NEIWPCC

UST Inspector Training Webinar

UST Manifolds

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Manifolds Overview

- Definitions/Terms
  - Tanks
  - Lines
  - Siphon Bars/Actuators
- Dispenser Piping manifolds
- Vent lines
- Identification Process/What to look for?

Definitions

- Webster's - Definition of MANIFOLD
  - Consisting of or operating many of one kind combined
  - A manifold is a wide and/or bigger pipe, or channel, into which smaller pipes or channels lead.

What is a Manifold?

Manifolded Tanks

- A piping connection between two tanks that allows fuel to freely flow from one tank to another. A tank manifold allows one submersible pump to draw product from two or more tanks, thus increasing the storage capacity for that product

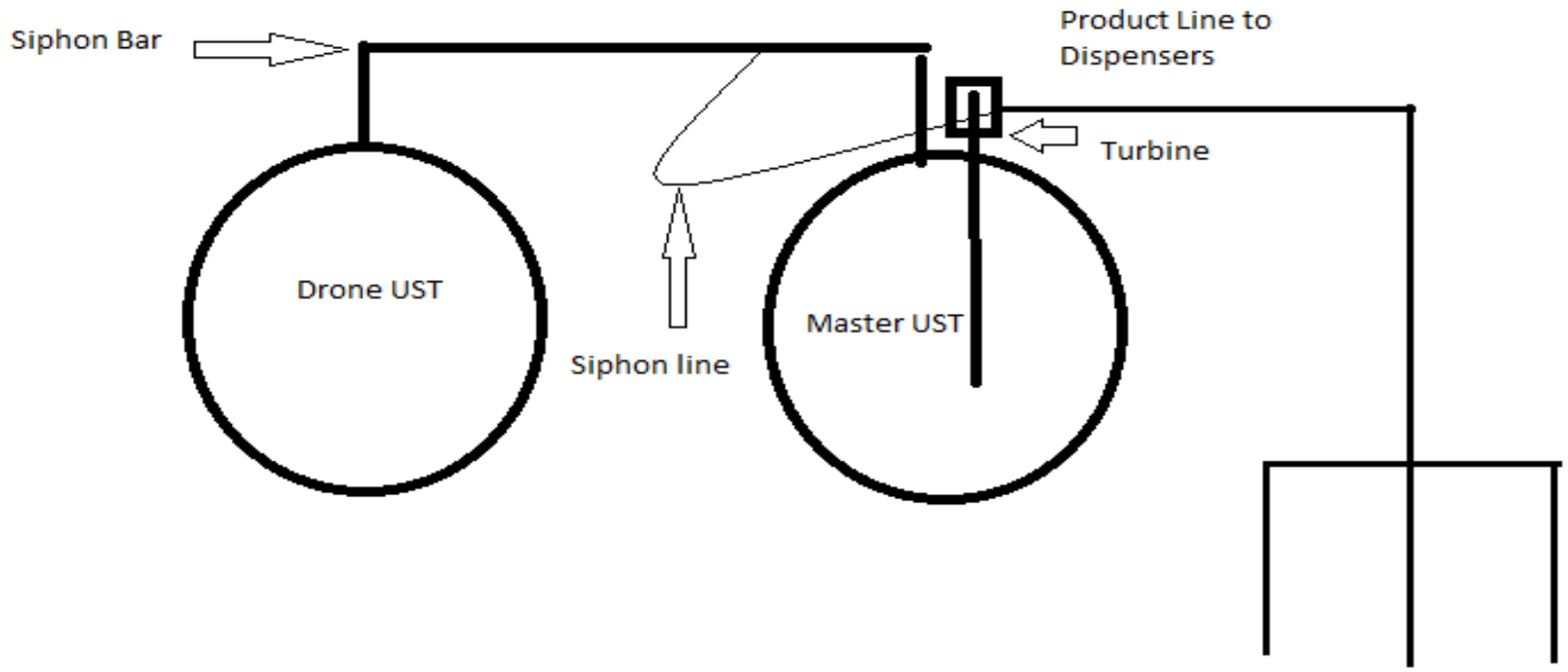
Manifolded Tanks

Manifolded Tanks

- Provides for larger storage capacity and reduces the number of deliveries needed to keep the location in operation.

