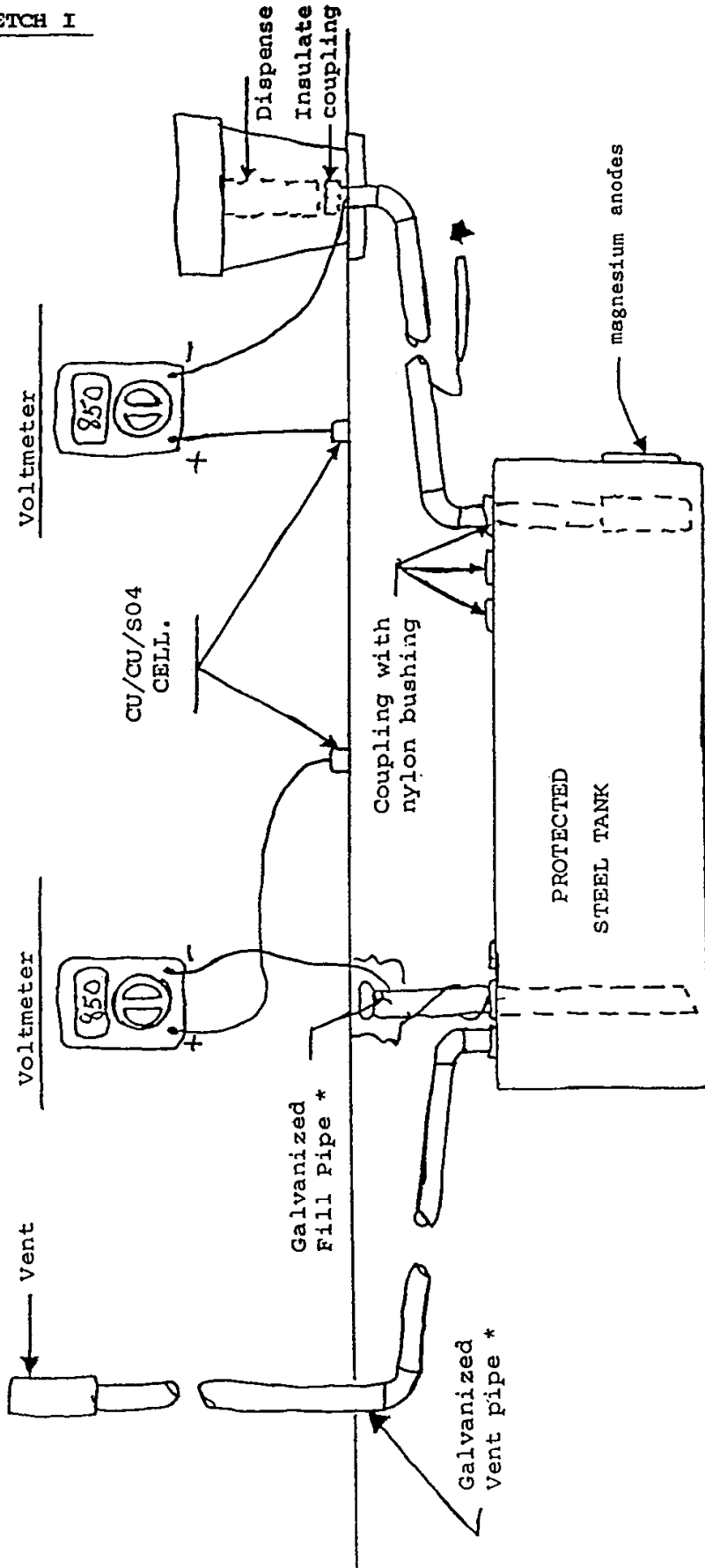
7.5. Tank piping

Fill, vent and supply piping must respect all applicable codes. Piping shall be designed so that the tank is not subjected to vacuum or pressure exceeding 1 PSIG measured at the top of the tank.

