

FPP Industrial Meters 1" Aluminum, Oval Gear Meter Model TS10A

FPP Meters' versatile STEALTH Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, STEALTH represents the ideal platform for year 2000 metering systems.



TS10AC0E
Representative Model

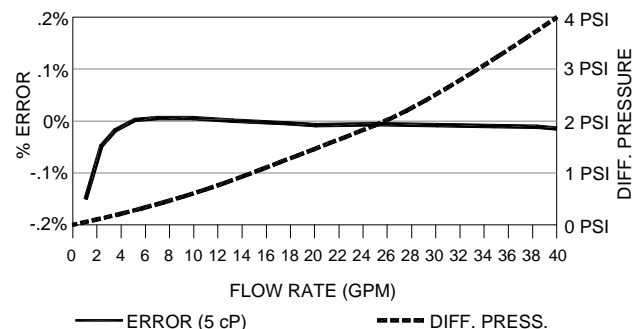
Specifications

- **Flow Rate**
4-40 GPM, viscosities to 300 CST
15-150 LPM, viscosities to 300 CST
- **Pressure**
150 PSI @ 100°F (10 Bar @ 40°C)
400 PSI @ 100°F (28 Bar @ 40°C) Meter only
- **Temperature**
300°F (149°C) RSFS only
212°F (100°C) mechanical registers
185°F (85°C) HEFS only
Other limits may apply to electronic devices
- **Viscosity**
Full nominal flow rate to 300 CST
Up to 350,000 CST with special gears
- **Connections**
1" NPT or BSP
Optional: ANSI flange adaptors
- **Materials**
Case: Anodized Aluminum
Oval gears: Ryton® (PPS)
Posts: 17-4 PH Stainless Steel
Seals: Viton™ (Teflon™ optional)

Industrial Performance

- **Linearity**
+/- 0.25% @ 1 CST
- **Repeatability**
+/- 0.1%
- **Resolution**
Flow Sensor: 67 PPG
Optional: 135 PPG
- **Calibration**
Mechanical: 1/10 gallon, lbs., liter & kg
Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- Mechanical register: 4, 5 or 6 digit
- Mechanical register/printer, register/preset, or register/preset/printer combination
- Battery-powered electronic totalizer or register
- Electronic AC batch controllers, flow computers, and temperature compensation
- NEMA 4X & NEMA 7/4 enclosures

Accessories

- Inlet strainer for meter protection
- Air eliminator on inlet strainer
- Air check valve with air eliminator
- Mechanical preset (shut-off) valve
- Electric or pneumatic preset valve
- Pulse output, analog signal & serial port
- Pulse Isolator/Amplifier/Splitter
- Pump control signal

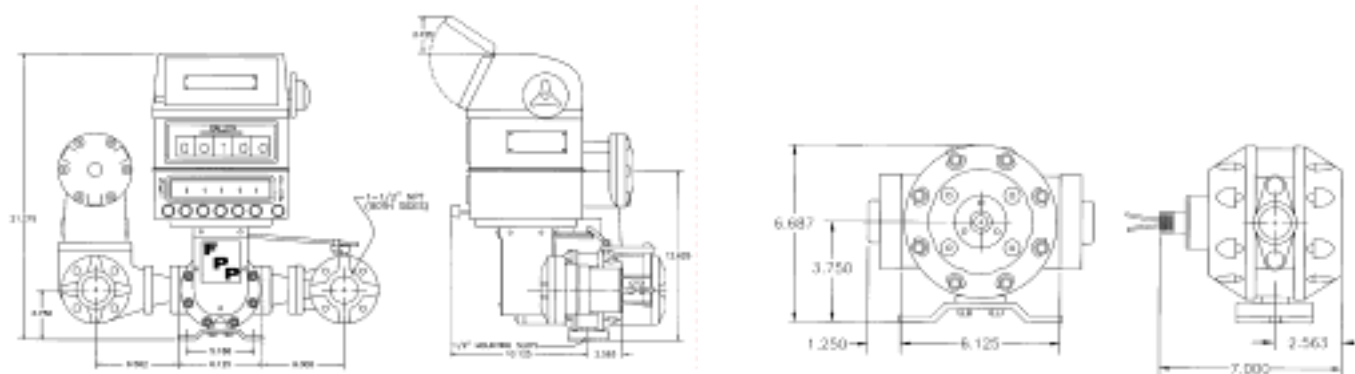
Note: Recommended protection

Inlet strainer, depending upon viscosity, with 20, 40 or 80 mesh basket

Dimensional Drawings: All dimensions are in inches.

Representative Models shown: TS10AV17

TS10ASRS

**Warranty**

Tuthill Transfer Systems ("Manufacturer") warrants to each buyer of its FPP Meters products (the "Buyer") for a period of 12 months from date of invoice or sales receipt, but in no event more than 18 months from date of manufacture, that goods of its manufacture ("Goods") will be free from defects of material and workmanship. Manufacturer's sole obligation under the foregoing warranties will be limited to either, at Manufacturers' option, replacing or repairing defective Goods (subject to limitations hereinafter provided) or refunding the purchase price for such Goods theretofore paid by the Buyer, and Buyer's exclusive remedy for breach of any such warranties will be enforcement of such obligations of Manufacturer. If Manufacturer so requests the return of the Goods, the Goods will be redelivered to Manufacturer in accordance with Manufacturer's instructions F.O.B. Factory. The remedies contained herein shall constitute the sole recourse of the Buyer against Manufacturer for breach of warranty. IN NO EVENT SHALL MANUFACTURER'S LIABILITY ON ANY CLAIM FOR DAMAGES ARISING OUT OF THE MANUFACTURE, SALE, DELIVERY OR USE OF THE GOODS EXCEED THE PURCHASE PRICE OF THE GOODS. The foregoing warranties will not extend to Goods subjected to misuse, neglect, accident or improper installation or maintenance, or which have been altered or repaired by anyone other than Manufacturer or its authorized representative. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR PURPOSE OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. No person may vary the foregoing warranties and remedies except in writing signed by a duly authorized officer of Manufacturer. Warranties or remedies that differ from the foregoing shall not otherwise be binding on Manufacturer. The Buyer's acceptance of delivery of the Goods constitutes acceptance of the foregoing warranties and remedies, and all conditions and limitations thereof.

