Department of Environmental Protection

2600 Blair Stone Road ♦ Tallahassee, Florida 32399-2400

DEP Form: 62-761.900(9)
Form Title: Storage Tank Equipment Registration Form
Effective Date: July 2019
Incorporated in Rule 62-761.850, F.A.C.

Storage Tank System Equipment Registration Form

Fill out completely

General Information

Company Name: Franklin Electric - Fueling Systems
Contact Name: Brad Fawcett / Jason Garrett
Company Address: 3760 Marsh Road
City, State: Madison, WI Zip: 53718
E-mail: bradley.fawcett@fele.com
Contact Number: 608-838-5650
Product Name: Sump Test System
Model Number(s): TS-STS
Product Type: Leak Detection / Liquid Detector and Leak Dete
Rule(s) citation that registration is being requested within Chapter 62-761 (UST), and/or 62-762 (AST),
62-761.600 UST/Leak Detection/Liquid Detection & Breach of Integrity
F.A.C.: Write a brief description of equipment registration request including product limitations:

The Sump Test System (STS) is designed specifically to test containment for leaks. Up to four containments can be leak-tested simultaneously with accurate. The TS-STS consists of a T750 ATG and up to 4 Franklin Fueling Systems TSP-LL2 Magnetostrictive probes.

Information Checklist (Choose Yes, No, or N/A - Not Applicable):

		Yes	No	N/A
1.	Third-party Certification by a Nationally Recognized Testing Laboratory? (Required)	✔		
2.	Documentation of third-party evaluation that the equipment meets DEP Rules?	✔		
3.	Documents included about the qualifications of the Nationally Recognized Testing Laboratory?	✔		
4.	Technical information and drawings included?	✔		
5.	Installation instructions included?	✔		
6.	Annual Operability Testing Requirements (Rules 62-761.500, 62-762.501, & 62-762.502 F.A.C.)?	✔		
7.	Integrity Testing Requirements (Rules 62-761.700, 62-762.701, & 62-762.702, F.A.C.)?	✔		
8.	Compatible with fuel blends containing >10% ethanol or >20% biodiesel?	✔		
9.	Has the product been approved or registered in other countries or states? (If so provide list)	✔		
10.	Any requirements for company-certified installers or trainers?	✔		
11.	Was this product(s) previously approved or registered by the Department? If yes, EQ- **892, 697, 3**	✔		
12.	Any changes or modifications to the equipment since the last submittal to DEP?		✔	

Document Information: Provide supporting documents indicated as "Yes" above including this form via email to Tanknotify@floridadep.gov, or documents can be sent to FDEP, Division of Waste Management, 2600 Blair Stone Road, MS 4560, Tallahassee, FL 32399.

Write a brief description of equipment installation and performance in the U.S.:

The Sump Test System (STS) is designed specifically to test containment for leaks. Up to four containments can be leak-tested simultaneously with accurate. The TS-STS consists of a T750 ATG and up to 4 Franklin Fueling Systems TSP-LL2 Magnetostrictive probes.

Equipment Registration Certification:

To the best of my knowledge and belief, all information submitted on this form is true, accurate and complete.

Brad Fawcett, Product Certification Engineer
Printed Name and Title

Fawcett, Bradley Digitally signed by Fawcett, Bradley Date: 2022.12.22 09:56:12 -06'00'
Signature (right click to sign)

12/22/2022
Date

For Department Use Only:

Date Application Received: 02/15/2023 Application complete: Yes: ✔ No:

EQ- 892 Date of complete or incomplete letter sent: 02/28/2023 Date Equipment Requires Renewal: 2/28/2028

Storage tank system equipment requires renewal every 5 years in accordance with subsection 62-761.850(2), F.A.C.

Department of Environmental Protection

2600 Blair Stone Road ♦ Tallahassee, Florida 32399-2400

DEP Form: 62-761.900(9)
Form Title: Storage Tank Equipment Registration Form
Effective Date: January 2017
Incorporated in Rule 62-761.850, F.A.C.

Storage Tank Equipment Registration Form

Fill out completely

General Information

Company Name: FRANKLIN FUELING SYSTEMS
Contact Name: SANDY ADAMS
Company Address: 3760 MARSH RD
City: MADISON, WI.
Zip: 53718
E-mail: SADAMS@FRANKLINFUELING.COM
Contact Number: 608-838-5668
Product Name: SUMP TEST SYSTEM
Model Number(s): TS-STS
Product Type: Sump tightness and breach detection/testing
Rule(s) citation within Chapter 62-761, or 62-762, F.A.C. that registration is being requested:
62-761.600 UST/Leak Detection/Liquid Detection & Breach of Integrity
Write a brief description of equipment registration request including product limitations:

The Sump Test System (STS) is designed specifically to test containment for leaks. Up to four containments can be leak-tested simultaneously with accurate. The TS-STS consists of a T750 ATG and up to 4 Franklin Fueling Systems TSP-LL2 Magnetostrictive probes.

Information Checklist

		Yes	No	N/A
1.	Third-party Certification by a Nationally Recognized Testing Laboratory?	✔		
2.	Documentation of third-party evaluation that the equipment meets DEP Rules?	✔		
3.	Documents included about the qualifications of the Nationally Recognized Testing Laboratory?	✔		
4.	Installation instructions included?	✔		
5.	Technical information and drawings included?	✔		
6.	Annual Operability Testing Requirements (Rules 62-761.700, 62-762.701, & 62-762.702 F.A.C.)?	✔		
7.	Compatible with fuel blends containing >10% ethanol or >20% biodiesel?	✔		
8.	Has the product been approved or registered in other countries or states? (If so provide list)	✔		
9.	Any requirements for company-certified installers or trainers?	✔		
10.	Was this product(s) previously approved or registered by the Department?	✔		
	If yes, please specify the Equipment Number: **EQ- 679,337**	✔		
11.	Any changes or modifications to the equipment since the last submittal to DEP?		✔	

Document Information: Provide supporting documents indicated as "Yes" above including this form via email to Tanknotify@dep.state.fl.us, or documents can be sent to FDEP, Division of Waste Management, 2600 Blair Stone Road, MS 4560, Tallahassee, FL 32399.

Write a brief description of equipment installation and performance in the U.S.:

The TS-STS Sump Test System is designed specifically to test containment sumps for leaks. The highly accurate leak test detects level changes greater than 0.002 inches during a fifteen minute test and can test four sumps simultaneously. The prove design has been used effectively in California for more than decade.

Equipment Registration Certification:

To the best of my knowledge and belief, all information submitted on this form is true, accurate and complete.

Matthew Kirby, Product Support Engineer, Franklin Fueling Sys.
Printed Name and Title

Matthew Kirby Digitally signed by Matthew Kirby Date: 2018.03.27 15:08:02 -04'00'
Signature

3/27/2019
Date

For Department Use Only:

Date Application Received: 3/28/2018 Renew 3/28/2023
Application complete: Yes: ✔ No:

EQ- 892
Date of complete or incomplete letter sent: 3/28/2018
Date of entry to the DEP Equipment Registration List: 3/28/2018

Evaluation of the INCON TS-STS Sump Test System

Final Report

Prepared for:
INCON (Intelligent Controls)

May 7, 2002

KWA

Ken Wilcox Associates, Inc.
1125 Valley Ridge Drive, Grain Valley, MO 64029, USA
Voice (816) 443-2494, Fax (816) 443-2495
E-mail info@kwaleak.com, Web http://www.kwaleak.com

Evaluation of the INCON TS-STS Sump Test System

Final Report

Prepared for:
INCON (Intelligent Controls)
74 Industrial Park Road
Saco, ME 04072

May 7, 2002

Preface

This testing was conducted at the request INCON. The procedures used to conduct the performance evaluation are based on the methodology described for water sensor testing in the EPA protocol “Standard Test Procedures for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems”, EPA/530/UST-90/006, March 1990. Questions regarding the report should be directed to Mr. Dan Marston, Intelligent Controls at (800) 872-3455.

The report presents the results of the testing in terms of the minimum detectable change in level that could be detected with a probability of 95% or greater.

H. Kendall Wilcox

Ken Wilcox, President
Ken Wilcox Associates, Inc.

May 7, 2002

Table of Contents

1.0 INTRODUCTION

Sumps, pans, over fill containment and other containment devices that do not routinely contain product are collectively referred to as Containment Sumps in this report. The State of California requires that containment sumps be tested periodically for leaks as specified in SB 989.

This document describes the evaluation that was conducted on the INCON TS-STS Sump Test System for testing containment sumps. The results of the evaluation make it possible for users, regulators and other interested parties to evaluate the performance of the leak detector and to compare its performance with other similar methods.

The test procedures used for this evaluation are described in an evaluation protocol developed by Ken Wilcox Associates, Inc. (KWA) entitled "Evaluation of Systems Used for Testing of Secondary Containment Vessels", November 26, 2001.

The results of this evaluation may be applied to turbine sumps, dispenser pans, and spill buckets and any other containment device that can be filled with water for testing.

2.0 DESCRIPTION OF THE INCON TS-STS SUMP TEST SYSTEM

The INCON TS-STS Sump Test System utilizes a modified INCON TS-504 equipped with magnetorstrictive probes with two-inch stainless steel floats. The TS-STS is a complete stand-alone system that includes a printer. Data is collected and analyzed using proprietary software and algorithms developed by INCON specifically for sump testing. Data is logged for a period of 15 minutes and the results reported in terms of the change in water level in the sump. A printout of the initial and final levels is provided automatically at the conclusion of the test. The sump water level can be displayed at any time.

3.0 APPLICABILITY

The TS-STS Sump Test System can be used to test containment sumps that may be temporarily filled with water. The testing does not define the performance necessary to achieve regulatory compliance. It does provide data necessary for calculating the minimum level change (MLC) that can be detected with a probability of 95% or greater. This information can then be used to determine the test time necessary to detect a specific change in water level. For example, the capability of this system to determine a level change equivalent to 0.25 inches in 24 hours within the manufacturers stated test time has been measured by this evaluation. The issue of compliance is left to the appropriate regulatory agency.

4.0 EVALUATION PROCEDURES

The evaluation was conducted using a sump containment with an inside diameter of approximately twenty-eight inches. The leak detection system was installed by suspending two probes in the sump using the chain provided by INCON. After calibration, the level change in the test cell was calculated from the volume of water removed and the volume to level ratio for the test cell. Fifty-two increments of water were removed and the level changes recorded after each removal for both probes. The volume of each increment was calculated to produce a level change of approximately 0.002 inches. The measured level change is compared to the calculated level change to obtain a difference that is used in the determination of the performance of the method.

The induced leak procedures are similar to those described in the standard EPA protocols including ATG water sensor testing. A graduated cylinder and peristaltic pump were used to remove increments of water from the test sump. A total of 52 separate tests were conducted for the evaluation. The volume of product removed during the test was determined volumetrically using the graduated cylinder.

The depth change per unit of volume change (L/V) was determined by removing a relatively large measured volume of water and measuring the corresponding level change using a dial micrometer with a resolution of 0.001 inches. The results indicate a level to volume ratio 0.0000986 inches per ml of water removed. The results of the calibration are shown in Table 1.

Table 1. Calibration of Test Sump

Increment No.	Volume Removed (ml)	Measured Level Change (in)	Level /volume Ratio (in/ml)
1	4000	0.399	0.0000998
2	3950	0.385	0.0000975
Average			**0.0000986**

This calculated ratio is more than accurate enough to measure small level changes for the purposes of this evaluation.

4.1 Leak Simulation Equipment

The equipment used to simulate a leak consisted of a sump and a 100 ml graduated cylinder. A peristaltic pump was used to remove liquid from the sump with minimal disturbance to the surface of the water. The graduated cylinder was used to measure the amount of fluid removed for each increment.

4.2 Test Procedures

1. The probe was installed in the test sump by suspending the probe in the sump using a chain supplied by the manufacturer. The probe extended into the water approximately 50% of the length of the probe used for the tests.

2. The display on the controller was monitored until noise due to waves or other factors on the water surface had dissipated.

3. For each increment, enough water was removed to produce a level change that was approximately equal to the claimed threshold level change. (The threshold is the level change that results in a failure.) For this system, the removal of 20 ml of water produced a level change of approximately 0.002 inches.

4. After each increment the volume of water removed and the water level change reported by the sensor for each removal were recorded.

5. At total of 52 incremental water removals were conducted for the evaluation.

6. Two identical probes were used to monitor the level change during this evaluation.

5.0 TEST RESULTS AND CALCULATIONS

The following statistical procedure provides a means of estimating the minimum water level change that the water sensor can detect. A summary of the results of the calculations is provided in Table 2.

Table 2. Summary of Results

	Results	
Description	**Probe 1**	**Probe 2**
Number of Increments	52	52
Bias	0.0000682	0.0000682 inches
Standard Deviation	0.0008064	0.0008070 inches
Calibration Coefficient	0.0000986	0.0000986 in/ml
Minimum Level Change	0.00192	0.00192 inches
K for n=50	2.379	2.379
Test Time	15 minutes	15 minutes
Stabilization Time	Not specified	Not specified
Threshold for declaring a leak	0.0020 inches	0.0020 inches

The test data is recorded in as indicated in Table 3. The volume of water removed for each increment is entered in column B. The calculated level change is obtained from the calibration coefficient and the volume of water removed. The sensor reading reported by the system being tested is recorded in column D. Column E is obtained from the difference in level for each increment removal. Finally, the increment difference between the measured value and the calculated value is recorded in column F.

