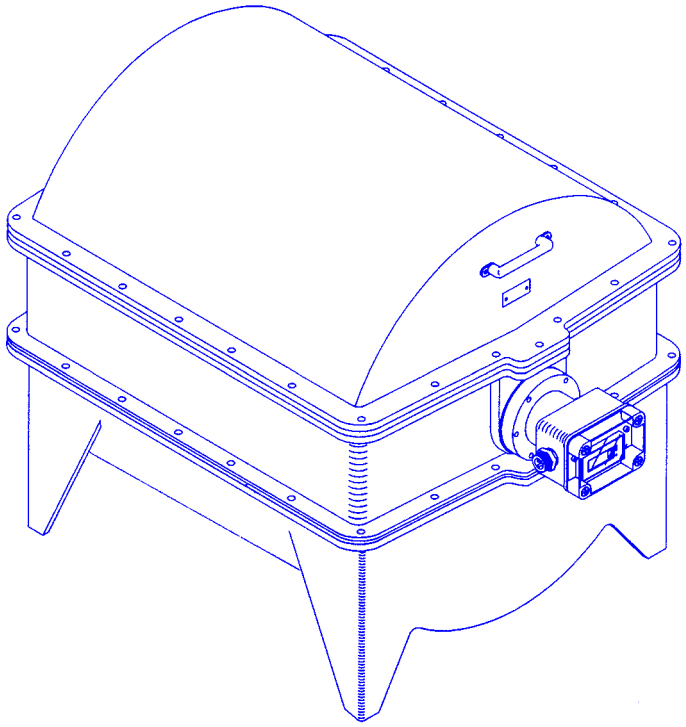
Cadillac® Condensate Meter

Central Station Steam Co.®

GENERAL INFORMATION



Central Station Steam Co.®

CADILLAC® METERS

15615 SW 74th Ave., Ste #150 Phone: 888-556-3913
Tigard, OR 97224 Fax: 503-624-6131
www.cadillacmeter.com

Rev 0702

THE METER OF CHOICE

The Cadillac® Condensate Meter is a totalizing meter which measures liquid or condensate. In any steam system where condensate is available, the condensate meter is the number one choice due to Cadillac®'s accuracy, reliability and infinite rangeability.

The underlying principle of the Condensate Meter is: one pound of steam equals one pound of water. Based on this principle, the volume of the condensate measurement can be converted into a measurement of steam consumption. Cadillac® does this by measuring the volume of condensate while adjusting for the density. This produces a reading in pounds.

Steam is measured either as a commodity to be bought and sold, or to determine the efficiency of a given system. Therefore, the efficiency and reliability of the metering equipment cannot be over-emphasized. No other meter has the capability to measure full rated capacity or a drop at a time, while maintaining an accuracy of +/- 1% of consumption. This is important because steam loads vary widely with seasons and time of day. Cadillac® Condensate Meters can handle all such variations and are not effected by any pressure fluctuations in the steam system.

THE INDUSTRY STANDARD

Since 1906, the Cadillac® Condensate Meter has been acknowledged as the industry standard. Customers choose the Cadillac® Meter because of proven:

- **ACCURACY, DEPENDABILITY, CONSISTENCY, LOW NTENANCE, RANGEABILITY**

APPLICATIONS

- Data Source for energy management system, DCS, district-wide systems.
- Energy-Customer Billing from accurately totalized flow measurements.
- Basis for internal cost distribution using campus-wide systems.
- Process monitoring from central control rooms.