**TUTHILL**
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FPP Industrial Meters

1" Stainless Steel, Oval Gear Meter Model TS10C

FPP Meters' versatile STEALTH Series is available in a variety of configurations including electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, STEALTH represents the ideal platform for year 2000 metering systems.



TS10CSRS
Representative Model

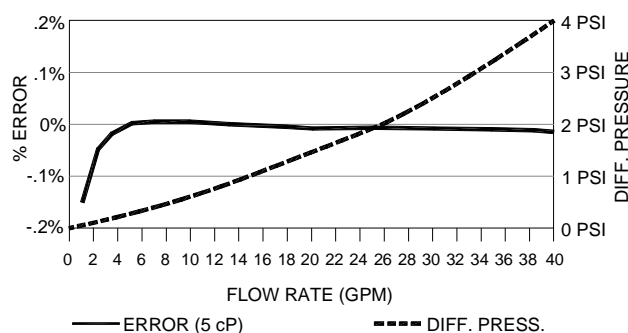
Specifications

- **Flow Rate**
4-40 GPM, viscosities to 300 CST
15-150 LPM, viscosities to 300 CST
- **Pressure**
150 PSI @ 100°F (10 Bar @ 40°C)
- **Temperature**
185°F (85°C) RSFS only
Other limits may apply to electronic devices
- **Viscosity**
Full nominal flow rate to 300 CST
Up to 350,000 CST with special gears
- **Connections**
1" NPT or BSP
Optional: ANSI flange adaptors
- **Materials**
Case: 303 Stainless Steel
Oval gears: Ryton® (PPS)
Posts: 17-4 PH Stainless Steel
Seals: Teflon™

Industrial Performance

- **Linearity**
+/- 0.25% @ 1 CST
- **Repeatability**
+/- 0.1%
- **Resolution**
Flow Sensor: 67 PPG
Optional: 135 PPG
- **Calibration**
Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- Battery-powered totalizer or registers
- Communication ports, pump controls
- Unscaled pulse output
- Electronic totalizers/ratemeters
- Electronic batch controllers
- Electronic flow computers
- Electronic mass flow computers
- NEMA 4X & NEMA 7/4 enclosures

Accessories

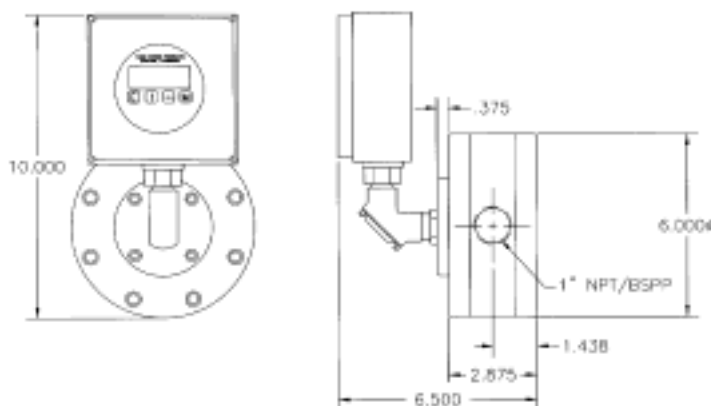
- Pulse amplifiers
- Analog converters

Note: Recommended protection

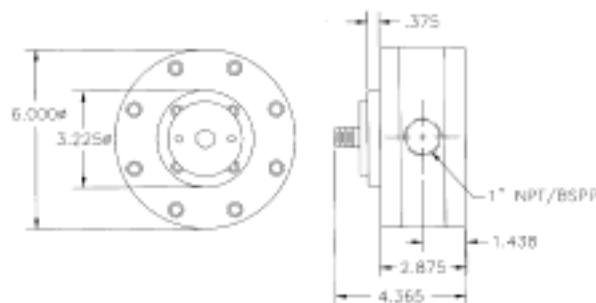
Inlet strainer, depending upon viscosity, with 80, 100 or 250 mesh basket

Dimensional Drawings: All dimensions are in inches.

Representative Models shown: TS10C:P1C



TS10CSRS

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FPF Industrial Meters

1 1/2" Aluminum, Oval Gear Meter Model TS15A

FPF Meters' versatile *STEALTH* Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, *STEALTH* represents the ideal platform for year 2000 metering systems.



TS15AV06
Representative Model

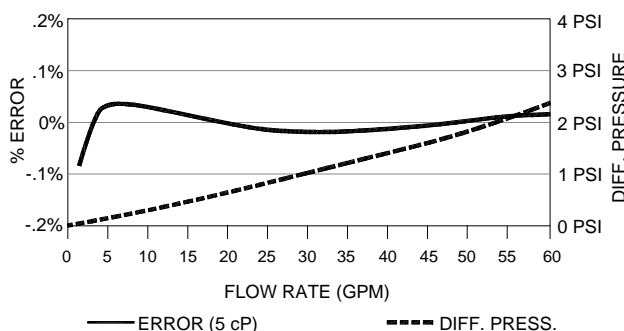
Specifications

- **Flow Rate**
6-60 GPM, viscosities to 300 CST
23-230 LPM, viscosities to 300 CST
- **Pressure**
150 PSI @ 100°F (10 Bar @ 40°C)
400 PSI @ 100°F (28 Bar @ 40°C) Meter only
- **Temperature**
300°F (149°C) RSFS only
200°F (100°C) mechanical registers
185°F (85°C) HEFS only
Other limits may apply to electronic devices
- **Viscosity**
Full nominal flow rate to 300 CST
Up to 350,000 CST with special gears
- **Connections**
1 1/2" NPT or BSP
Optional: 1 1/2" ANSI flange adaptors
- **Materials**
Case: Anodized Aluminum
Oval gears: Ryton® (PPS)
Posts: 17-4 PH Stainless Steel
Seals: Viton™ (Teflon™ optional)