5.1 Calculation of the Minimum Detectable Level Change (MLC)

1. Calculate the level change for the incremental volume added as indicated in column A using Equation 1

$$h = V_n * Coeff \quad (1)$$

where Coeff is the coefficient obtained for the height to volume ratio for the test cell and V_n is obtained from column B in Table 3. The results of this calculation are shown in column C.

2. The sensor readings obtained from the INCON Sump Testing system are recorded for each increment in column D.

3. The differences W_n between consecutive sensor readings in column D are recorded in column E.

4. The incremental difference between the calculated level change in column C and

the measured difference in column E are recorded in column F.

5. The calculation of the standard deviation and MLC are based on the data in column F.

Table 3. Data Sheet for Determining Minimum Level Change (MLC)
Method Incon STS
Date April 28 **Coefficient for Volume/in** 0.000986 gal/in

Probe 1

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
0	0	0.000	4.805		
1	20	-0.002	4.805	0.000	0.002
2	20	-0.002	4.800	-0.005	-0.003
3	20	-0.002	4.798	-0.002	0.000
4	20	-0.002	4.796	-0.002	0.000
5	20	-0.002	4.794	-0.002	0.000
6	20	-0.002	4.792	-0.002	0.000
7	20	-0.002	4.791	-0.001	0.001
8	20	-0.002	4.788	-0.003	-0.001
9	20	-0.002	4.787	-0.001	0.001
10	20	-0.002	4.785	-0.002	0.000
11	20	-0.002	4.782	-0.003	-0.001
12	20	-0.002	4.780	-0.002	0.000
13	20	-0.002	4.778	-0.002	0.000
14	20	-0.002	4.776	-0.002	0.000
15	20	-0.002	4.774	-0.002	0.000
16	20	-0.002	4.772	-0.002	0.000
17	20	-0.002	4.771	-0.001	0.001
18	20	-0.002	4.769	-0.002	0.000
19	20	-0.002	4.768	-0.001	0.001
20	20	-0.002	4.766	-0.002	0.000
21	20	-0.002	4.764	-0.002	0.000
22	20	-0.002	4.762	-0.002	0.000
23	20	-0.002	4.760	-0.002	0.000
24	20	-0.002	4.758	-0.002	0.000
25	20	-0.002	4.756	-0.002	0.000
	0	0.000	4.753		
26	20	-0.002	4.751	-0.002	0.000
27	20	-0.002	4.749	-0.002	0.000
28	20	-0.002	4.746	-0.003	-0.001
29	20	-0.002	4.744	-0.002	0.000
30	20	-0.002	4.742	-0.002	0.000

Probe 2

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
0	0	0.00000	4.652		
1	20	-0.00197	4.650	-0.002	-0.00003
2	20	-0.00197	4.648	-0.002	-0.00003
3	20	-0.00197	4.645	-0.003	-0.00103
4	20	-0.00197	4.644	-0.001	0.00097
5	20	-0.00197	4.642	-0.002	-0.00003
6	20	-0.00197	4.64	-0.002	-0.00003
7	20	-0.00197	4.638	-0.002	-0.00003
8	20	-0.00197	4.636	-0.002	-0.00003
9	20	-0.00197	4.634	-0.002	-0.00003
10	20	-0.00197	4.633	-0.001	0.00097
11	20	-0.00197	4.631	-0.002	-0.00003
12	20	-0.00197	4.629	-0.002	-0.00003
13	20	-0.00197	4.626	-0.003	-0.00103
14	20	-0.00197	4.624	-0.002	-0.00003
15	20	-0.00197	4.622	-0.002	-0.00003
16	20	-0.00197	4.621	-0.001	0.00097
17	20	-0.00197	4.619	-0.002	-0.00003
18	20	-0.00197	4.618	-0.001	0.00097
19	20	-0.00197	4.616	-0.002	-0.00003
20	20	-0.00197	4.616	0.000	0.00197
21	20	-0.00197	4.614	-0.002	-0.00003
22	20	-0.00197	4.611	-0.003	-0.00103
23	20	-0.00197	4.608	-0.003	-0.00103
24	20	-0.00197	4.606	-0.002	-0.00003
25	20	-0.00197	4.604	-0.002	-0.00003
*	0	0.00000	4.600		
26	20	-0.00197	4.600	0.000	0.00197
27	20	-0.00197	4.596	-0.004	-0.00203
28	20	-0.00197	4.594	-0.002	-0.00003
29	20	-0.00197	4.592	-0.002	-0.00003
30	20	-0.00197	4.591	-0.001	0.00097

Table 3. Data Sheet for Determining Minimum Level Change (MLC)
Method Incon STS
Date April 28 **Coefficient for Volume/in** 0.000986 gal/in

Probe 1

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
31	20	-0.002	4.740	-0.002	0.000
32	20	-0.002	4.738	-0.002	0.000
33	20	-0.002	4.736	-0.002	0.000
34	20	-0.002	4.734	-0.002	0.000
35	20	-0.002	4.732	-0.002	0.000
36	20	-0.002	4.730	-0.002	0.000
37	20	-0.002	4.728	-0.002	0.000
38	20	-0.002	4.726	-0.002	0.000
39	20	-0.002	4.725	-0.001	0.001
40	20	-0.002	4.723	-0.002	0.000
	0	0.000	4.709		
41	20	-0.002	4.707	-0.002	0.000
42	20	-0.002	4.706	-0.001	0.001
43	20	-0.002	4.704	-0.002	0.000
44	20	-0.002	4.704	0.000	0.002
45	20	-0.002	4.700	-0.004	-0.002
46	20	-0.002	4.698	-0.002	0.000
47	20	-0.002	4.696	-0.002	0.000
48	20	-0.002	4.694	-0.002	0.000
49	20	-0.002	4.693	-0.001	0.001
50	20	-0.002	4.693	0.000	0.002
51	20	-0.002	4.690	-0.003	-0.001
52	20	-0.002	4.689	-0.001	0.001

* There was a break in the data collection
No water was removed during the break.
Changes may be due to evaporation.

n	52	
Bias	0.0000682	
stdev	0.0008064	
MLC	0.00192	
Cal. Coeff	0.0000986	in/ml
K	2.379	
t bias	0.609	

Probe 2

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
31	20	-0.00197	4.589	-0.002	-0.00003
32	20	-0.00197	4.588	-0.001	0.00097
33	20	-0.00197	4.587	-0.001	0.00097
34	20	-0.00197	4.584	-0.003	-0.00103
35	20	-0.00197	4.583	-0.001	0.00097
36	20	-0.00197	4.581	-0.002	-0.00003
37	20	-0.00197	4.579	-0.002	-0.00003
38	20	-0.00197	4.577	-0.002	-0.00003
39	20	-0.00197	4.575	-0.002	-0.00003
40	20	-0.00197	4.573	-0.002	-0.00003
*	0	0.00000	4.566		
41	20	-0.00197	4.563	-0.003	-0.00103
42	20	-0.00197	4.562	-0.001	0.00097
43	20	-0.00197	4.56	-0.002	-0.00003
44	20	-0.00197	4.559	-0.001	0.00097
45	20	-0.00197	4.556	-0.003	-0.00103
46	20	-0.00197	4.555	-0.001	0.00097
47	20	-0.00197	4.554	-0.001	0.00097
48	20	-0.00197	4.552	-0.002	-0.00003
49	20	-0.00197	4.549	-0.003	-0.00103
50	20	-0.00197	4.546	-0.003	-0.00103
51	20	-0.00197	4.546	0.000	0.00197
52	20	-0.00197	4.542	-0.004	-0.00203

* There was a break in the data collection
No water was removed during the break.
Changes may be due to evaporation.

n	52
Bias	0.0000682
stdev	0.0008070
MLC	0.00192
Cal. Coeff	0.0000986
K	2.379
t bias	0.609

5. The average, D, of the differences in column E is computed using Equation 2. This number is also the bias of the test method.

$$D_n = \sum_{i=1}^{n} \frac{d_n}{n} \quad (2)$$

7. The variance of the differences between the each of the differences, d, and average, D are calculated using Equation 3..

$$Var = \sum_{i=1}^{n} \frac{(d_i - \overline{D})^2}{n-1} \quad (3)$$

8. The standard deviation (SD) is then obtained from equation 4.

$$SD = \sqrt{Var} \quad (4)$$

9. Calculate the minimum water level change, MLC that the sensor can detect.

$$MLC = K*SD \quad (5)$$

or

$$MLC = 2.379*SD \quad (6)$$

The tolerance factor, K, for two-sided tolerance intervals with 95% probability and 95% coverage is 2.379 for a sample size of 50. This number was obtained from the *CRC Handbook of Tables for Probability and Statistics*. 1966. William H. Beyer (ed.). pp.31-35. The Chemical Rubber Company).

The MLC is the smallest level change that can be detected with a probability of 95%. Systems using a level change smaller than the MLC will detect changes with a probability of less than 95% while those using level change greater than the MLC will detect the change with a probability of greater than 95%. The performance can be determined for each individual method.

5.2 Minimum Testing Time

The minimum test time is affected by two factors: the surface area of the sump, and the MLC. Sensitive methods with small MLC's will have shorter test times. Small surface areas will also result in shorter test times for the same level change.

The currently accepted standard requirement is to detect a 0.250 inch change in 24 hours. This can be expressed in many other equivalent ways in terms of inches per hour (e.g.,

0.01042 in/hr or 0.002604 inches per 15 minutes). This is a fixed requirement without regard to surface area or leak rate. For the INCON Sump Test method, a fifteen-minute test is conducted which means that the method will fail any test where the measured level change exceeds 0.0020 inches in 15 minutes or less.

The result of fixing the level change without regard to surface area or leak rate is that small surface area sumps will be tested much more rigorously than large surface area sumps. Because of the lack of specificity of the pass/fail criteria, it is not possible to determine a leak rate or a time necessary to detect a given leak rate. No matter what size of sump is tested, if the level change is less than 0.002 inches per 15 minutes, the test will pass.

5.3 Stabilization Time

Because of possible distortion of some types of sumps and possible wave action produced by filling the sump, it may be necessary to allow for an initial stabilization time before beginning the test. The criteria for determining when the sump has reached sufficient stability for testing is somewhat subjective in that the operator determines when the level readings have reached a uniform behavior. Random increases and decreases would indicate possible vibration or wave action is still present. In addition, the temperature of the water in the sump should be close to equilibrium. Very hot or very cold temperature differences should be avoided.

6.0 REPORTING OF RESULTS

The results of the evaluation are reported using the forms provided in Attachment A. All of the essential information is contained in this form. A description that provided some details on the characteristics of the system is also included in Appendix A. A table presenting the raw test data is included in Appendix B.

7.0 COMMENTS AND CONCLUSIONS

Because of the design of the float mechanism, it is important for the magnetorstrictive probe to be as nearly vertical is possible. Deviations from the vertical axis may cause the float to touch unnecessarily against the probe rod, causing sticking that will degrade the performance of the system. The position of the probe should be adjusted until there is minimal contact between the rod and the float. An observant test operator can see this effect and make the necessary adjustments.

It is also important that the mounting mechanism be attached to a stable location so that movement of the mount does not produce movement in the probe. When movement occurs it is usually apparent to the test operator who can then abort the test and restart.

The primary conclusion from this evaluation is that the INCON Sump Tester is capable of detecting a level change of less than the required 0.002 inches in 15 minutes.

APPENDIX A

REPORTING FORMS

Appendix A should contain the following:

1. Containment Sump Results Forms - 3 Pages
2. Containment Sump Method Description Forms - 4 Pages

Method Name and Version: INCON TS-STS Sump Test System
Date of Certification: May 7, 2002

Results of Evaluation of Systems Used for Testing of Sump Containment Vessels

This form describes the performance of the leak detection method described below. The evaluation was conducted by a consultant to the manufacturer according to a modification of the Water sensor test procedures described in the U.S. EPA's "Standard Test Procedure for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems."

Tank owners using this leak detection system should keep this form on file to provide compliance with the federal regulations. Tank owners should check with State and local agencies to make sure this form satisfies their requirements.

Leak Detection Method Description

Name TS-STS Sump Test System

Version number 2.0

Vendor Intelligent Controls, Inc.

74 Industrial Park Road
(street address)

Saco,	ME	04072	(800) 872-3455
(city)	(state)	(zip)	(phone)

Evaluation Results

This Leak Detection Method minimum change in level (MLC) that can be detected by the method is 0.00192 inches with a probability of detection [P_D] of 95% or greater.

The standard deviation of the test data results was 0.0008064 inches.

The Minimum test time specified by the vendor is 15 minutes .

Test Conditions During Evaluation

The evaluation testing was conducted in a 28 inch diameter containment sump with a nominal cross section of 615 square inches and a measured level to volume ratio of 0.0000986 inches per ml.