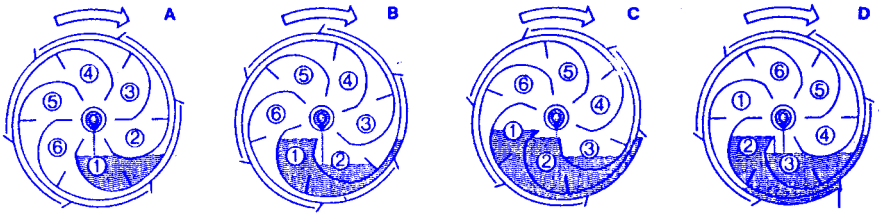
FEATURES

- **ACCURACY: +/-1% of the reading**
  Capable of measuring full-rated capacity or a drop at a time while maintaining an accuracy of +/- 1% of the flow rate.
- **RANGEABILITY: from 0 to full-rated capacity**
  With seasonal steam load variation, the need for a large turndown is essential. Cadillac® Condensate Meters are the only meters that will accurately measure down to virtually no flow.
- **LONGEVITY: 100 Years and still going strong**
  Meters in service for over 50 years are common. With proper maintenance Cadillac® Condensate Meters will provide reliable, accurate service for many years.
- **MODERN ELECTRONICS: meeting the challenges of the next millennium**
  Meters are equipped with electronics capable of registering locally, remotely or interfacing with an energy

PRINCIPLE OF OPERATION

The metering drum consists of 6 scroll shaped compartments. Liquid enters the meter through an axially mounted inlet spout at the center of the drum. As each compartment fills, the excess overflows into the next. This action shifts the center of gravity causing the drum to rotate. The number of filled compartments can be directly converted into steam consumption.

Each of 6 precision compartments fills fully and uniformly.....



Compartment No.1 filling. Liquid extending to right of center turns drum in direction of arrow.

Compartment No.1 filled and overflowing into compartment No.2

Compartment No.1 ready to empty. Compartment No.2 full and overflowing into Compartment No.3.

Compartment No.1 nearly empty. Compartment No.2 overflowing and compartment No.3

...and tilts the rotor by gravity to advance to the next identical

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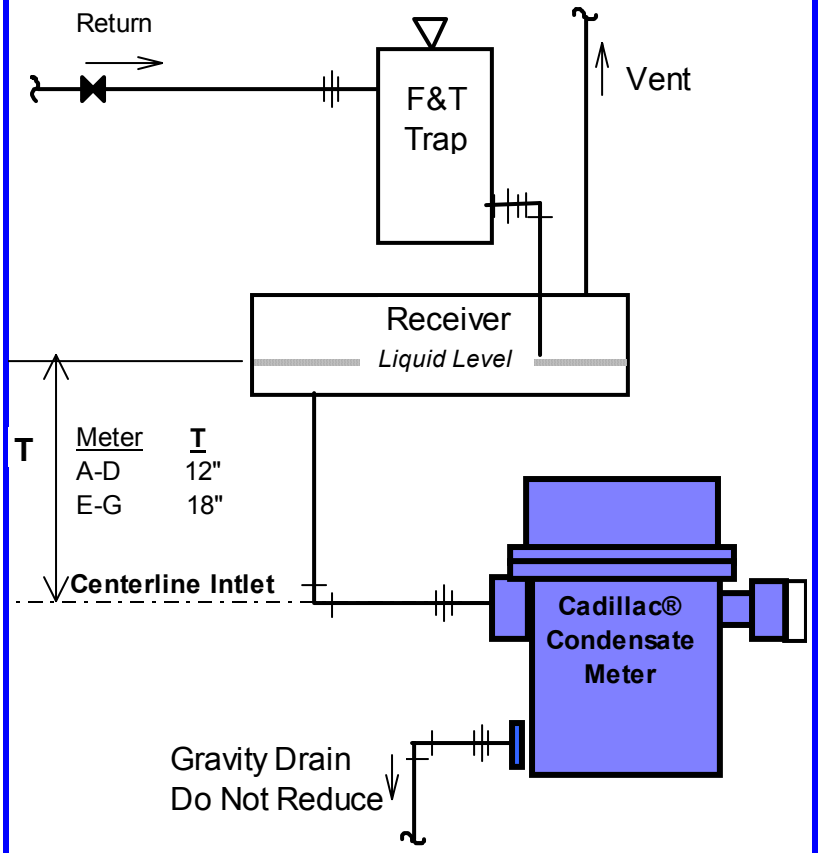