7.6. Plugging of remaining tank openings

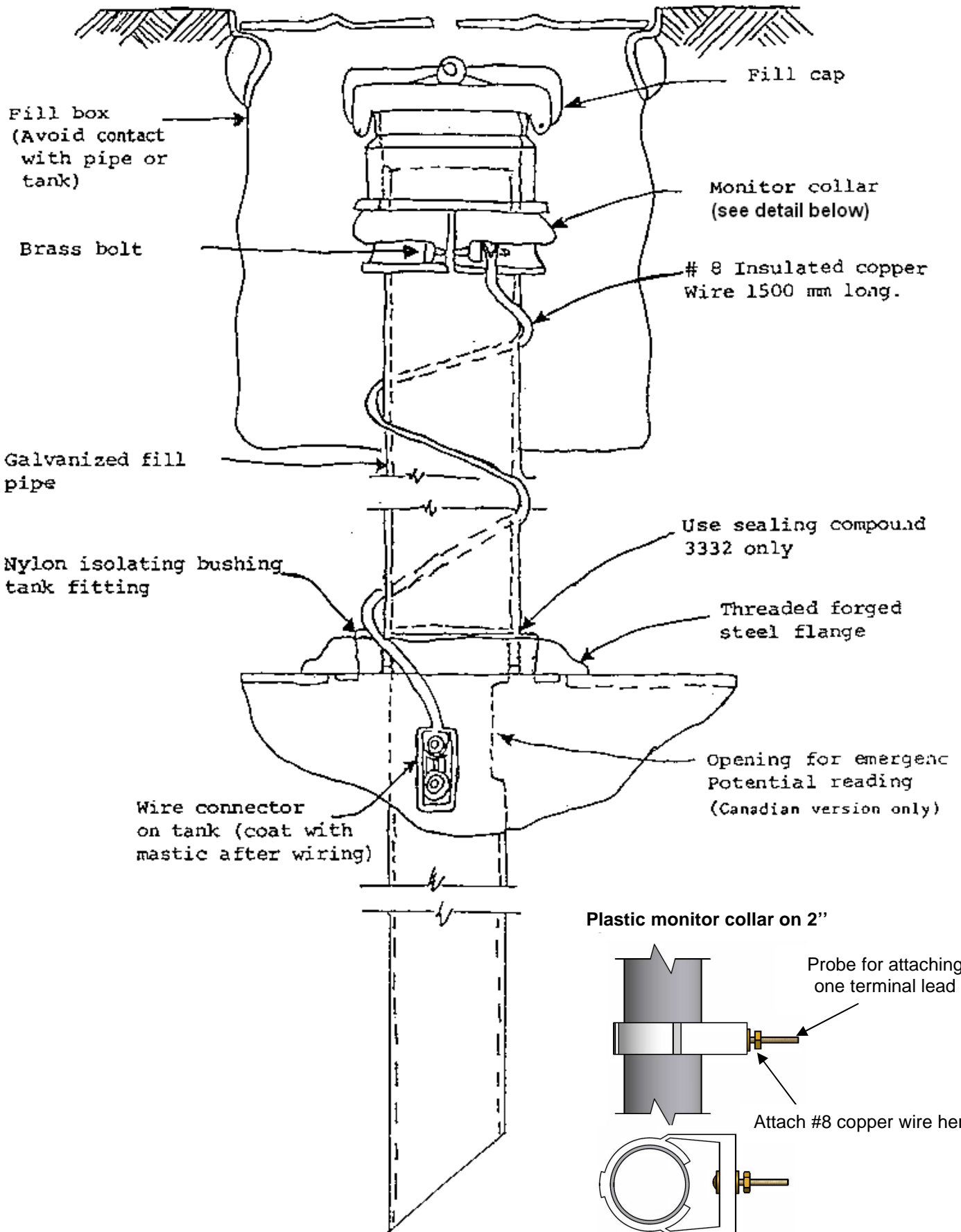
All unused openings on the tanks must be adequately plugged and sealed with liquid-tight closures before the tank is put in service.

SKETCH I



NOTE: * No anode required for galvanized piping providing threaded area is protected by mastic compound. All other protected steel piping shall be provided with magnesium anodes in accordance with recommendation outlined in ULC-S-603-1M-1985.

SKETCH II



TANK INSTALLATION CHECKLIST

Owner : _____
 Tank location : _____

Tank capacity : _____
 Single or double wall : _____
 Dimensions : _____
 Serial number UL : _____
 Serial number ULC : _____

	Yes <input type="checkbox"/>	No <input type="checkbox"/>
HANDLING :		
Is lifting equipment of adequate capacity to lift and lower the tank without damaging it?		
Have scratches been repaired with the included patching kit?		
EXCAVATION		
Is the excavation made in accordance with :		
manufacturer's instructions?		
authority's requirements?		
ANCHORING		
Is anchoring made in accordance with the authority's requirements?		
Type of anchoring used :		
anchoring not required		
concrete pad over the excavation		
concrete pad at the bottom of the excavation with hold down straps		
are straps electrically isolated from the tank		
are bolts evenly tightened		
LEAK TESTING		
Has the tank been tested in accordance with :		
manufacturer's instructions?		
Authority's requirements?		
ANODES		
If applicable, has the plastic wrap around the anodes been removed?		
Have anodes been fully soaked in water before back filling?		
Have final touch-up been made?		
Is electrical connector plate well coated with patching kit?		
Has the electrical wire connection to the monitor collar been performed?		
BACKFILLING		
Is backfilling in accordance with the authority's requirements?		
Clean sand without loose gravel?		
Has pea gravel been used?		
Has compaction been done?		
PIPING		
Has electrical isolation of connections been verified?		
Is tank fully isolated electrically from all surrounding equipment?		
CATHODIC PROTECTION MONITORING		
Has potential reading been taken before final backfilling?		
Is the potential reading more negative than :		
-0.85V for Cu/CuSO4 reference cell?		
or than +0.25 if a zinc anode reference has been used?		

COMMENTS : _____

INSTALLER SIGNATURE

Name _____
 Address _____

 Phone _____ Date _____

INSPECTOR'S SIGNATURE (IF APPLICABLE)

Name _____ Date _____

Notes: Herein, the term, "Authorities requirements" means requirements of codes, laws and regulations which are mandatory by the authorities having jurisdiction where the tank is installed.

Please, send us a copy of this form duly completed as soon as the installation is done.