Industrial Performance

- **Linearity**
+/- 0.25% @ 1 CST
- **Repeatability**
+/- 0.1%
- **Resolution**
Flow Sensor: 34 PPG
Optional: 67 PPG
- **Calibration**
Mechanical: 1/10 gallon, lbs., liter & kg
Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- Mechanical register: 4, 5 or 6 digit
- Mechanical register/printer, register/preset, or register/preset/printer combination
- Battery-powered electronic totalizer or register
- Electronic AC batch controllers, flow computers, and temperature compensation
- NEMA 4X & NEMA 7/4 enclosures

Accessories

- Inlet strainer for meter protection
- Air eliminator on inlet strainer
- Air check valve with air eliminator
- Mechanical preset (shut-off) valve
- Electric or pneumatic preset valve
- Pulse output, analog signal & serial port
- Pulse Isolator/Amplifier/Splitter
- Pump control signal

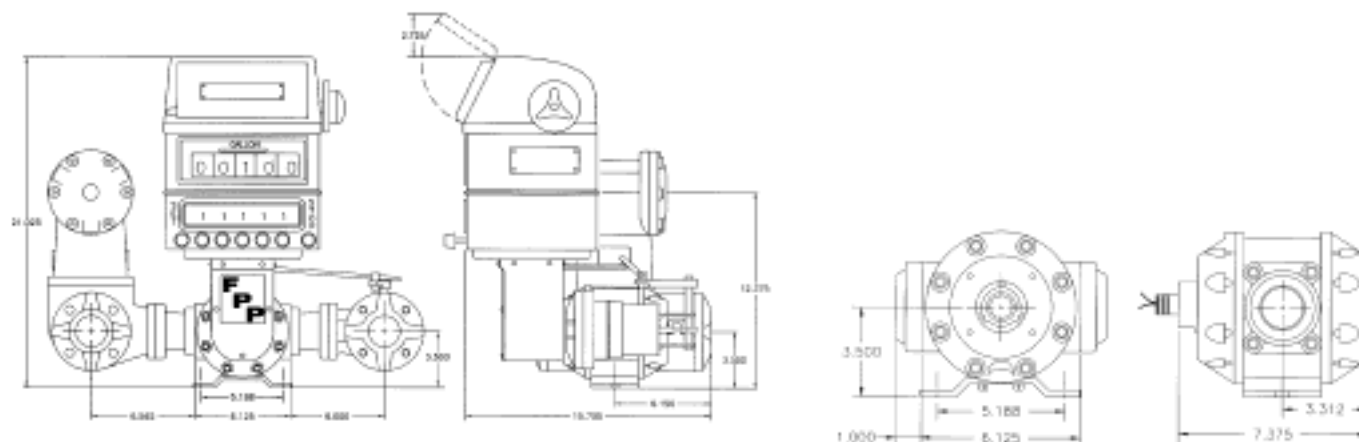
Note: Recommended protection

Inlet strainer, depending upon viscosity, with 20, 40 or 80 mesh basket

Dimensional Drawings: All dimensions are in inches.

Representative Models shown: TS15AV17

TS15ASRS



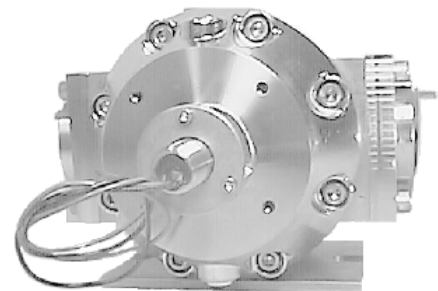
Warranty

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FPP Industrial Meters

1 1/2" Stainless Steel, Oval Gear Meter Model TS15C

FPP Meters' versatile *STEALTH* Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, *STEALTH* represents the ideal platform for year 2000 metering systems.



TS15CSRS
Representative Model

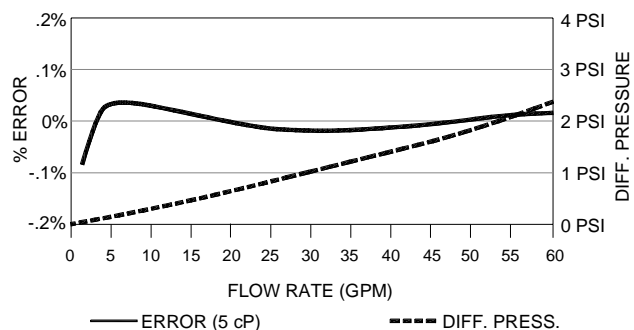
Specifications

- **Flow Rate**
6-60 GPM, viscosities to 300 CST
23-230 LPM, viscosities to 300 CST
- **Pressure**
150 PSI @ 100°F (10 Bar @ 40°C)
400 PSI @ 100°F (28 Bar @ 40°C) Meter only
- **Temperature**
300°F (149°C) RSFS only
212°F (100°C) mechanical registers
185°F (85°C) HEFS only
Other limits may apply to electronic devices
- **Viscosity**
Full nominal flow rate to 300 CST
Up to 350,000 CST with special gears
- **Connections**
1 1/2" NPT or BSP
Optional: 1 1/2" ANSI flange adaptors
- **Materials**
Case: 303 Stainless Steel
Oval gears: Ryton® (PPS)
Posts: 17-4 PH Stainless Steel
Seals: Teflon™

