



# COMMERCIAL PETROLEUM EQUIPMENT

1400 WHIPPLE ROAD • UNION CITY, CA 94587

(510) 489-3272 • FAX (510) 489-4483



## \* PROPOSED EQUIPMENT LIST \*

CONTRACTOR: MARCOR  
PROJECT : CLEAR PRINT PAPER COMPANY  
1482 67TH. STREET  
EMERYVILLE, CA 94608

MAIN TANK:  
LUBE CUBE 5000 GAL. U.L. 142 DOUBLE WALL TANK

DAY TANK:  
LUBE CUBE 280 GAL. DOUBLE WALL TANK

KRUGER LEVEL GAUGE  
OPW 523 LPS 2" VENT P/V - (MAIN TANK)  
OPW 633T-8076 4" FILL ADAPTER  
OPW 634TT-7085 4" FILL CAP  
OPW 23 2" VENT CAP (DAY TANK)  
OPW 233V-4420 4 X 4 X 2 X Ø VENT VALVE EXTRACTOR  
OPW 53VML 12" X 2" BALL FLOAT (OVER FILL VALVE)  
EBW 782-412 4" X 12' FILL TUBE  
EBW 706-400-01 5 GAL. OVER FLOW

### MONITORING SYSTEM

API/ROANAN X76-4X-9 CONSOLE  
7-LS-3 LIQUID SENSORS -

- 1- EACH FOR TANKS ANNULAR SPACE
- 2- MAIN TANK HIGH & LOW LEVEL ALARMS
- 3- DAY TANK HIGH HIGH LEVEL, HIGH LEVEL & LOW LEVEL ALARMS
- 1- HIGH LEVEL ALARM REMOTE ANNUNCIATOR BOX



# HOOVER

Containment Systems Inc.

A SUBSIDIARY OF HOOVER GROUP INC

P.O. BOX 396

SEVERNA PARK, MARYLAND 21146



410-987-3800

800-777-2823

FAX 410-987-3890

## U/L LISTED LUBE CUBE SPECIFICATIONS

U/L Listed Lube Cubes are built, tested and labelled per U/L 142 (steel aboveground tanks for flammable and combustible liquids.) A 25-30 PSI Hydro test was performed on our tank design to test its structural integrity. Our double wall tank design must also withstand 15 PSI between the inner and outer shell. Lube Cube meets all requirements of N.F.P.A. 30.

Each tank is individually tested at 5 PSI air and soap suds are applied to detect weld seam pinhole leaks before leaving the factory.

Our recommended installation instructions are that each tank is tested to 3-5 PSI at the site. The largest opening on top is the emergency relief vent. Each tank also has a 2" opening for normal venting.



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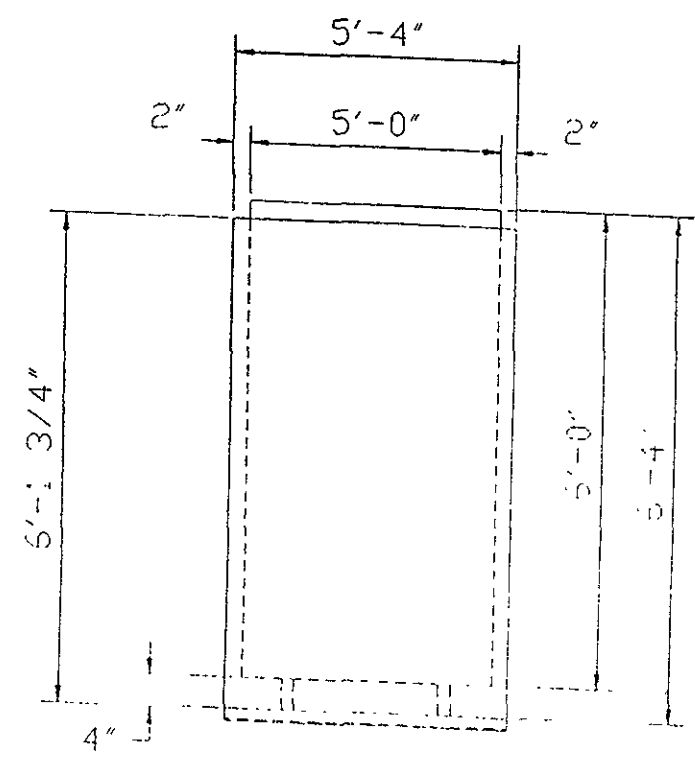
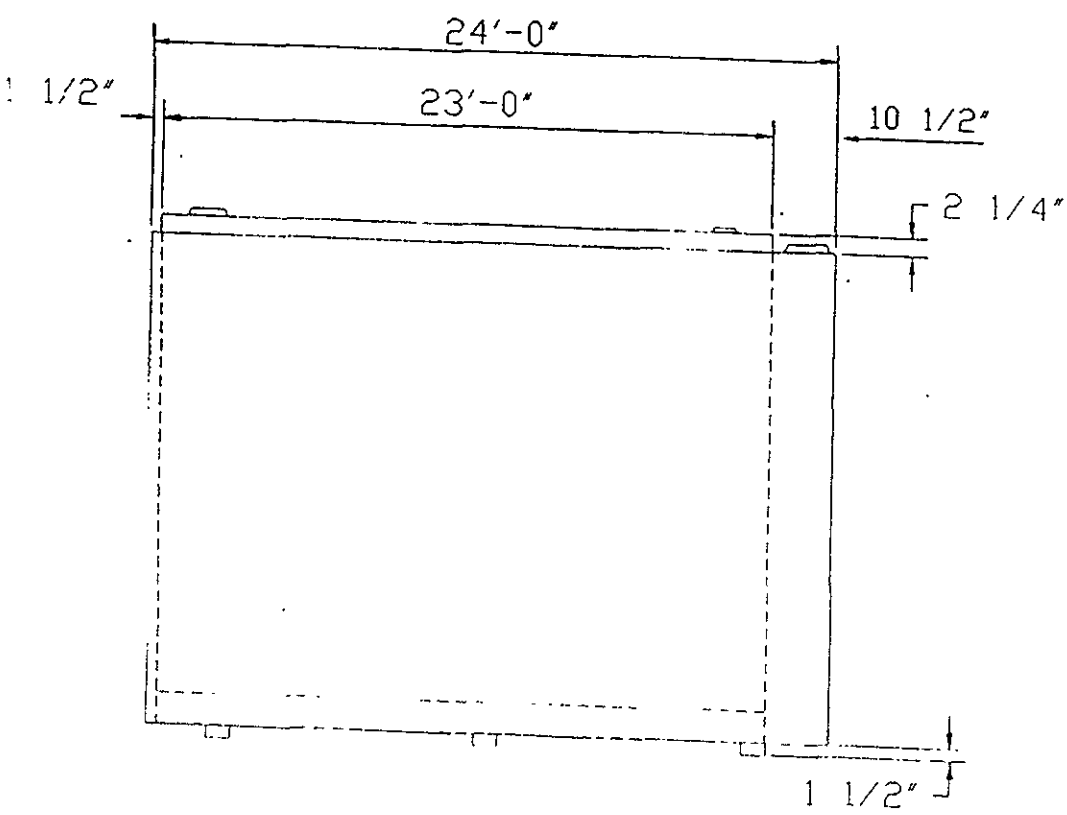
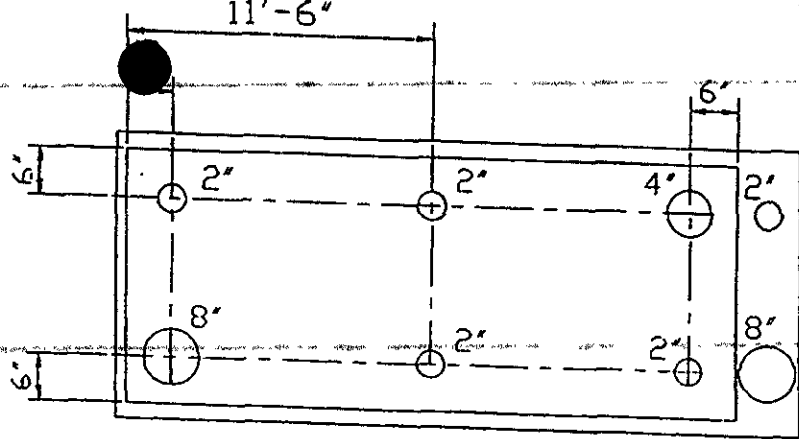
410-987-3800  
800-777-2823  
FAX 410-987-3890

## INSTALLATION OF ABOVEGROUND STEEL STORAGE TANKS


Aboveground Storage Tanks for Flammable and Combustible Liquids are manufactured and tested by LUBE CUBE in accordance with the requirements of the Underwriter's Laboratories Standard UL142.

