



MAX FLOW SIZES FROM
500 TO 1500 GPM
(2000 TO 5600 LPM)

MAX LIQUID PRESSURE 300 PSIG (20.69 BAR) XHF SERIES

UNIVERSAL® Flow Meters

An Extra-Large Vane Style For Liquids

FOR APPLICATIONS OF AIR OR
GASES CONSULT FACTORY

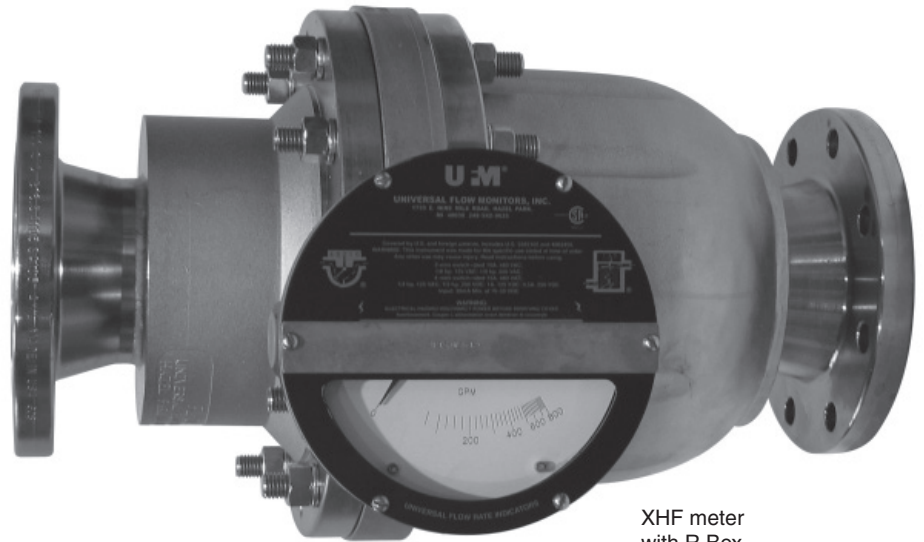


CSA Certified NRTL/C



CE Marked (as noted)

NIST Traceable Calibration
Certificate Available



XHF meter
with R Box

DESCRIPTION

These variable-area flow meters have a spring-loaded swinging vane. Mounting is in-line and in any position. Straight pipe runs before or after are not required on the 4-inch meter. The 6 and 8-inch sizes at 1000 GPM and 8-inch size at 1500 GPM require 2 pipe diameters straight run before and after the meter. The all-mechanical sensing system directly drives the pointer and remote signaling devices. They handle shocks or flow surges beyond their rated capacities.

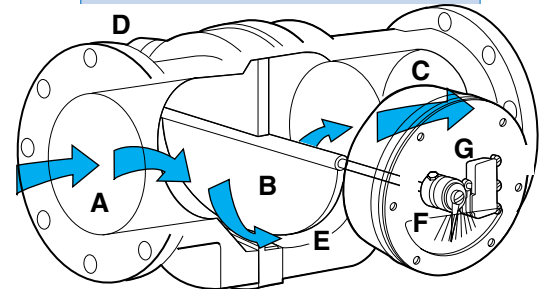
The swinging vane can be manually operated with a factory supplied wrench to verify or adjust switch points, or to free the vane should it become lodged by debris in the fluid.

CALIBRATION

All flow meters are individually calibrated for fluids with the viscosity you specify (up to 3000 SSU/650 centipoise). We also compensate for specific gravity. For NIST Traceability please consult factory.

CONSTRUCTION MATERIALS

The meter body, moving parts, and seals are offered in a variety of materials to suit a wide range of applications: water, synthetic and petroleum based oils, paint, some corrosives, solvents, and air and gases. Meter bodies are available in aluminum, carbon steel or nickel-plated carbon steel, 316 stainless steel, or aluminum bronze. We offer internal moving parts in 316 stainless steel. Choices of materials for seals: Buna N, EPR, Viton®, and Kalrez™ (Kalrez can be combined with others). Please consult the factory for compatibility of materials with your application.



Fluid enters at **A**, passes around the semi-circular vane **B**, exits at outlet **C**. The vane resists the flow because of the spring **D**. The further the vane is pushed the larger the passageway **E** becomes. This minimizes pressure drop. The vane shaft turns to operate the pointer **F** and remote signal devices such as the switch **G**.