Industrial Performance

- **Linearity**
+/- 0.25% @ 1 CST
- **Repeatability**
+/- 0.1%
- **Resolution**
Flow Sensor: 34 PPG
Optional: 67 PPG
- **Calibration**
Mechanical: 1/10 gallon, lbs., liter & kg
Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- Mechanical register: 4, 5 or 6 digit
- Mechanical register/printer, register/preset, or register/preset/printer combination
- Battery-powered electronic totalizer or register
- Electronic AC batch controllers, flow computers, and temperature compensation
- NEMA 4X & NEMA 7/4 enclosures

Accessories

- Inlet strainer for meter protection
- Air eliminator on inlet strainer
- Air check valve with air eliminator
- Mechanical preset (shut-off) valve
- Electric or pneumatic preset valve
- Pulse output, analog signal & serial port
- Pulse Isolator/Amplifier/Splitter
- Pump control signal

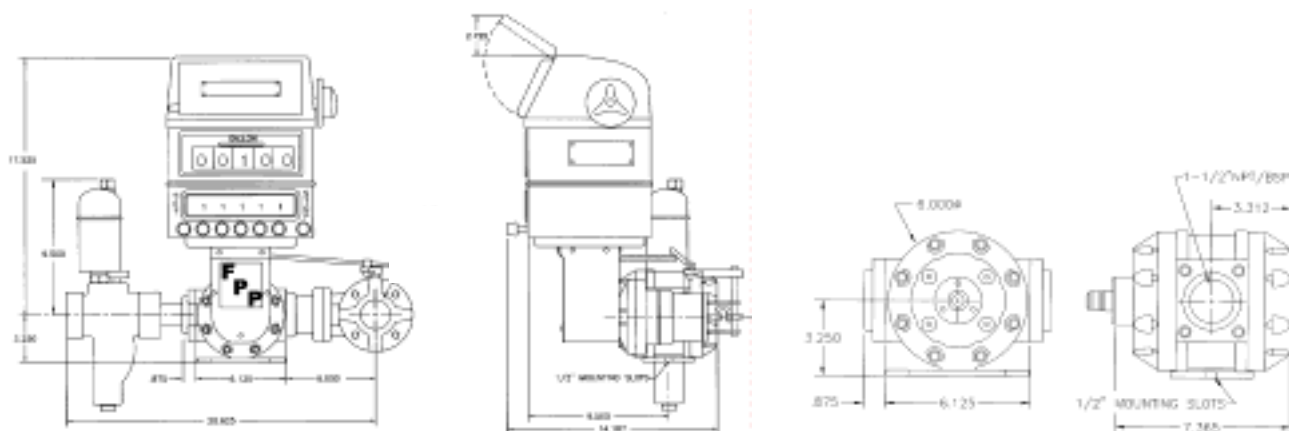
Note: Recommended protection

Inlet strainer, depending upon viscosity, with 20, 40 or 80 mesh basket

Dimensional Drawings: All dimensions are in inches.

Representative Models shown: TS15CV17

TS15CSHE



Warranty

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TS20A, 2" Anodized Aluminum

Representative assemblies:



TS20A V__

With mechanical register, might include ticket printer, and/or 2-stg preset with valve & linkage.



TS20A E__

Gland-less flow meter, with an electronic register mounted on right-angle adaptor.



TS20A F__

Gland-less flow meter, with ELNC electronic register on bracket mounted on meter case



TS20A S__

Gland-less flow sensor, opt. with signal conditioner or small totalizer mounted on pulser

All meter assemblies can include optional strainer, air eliminator and/or control valves.

Specifications

● Nominal Capacity

GPM : 10-150, to 120 F & to 300 cP viscosity

LPM : 38-570, to 50 C & to 300 cP viscosity

M³/H : 1.5-23, to 50 C & to 300 cP viscosity

● Pressure Rating

V assy : 150 PSI @ 100 F (10 BAR @ 40 C)

E, F & S : 400 PSI @ 100 F (28 BAR @ 40 C), meter only.

● Temperature Rating

V assy : 180 F (80 C)

E & F : See temperature limit for electronic register

S assy : 300 F (150 C) without signal conditioner/ totalizer

● Viscosity

Full nominal capacity to 1,500 SSU (300cP) viscosity, at reduced flow rates to 1,500,000 SSU (350,000 cP) with high viscosity rotors.

● Connections

Bolted companion flanges with 2" NPT or BSP port, ANSI flange adaptors are optional.

● Materials

Case : Anodized aluminum

Gears : Ryton (PPS) with carbon bearings
: (gears with Teflon bearings optional).

Posts : 303SS Hard Chrome Coated

Seals : Viton (Teflon optional)

● Pulsers

V assy : Optional Reed Switch or Solid State pulser on register.

E, F & S : Hall Effect with registers using external power.
: Reed Switch with battery powered registers.

● Meter Performance

Linearity

Over 5:1 turn-down from max. capacity +/- 0.175%

Over 15:1 turn-down from max. capacity +/- 0.25%

Over 30:1 turn-down from max. capacity +/- 0.5%

Repeatability 0.05% (at constant rate)

● Pulse resolution

V assy : None (1, 10 or 100 PPU if pulser is added)

E, F & S : +/- 75 PPG (+/- 26.7 ppl)

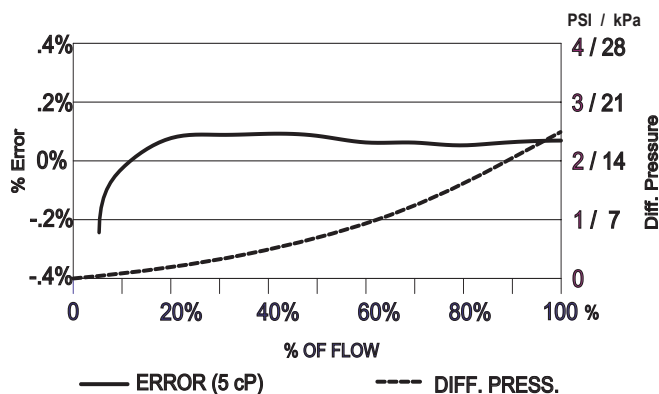
● Calibration

V assy : 1/10 gallon, gallon, lbs, liter or kg

E, F & S : Any unit of mass or volume.