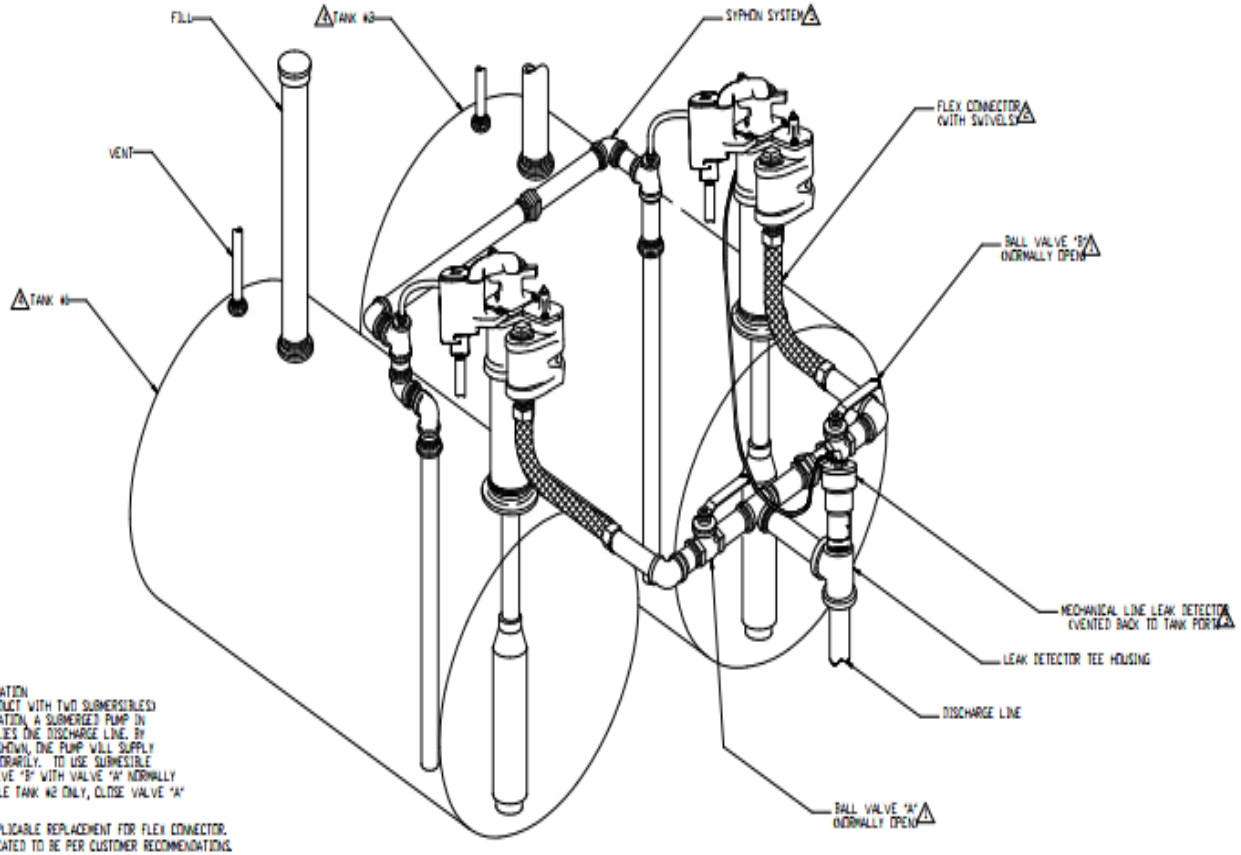
Manifolded Tanks

What they look like?



TYPICAL MANIFOLD SYSTEM

(SINGLE PRODUCT LINE DELIVERY)



NOTES:

1. MANIFOLDED SYSTEM OPERATION (FOR DISPENSING ONE PRODUCT WITH TWO SUBMERSIBLES) IN THIS TYPE OF INSTALLATION, A SUBMERGED PUMP IN EACH TANK #1 & #2 SUPPLIES ONE DISCHARGE LINE. BY THE USE OF VALVES AS SHOWN, ONE PUMP WILL SUPPLY THE DISCHARGE LINE TEMPORARILY. TO USE SUBMERSIBLE TANK #1 ONLY, CLOSE VALVE "B" WITH VALVE "A" NORMALLY OPEN. TO USE SUBMERSIBLE TANK #2 ONLY, CLOSE VALVE "A" NORMALLY OPEN.
2. SWING JOINT MAY BE APPLICABLE REPLACEMENT FOR FLEX CONNECTOR. PIPING OTHER THAN INDICATED TO BE PER CUSTOMER RECOMMENDATIONS.
3. MECHANICAL LINE LEAK DETECTORS WILL NOT DETECT LEAKS PRIOR TO THE LEAK DETECTOR TEE HOUSING. MINIMIZE PIPING BETWEEN THE TEE HOUSING AND THE SUBMERSIBLES.
4. TANKS RECOMMENDED TO BE OF SAME DIAMETERS OR WITH TOP OF TANKS IN THE SAME PLANE.
5. A SYPHON SYSTEM MAY BE DESIRED WITH THIS CONFIGURATION TO UTILIZE FULL STORAGE CAPACITY OF THE TANKS AND REDUCE THE POSSIBILITY OF RUNNING A PUMP IN A DRY CONDITION. THE SUGGESTED SYPHON SYSTEM WOULD BE INSTALLED AS SHOWN ABOVE, WITH THE HIGHEST POINTS OF THE SYPHON LINE CONNECTED AT EACH END TO THE SYPHON CHECK VALVE ASSEMBLY AT EACH SUBMERSIBLE. THE SYPHON WOULD BE INSTALLED LIKE THAT OF A TYPICAL SYPHON SYSTEM, REFERENCE ENGINEERING SKETCH ENGSK12 FOR COMPLETE DETAILS, EXCEPT THE SYPHON LINE MUST BE INSTALLED LEVEL RATHER THAN PITCHING UP TOWARD EITHER SUBMERSIBLE AS IN A TYPICAL SYPHON SYSTEM INSTALLATION.

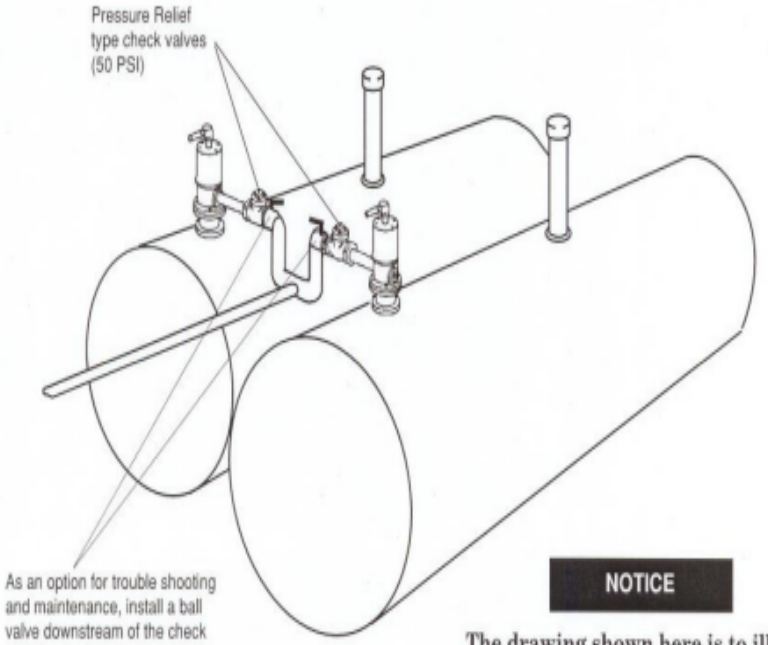
INSTALLATION MUST CONFORM TO APPLICABLE NATIONAL, STATE, AND LOCAL CODE REQUIREMENTS