Limitations on the Results

The performance estimates above are only valid when:

- The method has not been substantially changed.
- The vendor's instructions for installing and operating the Leak Detection Method are followed.
- Other limitations specified by the vendor or determined during testing:

_____

_____

_____

_____

Procedural Information

State the procedures used to determine when the Containment Sump is stable.

Level is monitored until stable readings are obtained..

State the procedures used to eliminate various types of errors.

Wind/Vibration

Shield from wind.

Water temperature versus surrounding soil and backfill temperature

Not considered

Other

None specified.

Method Name and Version: INCON TS-STS Sump Test System
Date of Certification: May 7, 2002

Other Information

Have other evaluations been conducted on this method? ( ) Yes (X) No

If so, please summarize the results or attach a copy of the Results Forms to this document.

> **Safety disclaimer: This test procedure only addresses the issue of the Leak Detection Method's ability to detect leaks. It does not test the equipment for safety hazards.**

Certification of Results

I certify that the Leak Detection Method was installed and operated according to the vendor's instructions and that the results presented on this form are those obtained during the evaluation.

H. Kendall Wilcox
(printed name)

Ken Wilcox Associates, Inc.
(organization performing evaluation)

H. Kendall Wilcox

(signature)

Grain Valley, MO 64029
(city, state, zip)

May 7, 2002
(date)

816-443-2494
(phone number)

Description
Sump Containment Vessel
Leak Detection Method

This section describes briefly the important aspects of the Sump Containment leak detection method. It is not intended to provide a thorough description of the principles behind the system or how the equipment works.

Method Name and Version INCON TS-STS Sump Test System

Principle of Operation

What technique is used to detect leaks in the tank system?

( ) directly measure the volume of product change

( ) changes in head pressure

( ) changes in buoyancy of a probe

( ) mechanical level measure (e.g., ruler, dipstick)

( ) changes in capacitance

( ) ultrasonic

(X) change in level of float (specify principle, e.g., capacitance, magnetostrictive, load cell, etc.) magnetostrictive

( ) acoustical signal characteristics of a leak

( ) identification of a tracer chemical outside the tank system

( ) change in vacuum produced in the containment vessel

( ) other (describe briefly) _____

Data Acquisition

How are the test data acquired and recorded?

( ) manually

( ) by strip chart

(X) by computer

Procedure information

> Waiting times

What is the required waiting period between filling the sump and the beginning of a test.

_____ Hours _____ Minutes

Additional Comments: determined by operator - waits for sensor readings to become consistent.

> Test duration

What is the required time for collecting data?

0 Hours 15 Minutes

Additional Comments: Test is automated

What is the sampling frequency for the measurements?

( ) more than once per second

(X) at least once per minute

( ) every 1-15 minutes

( ) at the beginning and end of the test

( ) variable (explain) _____

> Identifying and correcting for interfering factors

How does the Method correct for the interference due to the presence of ground water above the bottom of the sump?

( ) no action

(X) system tests for water incursion

( ) different product levels tested and leak rates compared

( ) other (describe briefly) _____

> Interpreting test results

How are level changes converted to volume changes (i.e., how is height-to-volume conversion factor determined)?

(X) actual level changes observed when known volume is added or removed (e.g., liquid metal bar)

( ) theoretical ratio calculated from sump geometry

( ) other (describe briefly)

( ) not applicable; volume measured directly

How is the leak rate (gallon per hour) calculated?

( ) average of subsets of all data collected

( ) difference between first and last data collected

( ) from data from last _____ hours of test period

( ) from data determined to be valid by statistical analysis

(X) other (describe) level change is reported. This can be used to calculate volume if needed.

What threshold value is used to declare that a tank is leaking?

Describe level changes greater than 0.002 inches result in a failed test

Additional Comments: _____

Under what conditions are test results considered inconclusive?

( ) ground water level above the bottom of the sump

( ) too much variability in the data (standard deviation beyond a given value)

( ) other (describe briefly) _____

Exceptions

Are there any conditions under which a test should not be conducted?

( ) ground water level above the bottom of the sump

( ) extremely high or low ambient temperature

( ) other (describe briefly) _____

What are acceptable deviations from the standard testing protocol?

(X) none

( ) lengthen the duration of test

( ) other (describe briefly) _____

What elements of the test procedure are determined by personnel on-site?

(X) water level when test is conducted

(X) when to conduct test

(X) waiting period between filling sump and beginning test

( ) length of test

( ) determination of "outlier" data that may be discarded

( ) other (describe briefly) _____

( ) none

APPENDIX B

DATA SHEETS

Appendix B should contain the following:

1. Data Sheets – 2 Pages

Data Sheet for Determining Minimum Level Change (MLC)
Method Incon STS
Date April 28 **Coefficient for Volume/in** 0.000986 gal/in

Probe 1

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
0	0	0.000	4.805		
1	20	-0.002	4.805	0.000	0.002
2	20	-0.002	4.800	-0.005	-0.003
3	20	-0.002	4.798	-0.002	0.000
4	20	-0.002	4.796	-0.002	0.000
5	20	-0.002	4.794	-0.002	0.000
6	20	-0.002	4.792	-0.002	0.000
7	20	-0.002	4.791	-0.001	0.001
8	20	-0.002	4.788	-0.003	-0.001
9	20	-0.002	4.787	-0.001	0.001
10	20	-0.002	4.785	-0.002	0.000
11	20	-0.002	4.782	-0.003	-0.001
12	20	-0.002	4.780	-0.002	0.000
13	20	-0.002	4.778	-0.002	0.000
14	20	-0.002	4.776	-0.002	0.000
15	20	-0.002	4.774	-0.002	0.000
16	20	-0.002	4.772	-0.002	0.000
17	20	-0.002	4.771	-0.001	0.001
18	20	-0.002	4.769	-0.002	0.000
19	20	-0.002	4.768	-0.001	0.001
20	20	-0.002	4.766	-0.002	0.000
21	20	-0.002	4.764	-0.002	0.000
22	20	-0.002	4.762	-0.002	0.000
23	20	-0.002	4.760	-0.002	0.000
24	20	-0.002	4.758	-0.002	0.000
25	20	-0.002	4.756	-0.002	0.000
	0	0.000	4.753		
26	20	-0.002	4.751	-0.002	0.000
27	20	-0.002	4.749	-0.002	0.000
28	20	-0.002	4.746	-0.003	-0.001
29	20	-0.002	4.744	-0.002	0.000
30	20	-0.002	4.742	-0.002	0.000
31	20	-0.002	4.740	-0.002	0.000

Probe 2

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
0	0	0.00000	4.652		
1	20	-0.00197	4.650	-0.002	-0.00003
2	20	-0.00197	4.648	-0.002	-0.00003
3	20	-0.00197	4.645	-0.003	-0.00103
4	20	-0.00197	4.644	-0.001	0.00097
5	20	-0.00197	4.642	-0.002	-0.00003
6	20	-0.00197	4.64	-0.002	-0.00003
7	20	-0.00197	4.638	-0.002	-0.00003
8	20	-0.00197	4.636	-0.002	-0.00003
9	20	-0.00197	4.634	-0.002	-0.00003
10	20	-0.00197	4.633	-0.001	0.00097
11	20	-0.00197	4.631	-0.002	-0.00003
12	20	-0.00197	4.629	-0.002	-0.00003
13	20	-0.00197	4.626	-0.003	-0.00103
14	20	-0.00197	4.624	-0.002	-0.00003
15	20	-0.00197	4.622	-0.002	-0.00003
16	20	-0.00197	4.621	-0.001	0.00097
17	20	-0.00197	4.619	-0.002	-0.00003
18	20	-0.00197	4.618	-0.001	0.00097
19	20	-0.00197	4.616	-0.002	-0.00003
20	20	-0.00197	4.616	0.000	0.00197
21	20	-0.00197	4.614	-0.002	-0.00003
22	20	-0.00197	4.611	-0.003	-0.00103
23	20	-0.00197	4.608	-0.003	-0.00103
24	20	-0.00197	4.606	-0.002	-0.00003
25	20	-0.00197	4.604	-0.002	-0.00003
*	0	0.00000	4.600		
26	20	-0.00197	4.600	0.000	0.00197
27	20	-0.00197	4.596	-0.004	-0.00203
28	20	-0.00197	4.594	-0.002	-0.00003
29	20	-0.00197	4.592	-0.002	-0.00003
30	20	-0.00197	4.591	-0.001	0.00097
31	20	-0.00197	4.589	-0.002	-0.00003

Data Sheet for Determining Minimum Level Change (MLC)

Method Incon STS

Date April 28 **Coefficient for Volume/in** 0.000986 gal/in

Probe 1

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
32	20	-0.002	4.738	-0.002	0.000
33	20	-0.002	4.736	-0.002	0.000
34	20	-0.002	4.734	-0.002	0.000
35	20	-0.002	4.732	-0.002	0.000
36	20	-0.002	4.730	-0.002	0.000
37	20	-0.002	4.728	-0.002	0.000
38	20	-0.002	4.726	-0.002	0.000
39	20	-0.002	4.725	-0.001	0.001
40	20	-0.002	4.723	-0.002	0.000
	0	0.000	4.709		
41	20	-0.002	4.707	-0.002	0.000
42	20	-0.002	4.706	-0.001	0.001
43	20	-0.002	4.704	-0.002	0.000
44	20	-0.002	4.704	0.000	0.002
45	20	-0.002	4.700	-0.004	-0.002
46	20	-0.002	4.698	-0.002	0.000
47	20	-0.002	4.696	-0.002	0.000
48	20	-0.002	4.694	-0.002	0.000
49	20	-0.002	4.693	-0.001	0.001
50	20	-0.002	4.693	0.000	0.002
51	20	-0.002	4.690	-0.003	-0.001
52	20	-0.002	4.689	-0.001	0.001

* There was a break in the data collection
No water was removed during the break.
Changes may be due to evaporation.

n	52
Bias	0.0000682
stdev	0.0008064
MLC	0.00192
Cal. Coeff	0.0000986 in/ml
K	2.379
t bias	0.609

Probe 2

A	B	C	D	E	F
Test No	Volume of Water Removed (ml)	Calculated Level Change (in)	Sensor Reading (in)	Measured Level Change (in)	Increment Difference Measured - Calculated (E - C)
32	20	-0.00197	4.588	-0.001	0.00097
33	20	-0.00197	4.587	-0.001	0.00097
34	20	-0.00197	4.584	-0.003	-0.00103
35	20	-0.00197	4.583	-0.001	0.00097
36	20	-0.00197	4.581	-0.002	-0.00003
37	20	-0.00197	4.579	-0.002	-0.00003
38	20	-0.00197	4.577	-0.002	-0.00003
39	20	-0.00197	4.575	-0.002	-0.00003
40	20	-0.00197	4.573	-0.002	-0.00003
*	0	0.00000	4.566		
41	20	-0.00197	4.563	-0.003	-0.00103
42	20	-0.00197	4.562	-0.001	0.00097
43	20	-0.00197	4.56	-0.002	-0.00003
44	20	-0.00197	4.559	-0.001	0.00097
45	20	-0.00197	4.556	-0.003	-0.00103
46	20	-0.00197	4.555	-0.001	0.00097
47	20	-0.00197	4.554	-0.001	0.00097
48	20	-0.00197	4.552	-0.002	-0.00003
49	20	-0.00197	4.549	-0.003	-0.00103
50	20	-0.00197	4.546	-0.003	-0.00103
51	20	-0.00197	4.546	0.000	0.00197
52	20	-0.00197	4.542	-0.004	-0.00203

* There was a break in the data collection
No water was removed during the break.
Changes may be due to evaporation.

n	52
Bias	0.0000682
stdev	0.0008070
MLC	0.00192
Cal. Coeff	0.0000986
K	2.379
t bias	0.609

Issue Date: April 15, 2013
Revision Date: January 27, 2015

Franklin Fueling Systems

INCON TS-STS Sump Test System

SECONDARY AND SPILL CONTAINMENT TEST METHOD

Certification	Minimum Level Change (MLC) of 0.00192 inch in 15 minutes with PD = 95% Please be aware that the authority having jurisdiction in your particular state, territory, tribe or municipality may have set a minimum detectable leak rate for Secondary and Spill Containment Test Methods.
Leak Threshold	0.0020 inch/15min (0.008 inch/hour). A containment vessel should not be declared tight if the test result indicates a loss or gain that equals or exceeds this threshold.
Applicability	Water, water-based test solution.
Specification	System tests wetted portion of turbine, transition and dispenser containment sumps, and spill buckets after test liquid is temporarily added above level of all containment vessel penetration holes, as in accordance with PEI RP-1200 requirements. Uses a magnetostrictive probe to measure rise or drop of liquid level.
Waiting Time	Water level readings must stabilize (due to distortion of sumps and wave action) and temperature in sump must be close to equilibrium prior to beginning test.
Test Period	15 minutes.
System Features	Up to 4 sumps can be tested at the same time.
Calibration	No calibration is required.
Comments	Operates similar to an automatic tank gauge, but is portable. Probe must be suspended as described in the installation manual to keep the probe as vertical as possible. Probe should be adjusted so there is minimal contact between the rod and the float. The sump water level can be displayed at any time. A printout of the initial and final levels is provided automatically at the conclusion of the test. Results may be converted to gal/hr using beginning and ending of test surface area of liquid in test vessel.