Proper installation is of utmost importance to ensure the expected service and life of the tank. The following installation suggestions are furnished for your consideration:

1. Handle tank carefully. Use cables or chains of adequate length (not more than 90 degrees between the chains) attached to lift lugs provided. Oversize hooks will tear the lift lugs - use shackles, if necessary.
2. To insure compliance with applicable codes and regulations, tank and piping should be retested at jobsite before being enclosed, or placed in use, using 2 p.s.i. air pressure as soap solution is brushed over weld seams. Inspect tank contents before filling and replace tin caps with pipe plugs or capped piping before test.
3. When testing a double wall tank the inner tank should be pressurized to a maximum of 2 p.s.i. then pressurize the outer tank by bringing the pressure up very slowly to 2 p.s.i. Maximum capacity of the outer tank is very small in relation to the primary tank capacity. Compressors used for testing can over pressurize the outer tank space in seconds causing serious damage to the tank.
4. Install appropriate primary and emergency vent connections as indicated on tank and drawings.
5. Do not cut or weld on any tank that contains flammable or combustible liquids or vapors. Fire or explosion may result.
6. Contact your local Fire Marshall to assure compliance with local regulations and codes.
7. Be sure all drain plugs are secure by applying teflon tape or pipe dope around cast iron plug.



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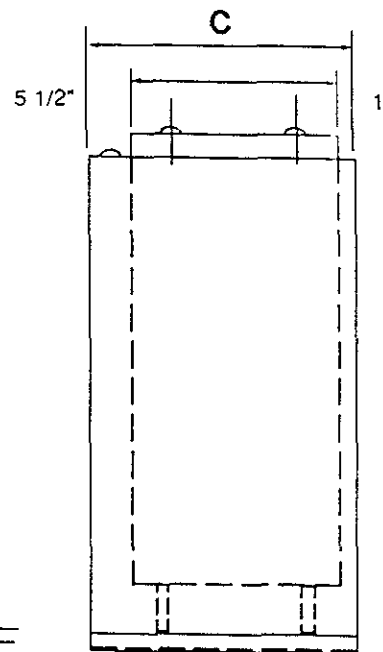
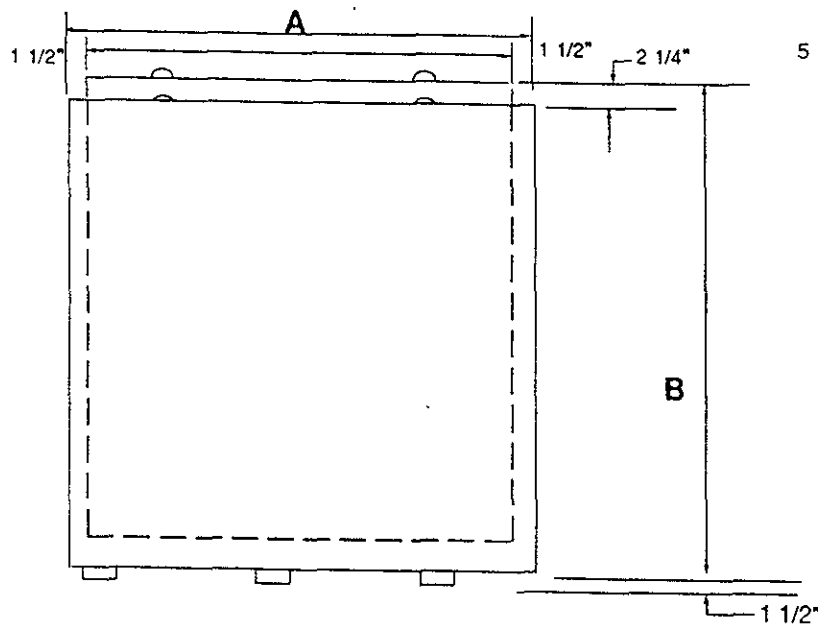
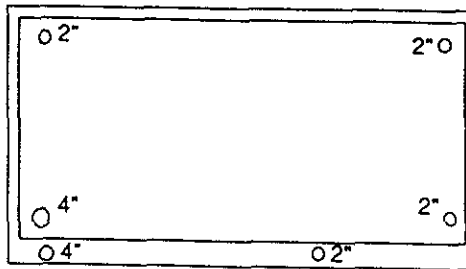
	<b>HOOVER</b>	
	CONTAINMENT SYSTEMS, INC.	
DESCRIPTION: 5000 GALLON 1 1/2" W/L DOUBLE WALL TANK		
BY: JRD	DATE: 2-26-93	PROJECT: W5000

**CAPACITY**  
280 GALLONS

**A**  
5'3"

**B**  
3'4"

**C**  
3' 1/2"



U/L  
**10 GAUGE**  
TEST AT 5 PSI

UL 142  
STEEL ABOVEGROUND  
TANKS FOR FLAMMABLE AND  
COMBUSTIBLE LIQUIDS

NOTE:  
ADD 1 1/2" TO HEIGHT FOR SKIDS

OPENINGS:  
INNER TANK  
4" EMERGENCY VENT  
2" REGULAR VENT  
2" GAUGE  
2" FILL

OUTER TANK  
4" EMERGENCY VENT  
2" INSPECTION

# LUBE CUBE

SPECIFICATIONS  
280 GALLON U/L  
DOUBLE WALL TANK

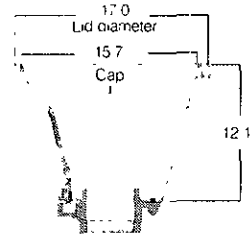
By: JB

12-12-88

## Above Ground Spill Containment

This exciting new product, with a five gallon capacity, gives overflow protection for above ground storage tanks. It prevents possible environmental problems by containing fuel over-spills during fill up. The containment chamber also has a pull drain which allows spilled fuel to drain back into the tank. A hinged locking lid prevents rain intrusion. The cast iron base and welded 14 gauge steel skirt & lid are epoxy coated for corrosion protection.

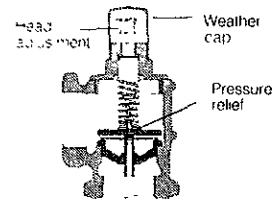
Features	Part no.	Size (in.)	Lbs.
Cast iron base	706-400-01	4.0	33.0
Epoxyed 14 gauge steel skirt & lid			
Pull drain			



## Anti-Syphon Valve

This valve automatically shuts off product flow when lines are broken, preventing fuel spillage and fire hazards. Each valve has an adjusting mechanism allowing for various hydrostatic head pressure settings within the valve range. Both 1.5 and 2.0 inch valves are available in two head pressure ranges. The adjusting mechanism is lockable after the preferred setting is made. The Anti-Syphon Valve also includes a pressure relief valve eliminating thermal expansion of fluid in the lines. Recommended for all above ground storage applications. Sturdy ductile iron construction.

Features	Part no.	Size (in.)	Lbs.	Head pressure ranges(ft.)
Ductile iron construction	616-300-01	1.5 x 1.5	4.6	5 to 10
	616-300-02	1.5 x 1.5	4.6	15 to 20
Hydrostatic pressure adjusting mechanism with weather cap	636-300-01	2.0 x 2.0	7.2	5 to 10
	636-300-02	2.0 x 2.0	7.2	15 to 20
Thermal expansion pressure relief valve				