2	CLOSE TOL			
1	ENGINEERING RELEASE			
NO.	DESCRIPTION	BY	CK	DATE

PETRO

MANIFOLD 2 STP / 1 MLD ISO

ENGSK11A



NOTICE

The drawing shown here is to illustrate the requirement for in-line, pressure relief type check valves. It is not a recommended guide for installation of piping downstream of the check valves.

Figure 2

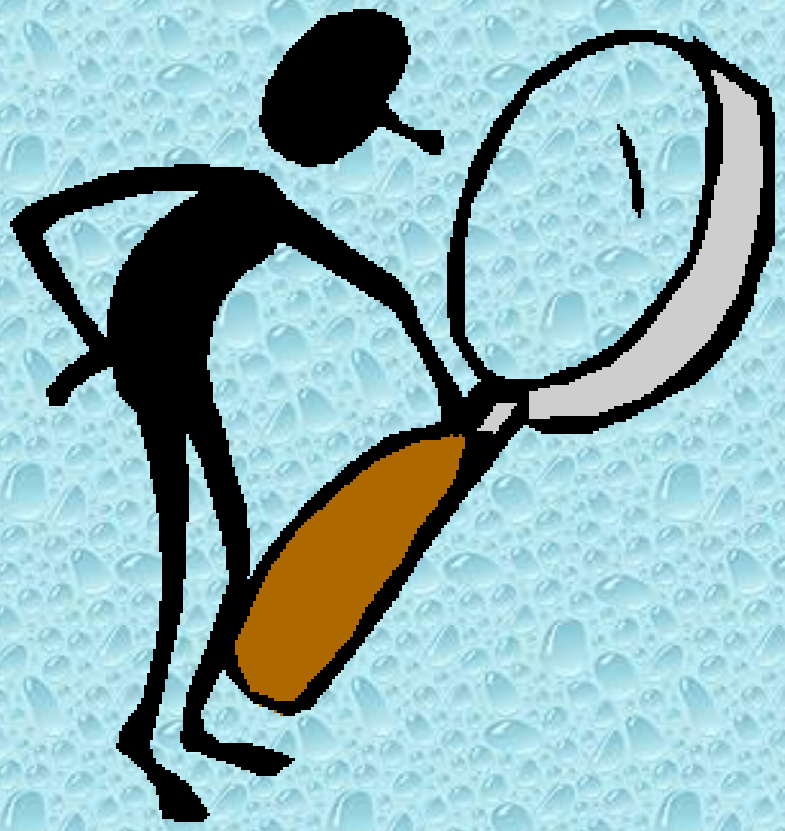
Drone Tank

Drone Tank

- Drone tank – A tank that has only a siphon bar connecting it to another tank for product piping.

Siphon Bar

What to look for?



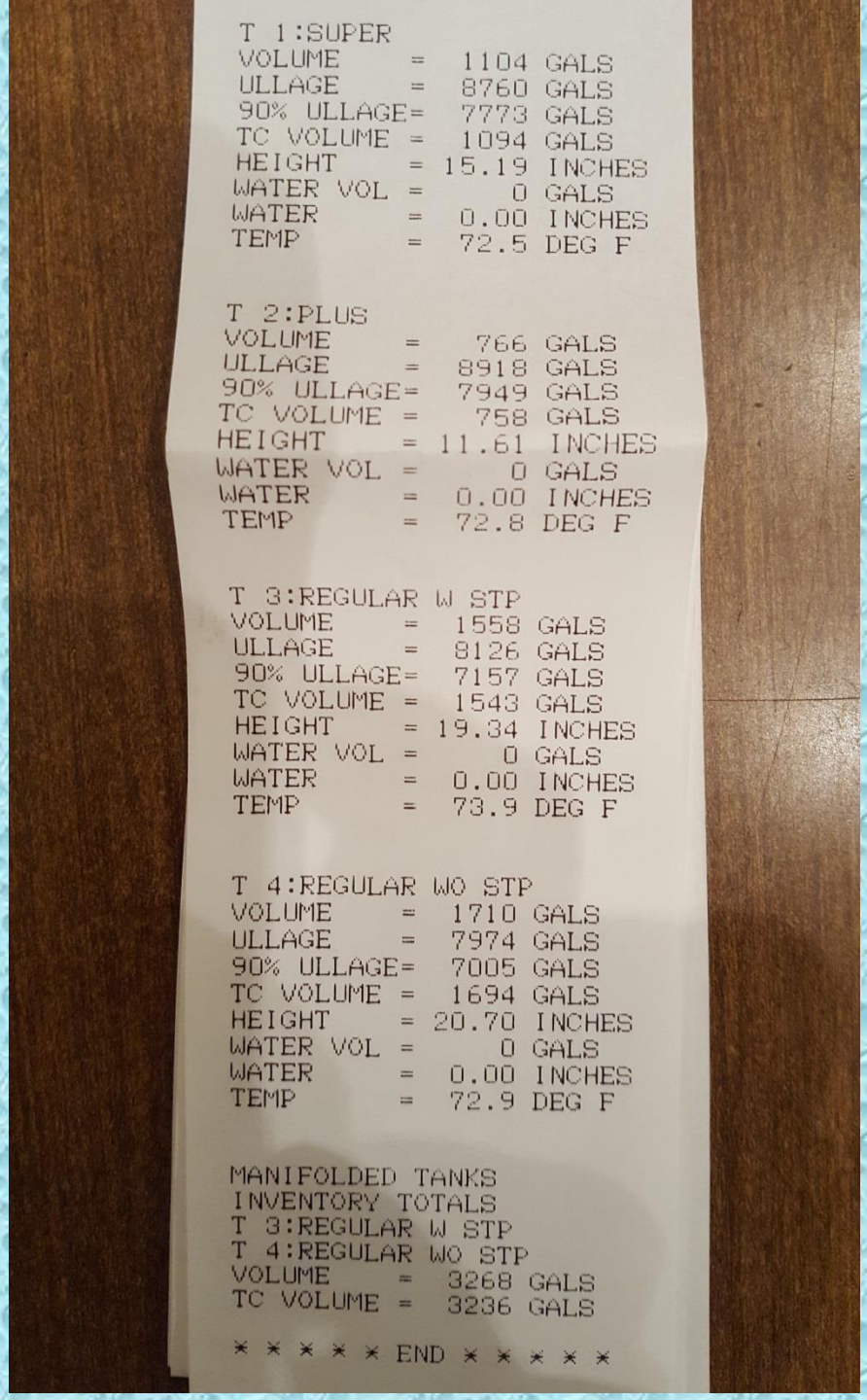
What to look for?