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3760 Marsh Road
Madison, WI 53718
Tel: (800) 225-9787
E-mail: info@franklinfueling.com
URL: www.franklinfueling.com

Evaluator: Ken Wilcox Associates
Tel: (816) 443-2494
Dates of Evaluations: 05/07/02

| Home | Vendors: A - F | Vendors: G - M | Vendors: N - S | Vendors: T - Z | Method Index | Glossary |

Appearance on this list is not to be construed as an endorsement by any regulatory agency nor is it any guarantee of the performance of the method or equipment.
Equipment should be installed and operated in accordance with all applicable laws and regulations. For full details, please refer to our expanded "DISCLAIMER" page.

SUMP TEST SYSTEM

The INCON™ brand Sump Test System (STS) is designed specifically to test containment for leaks. Up to four containments can be leak-tested simultaneously with accurate compliance test results available in just 15 minutes.

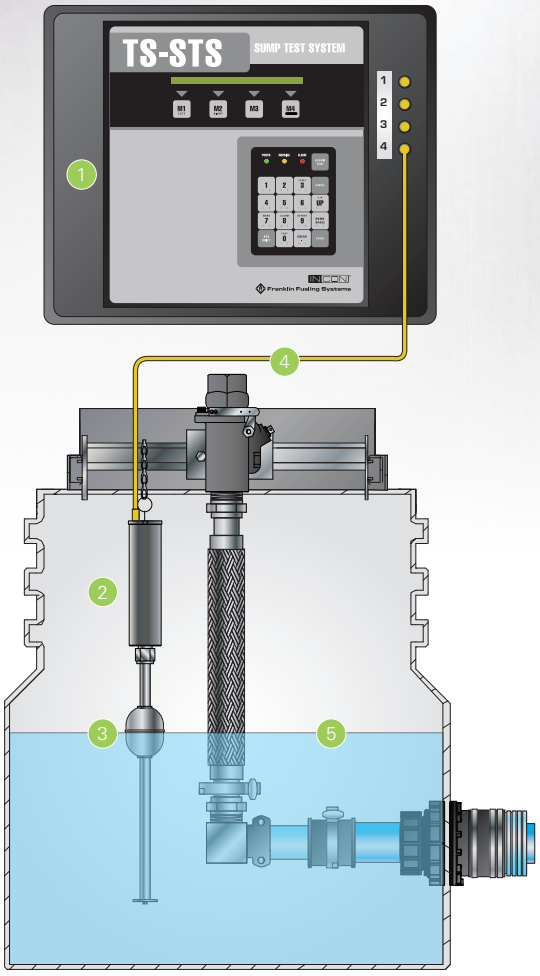
Highlights

- Designed to deliver cost-effective environmental compliance test data.
- Easily transported in two supplied carrying cases.
- Easily set-up and programmed with site-specific data and sump identification before a test. Site and test data can also be saved to a laptop.
- Laptop interface optional using System Sentinel™ Tech Software.
- Accommodates up to four probes for testing of up to four spill containers, dispenser sumps, or tank sumps simultaneously.
- Uses INCON™ brand magnetostrictive probe technology for unparalleled accuracy and reliable results.
- Highly accurate leak test detects level changes greater than 0.002 inches during the fifteen minute test.
- Provides accurate test fluid levels for each sump monitored.
- Automatically prints out passed or failed test reports in just fifteen minutes after starting a leak test. Printer included.
- Shows the date and time of the test, test fluid levels, and the leak test results on sump leak test reports.
- Additional sump leak test reports can also be printed at the console before other tests are completed.

Specifications

Components

1. TS-STS sump test kit console
2. Leak test probe
3. Float
4. Probe cable
5. Test fluid (filled above all openings)



Specifications

- Operating temperature:
  Console - 32° to 122 °F (0° to 50 °C).
  Leak test probes - -40° to 140 °F (-40° to 60 °C).
- Storage temperature:
  Console - -4° to 140 °F (-20° to 60 °C).
  Leak test probes - -40° to 158 °F (-40° to 70 °C).
- Intrinsic safety rating:
  Leak test probes - Class 1, Div. 1, Group D.
- Carry case weight and dimensions:
  Console - 33 lbs. (15 kg), 24" × 19" × 8½" (62 cm × 49 cm × 22 cm).
  Leak test probes - 30 lbs. (13.5 kg), 38" × 18" × 6"
  (97 cm × 45 cm × 16 cm).
- Number of sumps monitored:
  Console - 4.
  Leak test probes - 1.
- Applicable liquids:
  Leak test probes - testing solution.
- Level units:
  Console - inches.
- Display type and size:
  Console - alphanumeric LCD, 2 lines of 40 characters.
- Printer type:
  Console - 24 column thermal printer.
- Power requirements:
  Console - 115 VAC, 50 Watts, 6' power cord with 3 prong plug supplied.
  Leak test probes - 50' cable supplied.

Ordering Information

Model	Description
TS-STS-2K	Sump test system with two probes
TS-STS-3K	Sump test system with three probes
TS-STS-4K	Sump test system with four probes

INCON
A Franklin Fueling Systems Brand
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Tel: Mex 001 800 738 7610 • Tel: FR +33 (0)1 69 21 41 41 • Tel: CH +86 10 8565 4566

Franklin Fueling Systems

FUEL MANAGEMENT SYSTEMS

SUMP TEST SYSTEM

HIGHLIGHTS

- Portable, cost-effective environmental compliance leak testing.
- Accommodates up to four probes for testing of up to four spill containers, dispenser sumps, or tank sumps simultaneously.
- Automatically prints out passed or failed test reports in just fifteen minutes after starting a leak test.
- Highly accurate leak test detects level changes greater than 0.002 inches.
- Available with 2, 3, or 4 probes (floats included).

INCON

A Franklin Fueling Systems Brand

franklinfueling.com

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FFS-0476 09-15

SUMP TEST SYSTEM

The INCON™ brand Sump Test System (STS) is designed specifically to test containment for leaks. Up to four containments can be leak-tested simultaneously with accurate compliance test results available in just 15 minutes.

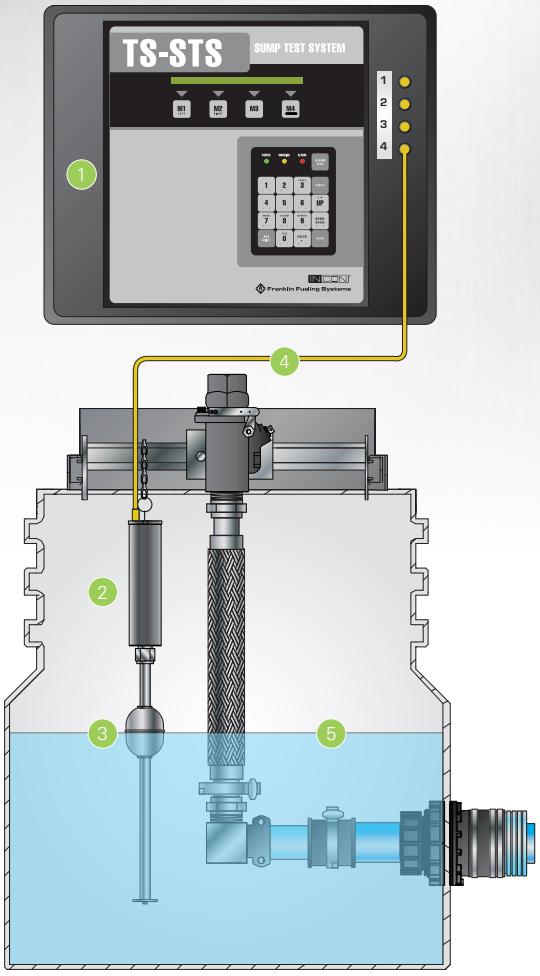
Highlights

- Designed to deliver cost-effective environmental compliance test data.
- Easily transported in two supplied carrying cases.
- Easily set-up and programmed with site-specific data and sump identification before a test. Site and test data can also be saved to a laptop.
- Laptop interface optional using System Sentinel™ Tech Software.
- Accommodates up to four probes for testing of up to four spill containers, dispenser sumps, or tank sumps simultaneously.
- Uses INCON™ brand magnetostrictive probe technology for unparalleled accuracy and reliable results.
- Highly accurate leak test detects level changes greater than 0.002 inches during the fifteen minute test.
- Provides accurate test fluid levels for each sump monitored.
- Automatically prints out passed or failed test reports in just fifteen minutes after starting a leak test. Printer included.
- Shows the date and time of the test, test fluid levels, and the leak test results on sump leak test reports.
- Additional sump leak test reports can also be printed at the console before other tests are completed.

Specifications

Components

1. TS-STS sump test kit console
2. Leak test probe
3. Float
4. Probe cable
5. Test fluid (filled above all openings)



Specifications

- Operating temperature:
  Console - 32° to 122 °F (0° to 50 °C).
  Leak test probes - -40° to 140 °F (-40° to 60 °C).
- Storage temperature:
  Console - -4° to 140 °F (-20° to 60 °C).
  Leak test probes - -40° to 158 °F (-40° to 70 °C).
- Intrinsic safety rating:
  Leak test probes - Class 1, Div. 1, Group D.
- Carry case weight and dimensions:
  Console - 33 lbs. (15 kg), 24" × 19" × 8½" (62 cm × 49 cm × 22 cm).
  Leak test probes - 30 lbs. (13.5 kg), 38" × 18" × 6"
  (97 cm × 45 cm × 16 cm).
- Number of sumps monitored:
  Console - 4.
  Leak test probes - 1.
- Applicable liquids:
  Leak test probes - testing solution.
- Level units:
  Console - inches.
- Display type and size:
  Console - alphanumeric LCD, 2 lines of 40 characters.
- Printer type:
  Console - 24 column thermal printer.
- Power requirements:
  Console - 115 VAC, 50 Watts, 6' power cord with 3 prong plug supplied.
  Leak test probes - 50' cable supplied.

Ordering Information

Model	Description
TS-STS-2K	Sump test system with two probes
TS-STS-3K	Sump test system with three probes
TS-STS-4K	Sump test system with four probes

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Franklin Fueling Systems

Automatic Tank Gauge and Electronic LLD Systems

Maintenance Guide

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Introduction

Franklin Fueling Systems (FFS) manufactures automatic tank gauge systems and electronic line leak detection systems for the petroleum industry. These systems are third party certified and are capable of performing self-diagnostic tests. Due to the self-diagnostic features of the automatic tank monitoring systems and electronic line leak detection systems, there are no annual physical tests required by third party testers or the EPA.

Even with these self-diagnostic features though, alarms or equipment damage can sometimes go unnoticed by service station personnel. Following the steps in this document will assist you in verifying that your equipment is functioning correctly.

Though not required, we recommend that the equipment be inspected occasionally for proper operation, especially if the system is located in a remote area or somewhere isolated from service station personnel. Inspecting these systems will confirm that they are operating correctly, and, in the case of electronic line leak detection systems, that it is passing its monthly line leak tests.

The inspection steps in this manual include recommendations for service station personnel, as well as steps recommended exclusively for certified service technicians. In addition, these steps can be used in conjunction with a service station's individual equipment maintenance program to help ensure the proper operation of these systems.

In the event of an alarm condition in either an automatic tank gauge system or electronic line leak detection system (TS-LLD ,TS-LS300 or TS-LS500), a certified technician should be called to the site to diagnose the problem. Alarm conditions may be an indication of a potentially hazardous condition. Telephone numbers of certified service companies should be displayed near the equipment, and attendants should be instructed on what actions to take should an alarm trip.

Service station personnel, as well as service technicians, should always refer to the *Installation and Owner's Manual* for product and safety information. If you have any questions though, please call FFS Technical Support at 800-984-6266.

Notice

The information in this publication is provided for reference only. While every effort has been made to ensure the reliability and accuracy of the information contained in this manual at the time of printing, we recommend that you refer to "franklinfueling.com" for the most current version of this manual. All product specifications, as well as the information contained in this publication, are subject to change without notice. Franklin Fueling Systems does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of, or in any way connected with, installation, operation, use, or maintenance by using this manual. Franklin Fueling Systems assumes no responsibility for any infringement of patents or other rights of third parties that may result from use of this manual or the products. We make no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

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Important Safety Messages

Franklin Fueling Systems equipment is designed to be installed in association with volatile hydrocarbon liquids such as gasoline and diesel fuel. Installing or working on this equipment means working in an environment in which these highly flammable liquids may be present. Working in such a hazardous environment presents a risk of severe injury or death if these instructions and standard industry practices are not followed. Read and follow all instructions thoroughly before installing or working on this, or any other related equipment.

As you read this guide, please be aware of the following symbols and their meanings.

Warning  This symbol identifies a warning. A warning sign will appear in the text of this document when a potentially hazardous situation may arise if the instructions that follow are not adhered to closely. A potentially hazardous situation may involve the possibility of severe bodily harm or even death.