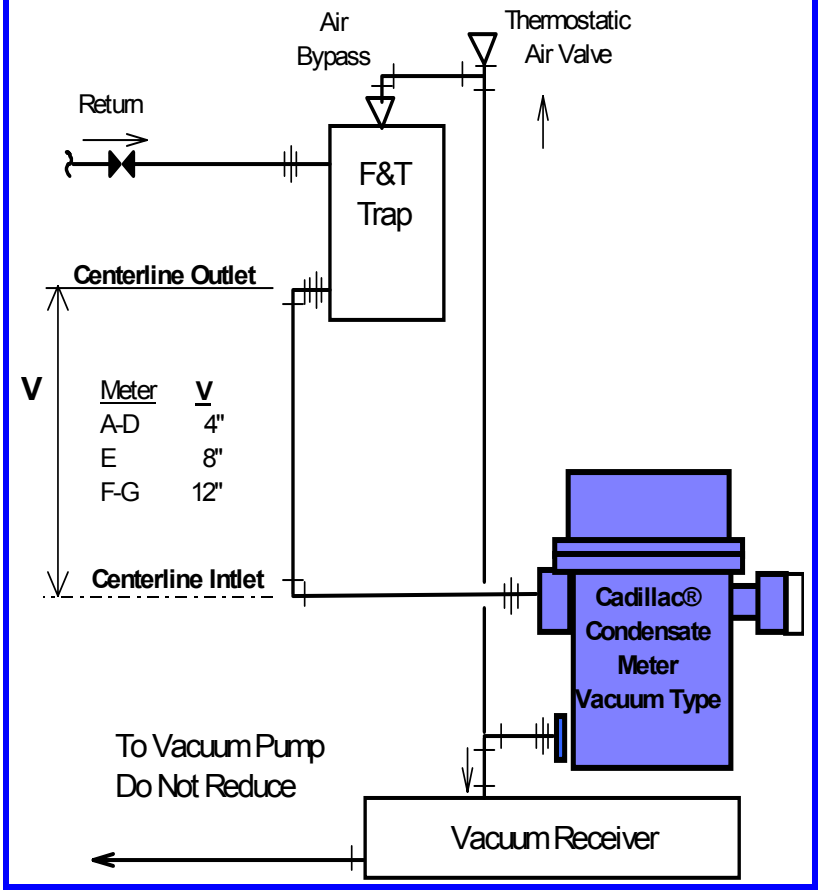
GRAVITY INSTALLATION

A gravity installation is intended for use on heating systems where the steam condensate flowing from the meter by gravity is at or near atmospheric pressure.

The condensate receiver is optional in an installation where the condensate temperature is moderate and steam traps in the system are reliable enough to prevent excessive steam from reaching the meter. Steam trap selection should include consideration of reliability and uniform flows to the meter. Float and thermostatic traps are generally recommended.

Use of a receiver is recommended in several cases. System design may require that very hot condensate be handled. A receiver is a convenient way to allow for flashing. The receiver also provides surface area for cooling. Flow surges that briefly exceed the capacity of the meter are also accommodated by the receiver.

Where several meters are required in parallel because of large flows or several streams, a receiver is an excellent solution. Multiple receiver inlets or outlets reduce header requirements. Receivers are generally sized for a nominal hold time of 5 to 10 minutes depending on surge and flash conditions.



VACUUM INSTALLATION

Vacuum-rated condensate meters are used for metering on the suction side of a vacuum pump. A thermostatic air valve is recommended as shown.

The vacuum installation is used where condensate is brought back to the power plant through a common return line. In this installation, the master trap isolates the heating system from the vacuum. A reliable, uniform flowing trap such as a float and thermostatic unit is recommended.

If the individual traps are reliable enough to prevent steam leakage into the return line, the master trap may be omitted and the meter installed with an air bypass.

The air bypass should be used whenever air may enter the system. Care in vertical positioning is required to avoid condensate flowing through the air bypass. Vacuum pump controls should permit continuous operation of the vacuum pump in order to ensure drainage of condensate from the meter.