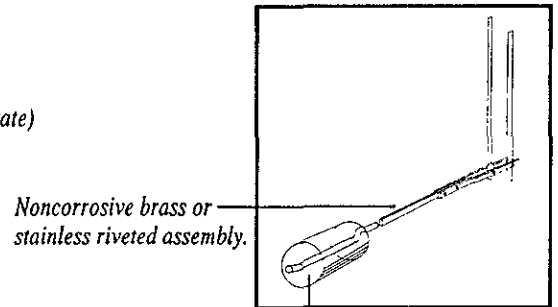
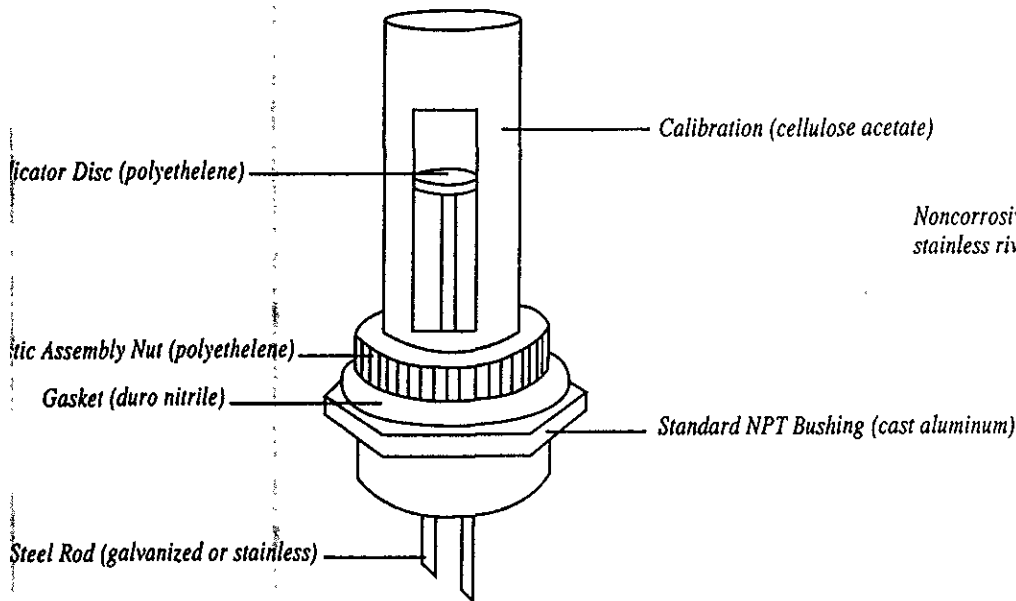
## Locking Fill Cap

The Locking Fill Cap is a cost effective way to give your above ground storage tank the added security it needs. This watertight, locking fill cap consists of a sturdy brass body with attractive gray epoxyed cast iron cap. Holes are uniformly located around the edge of cap so it may be locked in any position. Furnished with a Buna "N" Gasket.

Features	Part no.	Size (in.)	Lbs.
Brass body	770-101-01	2.0	2.6
	770-101-02	3.0	4.0
Epoxyed cast iron cap	770-101-03	4.0	7.8

# THE AT-A-GLANCE Direct Reading Gauge

*One of the Industry's Most Popular Gauges*



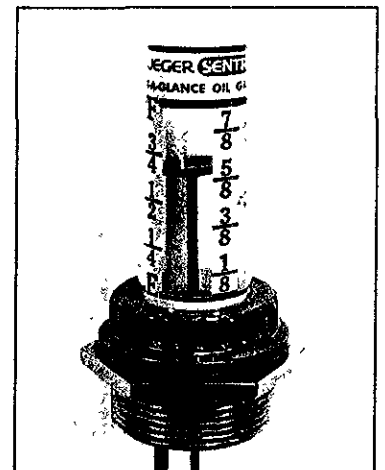
Float (Nitrophenyl, polyurethane coated cork, polyethelene, or stainless steel.)

Direct mechanical action, reliable construction and "at-a-glance" readability make this gauge a perfect choice for tanks with depths up to 12'.

- Patented calibration assembly withstands pressure of 70 lbs. per sq. inch.
- Double plastic dome is almost indestructible.
- "Gallon" readout available for Standard 275 Gal. Oval Tanks.
- All "internal tank" parts available in stainless steel.
- Repair parts available.

*Choose the model which best fits your tank: Type D-2 For 2" tank openings. Type D-1 1/2 For 1 1/2" tank openings.*

*Please specify model and tank depth when ordering. Packed individually.*



**KRUEGER SENTRY GAUGES**

941-D Ashwaubenon St. ■ Green Bay, WI 54304  
Phone: 414-336-2227 Fax: 414-336-6888

# OPW VAPOR VENTS

## OPEN VENT

The OPW 23 is an open vent and directs vapors upward in accordance with NFPA Code 30. This vent features an aluminum body and a 40-mesh brass screen. Set screws make installation easy.

### Materials

Body: aluminum

Screen: 40-mesh brass

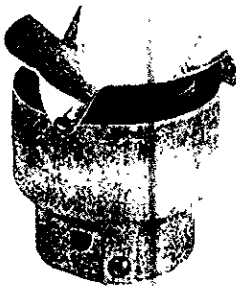
Set Screws: brass

### Ordering Specifications

Product No.	in.	mm.	oz.	kg.	Description
23-0044	1 1/2"	38	3.8	.11	open vent
23-0033	2"	51	4.3	.12	open vent
23-0055	3"	76	5.0	.14	open vent

### Replacement Parts

Part No.	Description
H-00122-M	Screw
H-01967	Nut
H-01969	Screen

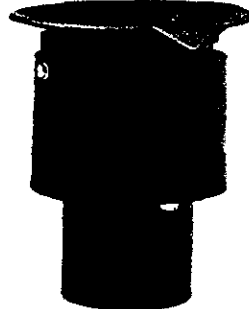


## PRESSURE VACUUM VENTS

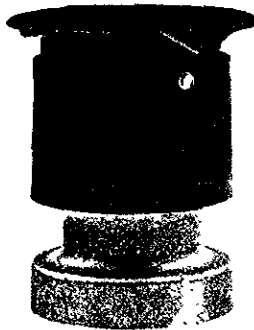
The OPW 523 and 523S Pressure Vacuum Vents maintain the required pressure in the UST to prevent vapor loss.

### OPW 523

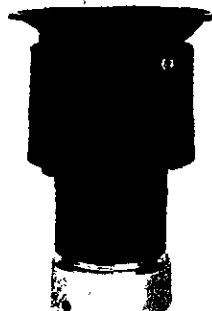
The OPW 523 Pressure Vacuum Vents discharge upward and are available with a 1 oz., 8 oz. or 12 oz. pressure setting and a 1/2 oz. vacuum setting. Now available in corrosion resistant Duratuff®, the OPW 523 comes in 2" and 3" sizes and has a thread-on connection. The rated maximum flow pressure drop is 2 psi at 7000 SCFH. The OPW 523 is UL listed and complies with NFPA code 30.



523 2"



523 3"



523S 2"

### OPW 523S

The OPW 523S Pressure Vacuum Vent is similar to the 523 except that it is attached to the vent line with clamps for the 2" and set screws for the 3". The rated maximum flow pressure drop is 2 psi at 7000 SCFH. The OPW 523S is UL listed and complies with NFPA code 30.

### Materials

Body and Cap: Duratuff®

Screen and Fasteners: stainless steel

Seat Ring: anodized aluminum

Adaptor: 2" - Duratuff®

3" - 2A-12 alloy

### Ordering Specifications

Product No.	in.	mm.	ozs.	kg.	Description
523LP-2200	2"	51	12	.34	1 oz, threads
523LP-2205	2"	51	12	.34	1" wc, threads
523LPS-2250	2"	51	12	.34	1 oz, set screws
523LPS-2255	2"	51	12	.34	1" wc, threads
523LP-3200	3"	76	35	1.0	1 oz, threads
523LP-3205	3"	76	35	1.0	1" wc, threads
523LPS-3250	3"	76	35	1.0	1 oz, set screws
523LPS-3255	3"	76	35	1.0	1" wc, threads
523-1100	2"	51	12	.34	8 oz, threads
523S-1150	2"	51	12	.34	8 oz, set screws
523-3100	3"	76	35	1.0	8 oz, threads
523S-3150	3"	76	35	1.0	8 oz, set screws
523-2300	2"	51	12	.34	12 oz, threads
523S-2350	2"	51	12	.34	12 oz, set screws
523-3300	3"	76	35	1.0	12 oz, threads
523S-3350	3"	76	35	1.0	12 oz, set screws

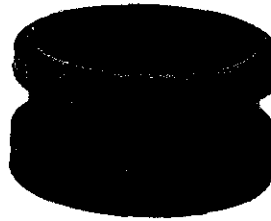


# OPW TIGHT FILL EQUIPMENT

## TOP SEAL ADAPTORS

### OPW 633T

OPW 633T adaptors screw onto the fillpipe of underground storage tanks. Installation is easy with internal wrenching lugs. Designed for use with the OPW 634TT and 634TE and other similar top seal caps, the OPW 633T accepts top seal fill elbows.



633T-7985

### Dimensions OPW 633T 3"x2"

	in.	mm.
A	3 3/8"	92
B	3 3/8"	92
C	1 1/8"	41

### OPW 633TE

The OPW 633TE adaptor is similar to the 633T, except it does not have internal wrenching lugs.