- Open all lids in tank field
- Determine # of tanks
- Determine # of STP's
- Are they equal?
- Is there a siphon bar?
- Is there a piping sump?
- Open dispenser cabinets
- How many grades of fuel are being sold?

Other things to look at!

- Print out an inventory off the monitoring system.
- Pressing the print button on a Veeder root will give you an inventory.
- Look at Tank label names
  - Sometimes the name will ID the master and drone tank.


VEEDER-ROOT
AUG 11, 2000 9:48:31 AM
ALL FUNCTIONS NORMAL
ALARM
WARNING
POWER
MODE
BACKUP
FUNC-TION
PRINT
CHANGE
STEP
PAPER FEED
ENTER
TANK SENSOR
QZ. 1
ABC 2
DEF 3
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
+/-
0
.



T 1:SUPER
VOLUME = 1104 GALS
ULLAGE = 8760 GALS
90% ULLAGE= 7773 GALS
TC VOLUME = 1094 GALS
HEIGHT = 15.19 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 72.5 DEG F

T 2:PLUS
VOLUME = 766 GALS
ULLAGE = 8918 GALS
90% ULLAGE= 7949 GALS
TC VOLUME = 758 GALS
HEIGHT = 11.61 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 72.8 DEG F

T 3:REGULAR W STP
VOLUME = 1558 GALS
ULLAGE = 8126 GALS
90% ULLAGE= 7157 GALS
TC VOLUME = 1543 GALS
HEIGHT = 19.34 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 73.9 DEG F

T 4:REGULAR WO STP
VOLUME = 1710 GALS
ULLAGE = 7974 GALS
90% ULLAGE= 7005 GALS
TC VOLUME = 1694 GALS
HEIGHT = 20.70 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 72.9 DEG F

MANIFOLDED TANKS
INVENTORY TOTALS
T 3:REGULAR W STP
T 4:REGULAR WO STP
VOLUME = 3268 GALS
TC VOLUME = 3236 GALS

* * * * * END * * * * *

Still not sure

- Keep looking down the list
  - Tank that are Manifolded will then be listed.
  - May also give you the combined volume of both tanks

  May also tell you which UST has an STP

Need more info

- CSLD Test results
  - Should list the tanks that are manifolded and therefore you will see one .2 gph test result.
  - (hopefully passing)