Caution  This is a caution symbol. A caution sign will appear in the text of this document when a potentially hazardous environmental situation may arise if the instructions that follow are not adhered to closely. A potentially hazardous environmental situation may involve the leakage of fuel from equipment that could severely harm the environment.

Warning  **Follow all applicable codes governing the installation and servicing of this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on during installation or servicing. Please refer to the *Installation and Owner's Manual* for this equipment and the appropriate documentation for any other related equipment, for complete installation and safety information.**

Warning  **Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.**

Warning  **Always secure the work area from moving vehicles. The equipment in this manual is usually mounted underground, so reduced visibility puts service personnel working on this equipment in danger from moving vehicles entering the work area. To help eliminate these unsafe conditions, secure the area by using a service truck to block access to the work environment, or by using any other reasonable means available to ensure the safety of service personnel.**

Warning  **Highly flammable vapors may be present in the environment in which this equipment is being installed or serviced. Do not smoke while working on, or near, this equipment. Use only non-sparking tools. Failure to follow this instructions could result in a serious fire or explosion.**

Warning  **Before entering a containment sump, check for the presence of hydrocarbon vapors. If these vapors are inhaled they could cause dizziness or unconsciousness, and, if ignited, hydrocarbon vapors could explode causing serious injury or death. Electronic and electrical petroleum monitoring equipment is often housed in containment sumps designed to trap hazardous liquid spills and prevent contamination of the environment, and, as a consequence, containment sumps can trap dangerous amounts of hydrocarbon vapors. If these vapor levels reach unsafe amounts, ventilate the sump with fresh air. While working in the sump, periodically check the atmosphere in the sump, if vapors reach unsafe levels, exit the sump and ventilate it before continuing work. Always have a second person standing by for assistance when working in, or around, a containment sump.**

Models	Recommended Steps
Tank Sentinel Consoles **TS-1001 Consoles** **TS-504/TS-508 Consoles** **TS-750 Consoles**	**Steps to be done by Station Owner/Attendant** 1. Verify that the display is ON and that the date and time are correct. 2. If the console has a printer, verify that it has paper. For assistance in replacing the paper roll, refer to the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide,* Chapter 5 - Troubleshooting and Routine Maintenance. 3. Press the **Alarm Test** button and verify that the WARNINGS and ALARM lights come on and that the audible alarm sounds. 4. Identify and address any WARNINGS or ALARMS. For specific information on WARNINGS and ALARMS, refer to the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide,* Chapter 5 - Troubleshooting and Routine Maintenance**.** ALARMS can be an indication of a potentially hazardous situation. If the conditions cannot be cleared, contact a service company. 5. "Stick" each tank and verify that the levels coincide with ATG levels. 6. If you can, print a **Regulatory Report**. Verify that the tank leak tests are passing monthly. If an electronic line leak system is installed (TS-LLD or TS-LS300/AS-LS300), verify that the line leak tests are passing monthly. 7. For information on printer lubrication, fuse replacement, and interior cleaning, see the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide*, Chapter 5 - Troubleshooting & Routine Maintenance section. **Steps to be done by Service Company** 1. To test the functionality of the battery backup system: a. Print a **System and Tank Setup Report**. b. Turn off power to the ATG using the black power switch located in the lower right hand corner of the tank gauge circuit board. After 10 seconds, turn the power on. If any programming information is lost, then the backup battery needs to be replaced. **Note:** Information on printing different types of tank gauge reports can be found in the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide*, Chapter 3 - Tank Gauge Reports.
Fuel Management System Consoles **T5 Series:** • TS-5 • TS-550 • TS-5000 **EVO™ Series:** • EVO™ 200 • EVO™ 400 • EVO™ 550 • EVO™ 5000 **Colibri®**	**Steps to be done by Station Owner/Attendant** 1. Verify that the POWER light is on. If the system has a display, verify that it is functional. 2. If the console has a printer, verify that it has paper. For assistance in replacing the paper roll, refer to the Fuel Management System Operators Guide FFS 000-2151, Routine Maintenance Section. 3. Identify and address any WARNINGS or ALARMS. For specific information on WARNINGS and ALARMS, refer to the Fuel Management System Operators Guide FFS 000-2151, Appendix B-Alarm Table. ALARMS can be an indication of a potentially hazardous situation. If the conditions cannot be cleared, contact a service company. 4. Stick each tank and verify that the levels coincide with ATG levels. 5. Print a Regulatory Report. Verify that the tank leak tests are passing monthly. If the system incorporates the LS500 line leak system, verify that the line leak tests are passing monthly. **Note:** For information on printing reports, and basic printer maintenance and service, refer to the Fuel Management System Operators Guide FFS 000-2151, Printing Reports Section.

Models	Recommended Steps
Liquid Level Probes **TSP-LL2-XX** **TSP-LL2-XX-I** **FMP-LL3** **FMP-LL3-I**	**Steps to be done by Station Owner/Attendant** 1. Inspect the probe cables and connections. If the cables appear to be cracked, split, or swollen, contact a service company. **Steps to be done by Service Company** 1. Inspect the probe cables and connections. Cables that are cracked, split, broken or swollen should be replaced. Connections should be epoxy sealed or in weatherproof junction boxes. Connections showing corrosion, excessive moisture, or exposed bare wire should also be replaced. a. See the TSP-LL2 Magnetostrictive Probe Installation Guide (FFS part number 000-2081) for more information. (TSP-LL2) b. See the Digital Inventory and Leak Detection Probe Installation Guide (FFS part number 409723001) for more information. (FMP-LL3) 2. Inspect the probe and floats for residual buildup. Clean the shaft and floats with mineral spirits if necessary.
Leak Detection Sensors Cable Inspection **Includes:** **TSP-EIS, TSP-DIS, TSP-ULS, TSP-UHS, TSP-DDS, TSP-DTS, TSP-DVS, TSP-HIS, TSP-MWS, TSP-HLS, TSP-DMS-12/24** **FMP-EIS, FMP-EIS-U, FMP-DIS, FMP-DIS-U, FMP-ULS, FMP-UHS, FMP-DDS, FMP-DDS-U, FMP-DTS, FMP-DTS-U, FMP-HLS, FMP-HLS-U, FMP-HIS-XL, FMP-HIS-XL-U**	**Steps to be done by Station Owner/Attendant** 1. Inspect the sensor cables for damage. If the cables show signs of cracking, splitting, or appear swollen, contact a service company. **Steps to be done by Service Company** 1. Inspect the sensor cables for damage. Replace cables that show signs of cracking, splitting, or swelling. 2. Inspect the sensor connections. Connections should be epoxy sealed or in weatherproof junction boxes. Connections showing corrosion, excessive moisture, or exposed bare wire should be replaced. a. See the *Tank Sentinel* or *Auto/Stik Bulk/Stik Installation Guide,* Chapter 7 - System Wiring for further information.
Leak Detection Sensors Functional Testing **TSP-ULS** **FMP-ULS** 2-wire float switch	**Steps to be done by Service Company** 1. Insert the sensor into a container that has at least three inches of water in it and verify that the LIQUID DETECTED alarm trips. a. The TSP-ULS sensor is able to sense any type of liquid, but cannot distinguish between water and hydrocarbons.
TSP-UHS **FMP-UHS** 2-wire Hydrostatic Sensor	**Steps to be done by Service Company** 1. Lift the sensor from the sensor reservoir and verify that the ATG sensor alarm trips.

TSP-EIS **FMP-EIS** **FMP-EIS-U** 3 wire optical sensor	**Steps to be done by Service Company** 1. Insert the sensor into a container that has at least three inches of dark liquid in it and verify that the LIQUID DETECTED alarm trips. a. The TSP-EIS is a light sensitive sensor. Exposure to light may prevent the sensor from going into ALARM, so do not test it in direct light. 2. Wipe the sensor prism with a clean, dry cloth before reinstalling it.
TSP-HLS 2 wire float switch	**Steps to be done by Service Company** 1. Manually move the float to a high level position and verify that the LIQUID DETECTED alarm trips. 2. Testing this device is a matter of rotating the sensor 180 degrees with the bottom up, to cause an alarm at the ATG console. Test the sensor for proper operation on a yearly basis, or more frequently per local code.
TSP-DIS **FMP-DIS** **FMP-DIS-U** 3 wire optical and conductivity sensor	**Steps to be done by Service Company** 1. Insert the sensor into a container that has at least three inches of dark liquid in it and verify that the WATER DETECTED trips. a. The TSP-DIS is a light sensitive sensor. Exposure to light may prevent the sensor from going into ALARM, so do not test it in direct light. b. The TSP-DIS sensor can also detect liquid hydrocarbons, although we do not recommend testing the sensors using hydrocarbons. c. Wipe the sensor prism with a clean, dry cloth before reinstalling it.
TSP-DDS **FMP-DDS** **FMP-DDS-U** 3 wire Discriminating Dispenser Sump Sensor **TSP-DTS** **FMP-DTS** **FMP-DTS-U** 3 wire Discriminating Turbine Sump Sensor	**Steps to be done by Service Company** 1. Confirm that the sensor is installed upright and located at the bottom of the dispenser/turbine sump. 2. Insert the sensor into a container that has at least three inches of water in it and verify that the WATER DETECTED alarm trips. 3. Turn the sensor upside-down and verify that the SUMP FULL alarm trips. a. The TSP-DDS and the TSP-DTS sensors can also detect liquid hydrocarbons, although we do not recommend testing the sensors using hydrocarbons.
TSP-HIS 3 wire Hydrostatic Interstitial Sensor	**Steps to be done by Service Company** 1. Verify that the brine level is located in the approximate middle of the sensor. Move the sensor as necessary. 2. Pull the sensor out of the interstitial brine solution and verify that the LOW BRINE alarm trips. 3. Turn the sensor upside-down and verify that the HIGH BRINE alarm trips.

TSP-MWS 3 wire Discriminating Ground Water Monitoring Well Sensor	**Steps to be done by Service Company** 1. Pull the sensor out of the monitoring well and verify that the DRY WELL alarm trips. a. The TSP-MWS sensor is also capable of detecting hydrocarbon vapors, although we do not recommend testing the sensors using hydrocarbon vapors.
TSP-DVS Discriminating Vapor Well Sensor	**Steps to be done by Service Company** 1. Insert the sensor into a container that has at least three inches of water in it and verify that the LIQUID DETECTED alarm trips. a. The TSP-DVS can also detect hydrocarbon vapors in a vapor well, although we do not recommend testing the sensors using hydrocarbon vapors.
TSP-DMS Discriminating Magnetostrictive Sensor	**Steps to be done by Service Company** 1. Raise the sensor slightly and confirm that the sensor goes into an alarm, indicating that the sensor has been tampered with. 2. Insert the sensor into a container with at least 3 inches of water and verify that the sensor indicates the presence of water. If the Water Alarm programming is set to less than 3 inches, verify that the sensor indicates a water alarm. a. The TSP-DMS can also detect liquid hydrocarbons, although we do not recommend testing this sensor using hydrocarbons.

Electronic Line Leak

TS-LLD Line Sentinel

TS-LS300 AutoLearn

Steps to be done by Station Owner/Attendant

1. Print a **Line Compliance Report**. Verify that for each product line a .2 GPH test is being passed every month. If the report does not show line tests passing regularly, contact a service company.
    a. Information on printing different types of tank gauge reports can be found in the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide,* Chapter 3 - Tank Gauge Reports.
2. Verify that there are no line alarms on the tank gauge.
    a. Information on line alarms can be found in the *TS-LS300 AutoLearn User's Guide* or the *TS-LLD Installation Guide*.
    b. Alarms that cannot be cleared promptly could be an indication of a potentially hazardous situation. Contact a service company.

Steps to be done by Service Company

1. Print a **Line Compliance Report**. Verify that for each product line a .2 GPH test is being passed every month. Verify that there are no line alarms on the tank gauge. If the report does not show line tests passing regularly or if line alarms are present, then:
    a. Check for leaks.
    b. Make sure that the pumps are not constantly running.
    c. Make sure that there is enough quiet time to run tests.
    - Information on printing different types of tank gauge reports can be found in the *Tank Sentinel* or *Auto/Stik Bulk/Stik Operator's Guide,* Chapter 3 - Tank Gauge Reports.
    - Information on line alarms can be found in the *TS-LS300 AutoLearn User's Guide* or the *TS-LLD Installation Guide*.
3. Inspect the transducer cables. Cables showing signs of cracking, splitting, or swelling should be replaced. Confirm that connections are either in a dry, weatherproof J-Box or sealed in an epoxy pack. Redo connections that are wet or corroded.
    a. Information on transducer cable installation can be found in the *TS-LS300 AutoLearn User's Guide*.

Note: Local codes may require annual line testing to verify that the installed leak detection system will catch an actual 3 GPH leak.

- For information on conducting a manual 3 GPH leak test, see Chapter 5 of the *TS-LS300 AutoLearn User's Guide* or Chapter 3 of the *TS-LLD Installation Guide*.
- For instructions on how to introduce a calibrated 3 GPH leak into a petroleum pipeline, refer to page 6 of FE Petro's *STP-MLD Installation and Owner's Manual*.