### OPW 633T 3"x3"

	in.	mm.
A	3 3/4"	92
B	3 3/4"	100
C	1 1/8"	41

### Ordering Specifications

Product No.	in.	mm.	lbs.	kg.	Description
633T-8050	3"x2"	76x51	0.54	.25	Hardcoated Aluminum
633T-8060	3"x3"	76x76	0.96	.44	Bronze
633T-8070	3"x4"	76x102	0.71	.32	Hardcoated Aluminum
633T-8075	4"x4"	102x102	0.82	.37	Hardcoated Aluminum
633T-8076	4"x4"	102x102	2.70	1.23	Bronze
633T-7985	4"x4"	102x102	0.45	.20	Duratuff® II
633T-8080	4"x3"	102x76	0.89	.40	Hardcoated Aluminum
633TE-8160	3"x3"	76x76	0.94	.43	Bronze
633TE-8180	4"x4"	102x102	0.79	.36	Hardcoated Aluminum
633TE-7986	4"x4"	102x102	0.48	.22	Duratuff® II

### OPW 633T 3"x4"

	in.	mm.
A	3 3/4"	92
B	5 3/4"	128
C	2 1/16"	68

### OPW 633T 4"x3"

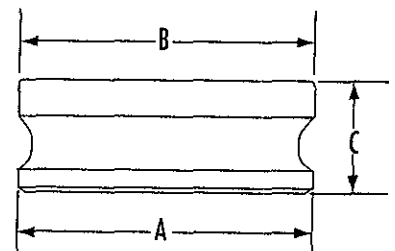
	in.	mm.
A	4 5/16"	123
B	4 5/16"	123
C	2 1/32"	55

### Replacement Parts

Part No.	Size	Description
H-05289-M	3" x 3"	Gasket (Metal)
H-04150-M	3" x 4"	Gasket (Metal)
H-04150-M	4" x 4"	Gasket (Metal)
H-04145-M	4" x 3"	Gasket (Metal)
H-11199-M	4" x 4"	Gasket (Duratuff®)

### OPW 633T 4"x4"

	in.	mm.
A	4 5/16"	123
B	4 25/32"	121
C	2 21/32"	67



# OPW TIGHT FILL EQUIPMENT

## TOP SEAL CAPS

### OPW 634TT

The OPW 634TT is designed to mate with the 633T and other similar top seal adaptors.

Heavy duty and corrosion resistant, the body is made of Duratuff® to help eliminate rust and oxidation for a long, maintenance free life.

The toggle lever distributes downward pressure to compress its buna-N gasket evenly, assuring a positive, uniform, leakproof seal. The 634TT can be locked with a padlock or wire seal.

#### Materials

Cap & links: Duratuff®  
Pins: stainless steel  
Gasket: buna-N  
Color: grey

#### Ordering Specifications

Product No.	in.	mm.	lbs.	kg.
634TT-7085	4"	102	1.01	.46

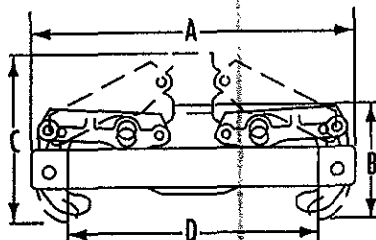
#### Replacement Parts

Part No.	Description
H-05995-M	Buna-N Gasket



#### Dimensions

	in.	mm.
A	7"	178
B	2 3/8"	62
C	3 3/8"	86
D	5 3/8"	138



### OPW 634TE

The OPW 634TE mates with the OPW 633T and similar competitive adaptors.

When removing the cap of the 634TE, the cam action of the locking lever will force the cap free from the adaptor.

The locking lever also has a cam action against the top of the groove in the adaptor. This provides a pull down action on the cap and a positive water and vapor tight seal. The 634TE can be locked with a padlock or wire seal. Patent 3118561

#### Materials

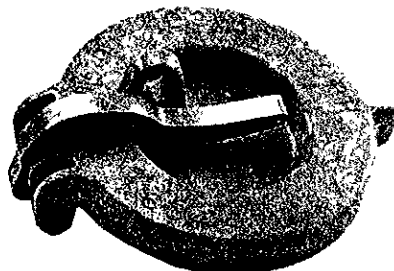
Cap: Duratuff®  
Lever: brass  
Gasket: buna-N  
Pivot pin: stainless steel  
Color: grey

#### Ordering Specifications

Product No.	in.	mm.	lbs.	kg.
634TE-7085	3"	76	1.11	.50

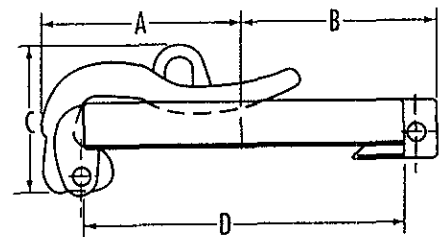
#### Replacement Parts

Part No.	Description
C-01094-RB	Lever
H-10765-M	Gasket
H-10731-RE	Pivot Pin



#### Dimensions

	in.	mm.
A	2 3/8"	67
B	2 1/2"	64
C	2 3/8"	56
D	4 1/8"	105



**IMPORTANT:** OPW products should be used in compliance with applicable federal, state and local laws and regulations. Product selection should be based on physical specifications and limitations and compatibility with the environment and material to be handled. OPW MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR USE. All illustrations and specifications in this literature are based on the latest product information available at the time of publication. Dover/OPW reserves the right to make changes at any time in prices, materials, specifications and models and to discontinue models without notice or obligation.

# OPW 233 EXTRACTOR FITTINGS

## VAPOR LINE

OPW 233 Extractor Fittings allow ball float vent valves to be removed from underground storage tanks without breaking up concrete.

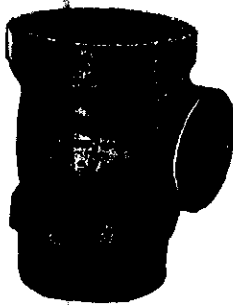
OPW 233V

The OPW 233V extractors are used to connect OPW 53V Ball Float Vent Valves to the vent lines in underground storage tanks. It is furnished complete with an extractable cage. The entire float vent sub-assembly can be extracted from the tank for tank testing by using the OPW 52 or 89 extractor wrench.

The OPW 233V extractor is a single outlet extractor.

### Materials

Body: cast iron with Duragard® coating  
Extractor cage: ZA12



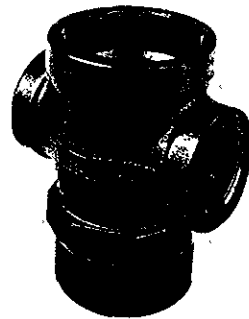
OPW 233VM

The OPW 233VM extractor is a multi-outlet extractor. It is available in 2 sizes, used in direct manifolded systems, vapor recovery, or where provisions for Stage II vapor recovery are needed.

All OPW 233V extractors are specially coated with black Duragard® coating for improved corrosion resistance and easier cage removal.

### Materials

Body: cast iron with Duragard® coating  
Extractor cage: ZA12



OPW 233

OPW 233 Extractor Fittings are designed for use with the 30MV Ball Float Vent Valves. It is provided without a cage assembly.

## OPW 233VMP & 233VP Test Plugs

OPW Test Plugs are used to isolate the tank from the vent piping system during tank testing.

- ◆ 233VP-6046, WT.: .78 lbs.
- ◆ 233VMP-6047, WT.: 1.24 lbs.