57317 LUK OIL
2193 RT 27
EDISON,NJ

OCT 5, 2017 11:20 AM

CSLD TEST RESULTS
- - - - - - - - - - - - - -
OCT 5, 2017 11:20 AM

T 1:SUPER
PROBE SERIAL NUM 249158

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

T 2:PLUS
PROBE SERIAL NUM 249160

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

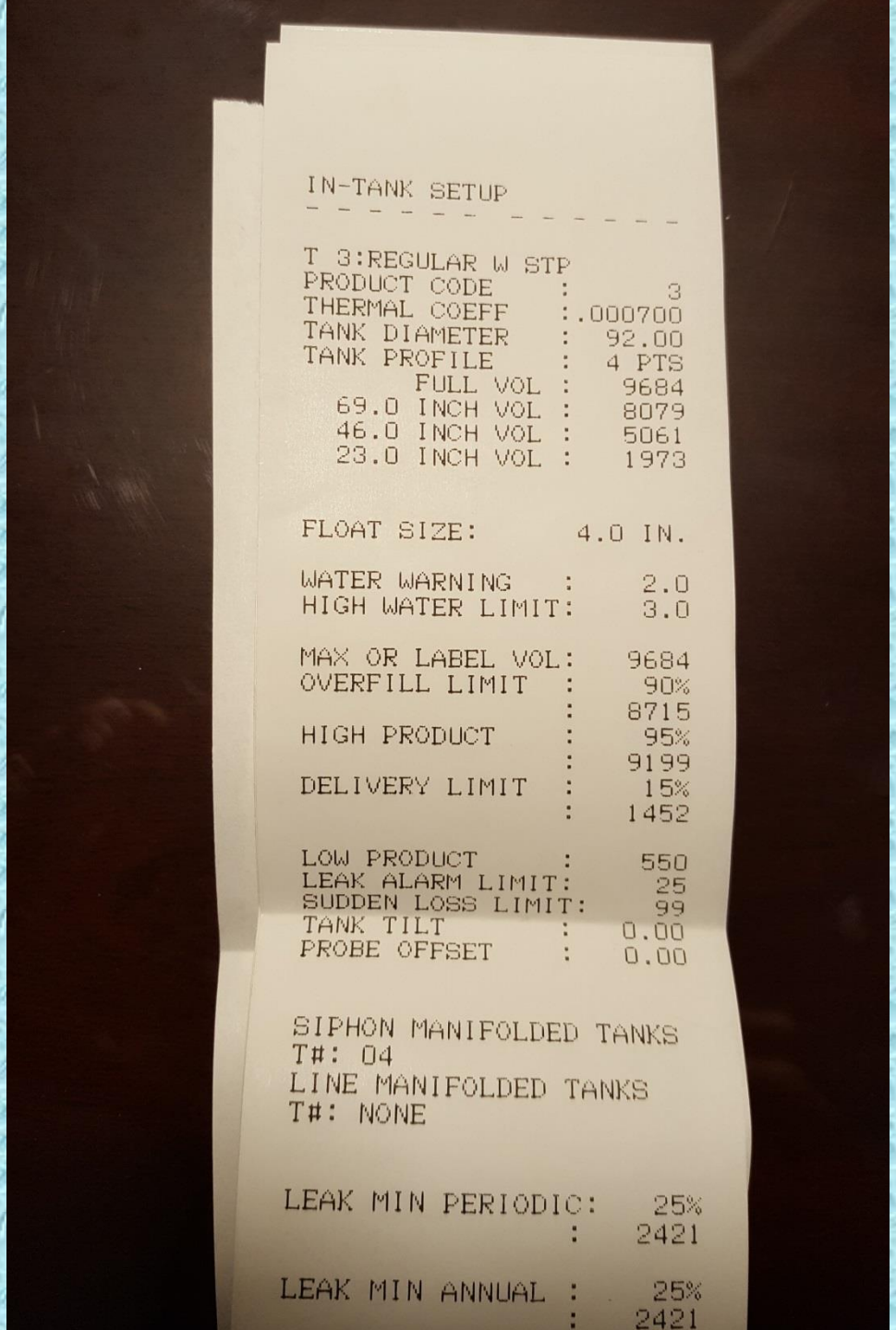
T 3:REGULAR W STP
PROBE SERIAL NUM 249161
T 4:REGULAR WO STP
PROBE SERIAL NUM 249159

0.2 GAL/HR TEST
PER: OCT 5, 2017 PASS

* * * * * END * * * * *

Need more info?

- Print out the in-tank set up
- Look down the list of information for each tank.
- Siphon Manifolded Tanks



IN-TANK SETUP

T 3:REGULAR W STP
PRODUCT CODE : 3
THERMAL COEFF :.000700
TANK DIAMETER : 92.00
TANK PROFILE : 4 PTS
FULL VOL : 9684
69.0 INCH VOL : 8079
46.0 INCH VOL : 5061
23.0 INCH VOL : 1973

FLOAT SIZE: 4.0 IN.

WATER WARNING : 2.0
HIGH WATER LIMIT: 3.0

MAX OR LABEL VOL: 9684
OVERFILL LIMIT : 90%
: 8715
HIGH PRODUCT : 95%
: 9199
DELIVERY LIMIT : 15%
: 1452

LOW PRODUCT : 550
LEAK ALARM LIMIT: 25
SUDDEN LOSS LIMIT: 99
TANK TILT : 0.00
PROBE OFFSET : 0.00

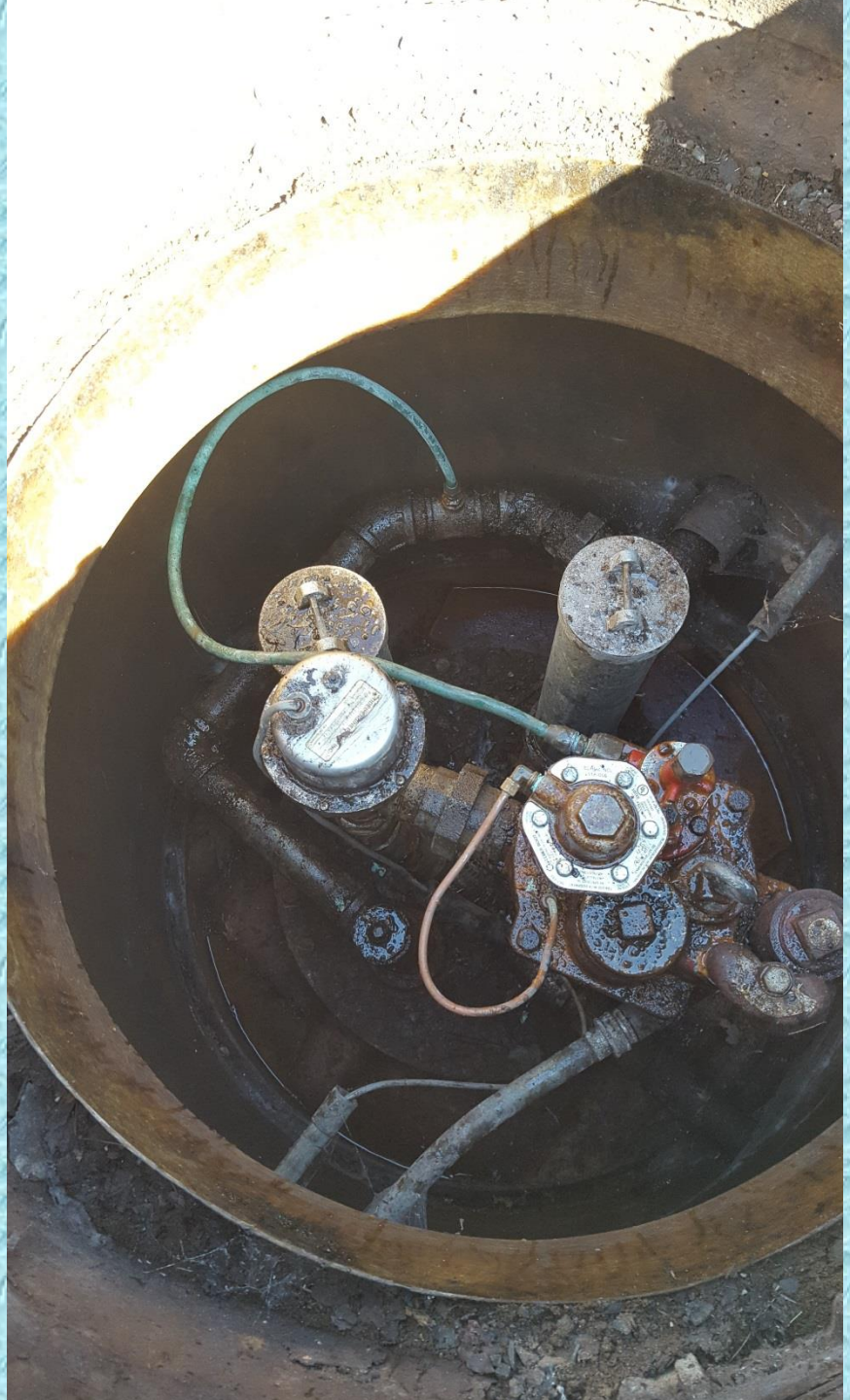
SIPHON MANIFOLDED TANKS
T#: 04
LINE MANIFOLDED TANKS
T#: NONE