EXAMPLE: XHF – Q I B 800 GM – 32W – 32V1.0 –

SERIES

Extra high vane style

= **XHF**

HOUSING & FLANGE MATERIAL

- Aluminum = D
- Carbon steel = M
- Carbon steel (nickel plated) = J
- Aluminum (hard coat) = E
- Stainless steel (316) = I
- Alum./Brass Center Section = **Q**
- Carbon steel with 316 SS Center Section = X

INTERNAL PARTS

Stainless steel (316)
(other materials on request)

= **I**

SEAL MATERIAL

- Buna N = **B**
- EPR (not avail. on petroleum base fluid) = E
- Viton® = F
- Kalrez™ (dynamic) and Teflon (static) = T
- Kalrez (dynamic) and Buna N (static) = A
- Kalrez (dynamic) and EPR (static) = H
- Kalrez (dynamic) and Viton (static) = K

FLUID CHARACTERISTICS

Viscosity number, followed by a 'V' (for SSU), a 'C' (for centipoise), or a 'CS' (for centistokes), plus the fluid specific gravity. **32V1.0** would mean water.) For dual viscosity give two numbers separated by a slash (example: 320/500V1.0).

Check with the factory for compatibility of construction materials with the fluid involved.

MAX FLOW RATING

| Gallons Per Minute | | GPM | |
|--------------------|-----------------|-----------------|-------------|
| Calibration | Minimum Reading | Maximum Reading | |
| 20 | 50 | - | 500 |
| 20 | 50 | - | 600 |
| 25 | 50 | - | 800 |
| 25 | 50 | - | 1000 |
| 50 | 300 | - | 1500 |

| Liters Per Minute | | LPM | |
|-------------------|-----------------|-----------------|-------------|
| Calibration | Minimum Reading | Maximum Reading | |
| 100 | 200 | - | 2000 |
| 100 | 200 | - | 2500 |
| 100 | 200 | - | 3000 |
| 100 | 200 | - | 3500 |
| 200 | 1200 | - | 5600 |

| Cubic Meters Per Hour | | CMH | |
|-----------------------|-----------------|-----------------|------------|
| Calibration | Minimum Reading | Maximum Reading | |
| 10 | 10 | - | 120 |
| 10 | 10 | - | 140 |
| 10 | 10 | - | 180 |
| 20 | 20 | - | 220 |
| 20 | 70 | - | 340 |

Note: Custom scales are available in any units and increments on special order.

PORT CONNECTION

| 150-lb ANSI Weld-Neck Flanges | | | | |
|-------------------------------|-----------|-------|--------|------------|
| Size | Max. Flow | | Symbol | |
| Inches | MM | (GPM) | (LPM) | |
| 4 | 101.6 | 800 | 3024 | 32W |
| 6 | 152.4 | 1400 | 3785 | 48W |
| 8 | 203.2 | 1500 | 5677 | 64W |

Flanges are ANSI steel; stainless units have stainless flanges. (Refer to page 129 for additional flange information)

SCALE CALIBRATIONS

- Calibrated in gallons per minute = **GM**
- Calibrated in liters per minute = **LM**
- Calibrated in imperial gallons per minute = **IGM**
- Dual scales (GPM and LPM) = **GLM**
- Cubic meters per hour = **CMH**

For specific calibration increments and other units of measurement consult factory

Consult factory for compatibility of construction materials with the fluid involved.

R 1 W R - ST - 400D

FLOW DIRECTION

- R** = Left to right
- L** = Right to left
- U** = Up
- D** = Down

SERVICE

- W** = Weatherproof (Type 4)
- X** = Weatherproof, corrosion proof (Type 4X)

INITIAL SWITCH SETTING

No symbol = Lowest possible
 Or, give setting(s) in GPM, LPM, etc. Also a symbol to indicate that accuracy is desired during increasing flow (**U**) or decreasing flow (**D**). (**400D**) would mean that switch will actuate when flow rate decreases to 100 GPM.) Settings are field adjustable.

SPECIAL OPTIONS

- HT** = High-temp, 400°F for A & R Box (300°F for transmitter options GT, RT & TT Boxes)
 - ST** = Stainless steel ID tag
 - PC*** = Pin connector with 3-6 pins, mini and micro style available
 - FL*** = Fault light(s)
 - TG** = Tempered glass window
- Note:** These options are described more fully in "Options for Vane and Piston style flowmeters."