### Replacement Parts OPW 233V and 233VM

Part No.	Description
H-8932	Cage SA

## Ordering Specifications

Product No.	Top Thread		Outlet Thread		Bottom Thread		lbs.	kgs.	Test Plugs
	in.	mm.	in.	mm.	in.	mm.			
233-4420 (Tee)*	4"	102	2"	51	4"	102 Ext.	13.89	6.31	233VP (6046)
233-4430 (Tee)*	4"	102	3"	76	4"	102 Ext.	14.06	6.39	233VP (6046)
233-4422 (Cross)*	4"	102	2"x2"	51x51	4"	102 Ext.	15.18	6.90	233VMP (6047)
233-4433 (Cross)*	4"	102	3"x3"	76x76	4"	102 Ext.	15.54	7.06	233VP (6046)
233-4432 (Cross)*	4"	102	3"x2"	76x51	4"	102 Ext.	17.29	7.86	233VMP (6047)
233-5522 (Cross)*	4"	102	2"x2"	51x51	4"	102 Ext.	15.18	6.90	233VP (6046)
233V-4420 (Tee)	4"	102	2"	51	4"	102 Ext.	15.33	6.99	233VP (6046)
233V-4430 (Tee)	4"	102	3"	76	4"	102 Ext.	12.50	5.68	233VP (6046)
233VM-4422 (Cross)	4"	102	2"x2"	51x51	4"	102 Ext.	16.62	7.55	233VMP (6047)
233VM-4433 (Cross)	4"	102	3"x3"	76x76	4"	102 Ext.	16.98	7.72	233VP (6046)
233VM-5522 (Cross)	4"	102	2"x2"	51x51	4"	102 Int.	16.62	7.55	233VMP (6046)
233VM-6045 (Cross)	4"	102	3"x2"	76x51	4"	102 Ext.	16.62	8.51	233VMP (6047)
233VM-604L (BSPP)	4"	102	3"x2"	76x51	4"	102 Ext.	18.73	8.51	233VMP (6047)

\* without cage assembly

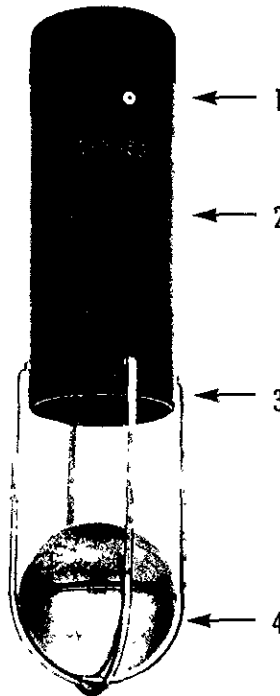
# OPW 53V BALL FLOAT VENT VALVES

OPW 53VML Ball Float Vent Valves, when installed in an OPW 233V Extractor Fitting, form a system that helps prevent product mixing and meets the Federal EPA's 90% flow restriction requirement for overfill prevention of underground storage tanks.

When the UST is filled to a predetermined level, the stainless steel ball float rises to seat tightly against a specially designed valve seat. This restricts the flow of vapors back to the delivery transport or tank vent. The pressure created in the UST by the vapor flow restriction works against the head of liquid remaining in the delivery transport and hoses to reduce the incoming flow rate.

The OPW 53VML provides consistent performance and long service life:

- ◀ **Proven Concept** - the basic ball float concept has been proven in numerous applications to help prevent product contamination.
- ◀ **Corrosion Resistant** - the OPW 53V Series is coated with Duragard® and resists corrosion to provide long life and tight shut-off.
- ◀ **Easy to Service** - the float vent valve assembly can be easily withdrawn, eliminating the need to dig to the tank for service.
- ◀ **Flexible** - the various OPW float vent valves and extractor fitting assemblies can be combined to meet various piping requirements and/or system operating characteristics.
- ◀ **Adaptable** - many tanks are already equipped with OPW extractor assemblies, so overfill prevention can be easily achieved.
- ◀ **Easy Tank Testing** - when using OPW overfill systems, the extractors are easily plugged for testing.
- ◀ OPW Ball Float Vent Valves are covered under patent no. 3,736,950.



## Unique Features:

1. Vapor flow orifice - properly sized to cause a "slow down" effect and reduce delivery flow.
2. Duragard® Coating - resists corrosion to provide long life and tight shut-off.
3. Sealed Cage Points - eliminates uncalibrated vapor loss, assures proper "slow down" effect.
4. Stainless Steel Float with Counterweight - assures proper alignment and tight shut-off. Corrosion proof for long life and tight shut-off.

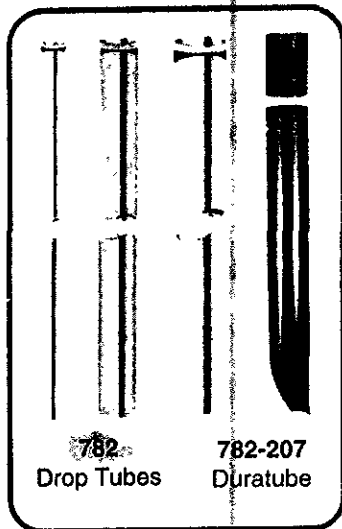
## Warning

OPW Overfill Warning Systems should only be used on submerged pumping systems; not suction pump systems. For special applications, contact OPW Fueling Components.

OPW Overfill Warning Systems should only be used on gravity drop systems. DO NOT use where Pump Off Unloading is used.

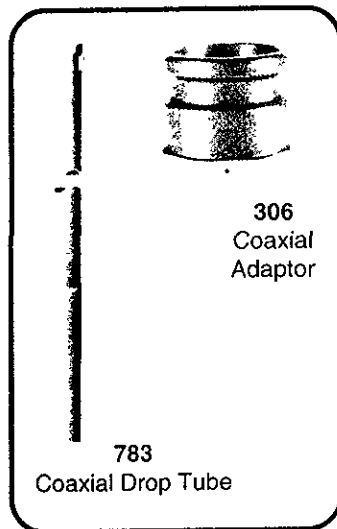
## Materials

Pipe nipple: steel  
Coating: Duragard®  
Cage: stainless steel  
Ball: stainless steel



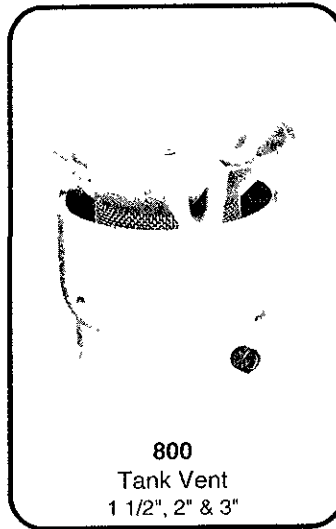
782  
Drop Tubes

782-207  
Duratube

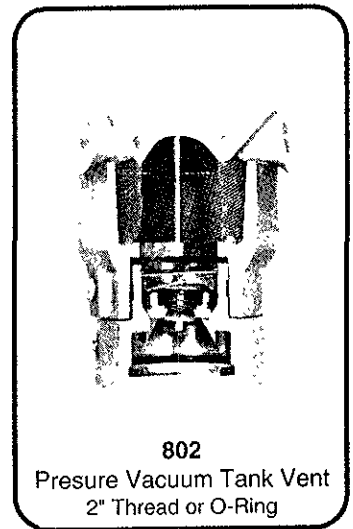


783  
Coaxial Drop Tube

306  
Coaxial  
Adaptor

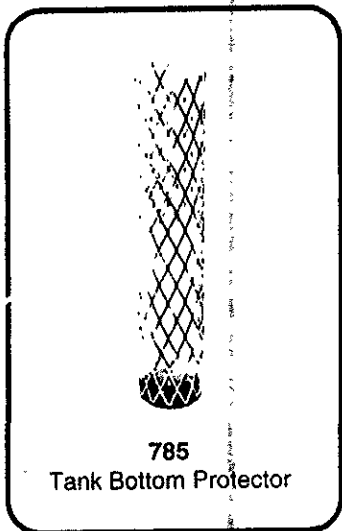


800  
Tank Vent  
1 1/2", 2" & 3"

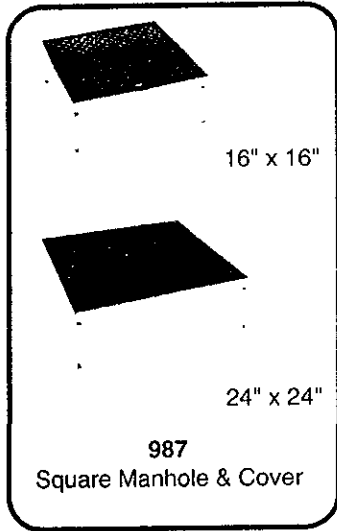


802  
Pressure Vacuum Tank Vent  
2" Thread or O-Ring

## MANHOLES



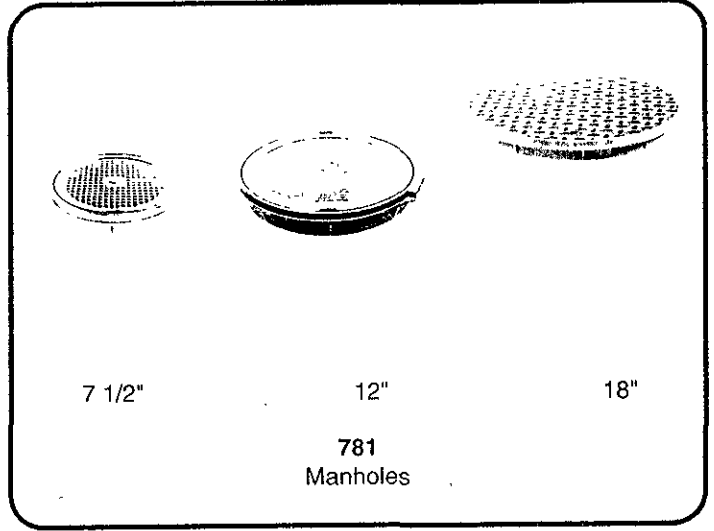
785  
Tank Bottom Protector



16" x 16"