TS-LS500 AutoLearn	**Steps to be done by Station Owner/Attendant** 1. Print or Generate a Monthly Line Leak Report for the last 30 days. Verify that for each product a Monthly (.2 GPH) line test is being passed each month. If the report does not show line tests passing regularly, contact a service company. • NOTE: For information on printing reports refer to the Fuel Management System Operators Guide FFS 000-2151, Printing Reports Section. 2. Verify that there are no line alarms on the tank gauge a. Information on line alarms can be found in the LS500 Auto Learn Line Leak Detection Installation and User's Guide FFS 000-02145 b. Alarms that cannot be cleared promptly could be an indication of a potentially hazardous situation. Contact a service company **Steps to be done by a Service Company** 1. Print or Generate a Monthly Line Leak Report for the last 30 days. Verify that for each product a Monthly (.2 GPH) line test is being passed each month. Verify that there are no line alarms on the tank gauge. If the report does not show line tests passing regularly or if line alarms are present, then; a. Check for leaks b. Make sure that the pumps are not constantly running. c. Make sure that there is enough quiet time to run tests • Information on printing different types of tank gauge reports can be found in the Fuel Management System Operators Guide FFS 000-2151, Routine Maintenance Section. • Information on line alarms can be found in the LS500 Auto Learn Line Leak Detection Installation and User's Guide FFS 000-02145 2. Inspect the transducer cables. Cables showing signs of cracking, splitting, or swelling should be replaced. Confirm that connections are either in a dry, weatherproof J-Box or sealed in an epoxy pack. Redo connections that are wet or corroded. a. Information on transducer cable installation can be found in the LS500 Auto Learn Line Leak Detection Installation and User's Guide FFS 000-02145 **Note**: Local codes may require annual line testing to verify that the installed leak detection system will catch an actual 3 GPH leak. a. Information on conducting a manual 3GPH leak can be found in the LS500 Auto Learn Line Leak Detection Installation and User's Guide FFS 000-02145 b. For instructions on how to introduce a calibrated 3 GPH leak into a petroleum pipeline, refer to page 6 of FE Petro's STP-MLD Installation Owner's Manual.

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INCON®
Franklin Fueling Systems

TS-STS Sump Test System Quick Start Guide

TS-STS Overview

The TS-STS system includes a TS-STS console within a convenient portable case, leak testing probes with 50 feet of cable, and probe hanging hardware (slip rings and chain).

After all fittings within the sump are sealed, the sump is filled with a water-based test solution that covers all sump penetration holes. The probe is installed so the float is floating on the surface of the test solution. The TS-STS console is quickly programmed with the site name and address, number of sumps, the 7-digit code-names for each sump, and the correct Time/Day/Date before leak testing.

Pressing the **Test** key at the console keypad starts sump leak tests for all sumps. The test time is 15 minutes and tests for a level change greater than 0.002 inches. If the level of a sump drops more than the leak limit during the test, the Sump Leak Test Report will show a fail result when the test is finished. Leak tests can also be programmed (scheduled) to start at desired times.

When finished, leak test reports will automatically print out at the console printer. Extra copies of this report can be printed using the report key. A newly completed Sump Leak Test will overwrite the previous results stored in memory. Save sump leak test reports and provide copies as evidence of compliance with regulations.

Recommendation: Use a computer and the Tech version of System Sentinel™ to record site data, sump code-names, and test results. Test results can also be extracted from Comm Port 1 at the bottom of the TS-STS console (also see Section 4).

Reference Federal and State regulations for leak limit and test time requirements. Recommendations for locating the TS-STS console outside of the (Class I, Division 1, Group D) Hazardous Areas during testing, are based on NFPA 30, NFPA 30A and NFPA 70 (NEC).

1 TS-STS Installation

1.) **Required Materials:**

a.) Tape to secure the probe cable
b.) Safety cones & signs
c.) Grounded, 3-pronged extension cord
d.) Flat pieces of metal to suspend leak testing probe over sumps

2.) Work safely — install Safety Cones and Signs at the site

3.) The probes are precision instruments — handle with care!

4.) The STS probes are shipped with cables attached, do not remove the cable from the probe end... remove at the console case **only**.

5.) Inspect probes for proper float movement before use, then install probes as shown in Section 1

6.) Connect the yellow probe cables to the receptacles at the TS-STS case. *Make sure to line up keyways before inserting cable and tightening the screw-on connector.*

7.) Locate the TS-STS case outside of the Hazardous Area and tape the cable down to prevent probe movement during the test and to reduce tripping hazards

8.) Setup / Program the TS-STS console per Section 2

9.) Start sump leak test(s) on sumps that are ready

10.) Always clean, dry, and store probes in the probe carrying case after each use

11.) Test each of the probes on a monthly basis to ensure its ability to detect leaks. Install the probe in a test container and initiate a test. After 5 minutes, remove about 0.12 inches of water. When the test completes, the test report should show a **Failed** result if the probe is working properly.