Only two moving parts, low pressure loss and simple maintenance, makes **FPP METERS'** flexible **STEALTH** Series the ideal platform for third Millennium metering systems. With multiple register options, we can assemble solutions for every requirement.

Delta P & Accuracy Curves



● Signal Conditioners

PIA Pulse Isolator, Amplifier & Splitter

PAC Pulse to Analog Converter

SCL Scaler, Calibrator & Linearizer

● Registration Options

Mechanical (V-- Assembly No.)

Register (5 digit reset, 8 digit totalizer)

2-Stage preset counter, optional pump control

Ticket Printer, Zero Start or Accumulative type

Electronic (E, F or S-- Assembly No.)

Totalizer, Register or Batch Controller

Optional currency function

Optional temperature/volume compensation

Battery powered, DC or AC powered

In NEMA 4X, IS or NEMA 7/4 enclosure

Mounted on the flow meter or remote

Pulse, Analog or Serial Port communications

● Accessories

Inlet strainer for meter protection

Air Eliminator

Air Check Valve for tank truck service

Solenoid control valves, pneumatic operator

Solenoid control valves, electric operator

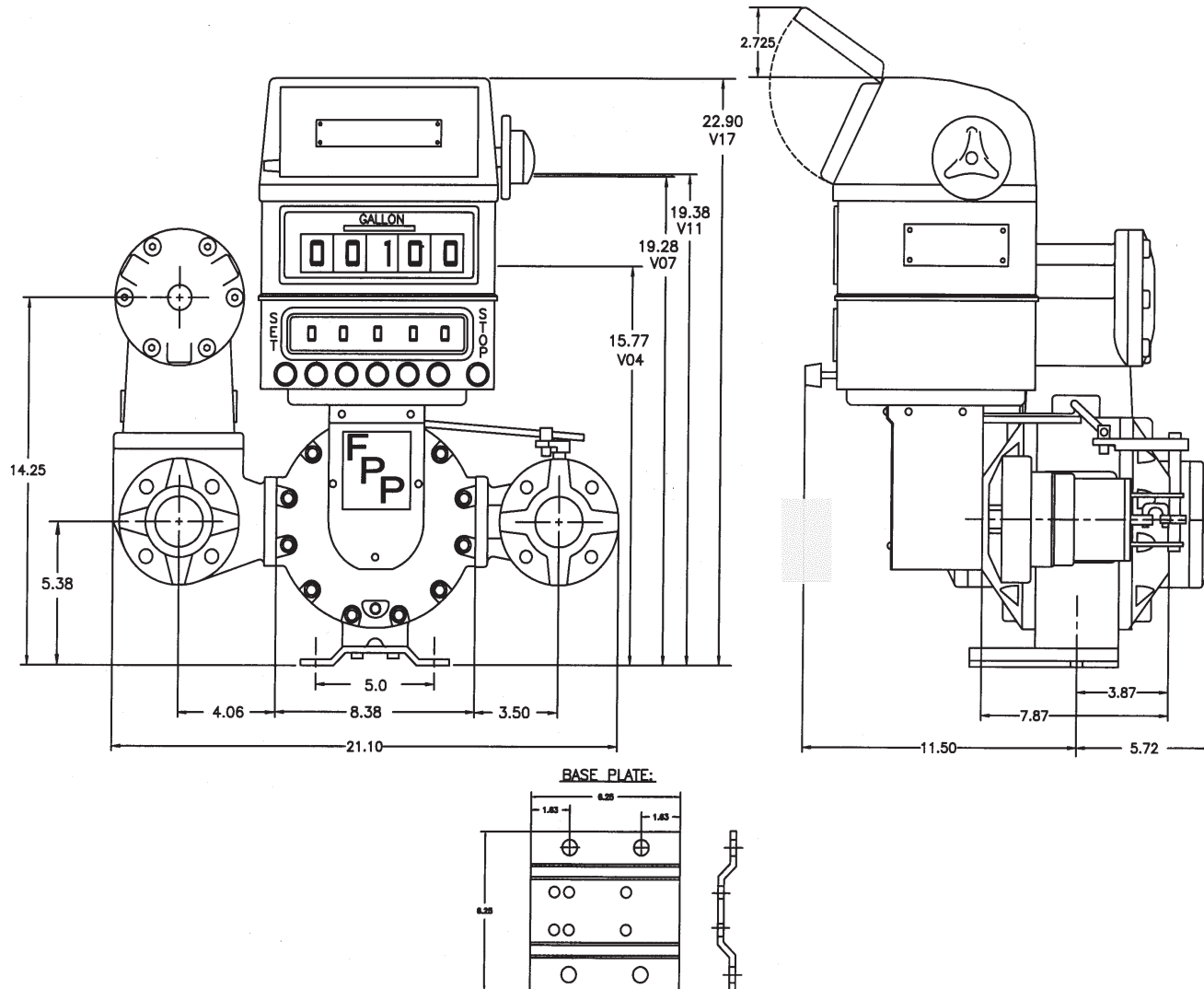
● Approvals

US, Canada, and Australian Weights & Measures

TS2HA, 2" Anodized Aluminum Dimensional Drawings

*All Dimensions are in inches

*Not for piping purposes



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FPP Industrial Meters

2" Stainless Steel, Oval Gear Meter Model TS20C

FPP Meters' versatile *STEALTH* Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, *STEALTH* represents the ideal platform for year 2000 metering systems.



