

# Meters and accessories for Marine and Workboat Fueling

Application Brochure TCS900-400

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November 10, 2008



**TOTAL  
CONTROL  
SYSTEMS**

“The Standard of Measurement”



American Bureau of Shipping (ABS)  
Type Approval No. 08-HS316077-PDA

MADE IN AMERICA

[www.tcsmeters.com](http://www.tcsmeters.com)

## About Us

Total Control Systems is a leading manufacturer of piston and rotary positive displacement flow meters located in Fort Wayne, Indiana. All meters are designed with the highest quality to provide superior performance in custody-transfer measurement of refined fuels, LPG, fertilizers, chemicals, alcohols, and solvents. Marketed to provide application-driven flow meter solutions for vehicles, dispensers, and fixed-site installations, we provide a full line of accessory equipment including strainers, air and vapor eliminators, control valves, pulse transmitters, and mechanical or electronic registration to complete system requirements. Meters are designed and created using sound engineering principles and state-of-the-art computer numerically controlled (CNC) machines in a world-class manufacturing facility. Each flow meter is completely assembled and tested by highly skilled members of our production team, who strive for excellence in workmanship and quality. Our reputation for providing innovative, high-quality, and reliable fluid measurement products is coupled with our sense of customer-driven services. Our first priority is to help our customers achieve increased productivity and provide value to your business today and tomorrow.

### APPLICATIONS

Marine dock refueling  
 Workboats, barges, and tug boats  
 Offshore oil rigs  
 Helicopter fueling

### FEATURES

10-year warranty  
 Reciprocating 3-piston design  
 Flow range 0.2-50 gpm (0.76-190 lpm)  
 Sustained high accuracy  
 Long service life, low maintenance  
 Wide viscosity range to 50,000 SSU  
 75 years of proven performance

### CONSTRUCTION

**Available metallurgies:**  
 Aluminum and ductile iron

**Available seal materials:**  
 Teflon<sup>®</sup> <sup>1</sup>, Viton<sup>®</sup> <sup>1</sup>, and Simriz<sup>®</sup> <sup>1</sup>

### ACCURACY <sup>2</sup>

250:1 = +/- 0.10%

### REPEATABILITY <sup>2</sup>

0.01% of rated flow

(1) Teflon is a registered trademark of DuPont Dow Elastomers, LLC. Viton is a registered trademark of E.I. DuPont de Nemours & Co. Simriz is a registered trademark of Freudenberg-NOK.

(2) Accuracy tested at constant operating conditions with 682-SPD Series meter and mechanical registration using 1CPS test fluid.

## 682 Series Piston Flow Meter

The 682 series piston flow meter is a true positive displacement flow meter that has an inline design consisting of three (3) reciprocating pistons operating within their respective measuring chambers. The pistons are fitted to a wobble plate, which has a shaft extending from its upper surface and a valve pivot attached beneath it. The valve pivot drives a sliding valve from piston to piston as a known amount of product flows through each cylinder bore, controlling the sequence of events in a smooth mechanical motion. The 682 piston flow meter combines outstanding accuracy (+/-0.1%) with an exceptional turndown ratio of 250:1 (flow range from 0.2 - 50 gpm).

### Accessories

The Series 682 Meter is available with a full complement of accessories including air eliminators, strainers, and valves, as well as mechanical and electronic registers with temperature volume compensation (TVC), and printers from industry leading suppliers.

### Testing and Approvals

Meters are Weights & Measures approved for custody transfer (NIST, OIML, NMI, and SABS), and are flow-tested for accuracy before leaving the factory. A test report is supplied with every meter. The Series 682-SPD meter is covered by ABS Type Approval No. 08-HS316077-PDA.

Meter Model No.	Flange Size NPT <sup>+</sup> *	Max. Capacity		Working Pressure		Working Temperature	
		gpm	lpm	psi	bar	°F	°C
682-15	1-1/2"	50	190	150	10.5	-40 to 160	-40 to 71

+ NPT flange is standard. BSPT, Slip Weld, ANSI and others available upon request.  
 \* Optional flange sizes available upon request.