STANDARD CONTROL BOX & READOUT (switches)

R Box

High resolution pointer and scale for more accurate reading, optional switches

- R0** = Scale & pointer only
- R1** = One SPDT (3wire), CE
- R2** = Two SPDT (3 wire), CE
- R3** = One SPDT (4 wire)
- R4** = Two SPDT (4 wire)
- R53** = One SPDT (3 wire) hermetically sealed
- R54** = Two SPDT (3 wire) hermetically sealed
- R61** = One SPDT (3 wire) high temperature
- R62** = Two SPDT (3 wire) high temperature
- R71** = One SPDT (3wire) gold contact
- R72** = Two SPDT (3wire) gold contact

R Box

Hazardous location indication and switches

- R7** = One SPDT hazardous location
- R17** = One DPDT hazardous location
- R18** = Two SPDT mechanical
- R19** = Two DPDT mechanical
- R30** = One SPST hazardous location proximity
- R31** = Two SPST hazardous location proximity

G Box

Transmitter with digital display and two open collectors (standard), or remote display (optional)

- GTL0** = internal 4-20 mA transmitter with two open collector alarms
- GTLZ0** = intrinsically safe 4-20 mA transmitter (no alarms)
- GP0** = G Box with remote transmitter. This requires a remote display and transmitter to be ordered as a separate line item. Model UT-PM-DTLCD.

Note: G Box requires "W" service selection (weatherproof). G Box has a terminal strip but can be used with pin connectors ordered as Special Options as described above. Select PC5M for GTL and PC3M for GTLZ or GP.

SPECIAL OFFERINGS

RT Box

High resolution pointer and scale for more accurate reading, 4-20 mA Transmitter, optional high amp mechanical switch

- RT0** = Scale & pointer only
- RT1** = One SPDT (3wire), CE
- RT53** = One SPDT (3 wire) hermetically sealed
- RT61** = One SPDT (3 wire) high temperature
- RT71** = One SPDT (3wire) gold contact

TT Box

4-20 mA Transmitter with pointer & scale, optional high amp mechanical switch, separate junction boxes for switch & transmitter

- TT0** = Scale & pointer only
- TT1** = One SPDT (3wire), CE
- TT3** = One SPDT (4 wire)
- TT53** = One SPDT (3 wire) hermetically sealed
- TT61** = One SPDT (3 wire) high temperature
- TT71** = One SPDT (3wire) gold contact

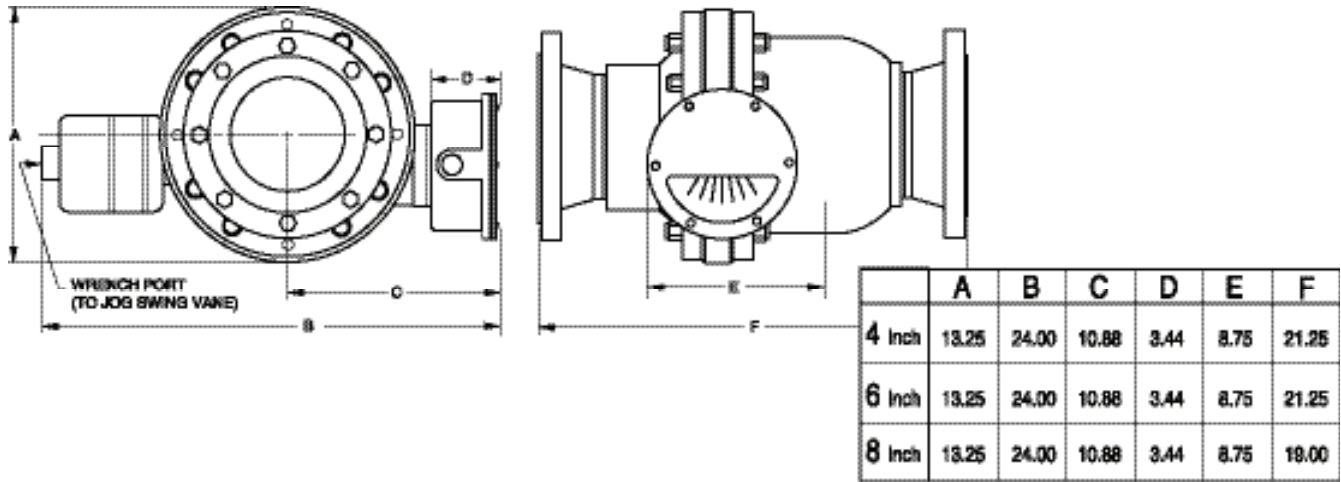
TTL Box

4-20 mA Transmitter with digital display, optional high amp mechanical switch, separate junction boxes for switch & transmitter