LEAK MIN PERIODIC: 25%
: 2421

LEAK MIN ANNUAL : 25%
: 2421

What about the tank field?

- Open all sump covers and look to see if what you see in the tank field matches the monitoring system print outs.



nitized Motor and Pump (UMP)

Telescoping Connector for variable length pumps

4" Riser Pipe

Discharge Head

Column Pipe with Conduit inside

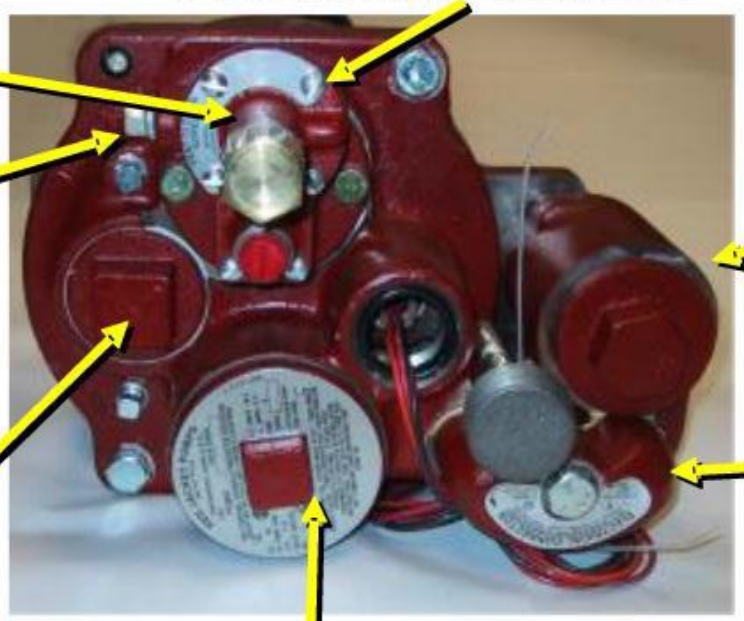
Manifold

Packer

Functional Element

Pressure Relief

Vacuum Source



Contractor's Junction Box

" Leak Detector Port

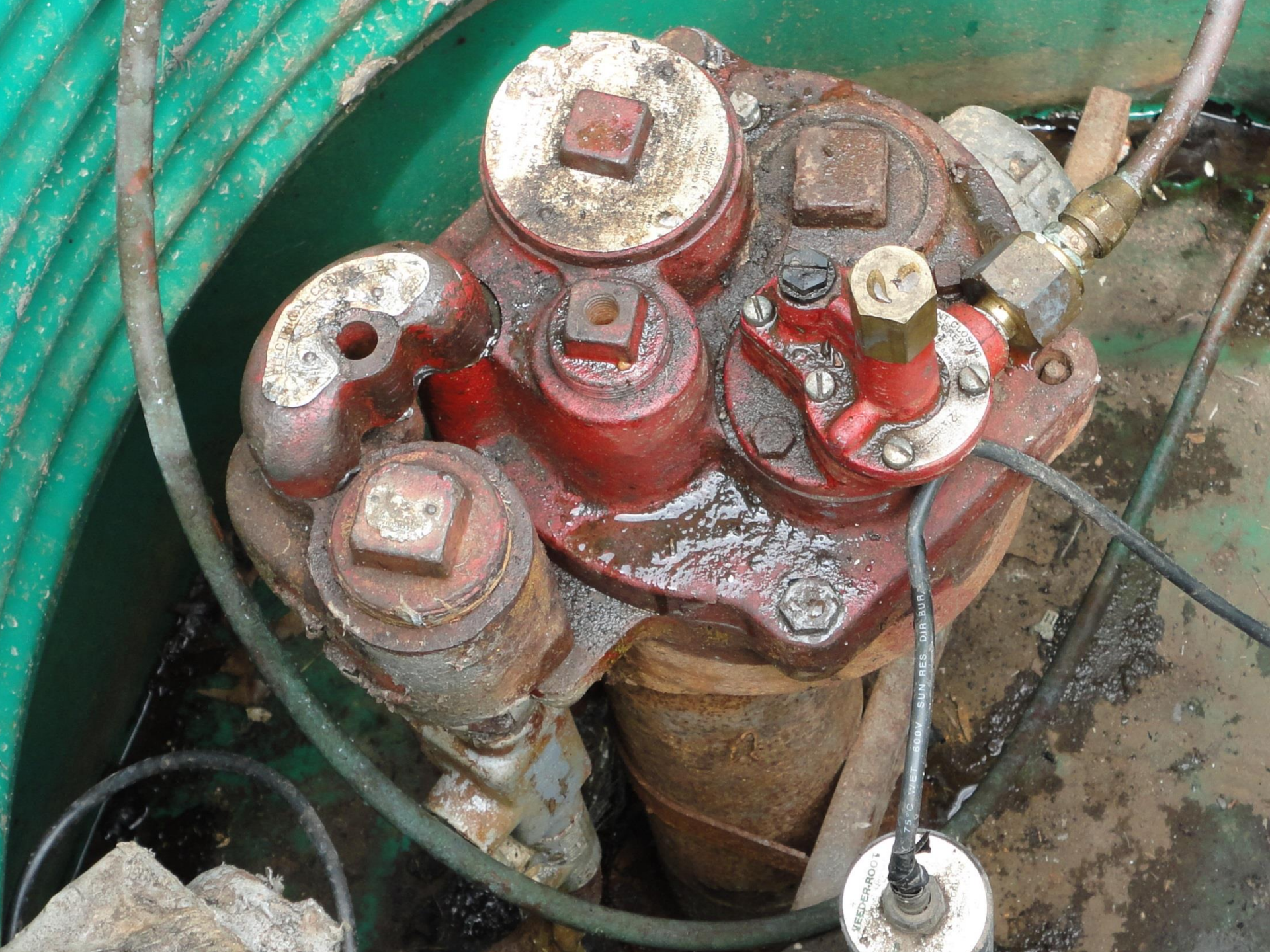
Electrical Disconnect Yoke