Mechanical Register is pictured.

Meters are also available with electronic registers from industry-leading suppliers.



## 700 Series Flow Meters

The Series 700 Standard Petroleum Rotary Positive Displacement Flow Meters are for metering refined fuels including fuel oil, gasoline, diesel, Bio-diesel, vegetable oils, soy oil, kerosene, motor oils, and ethylene glycol. Meters reflect a tri-rotor design with no metal-to-metal contact between rotors and housing to minimize internal wear, maintain high accuracy over time, and to extend the time between meter calibrations.

### Accessories

The Series 700 Meters are available with a full complement of accessories including air eliminators, strainers, and valves, as well as mechanical and electronic registers with temperature volume compensation (TVC), and printers from industry leading suppliers.

### Testing and Approvals

Meters are Weights & Measures approved for custody transfer (NIST, OIML, NMI, and SABS), and are flow-tested for accuracy before leaving the factory. A test report is supplied with every meter. Series 700 meters - Type SPD are covered by ABS Type Approval No. 08-HS316077-PDA.

### APPLICATIONS

- Marine dock refueling
- Workboats, barges, and tug boats
- Offshore oil rigs
- Helicopter fueling

### FEATURES

- 1-year warranty
- Sustained high accuracy
- Long service life, low maintenance
- Low pressure drop
- Light-weight design

### CONSTRUCTION

**Available metallurgies:**  
aluminum and ductile iron

**Available seal materials:**  
Teflon<sup>®</sup> <sup>1</sup>, Viton<sup>®</sup> <sup>1</sup>, and Simriz<sup>®</sup> <sup>1</sup>

### ACCURACY <sup>2</sup>

- 5:1 = +/- 0.10%
- 10:1 = +/- 0.125%
- 15:1 = +/- 0.15%

### REPEATABILITY <sup>2</sup>

0.02% of rated flow

- (1) Teflon is a registered trademark of DuPont Dow Elastomers, LLC. Viton is a registered trademark of E.I. DuPont de Nemours & Co. Simriz is a registered trademark of Freudenberg-NOK.
- (2) Accuracy tested at constant operating conditions with 700-SP Series meter and mechanical registration using 1CPS test fluid.

...metering onboard a vessel



...metering on a dock

Meter Model No.#	Flange Size NPT <sup>+</sup> *	Max. Capacity		Working Pressure		Working Temperature	
		gpm	lpm	psi	bar	°F	°C
700-15	1-1/2"	60	227	150	10.5	-40 to 160	-40 to 71
700-20	2"	100	380	150	10.5	-40 to 160	-40 to 71
700-25	2"	150	567	150	10.5	-40 to 160	-40 to 71
700-30	3"	200	760	150	10.5	-40 to 160	-40 to 71
700-35	3"	300	1135	150	10.5	-40 to 160	-40 to 71
700-40	4"	500	1893	150	10.5	-40 to 160	-40 to 71
700-45	4"	600	2271	150	10.5	-40 to 160	-40 to 71

+ NPT flange is standard. BSPT, Slip Weld, ANSI and others available upon request.

\* Optional flange sizes available upon request.

# ABS Type Approval No. 08-HS316077-PDA applies to meter type (-SPD) standard petroleum ductile (nodular) iron.



Veeder-Root Electronic Register is pictured.

Meters are also available with mechanical register and pre-set.



**Total Control Systems** is a leading manufacturer of quality measurement systems. Our world-class positive displacement flow meters are among the most accurate available in any industry and are backed by excellent customer service, support and prompt deliveries.

TCS meters are designed and manufactured to meet or exceed your needs. Our meters are used world-wide in a multitude of applications including Agriculture, Aviation, Marine, LPG, Refined Fuels, Industrial Chemicals, and Alternative Fuels.

***Discover why Total Control Systems  
should be the future of your metering solutions!***



**TOTAL  
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**“The Standard of Measurement”**

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