TS20CSRS
Representative Model

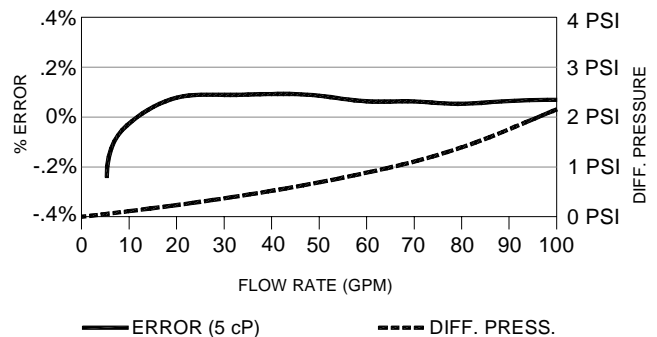
Specifications

- **Flow Rate**
10-100 GPM, viscosities to 300 CST
38-380 LPM, viscosities to 300 CST
- **Pressure**
150 PSI @ 100°F (10 Bar @ 40°C)
- **Temperature**
300°F (149°C) RSFS only
212°F (100°C) mechanical registers
185°F (85°C) RSFS only
Other limits may apply to electronic devices
- **Viscosity**
Full nominal flow rate to 300 CST
Up to 350,000 CST with special gears
- **Connections**
2" NPT or BSP
Optional: 2" ANSI flange adaptors
- **Materials**
Case: 316 Stainless Steel
Oval gears: Ryton® (PPS)
Posts: 17-4 PH Stainless Steel
Seals: Teflon™

Industrial Performance

- **Linearity**
+/- 0.25% @ 1 CST
- **Repeatability**
+/- 0.1%
- **Resolution**
Flow Sensor: 34 PPG
- **Calibration**
Mechanical: 1/10 gallon, lbs., liter & kg
Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- Mechanical register: 4, 5 or 6 digit
- Mechanical register/printer, register/preset, or register/preset/printer combination
- Battery-powered electronic totalizer or register
- Electronic AC batch controllers, flow computers, and temperature compensation
- NEMA 4X & NEMA 7/4 enclosures

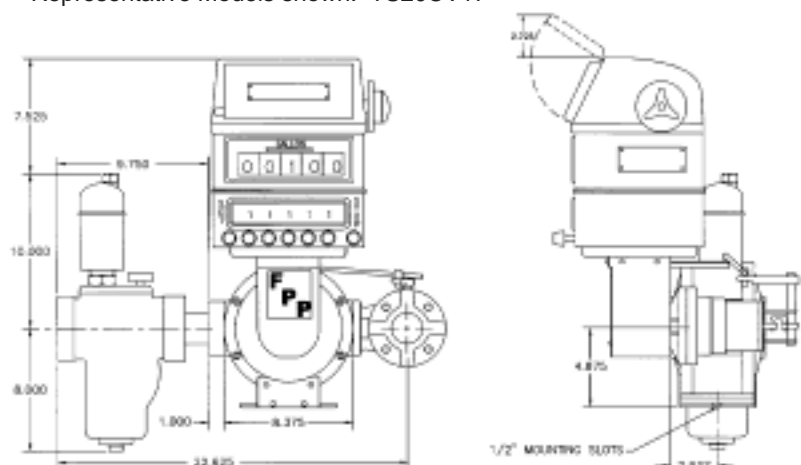
Accessories

- Inlet strainer for meter protection
- Air eliminator on inlet strainer
- Air check valve with air eliminator
- Mechanical preset (shut-off) valve
- Electric or pneumatic preset valve
- Pulse output, analog signal & serial port
- Pulse Isolator/Amplifier/Splitter
- Pump control signal

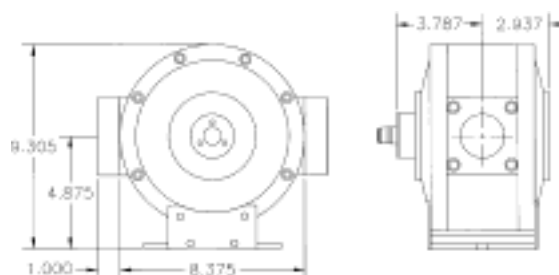
NOTE: Recommended protection
Inlet strainer, depending upon viscosity,
with 20, 40 or 80 mesh basket

Dimensional Drawings: All dimensions are in inches.

Representative Models shown: TS20CV17



TS20CSRS

**Warranty**

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FPP INDUSTRIAL METERS

3" Aluminum, Oval Gear Meter Model TS30A

FPP Meters' versatile STEALTH Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, STEALTH represents the ideal platform for year 2000 metering systems



Model Number TS30AE13

Specifications

Flow Rate

20-200 GPM, viscosities to 300 cSt
76-760 LPM, viscosities to 300 cSt

Pressure

150 PSI @ 100°F (10 Bar @ 40° C)
400 PSI @ 100° F (28 Bar @ 40° C)

Temperature

300°F (80° C)
185° F (85° C) RSFS only
Other limits may apply to electronic devices

Viscosity

Full nominal flow rate to 300 cSt to 350,000 cSt
at reduced flow rates with special gears