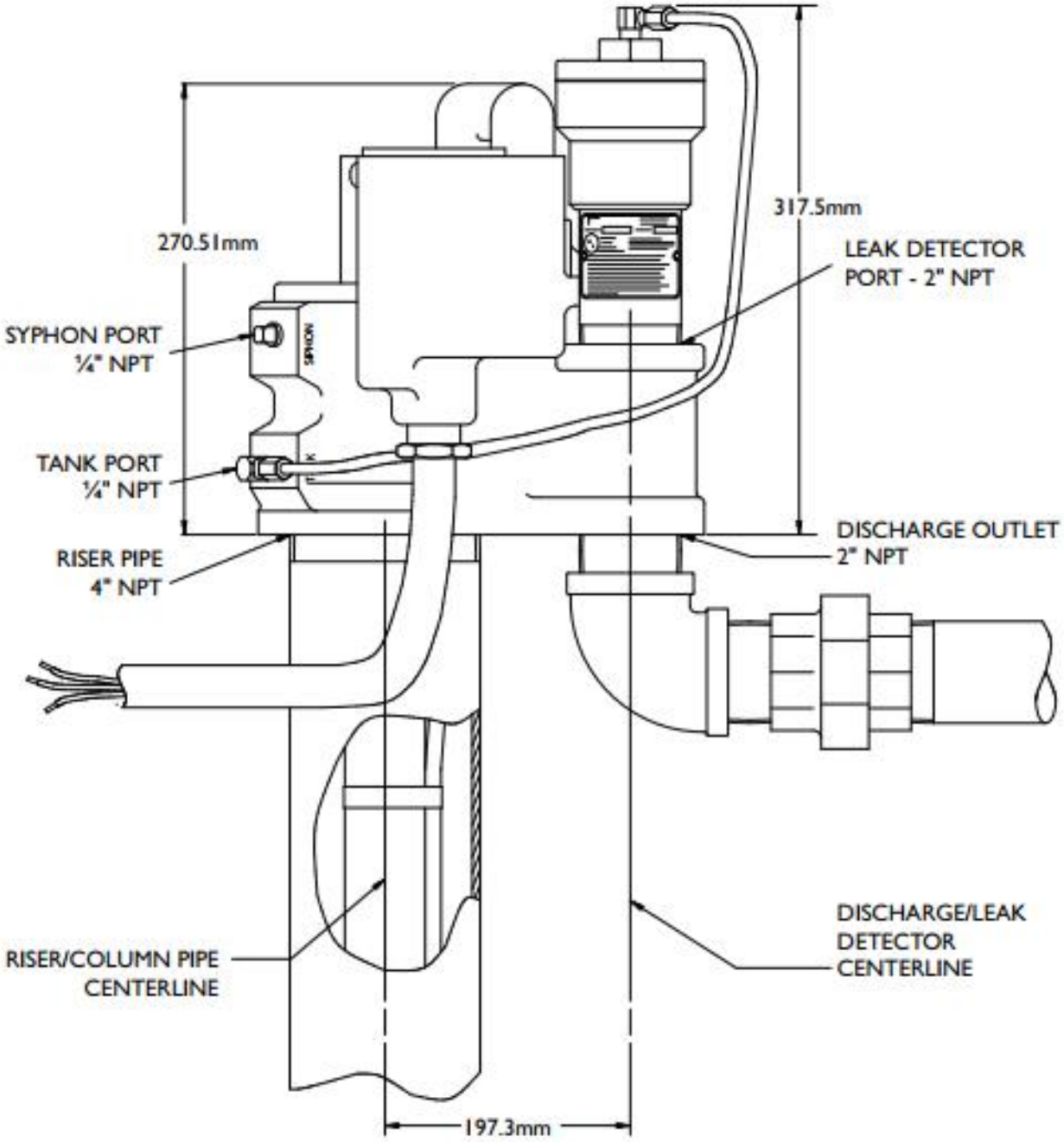
Capacitor Housing

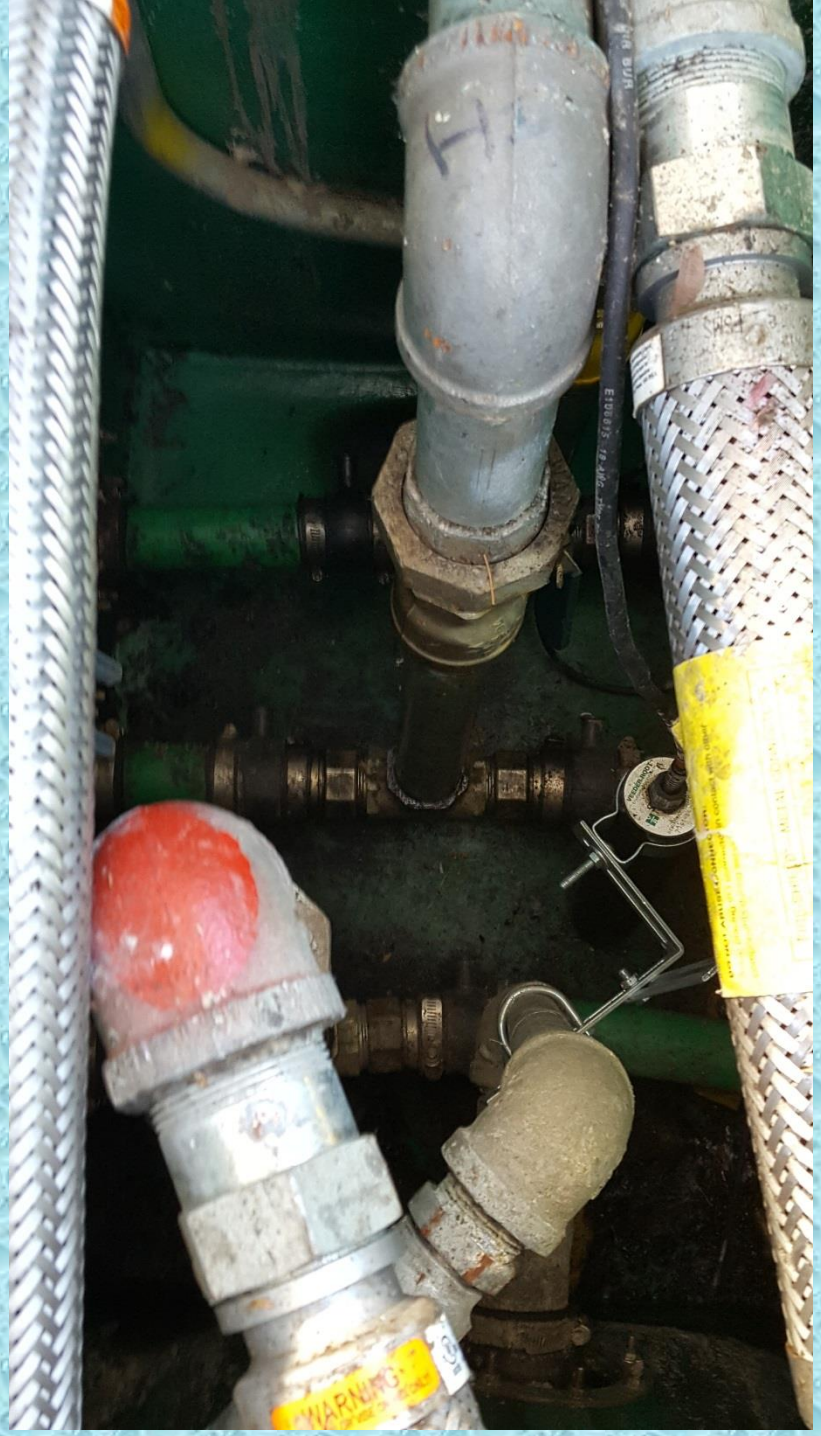
RED JACKET

Functional Element

- Check valve – (contains functional element adjusting screw to isolate line) -The functional element guides the stem of the check valve which can be tightened down with an adjusting screw to assist in pressure testing the lines
- Pressure relief - allows expansion relief and also relieves full pump pressure when the pump is shut off
- Vacuum Source – Creates a siphon (siphon bar for manifold tanks)
- Air Eliminator - provides a high point in the pump where air can be collected and discharged back to the tank.


WEEDER-ROOT
75°C WET 600V SUN RES DIR BUR


270.51mm
317.5mm
LEAK DETECTOR
PORT - 2" NPT
SYPHON PORT
¼" NPT
TANK PORT
¼" NPT
RISER PIPE
4" NPT
DISCHARGE OUTLET
2" NPT
RISER/COLUMN PIPE
CENTERLINE
DISCHARGE/LEAK
DETECTOR
CENTERLINE
197.3mm


WARNING


Same Price
Cash Or Credit
AUTO
CARE
SUPER PREMIUM
UNLEADED
PRICE PER GALLON $
93
MID-GRADE
UNLEADED
PRICE PER GALLON $
89
REGULAR
UNLEADED
PRICE PER GALLON $
87
THIS SALE $
GALLONS
PRICE PER GALLON $
NAPA

Vapor Recovery Lines