An optional vacuum receiver following the meter also levels out flow conditions.

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CADILLAC® CONDENSATE METERS

Phone: 888-556-3913
or
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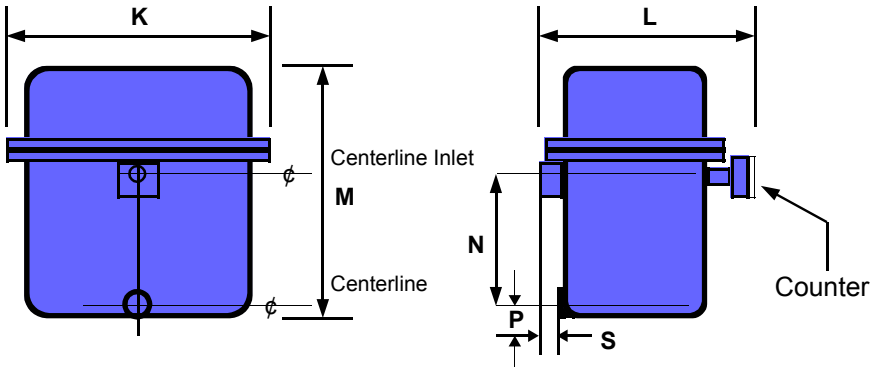
for
Engineering Support



METER SIZE	"A"	"B"	"C"	"D"	"E"	"F"	"G"
CAPACITY (LB/HOUR)	250	500	750	1,500	3,000	6,500	12,000
CAPACITY (LB/REV)	2 1/2	5	7 1/2	15	30	65	120
CAPACITY (GAL/MIN)	1/2	1	1 1/2	3	6	13	24
INLET PIPE SIZE (INCH)	1/2	1/2	1/2	3/4	3/4	1	1 1/4
OUTLET PIPE SIZE (")	1 1/4	1 1/2	1 1/2	2	2 1/2	3	3
K(OA width) (INCH)	11 5/8	11 5/8	16	16	22	22	22
L(Loa w/mech counter) (INCH)	8 5/8	10 5/8	9 1/2	11 7/8	13 3/8	18 3/4	27 3/4
L(Loa w/elect counter) (INCH)	11 1/8	13 1/8	12	14 3/8	15 7/8	21 1/4	30 1/4
M(OA height) (INCH)	11 1/4	11 1/4	16 1/4	16 1/4	22 3/4	22 3/4	22 3/4
N(inlet to-outlet CLs) (INCH)	5	5	7 1/4	7 1/4	10 5/8	10	10
P(base to outlet CL) (INCH)	1 3/8	1 3/8	1 5/8	1 5/8	2 1/8	2 1/2	2 5/8
S(inlet to outlet faces) (INCH)	1 3/16	1 3/16	1 3/16	1 3/16	1 1/4	1 1/4	1 3/8
WEIGHT NET (LB)	32	38	58	69	140	185	264
SHIPPING (LB)	45	50	85	95	190	240	375

SPECIFICATIONS: CADILLAC® CONDENSATE METER

General:
The condensate meter shall consist of a metal housing, a rotary volumetric measuring drum and a totalizer. The fluid shall be measured by isolating the flow in a scroll-shaped container, six of which shall be provided in the drum.

Materials of Construction:
The Cadillac® Condensate Meter shall be constructed of materials that are mutually compatible in steam condensate service. The casing shall be constructed of Cast Iron or Stainless Steel. The metering drum shall be constructed of machine formed Copper or Stainless Steel. All joints shall be full penetration welds using welding rod of suitable composition for the base metal. Fittings, fasteners and brackets shall be constructed of Bronze, Brass, Stainless Steel, or high temperature Polymers. Bearing bushings shall be constructed of Rulon Gold. External parts such as totalizers may be constructed of high temperature polymers.