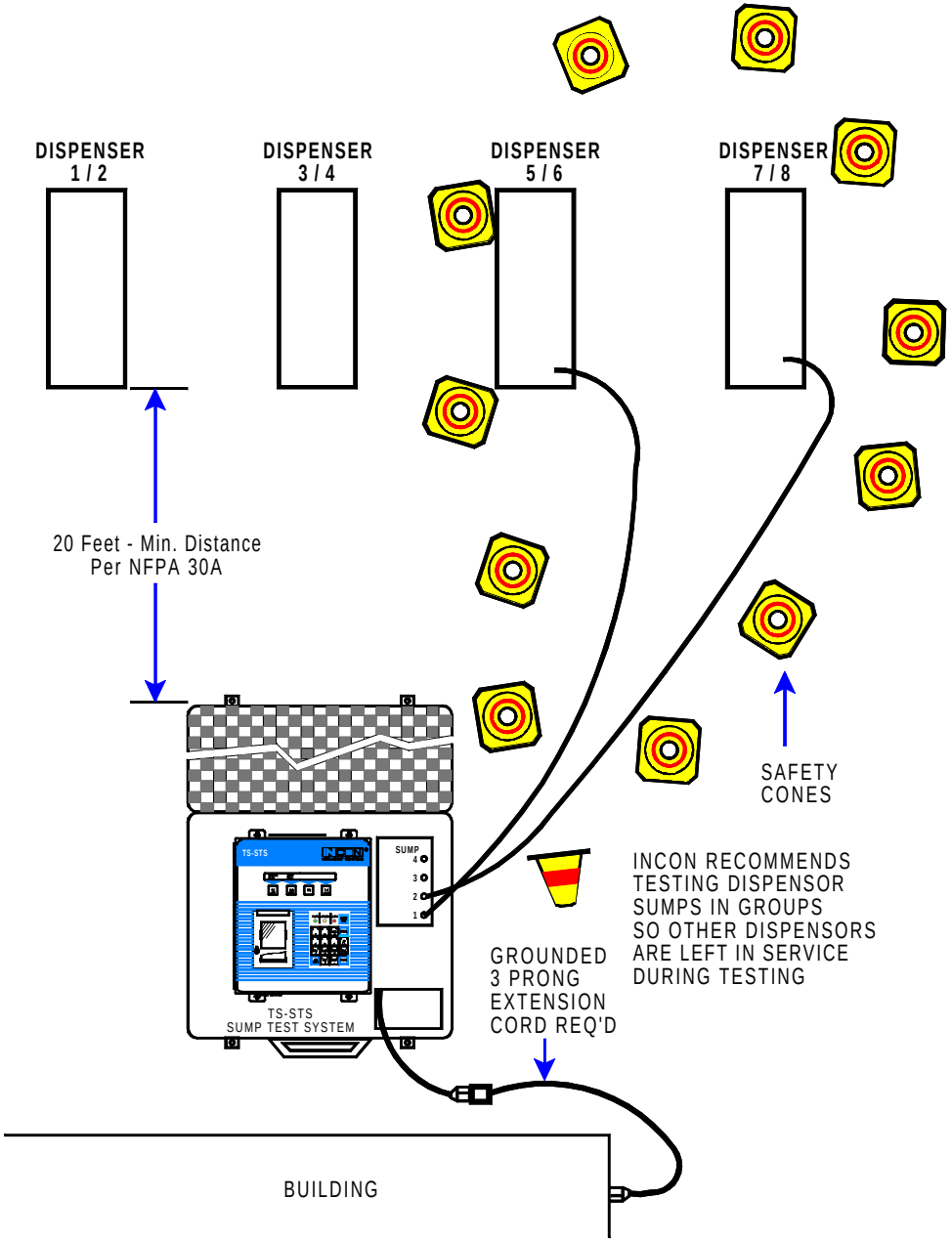


Figure 1.1 Typical Leak Detection Probe – Dispenser Sump Installation Overview

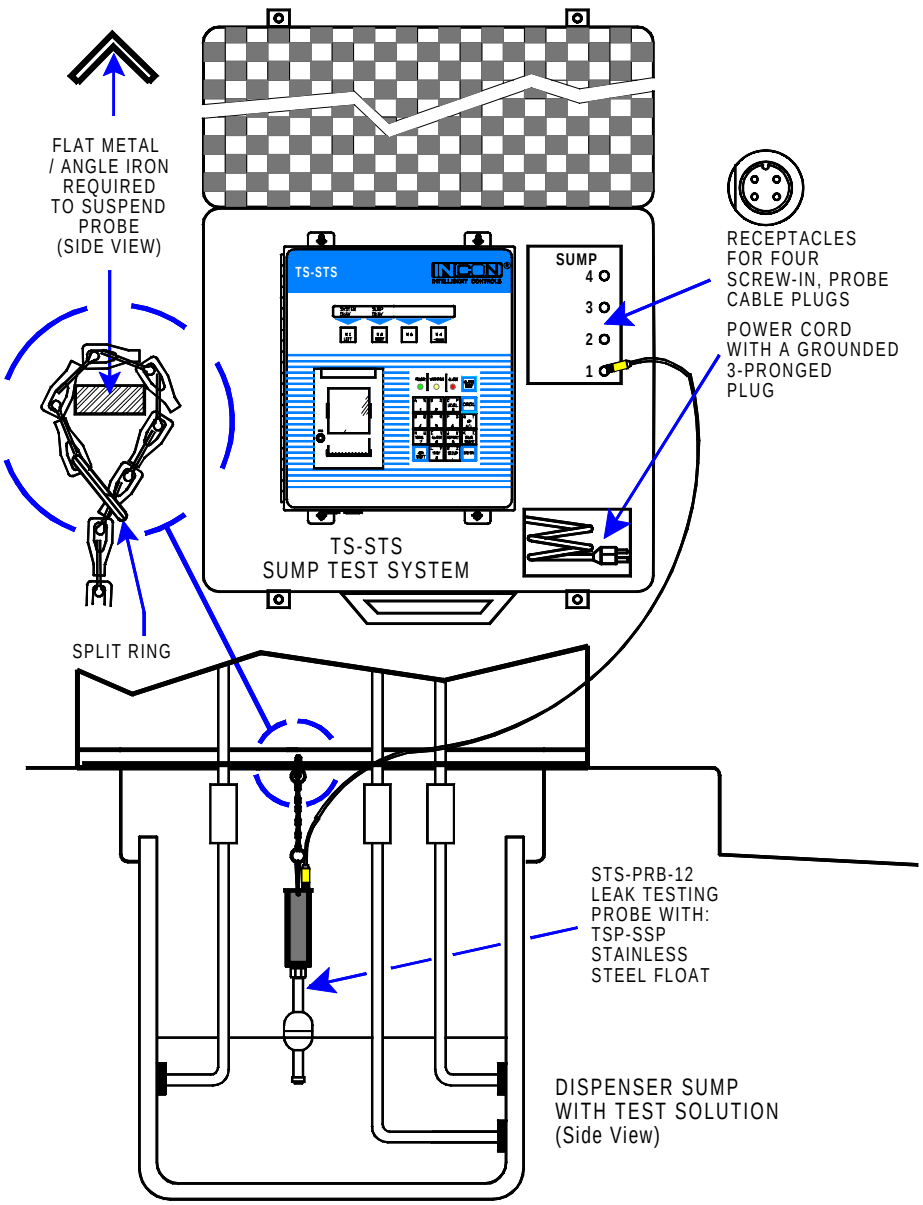


Figure 1.2 Leak Detection Probe Installation Dispenser Sump

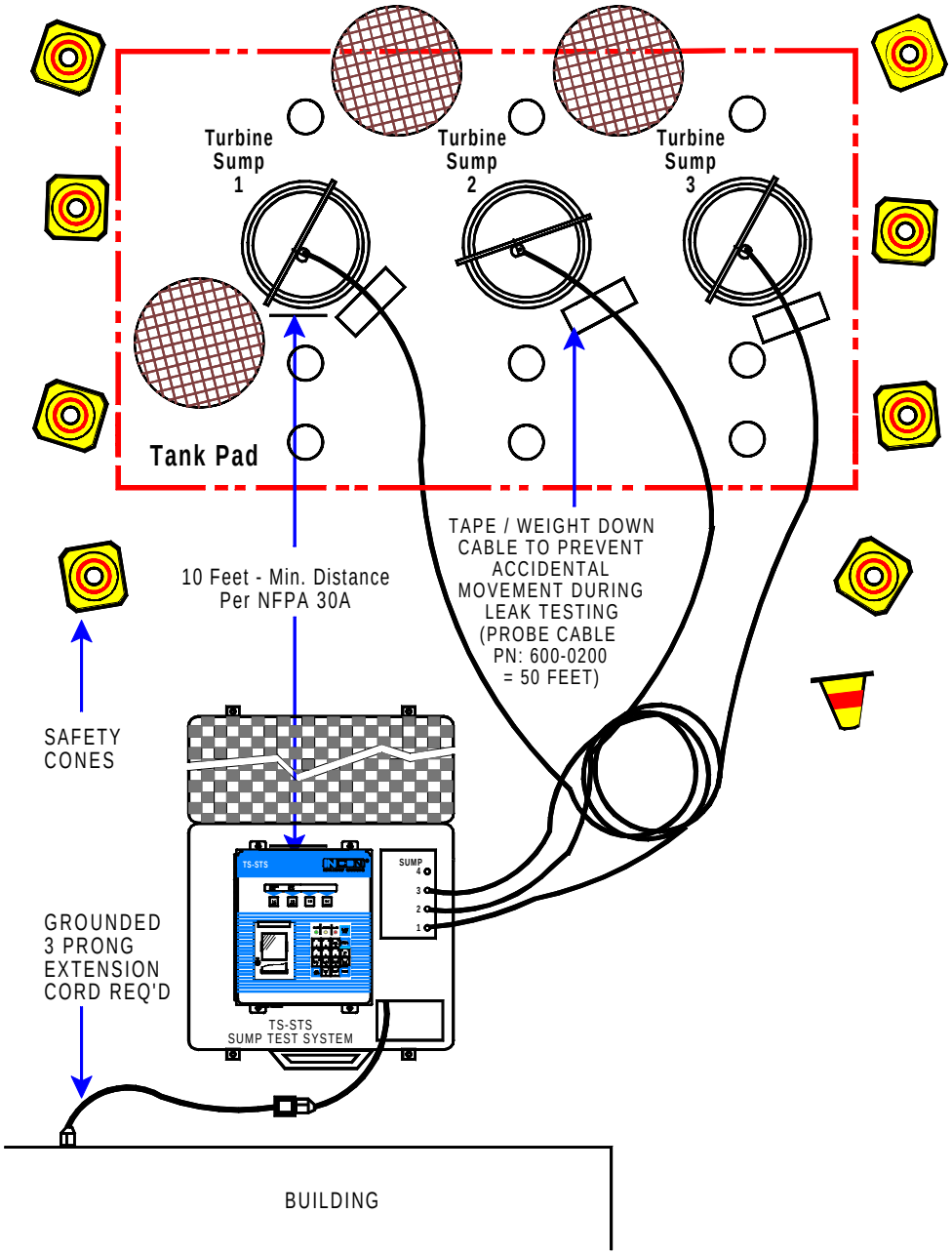


Figure 1.3 Typical Leak Detection Probe – Turbine Sump Installation Overview

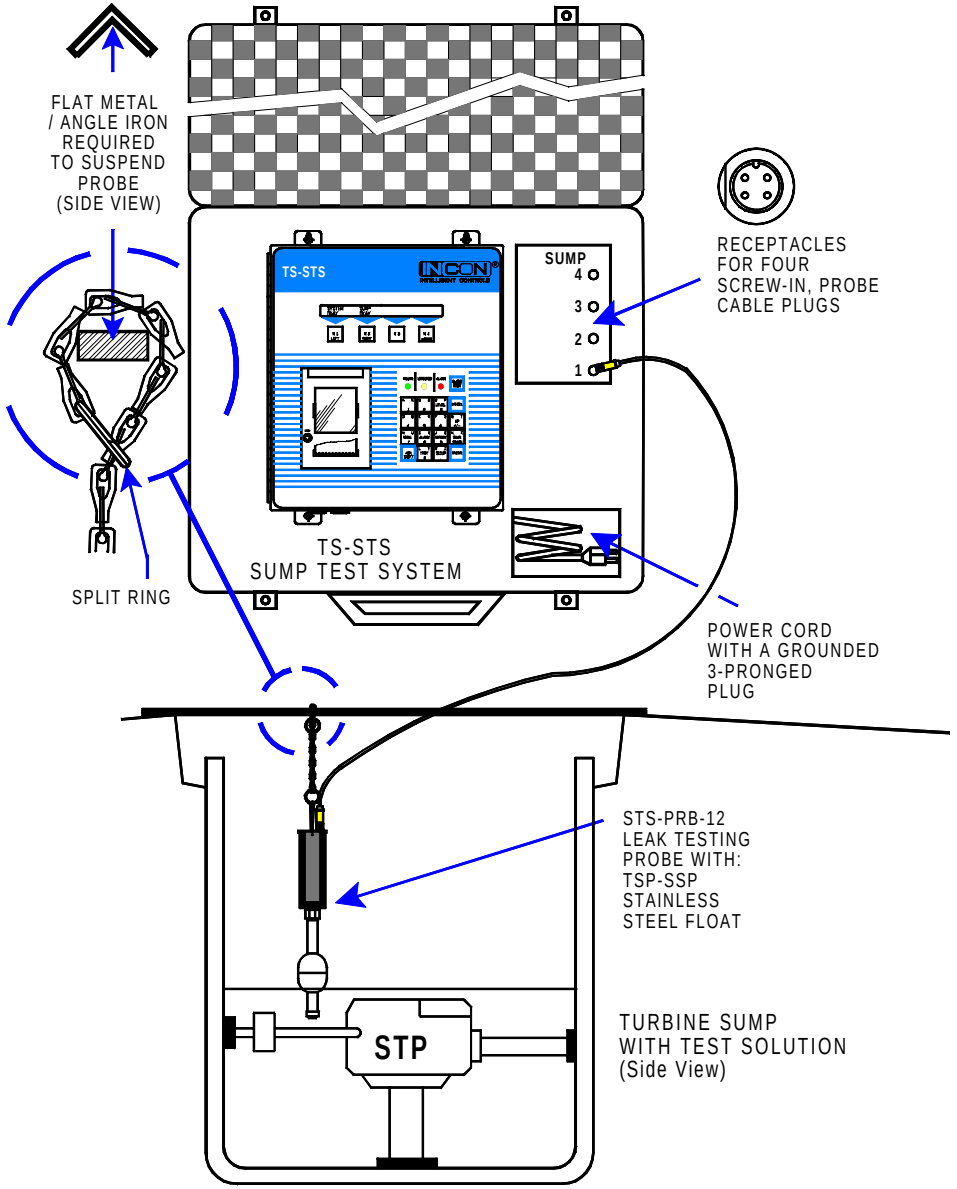
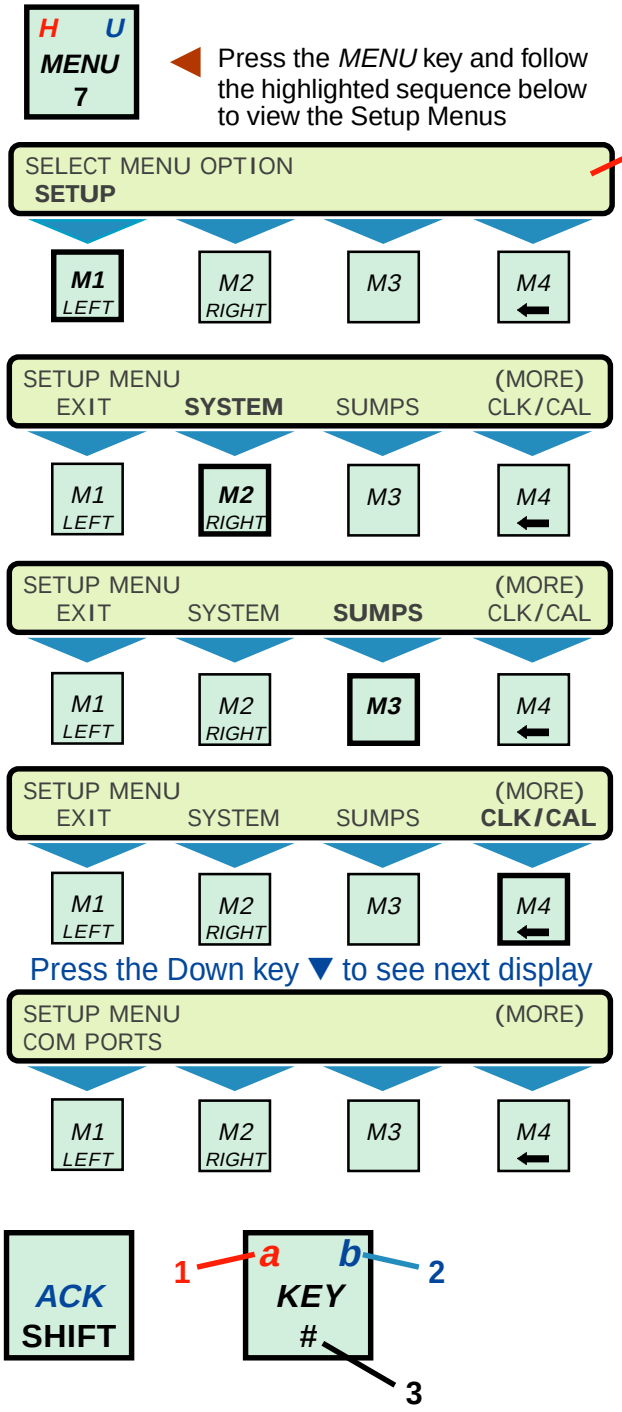


Figure 1.4 Leak Detection Probe Installation Turbine Sump

2 Setup - Program the Console

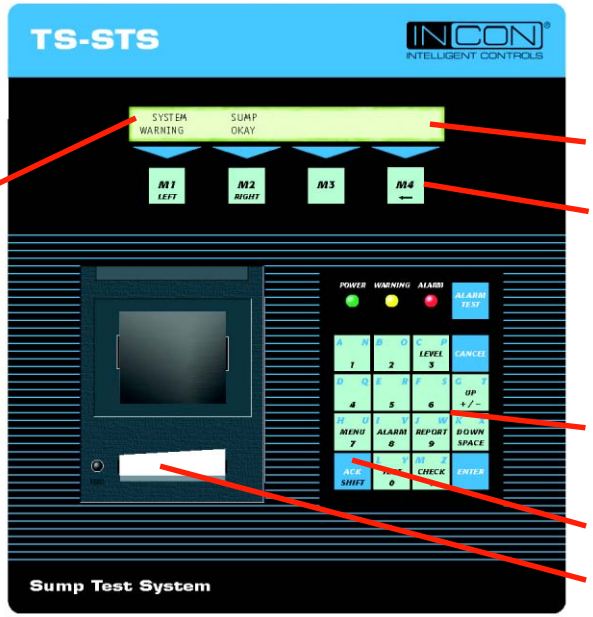
Navigating Menus:

- Push the ***UP/DOWN*** keys ▲▼ to show other menus or other choices
- Use menu keys ***(M1*** to ***M4)*** to access menus or to help edit text
- Press the ***ENTER*** key to make a setup choice or to move down in the menu *tree*
- Press the ***CANCEL*** key to cancel before entry or to move up and out of the menu *tree*



Input Alphanumeric Text (in setup mode):

Press the ***ACK*** **SHIFT** key at the keypad **1**, or **2**, or **3** times to cycle between the unique key characters (at positions **1**, **2**, and **3**). Select and press a key to input the desired alphanumeric character.



Editing Text:

- Press the ***M1*** key to move the cursor to the left
- Use ***M2*** to move the cursor to the right
- Use ***M4*** to backspace & delete text to the left of the cursor

NOTES

Follow the highlighted sequence at left to program the console.

Menus are in indented format (lower levels to the right).

*The setup program **factory default settings** are shown in ITALIC TEXT. The console will auto-exit the setup mode if no key is pressed after 3 minutes.*

Minimum Setup Requirements

1) From SETUP>SYSTEM (SYSTEM INFO), program the System ID data and the No. (number of) Sumps

2) SETUP>SUMPS>DATA>SUMP N>NAME>Sump Name (code-name for each containment sump that will be leak tested)

3) SETUP>CLK/CAL>Set Time (input the correct time), Set Date (input the correct date), Set Day (choose the day of the week)

Setup Menu

EXIT SYSTEM SUMPS CLK/CAL COM PORTS

Setup>System menu

SYSTEM INFO

SYSTEM ID (customize the Site ID information)

LINE 1

LOCATION LINE 1 (input 24 characters Max)

INCON *Enter the Business Name*

LINE 2

LOCATION LINE 2 (input 24 characters Max)

INTELLIGENT CONTROLS INC *Enter other Business data*

LINE 3

LOCATION LINE 3 (input 24 characters Max)

P.O. BOX 638 *Enter the Street Address*

LINE 4

LOCATION LINE 4 (input 24 characters Max)

SACO ME 04072 *Enter the City and Zip code*

LINE 5

LOCATION LINE 5 (input 24 characters Max)

1-800-984-6266 *Enter the Business Number*

NO. SUMPS (enter total number of sumps [4 max.])