Connections

150# RF ANSI flanges

Materials

Case: Anodized Aluminum

Oval gears: Ryton™ (PPS), Teflon™ optional

Posts: 17-4 PH Stainless Steel

Seals: Viton™, Teflon™ optional

Industrial Performance

Linearity

+/- 0.25% @ 1 cSt

Repeatability

+/- 0.1%

Resolution

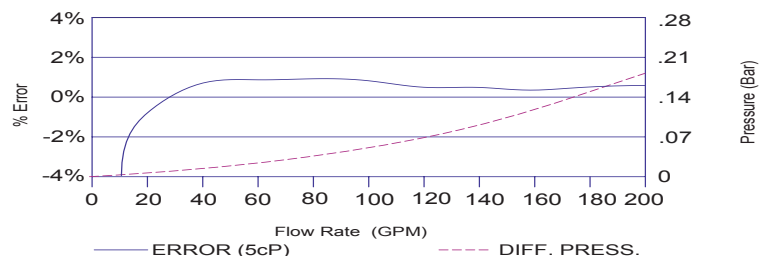
Flow Sensor: 51 PPG

Calibration

Mechanical: 1/10 gallon, whole gallon, lbs., liter,
dekaliters & kg

Electronic: Any unit of mass or volume

Delta P & Accuracy Curves



Registration Options

- * Mechanical Register: 4, 5 or 6 digit
- * Mechanical register/printer, register/preset, or register/preset/printer combination
- * Battery-powered electronic totalizer or register
- * Electronic AC batch controllers, flow computers, and temperature compensation
- * NEMA 4X & NEMA 7/4 enclosures

Accessories

- * Inlet strainer for meter protection
- * Air eliminator on inlet strainer
- * Air check valve with air eliminator
- * Mechanical preset (shut-off) valve
- * Electric or pneumatic preset valve
- * Pulse output, analog signal & serial port
- * Pulse Isolator/Amplifier/Splitter
- * Pump control signal

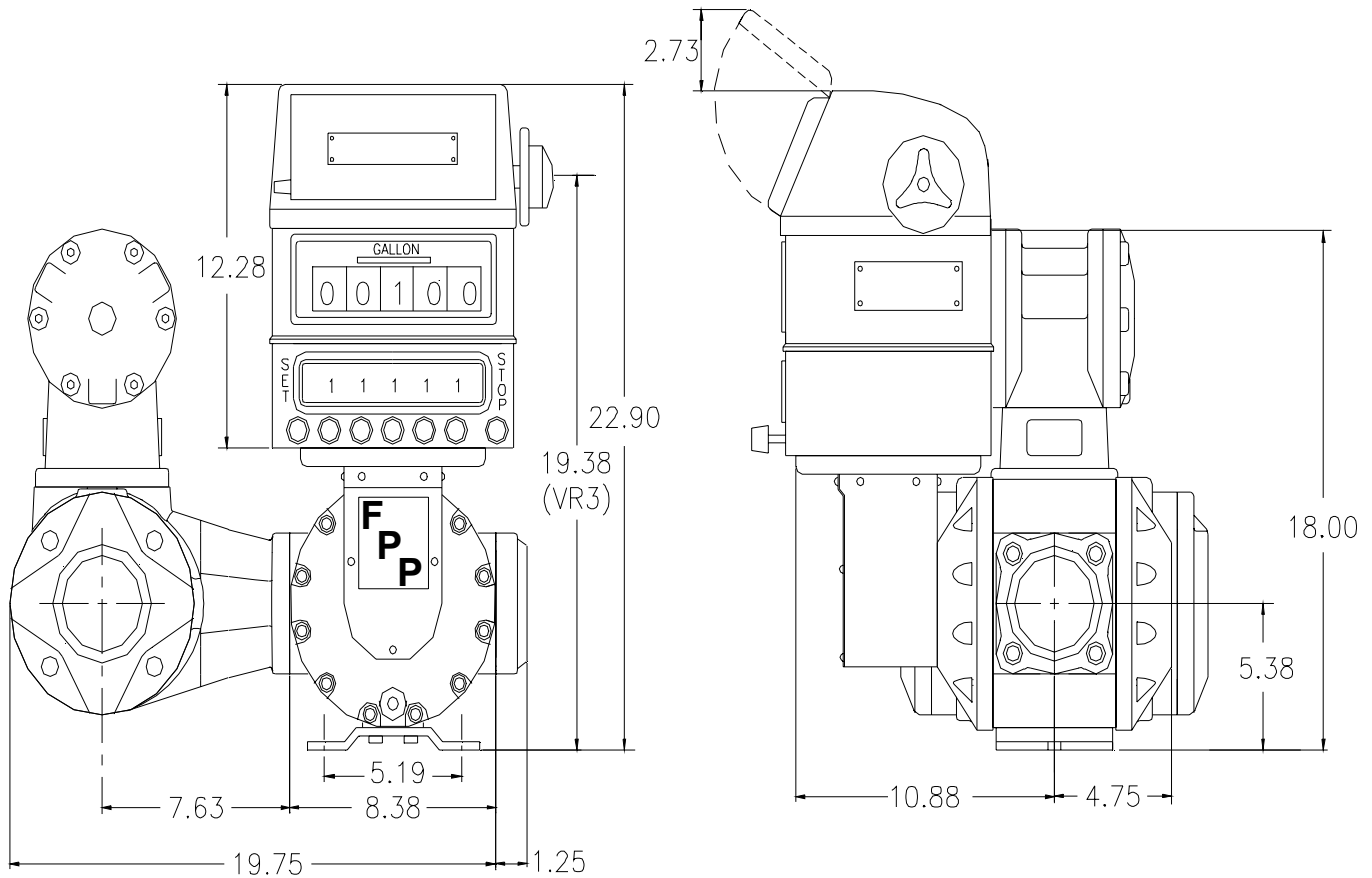
Note: Recommended protection

Inlet strainer, depending upon viscosity, with 20, 40 or 80 mesh basket

DIMENSIONAL DRAWINGS



Dimensional Drawings: All dimensions are in inches



TUTHILL
Transfer Systems

48513 Highway 51, P.O. Box 400
Tickfaw, Louisiana USA 70466
Tel: 985-542-5200 Fax: 985-542-7394
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FPP INDUSTRIAL METERS

3" Stainless Steel, Oval Gear Meter Model TS30C

FPP Meters' versatile STEALTH Series is available in a variety of configurations including mechanical registration, electronic registration or non-factored pulse output flow sensors. With only two moving parts and exceptional pressure loss characteristics, STEALTH represents the ideal platform for year 2000 metering systems