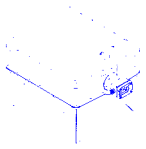
Assembly:
All metering drum seams shall be readily accessible for visual inspection. Meter parts shall also be easily accessed for maintenance and replacement and shall be arranged to operate without vibration within +/-1.0% accuracy throughout the entire range from 0-100% full rated capacity. Meter drums may be specified to +/- 0.50% accuracy throught entire range from 0-100% full rated capacity as option.

Totalizer:
Meter shall be equipped with a totalizer which shall indicate the quantity of fluid that has passed through the meter since the last reading. Such totalizer shall require no external power source and shall provide a resettable option, an anti-tampering device option and separate contact closure interface for energy monitoring systems. Local or remote mounting options shall be available.

CADILLAC® GRAVITY CONDENSATE METER MODEL NUMBER STRUCTURE

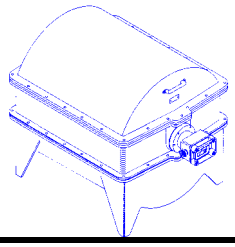
Low Capacity Gravity Meters (1,500 Lbs/Hr or Less)

CG				**Cadillac Gravity Condensate Flowmeter**
	A			Capacity: (0-250) Lbs/Hr - (0-0.5) GPM
	B			Capacity: (0-500) Lbs/Hr - (0-1.0) GPM
	C			Capacity: (0-750) Lbs/Hr - (0-1.5) GPM
	D			Capacity: (0-1,500) Lbs/Hr - (0-3.0) GPM
		LC		Local Counter with Indicator/Totalizer
		RC		Remote Counter with Indicator/Totalizer
		LR		Local & Remote Counter with Indicator/Totalizer
			S	Stainless Steel Casing and Internals
			C	Cast Iron Casing with Copper/Brass Internals
			R	Reconditioned Cast Iron casing and internals***
				S Calibrated to 1% accuracy across meter flow range
				H Calibrated to 0.5% accuracy across meter flow range



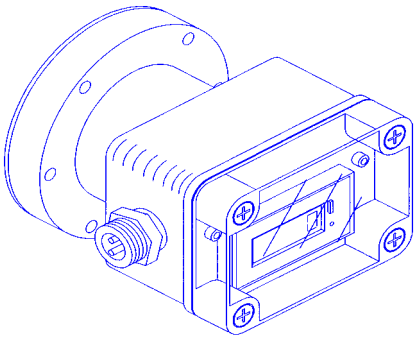
High Capacity Gravity Meters (3,000 - 12,000 Lbs/Hr)

CG				**Cadillac Gravity Condensate Flowmeter**
	E			Capacity: (0-3,000) Lbs/Hr - (0-6) GPM
	F			Capacity: (0-6,500) Lbs/Hr - (0-13) GPM
	G			Capacity: (0-12,000) Lbs/Hr - (0-24) GPM
		LC		Local Counter with Indicator/Totalizer
		RC		Remote Counter with Indicator/Totalizer
		LR		Local & Remote Counter with Indicator/Totalizer
			S	Stainless Steel Casing and Internals
			C	Cast Iron Casing with Copper/Brass Internals
			R	Reconditioned Cast Iron casing and internals***
				S Calibrated to 1% accuracy across meter flow range
				H Calibrated to 0.5% accuracy across meter flow range



***Note: Reconditioned casings may not be available for all meter sizes. Please contact the factory to confirm.

ELECTRONIC TOTALIZER



Available to read in your units

Meter Size:	A	B	C	D	E	F	G
Capacity for Model	EA140	EB140	EC140	ED140	EE140	EF140	EG140
LB/ Switch Closure	0.4167	0.8333	1.2500	2.5000	5.0000	10.8333	20.0000
Nominal Closures/Min.	10	10	10	10	10	10	10
Reading Multiplier, 1=	100	100	100	100	100	100	100

Switches: Magnetic Reed, Dry Contact Closure

Power Rating:	10 Watts Maximum
Direct Current Voltage:	200Vdc Maximum
Alternating Current Voltage:	140Vac Maximum
Amperage at Closure:	0.5A Maximum

Totalizer mounts directly onto meter. Remote Readout also available. Dry contact closure **computer interface** included.

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