

State of California
Department of Food and Agriculture
Division of Measurement Standards

Certificate Number: 5287-01
Page 1 of 2

California Type Evaluation Program
Certificate of Approval
for Measuring Devices

For:

Sponsler Electronic Delivery System Totalizer
Liquid-Measuring Device Indicating Element
Model: T675-X-X (See Model Designation Below)

Submitted by:

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Standard Features and Options

3" x 5" backlit graphics display
Real time graphics and totals
Menu selectable programming
Infrared/RS232/4-20ma outputs
Automatic delivery system maintenance reminders
Alphanumeric display with bargraphics
Automatic temperature compensation
Selectable 2-10 point flow meter linearization
System alarm log for fault identification

Model Designation:

T675	X	X
Basic Model	C2 = 100 ohm 2 wire probe	RS2 = RS232 output
	K2 = 1000 ohm 2 wire probe	

This device was evaluated under the California Type Evaluation Program (CTEP) and was found to comply with the applicable requirements of California Code of Regulations for "Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: January 9, 2002

Mike Cleary, Director

Sponsler Co., Inc.
Sponsler Electronic Delivery System Totalizer
Model: T675-X-X

Application: The T675 delivery system totalizer is a primary indicating element used to meter cryogenic liquids and liquid carbon dioxide. Designed to operate with approved and compatible turbine flow meters equipped with magnetic pick-up coils.

Identification: The manufacturer's name, address, and device model number are permanent artwork on the front panel overlay that seals the enclosure. The serial number label is on the rear of the unit and is also stored in memory, accessible only by the manufacturer.

Sealing: Category 3 with calibration and configuration event logs. Each event log contains the event counter number, date and time the change occurred, the parameter identification, and the new value of the parameter. A summary of each event counter showing the number of changes made is available from the audit trail. The audit trail can be accessed during initial power on by depressing and holding the backspace key (←) while momentarily depressing and releasing the **On/Off** push-button. The temperature probe is sealed by threading a wire security seal through a hole in the probe coupler and a hole in the screw attaching the probe well housing to the meter line.

Operation: Product flow through a turbine flow meter causes the rotor to rotate at an angular velocity proportional to the fluid velocity. The totalizer receives AC sine wave signals from a pickup coil located above the turbine's rotor. The signal of the pickup coil is amplified, divided, and displayed. A temperature compensation algorithm corrects for product densities influenced by fluid temperatures. When in California CO₂ mode, the vapor return displacement will automatically correct for vapor displacement.

Test Conditions: Model T675 was submitted for a laboratory evaluation interfaced to a pulse output simulator. The emphasis of this evaluation was on design, operation, and compliance with audit trail requirements. After the laboratory evaluation, the device was installed on a vehicle dispensing liquid nitrogen through a turbine meter for field evaluation. The emphasis of the field evaluation was on accuracy and repeatability. The device was configured to indicate in pounds. Three tests at three different flow rates ranging from 740 lb/min down to 200 lb/min were conducted using a cryogenic mass flow transfer standard. The device was sealed and tests repeated after approximately 30 days. Additional tests were conducted with the device configured to indicate in gallons using the conversion of 6.7381 lb/gal as compared to the cryogenic mass flow transfer standard. Liquid carbon dioxide was added to this certificate based on previous testing of the Models T575N-TC (Certificate of Approval Number 4380-96) and T650 (Certificate of Approval Number 3442(b)-00) utilizing the same temperature compensation algorithms.

Results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Type Evaluation Criteria Used: Title 4, California Code of Regulations, 2001 Edition

Tested By: Norman Ingram (CA)