Model Number TS30CE04

Specifications

Flow Rate

20-200 GPM, viscosities to 300 cSt
76-760 LPM, viscosities to 300 cSt

Pressure

150 PSI @ 100°F (10 Bar @ 40° C)
400 PSI @ 100° F (28 Bar @ 40° C)

Temperature

300°F (80° C)
185° F (85° C) RSFS only
Other limits may apply to electronic devices

Viscosity

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at reduced flow rates with special gears

Connections

150# RF ANSI flanges

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Repeatability

+/- 0.1%

Resolution

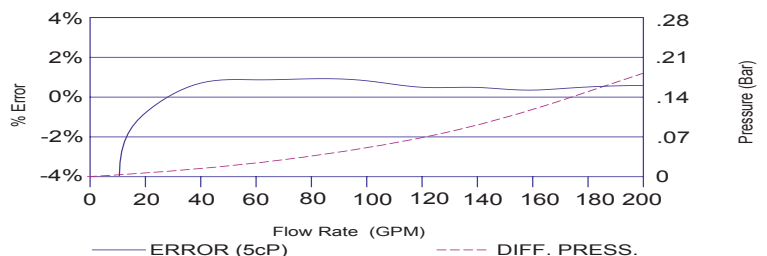
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Delta P & Accuracy Curves



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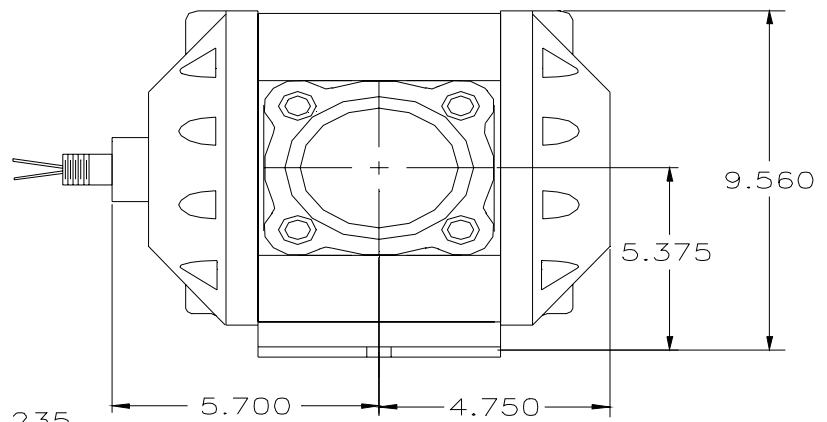
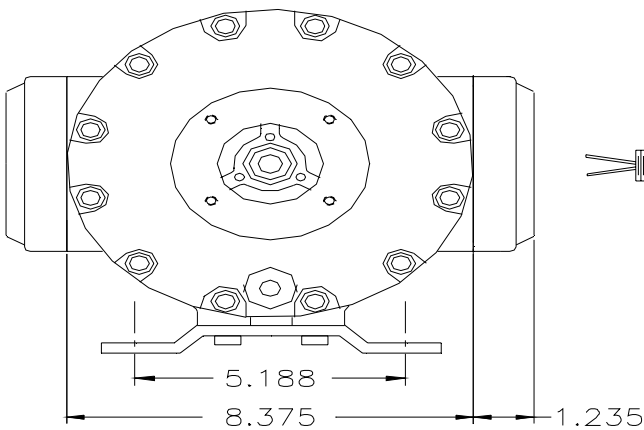
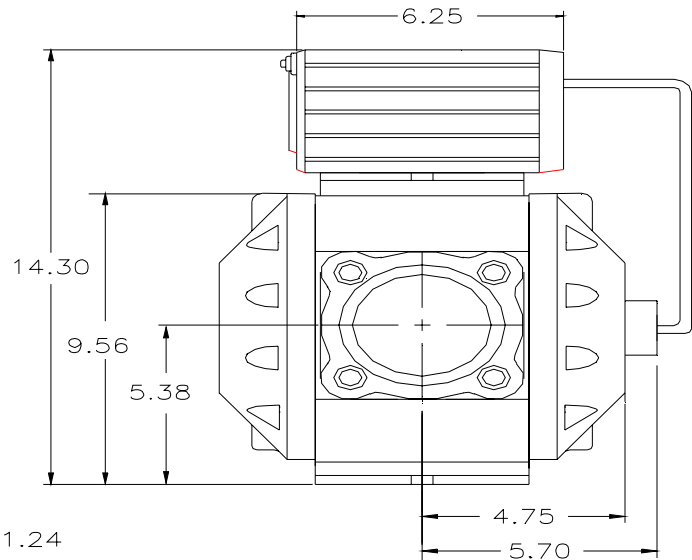
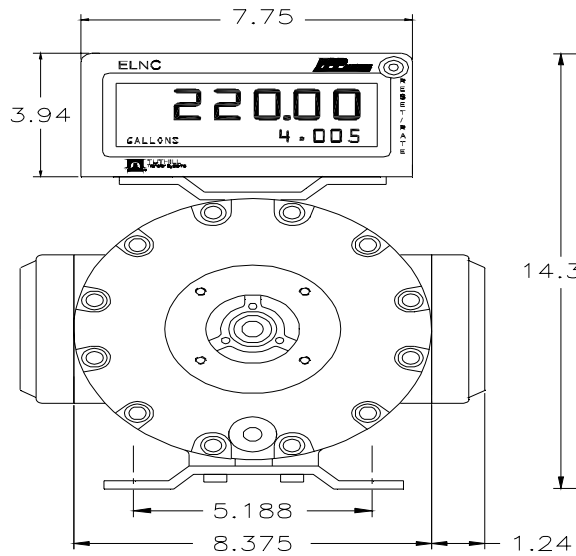
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