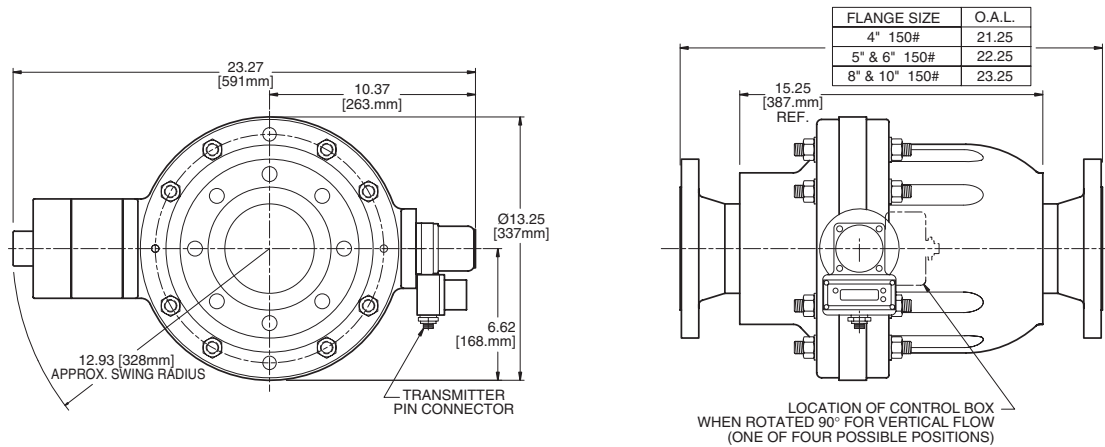
- TTL0** = Scale & pointer only
- TTL1** = One SPDT (3wire), CE
- TTL3** = One SPDT (4 wire)
- TTL53** = One SPDT (3 wire) hermetically sealed
- TTL61** = One SPDT (3 wire) high temperature
- TTL71** = One SPDT (3wire) gold contact

DIMENSIONS, XHF SERIES (approximate) in inches

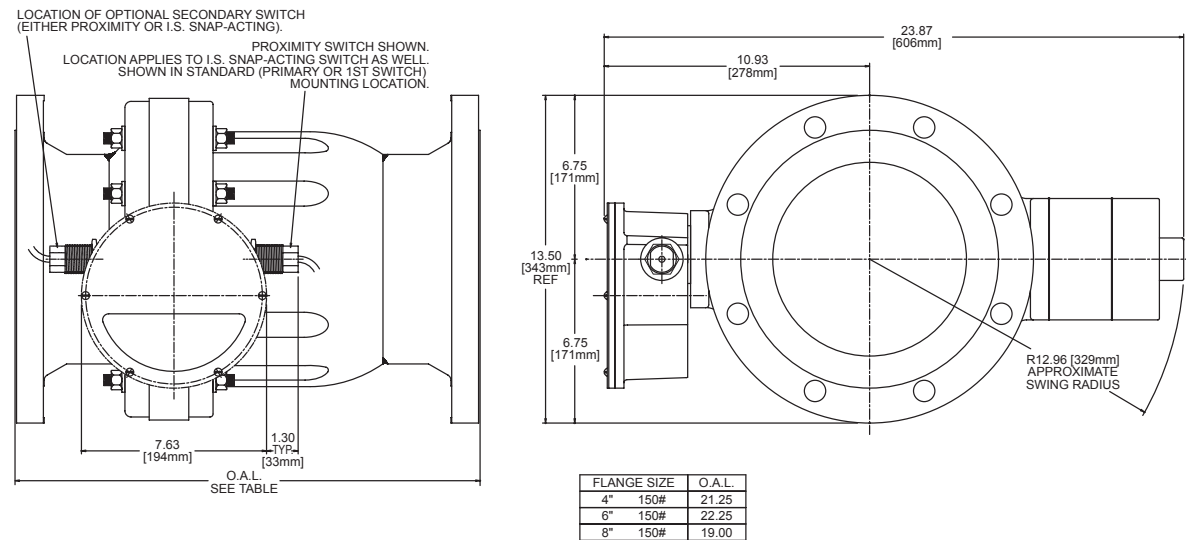
STANDARD OFFERING: Control Box "R"