24" x 24"

987  
Square Manhole & Cover

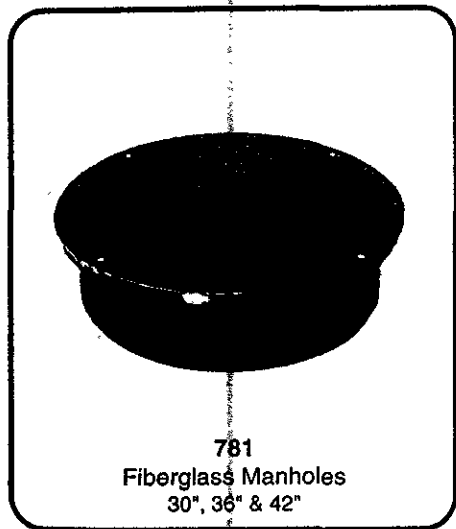


7 1/2"

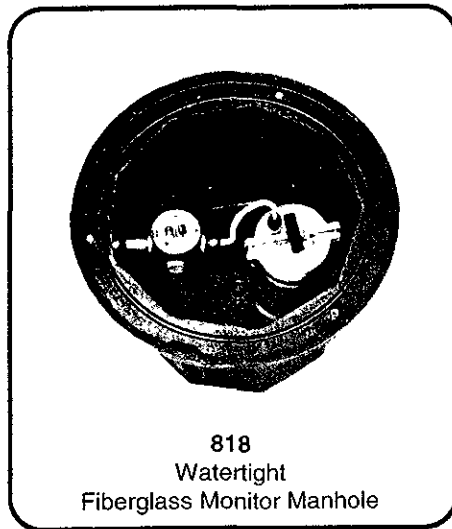
12"

18"

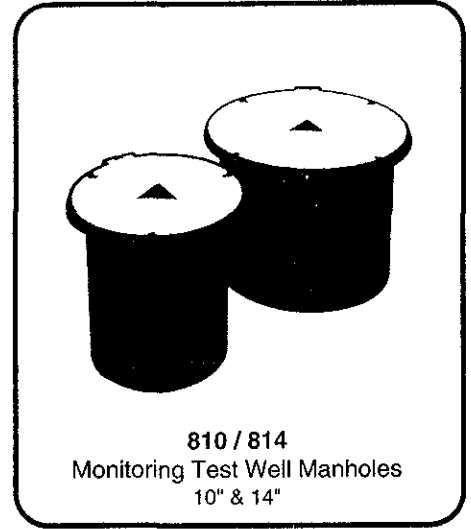
781  
Manholes



781  
Fiberglass Manholes  
30", 36" & 42"



818  
Watertight  
Fiberglass Monitor Manhole



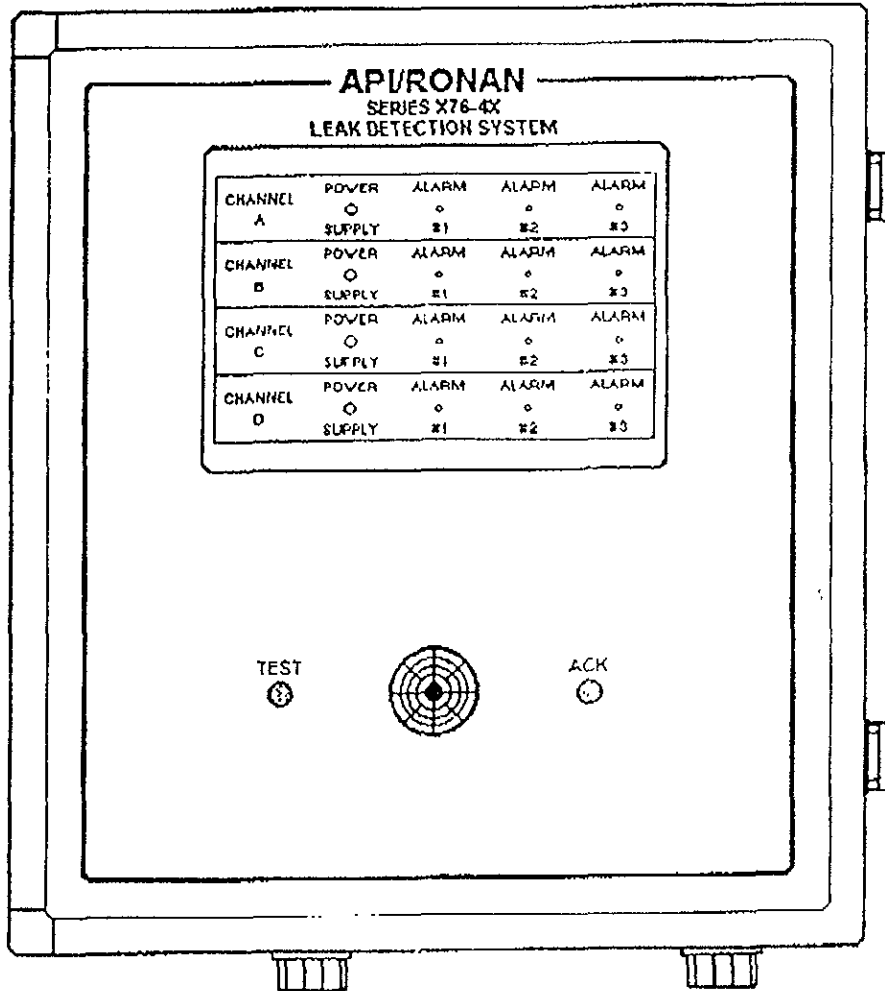
810 / 814  
Monitoring Test Well Manholes  
10" & 14"

# New Products

## API/RONAN announces the X76-4X

Introducing the API/Ronan Series X76-4X Leak Detection System

The Series X76-4X Leak Detection System is designed to monitor secondary containment systems for Industrial applications and installation into harsh environments as well as retail fuel facilities. The X76-4X offers up to twelve sensor inputs with unlimited sensor combinations, up to six auxiliary relays to trigger remote devices or shut down product pumps when leaks are detected, power on and alarm LED's, audio alarm horn and pre-installed threaded conduit hubs. Field expandable from three to twelve inputs.