NUMBER OF SUMPS

1

SUMP TST (sump leak test, start time + leak limit)

START TIME (Do not set when tests are started from the front panel)

SUMP TEST START TIME Tests are 15 minutes in length

00.28.00 (12:28 am in 24 hour format)

Input time in 24 hour format...

Add 12 to pm times from 1 to 11:59 pm

LEAK LIM

LEAK LIMIT (There is a fixed threshold of .002 level units.)

0.002

NOTE: The Leak Limit Threshold of 0.002 is not an adjustable setting.This is a fixed value.

Setup>System menu Continued...

COLD BOOT (Replaces **all** custom-setup data with default values)

IF YOU CONTINUE, ALL SYSTEM PROGRAMMING

AND DATA WILL BE LOST...

:

PRESS ENTER IF YOU ARE SURE THAT

YOU WANT TO CONTINUE WITH COLD BOOT

Setup>Sumps menu

SUMPS

DATA ***N = Sump number***

SUMP DATA

SUMP 1 Select sump and program new name

SUMP 2

:

SUMP 4

SUMP DATA N

NAME (Rename the sump using a

SUMP NAME N Code-Name for each Sump)

SUMP N *code-names can be up to 7 alphanumeric characters long*

(e.g. ULD SMP, SUP SMP, DSP 1-2)

Setup>Clk/Cal menu

CLOCK/CALENDAR

DAY SAV

DAYLITE SAVINGS

ENABLED — ***Enable*** = allows daylight savings time changes

DISABLED — Disable = does not

TM STYLE — Select the time style for displays & reports

TIME STYLE

12 HOUR

24 HOUR

DT STYLE — Select the time style for displays & reports

DATE STYLE

MM/DD/YY

DD/MM/YY

YY/MM/DD — (YY = Year, MM = Month, DD = Day)

SET TIME — **Input current time in 24 hour format**

SET SYSTEM TIME — Two digits are required, use leading

HH:MM:SS — zeros before single digits

(e.g. input 05 not 5) ***Add 12 to p.m. times from 1 to 11:59 p.m.***

SET DATE — **Input current DATE**

SET SYSTEM DATE

YYYY:MM:DD — (YYYY = year, MM = Month, DD = Day)... 2 digits are required for month and day – use leading zeros before single digits

(e.g.. input 04 not 4)

SET DAY

SET SYSTEM DAY OF WEEK — **Select the current day**

SUNDAY

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

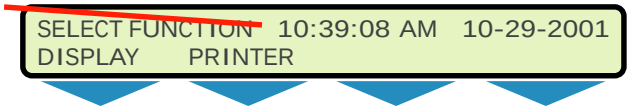
— ❖ —

3 Leak Testing / Console Operation

Displays:

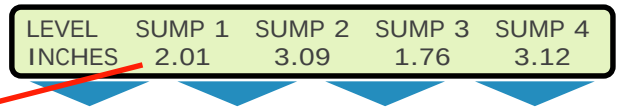
1.) Normal Display

2.) **Press** the **Check** key to check the time and date.

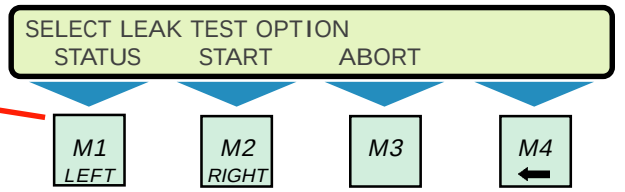


3.) The System – Warning message alternates with the No Paper (if out). Replace printer paper before starting sump leak tests.

4.) **Press** the **Level** key to check the test fluid level in sumps (sumps can't be leak tested if empty).



5.) **Press** the **Test** key at the keypad & and the *menu select key (M1 M2* or *M3)* and follow instructions to:



- Show the Status of tests including Start time / date

- Start tests, and to

- Abort leak test(s)...

Okay & Testing are alternately displayed when a sump leak test is running.

Leak Testing / Console Operation Continued...

6.) To view an alarm/warning, **press** the **M1** or **M2** Key under the word Alarm / Warning. While viewing the alarm, **press** the ***ACK*** **SHIFT** key at the keypad to acknowledge. *Cleared and transient alarms should be acknowledged prior to starting another test.*

7.) **Press** the **Report** key at the keypad to show various report choices.

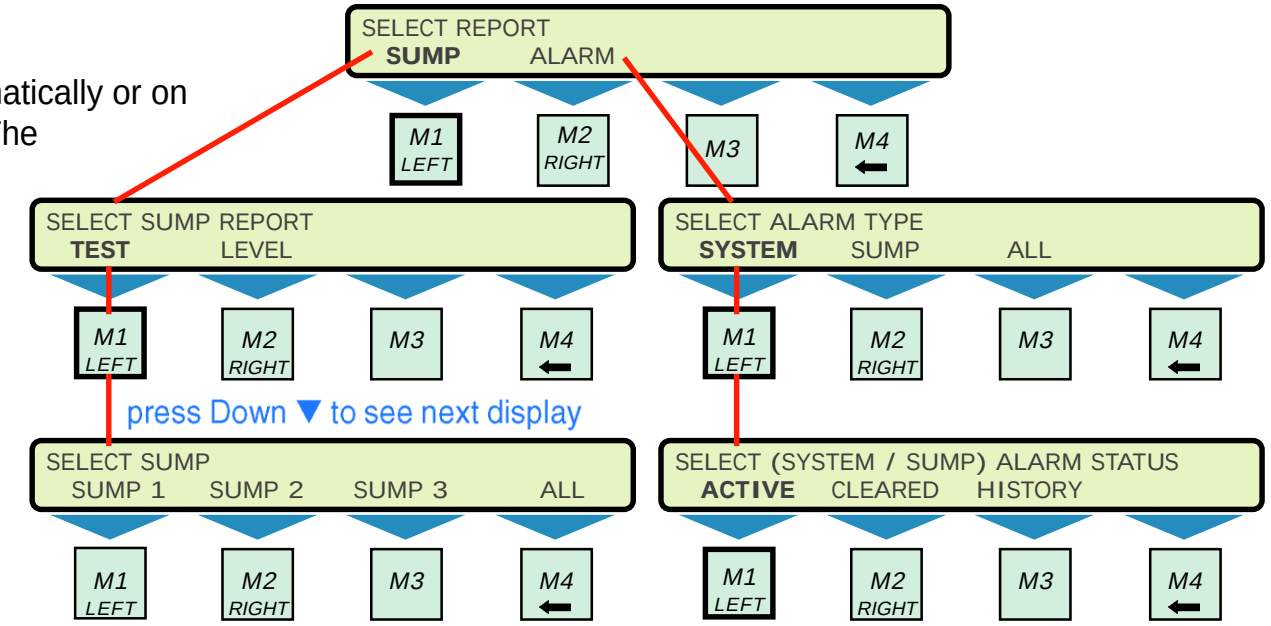
4 Reports

Reports can printout automatically or on demand from the keypad. The Sump Leak Test and Alarm Reports print automatically. The other reports, such as the Sump Level Reports, Alarm Reports, and Sump Test Reports can be printed on demand.

Press the menu select keys and choose the type of report that you wish to printout. Alarm reports will print as soon as an alarm is detected. Leak test reports print automatically after the leak test is finished. *Note that when a new leak test is complete the data will overwrite a previous result.*

Of the three reports shown here, one is a Level Summary report and two are Sump Leak Test Reports.

Up to 4 sumps can be leak-tested at the same time.



1.

INCON
INTELLIGENT CONTROLS INC.
P.O.. BOX 638
SACO ME 04072
1-800-984-6266

10/31/2001 11:58 AM

SUMP LEVEL REPORT

SUMP 1	2.012 IN
SUMP 2	7.201 IN
SUMP 3	3.218 IN

2.

INCON
INTELLIGENT CONTROLS INC.
P.O. BOX 638
SACO ME 04072
1-800-984-6266

10/31/2001 12:15 PM

SUMP LEAK TEST REPORT

SUMP 1

TEST STARTED	12:00 PM
TEST STARTED	10/31/01
BEGIN LEVEL	2.0120 IN
END TIME	12:15 PM
END DATE	10/31/01
END LEVEL	2.0120 IN
LEAK THRESHOLD	0.002 IN
TEST RESULT:	PASSED

3.

INCON
INTELLIGENT CONTROLS INC.
P.O. BOX 638
SACO ME 04072
1-800-984-6266

10/31/2001 12:15 PM

SUMP LEAK TEST REPORT

SUMP 2

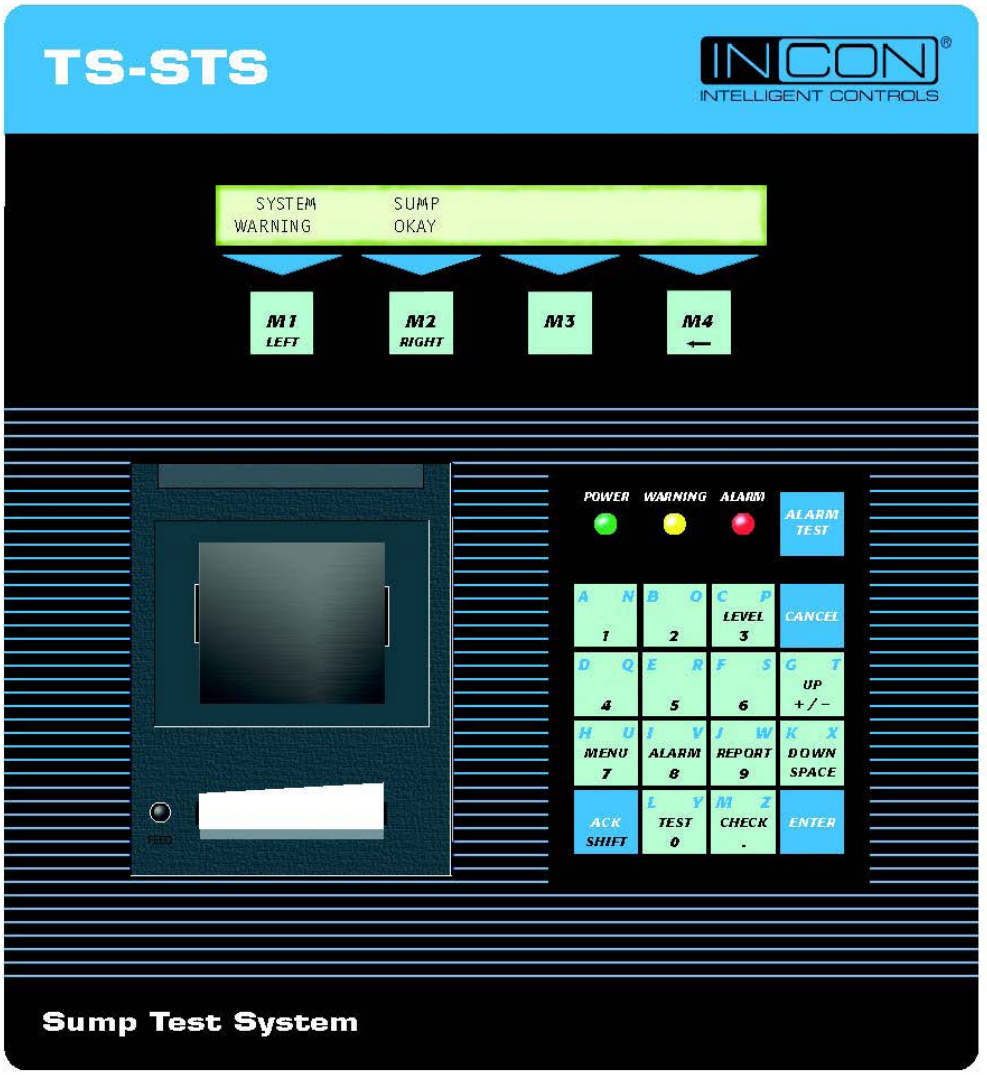
TEST STARTED	12:00 PM
TEST STARTED	10/31/01
BEGIN LEVEL	7.0230 IN
END TIME	12:15 PM
END DATE	10/31/01
END LEVEL	7.0209 IN
LEAK THRESHOLD	0.002 IN
TEST RESULT:	FAILED

REPORTS continued...

A digital copy of the Sump Test Report can be retrieved from the TS-STS console through the communications port (Comm Port 1). This port is located at the bottom side.

As with the printed reports, this data is overwritten when a new test is run, so it must be collected after each test. The data can be stored in a database as opposed to saving the printouts.

For more information on this feature contact INCON Technical Service at 1-800-984-6266.



Internet link to the Franklin Fueling Systems, FFS PRO University, online training website.

https://university.ffspro.com/en/online-training/

Prerequisite training:

Fueling System Safety: https://university.ffspro.com/en/online-training/safety/fueling-system-safety/safety-training-test/

Product Specific Training:

SITE STARTUP SPECIALIST: CONTAINMENT TESTING

https://university.ffspro.com/en/online-training/site-startup-specialist/containment-testing/