STANDARD OFFERING: Control Box "G"

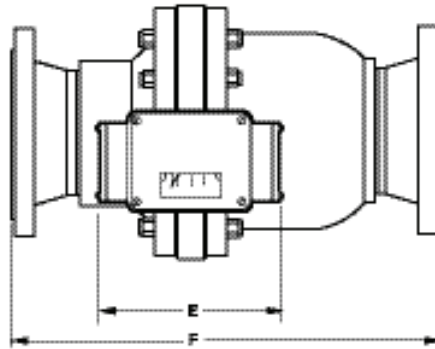
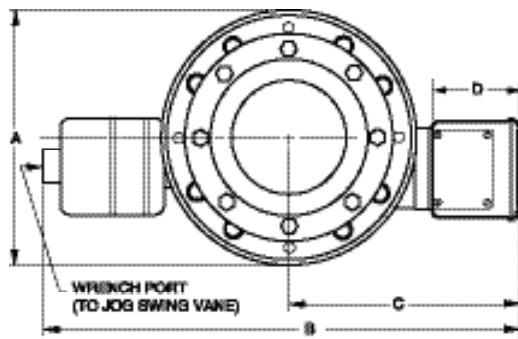


STANDARD OFFERING: Control Box "X"



DIMENSIONS, XHF SERIES (approximate) in inches

SPECIAL OFFERING: Control Box "T"



| | A | B | C | D | E | F |
|--------|-------|-------|-------|------|-----|-------|
| 4 Inch | 13.25 | 25.63 | 11.50 | 4.19 | 8.0 | 21.25 |
| 6 Inch | 13.25 | 25.63 | 11.50 | 4.19 | 8.0 | 21.25 |
| 8 Inch | 13.25 | 25.63 | 11.50 | 4.19 | 8.0 | 19.00 |

ENGINEERING DATA

Maximum fluid temperature:
200°F (95°C)

Optional max. fluid temperature:
400°F (205°C)

Maximum ambient temperature:
150°F (65°C)
CSA listed only to 105°F (40°C)

Maximum operating pressure
(3:1 safety factor):
300 PSI (20.69 BAR)

Readout accuracy, full scale:
±2%

FLOW & PRESSURE DROP

Meters with maximum flows to 800 GPM (3000 LPM) impose a pressure drop that increases with flow from 1.9 to 3.8 PSI (avg. 2.2). Flows greater than 800 GPM are made possible by having a dual spring modification (which raises the pressure drop). The pressure drop at maximum flow is 5.5 PSI.

SPECIAL OPTIONS

High temperature: (option HT) requires seals of Viton®, EPR, Kalrez™ or Teflon (compatible with fluid). A thermal barrier (heat-resistant cloth) is added between the housing and the control box, which must be used with service option "W" (weatherproof) or "X" (corrosion resistant). A metal scale is provided.

Identification tag: (option ST) customer-supplied information is stamped on a stainless steel tag that is attached to the nameplate.

Multi-pin connector: (option PC) the male half of a Brad-Harrison type multi-pin connector is pre-wired to switch(es), potentiometer or transmitter for quick and easy field installation. Maximum current for multi-pin connectors is 7 amps. Refer to available output types for additional ordering information, page 124.

Fault light: (option FL) a red LED in nameplate indicates when a flow limit has been reached by internal switch contact. Helpful with multiple meters. Add to end of symbol: **1** (1 light), **2** (2 lights), **A** (AC), **D** (DC), i.e. **FL2D**. Only available with service

option "W" weatherproof enclosures or "X" corrosive service. Requires switch option and switch setpoint. For optional LED colors, consult factory.

CE marked switches: (option CE) SPDT 3-wire switch for general purpose use. Standard on switches 1, 1B, 2 and 2B, optional on 3, 4, 61, 62, 71 and 72.

Tempered-glass window: (option TG) replaces the standard window. A tempered-glass window is employed where airborne solvents or high-ambient temperatures are common.

Transmitter-calibrated potentiometer: (option TC) the voltage signal from the potentiometer is recorded and filed at the factory for future reference. When a remote transmitter is ordered, the data recorded is used for calibration without requiring that the flow meter be returned to the factory.

Remote Transmitter Calibration: (option RX) coordinates specific meter with its matching remote transmitter (ordered separately) for proper factory calibration.



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