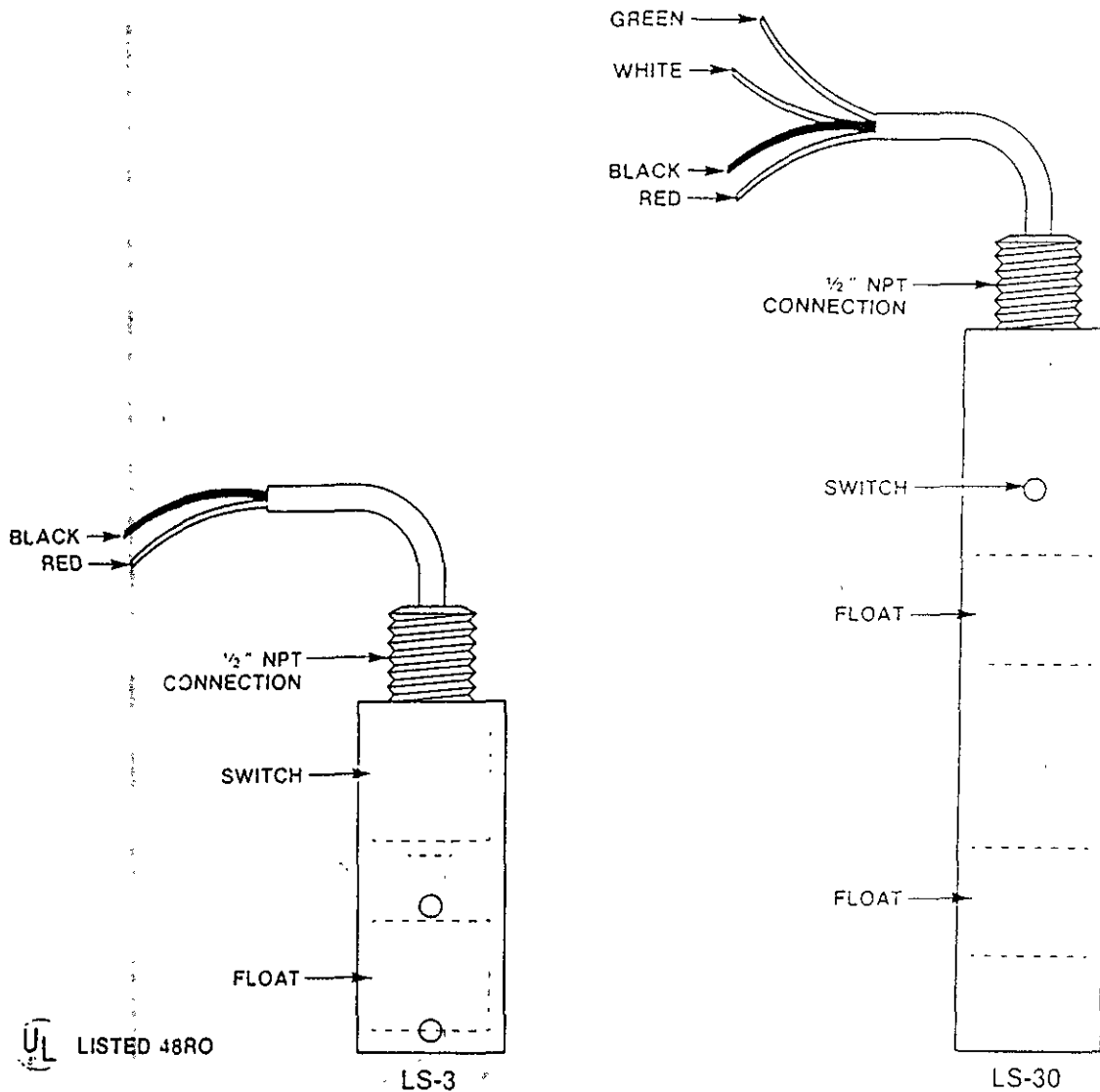
- ➔ NEMA4X ENCLOSURE
- ➔ FLUSH MOUNT WINDOW
- ➔ 3, 6, 9 or 12 SENSOR INPUTS
- ➔ POWER 'ON' INDICATORS LISTED

- ➔ UNLIMITED SENSOR COMBINATIONS
- ➔ LOCKABLE ENCLOSURE LATCHES
- ➔ UP TO 6 AUXILIARY RELAYS
- ➔ UNDERWRITERS LABORATORY

FOR PRICING AND AVAILABILITY CONTACT YOUR LOCAL SALES OFFICE OR API/RONAN DISTRIBUTOR

For more information call:

API/RONAN Sales: Long Beach, CA (800)634-0058  
San Jose, CA (408)244-6739  
Houston, TX (713)537-6309



**INSTALLATION INSTRUCTIONS LS-3 (For Steel Double-Wall Tank)**

Lower sensor on cable until it rests on bottom of tank annulus in vertical position. Pull remaining cable into junction box and cut off excess length. Secure cable to prevent slipping into tank annulus. Connect leads to wire from tank monitor terminal strip.

**Other Applications**

High level alarm for overflow tank and manhole's liner or secondary containment liquid level monitor


**INSTALLATION INSTRUCTIONS LS-30 (For Steel Double-Wall Tank)**

Lower sensor on cable until half of sensor is submerged in liquid. Pull remaining cable into junction box and cut off excess length. Secure cable to prevent slipping into tank annulus. Connect leads to wire from tank monitor terminal strip.

**Other Applications**

High/high, low/low or high/low level sensor

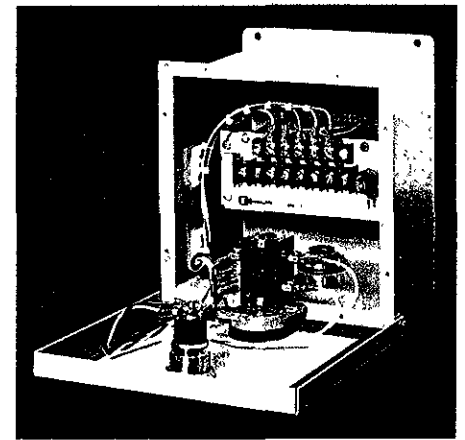
**Note:** Bottom float red and black wire; top float white and green. For single alarm return white and black wires to panel; jump green and red. For dual alarm return four wires to panel.

TANK LEAK SENSORS MODELS LS-3 AND LS-30		
	DRAWING NO X76C227	REV 3

# Single Point Annunciator Series X19



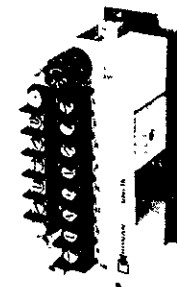
- Removable submodule for maximum field wiring access
- Powermizer alarm module — reduces power consumption
- Selectable NO/NC field contacts
- Selectable Lock/Non-lock feature for momentary alarms
- Isolated contacts for driving additional alarms or as interlock
- Replaceable flasher
- Fuse protected circuitry
- Standard voltage — 115VAC, other voltages available



These self contained alarms provide complete annunciation capability for NEMA 4 or 12 Applications. Each alarm contains the necessary logic, light indicator, and pushbutton switch for single point monitoring of Normally Open or Normally Closed field contacts.

Complete logic circuitry provides standard "A" alarm sequence with flashing light and horn on alarm, steady light-silent horn after acknowledgement, and light out-horn silent when trouble contacts return to normal.

The isolated SPDT auxiliary contacts may be used with other alarm systems or as electrical interlocks. Improved design allows easy field wiring and startup by use of a removable submodule. This submodule contains the NO/NC Field Contact Switch, the Lock/Non-Lock feature for momentary alarms, fuse holder, and the Power Mizer Alarm Module. A single pushbutton switch is used for both silence and lamp test functions.



Submodule



**RONAN ENGINEERING  
COMPANY**  
P.O. Box 1275  
21200 Oxnard Street  
Woodland Hills,  
California 91367 U.S.A.  
(818) 883-5211  
FAX (818) 992-6435

X19/Rev. 1

**RONAN ENGINEERING  
LIMITED U.K.**  
1 Tilley Road  
Crowther District 3  
Washington, Tyne and Wear  
United Kingdom, NE38-OEA  
(091) 416-1689  
FAX (091) 416-5856

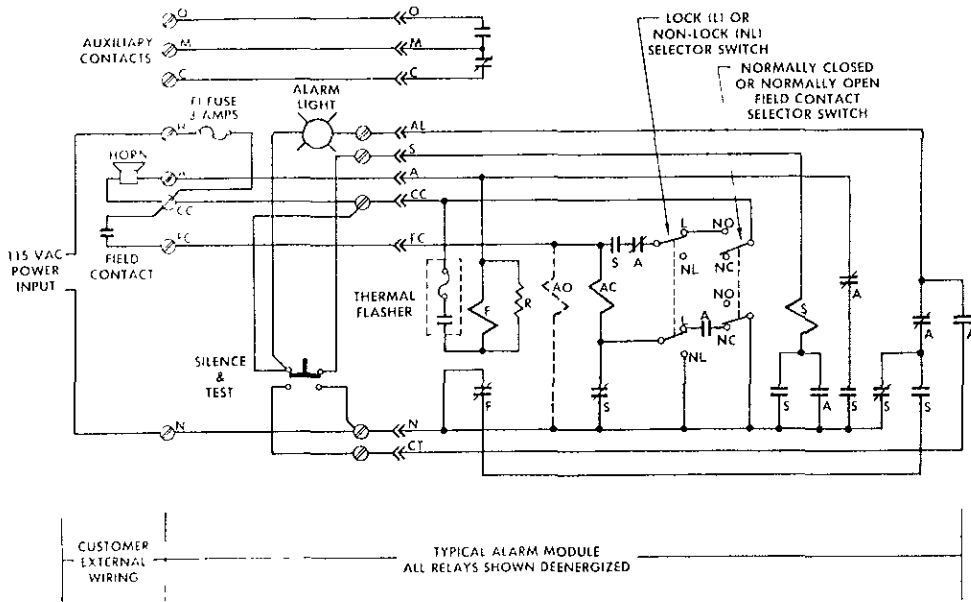
**RONAN ENGINEERING  
LIMITED**  
32 Bermondsey Road  
Toronto, Ontario  
Canada M4B1Z5  
(416) 752-0310  
FAX (416) 752-8072

**RONAN ENGINEERING  
PTY. LTD.**  
Unit 10, 8 Leighton Place  
Hornsby, N.S.W. 2077  
Australia  
(02) 477-7344  
FAX (02) 477-6151

Printed in U.S.A.

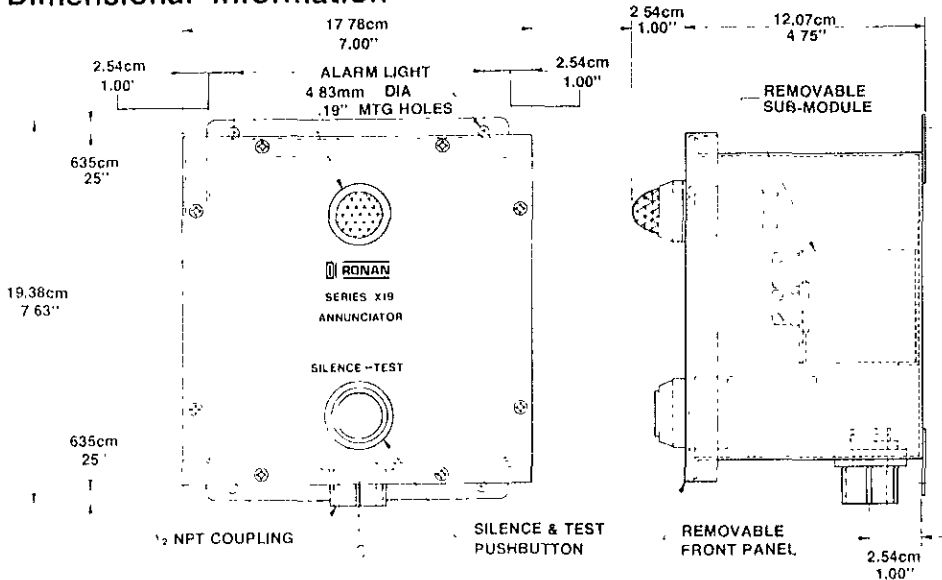


# Wiring Diagram



- NOTE:**
- a) All relays shown deenergized.
  - b) Schematic shown with KA relay in the NC position.
  - c) All KA contacts reversed when the KA relay is placed in the NO position.
  - d) Lamp test does not operate any relays.
  - e) Horn circuit loading not to exceed 3 AMP., use horn relay for larger currents.
  - f) To change NO-NC field contact function, both the NO/NC selector switch and the reversible relay must be placed in the proper position.

# Dimensional Information



# Ordering Information.

Specify X19-( )-( )

GP-General Purpose Relays

HS-Hermetically Sealed Relays

Voltage-115VAC

Accessory Horn or Bells  
See Catalog RA-178

# SEQUENCE CHART

CONDITION	FIELD CONTACT	ALARM LIGHTS	HORN	KA RELAY IN NC POSITION	KA RELAY IN NO POSITION	KS RELAY
Normal	Normal	Off	Off	Energized	Deenergized	Energized
Alarm	Abnormal	Flashing	On	Deenergized	Energized	Energized
Silence	Abnormal	On	Off	Deenergized	Energized	Deenergized
Normal	Normal	Off	Off	Energized	Deenergized	Energized
Lamp Test	Normal	On	Off	Energized	Deenergized	Energized

# RONAN WARRANTY

RONAN warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service, and will replace any component found to be defective, on its return, transportation charges prepaid, within one year of its original purchase. This warranty carries no liability, either expressed or implied, beyond our obligations to replace the unit which carries the warranty.



# MARCOR CERTIFICATE OF INSURANCE

CSH NU ISSUE DATE (MM/DD/YY)  
 MARC400 08/03/94

PRODUCER  
 Jardine Ins. Brokers L.A. Inc.  
 891 S. Figueroa St., Suite 700  
 Los Angeles CA 90017

LISA MURDOCH  
 213-599-4000

INSURED

MARCOR OF CALIFORNIA, INC  
 2601 Harrington Court  
 Hayward CA 94544

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## COMPANIES AFFORDING COVERAGE

- COMPANY LETTER **A** Golden Eagle Insurance Co.
- COMPANY LETTER **B**
- COMPANY LETTER **C**
- COMPANY LETTER **D**
- COMPANY LETTER **E**

## COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTY	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	GENERAL LIABILITY COMMERCIAL GENERAL LIABILITY CLAIMS MADE OCCUR. OWNERS & CONTRACTORS PROT.				GENERAL AGGREGATE \$ PRODUCTS-COMP/OP/AGG \$ PERSONAL & ADV. INJURY \$ EACH OCCURRENCE \$ FIRE DAMAGE (Any one fire) \$ MED. EXPENSE (Any one person) \$
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS GARAGE LIABILITY				COMBINED SINGLE LIMIT \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE \$
	EXCESS LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM				EACH OCCURRENCE \$ AGGREGATE \$
<b>A</b>	WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY	NWC 253487-06	03/01/94	03/01/95	<input checked="" type="checkbox"/> STATUTORY LIMITS EACH ACCIDENT \$ 5,000,000 DISEASE-POLICY LIMIT \$ 5,000,000 DISEASE-EACH EMPLOYEE \$ 5,000,000
	OTHER				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS  
 Asbestos Abatement Contractor-ALL OPERATIONS  
 Corporate address: 246 Cockeysville Rd., P.O. Box 1043, Hunt Valley, MD 21030  
 \*10 days non payment of premium

CERTIFICATE HOLDER  
 Clear Print Paper Co.  
 Earl Mau  
 1482 67th Street  
 Emeryville CA 94608

CANCELLATION  
 SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30\* DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE  
 LISA MURDOCH *Lisa Murdoch*

# CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD)  
08/03/94

**PRODUCER**  
Hibb, Rogal and Hamilton  
Company of Baltimore  
1104 Kenilworth Dr. Suite 500  
Baltimore, MD 21204-2190

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW

COMPANIES AFFORDING COVERAGE	
COMPANY LETTER	<b>A</b> Commerce & Industry
COMPANY LETTER	<b>B</b>
COMPANY LETTER	<b>C</b>
COMPANY LETTER	<b>D</b>
COMPANY LETTER	<b>E</b>

**INSURED**  
MARCOR of California, Inc.  
2601 Barrington Court  
Hayward, CA 94545

**COVERAGES**  
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO. #	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFF. DATE (MM/DD/YY)	POLICY EXP. DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY	AAI7779186*	2/24/94	2/24/95	GENERAL AGGREGATE 500000
	<input checked="" type="checkbox"/> COMM. GENERAL LIABILITY				PROD-COMP/OP AGG. 500000
	<input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCC.				PERS. & ADV. INJURY 500000
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE 500000
	<input checked="" type="checkbox"/> Environ. Liab				FIRE DAMAGE(One Fire) 300000
					MED. EXP. (One Per) 5000
A	AUTOMOBILE LIABILITY	CA2771805	2/24/94	2/24/95	COMBINED SINGLE LIMIT 500000
	<input checked="" type="checkbox"/> ANY AUTO				BODILY INJURY (Per person)
	<input type="checkbox"/> ALL OWNED AUTOS				BODILY INJURY (Per accident)
	<input checked="" type="checkbox"/> HIRED AUTOS				PROPERTY DAMAGE
	<input checked="" type="checkbox"/> NON-OWNED AUTOS				
					EACH OCCURRENCE
	EXCESS LIABILITY				AGGREGATE
	<input type="checkbox"/> UMBRELLA FORM				STATUTORY LIMITS
	<input type="checkbox"/> OTHER THAN UMBRELLA FORM				EACH ACCIDENT
	WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY				DISEASE-POLICY LIMIT
					DISEASE-EACH EMP.
	OTHER				

**DESCRIPTION OF OPERATIONS/LOCATION(S)/VEHICLE(S)/SPECIAL ITEMS**  
\*Insurance is excess & non-contributory and is for MARCOR's work only  
Job #SF00554-001 - Tank Removal, Clear Print Paper, Emeryville, CA  
GPC International is named as Additional Insured.

**CERTIFICATE HOLDER**  
GPC International  
c/o Clear Print Paper Company  
1482 67th Street  
Emeryville, CA 94608  
Attn: Mike Berman

**CANCELLATION**  
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**AUTHORIZED REPRESENTATIVE**  
*Janet Dawe*