

TECHNOLOGY

**HOLYKELL®**

# **HTWF**

## **FLOWMETER**

• DATASHEET •

1. Pressure Measurement 2. Level Measurement 3. Temperature Measurement  
**4. Flow Measurement** 5. Display & Control Instruments

# HTWF Tri-rotor Flow Meter

## Product Introduction



The tri-rotor flow meter is a volumetric flow meter, which can continuously measure the flow of liquid in a closed pipeline. The flow meter is mainly composed of two parts: measurement part and accumulation part. The flow meter has low friction, long service life, and strong adaptability to viscosity changes. It is widely used in the measurement of various crude oil and refined oil transit trade settlements.

It can indicate on site, and can also be connected to an explosion-proof pulse or 4-20mA transmitter for remote measurement to realize automatic control.

## Working Principle

The measurement chamber of the three-rotor flow meter is shown in Figure 2.

The decomposed parts of the three-rotor flow meter are shown in Figure 3. The measurement chamber is composed of a cylindrical cavity with an inner chamber and three synchronously rotating rotors contained therein. The three rotors are installed in the cylindrical rotor chamber. The anti-leakage rotor gear is installed at the end of the anti-leakage rotor, and the displacement rotor gear is installed at the end of the displacement rotor. Through this gear rotation structure, the three rotors are kept in synchronous rotation. The number of teeth of the anti-leakage rotor gear is twice the number of teeth of each displacement rotor gear. Therefore, the speed of the leakage

prevention rotor is half of the speed of each displacement rotor.

When the fluid flows into the measurement chamber, the three rotors rotate synchronously, and the fluid is divided into three parts by the three rotors. As the rotor rotates, the fluid in the measuring chamber moves simultaneously until it is discharged.

Since the volume of the measuring chamber is known, the same volume of fluid is discharged every one rotation of the rotor, and the flow of fluid through the measuring chamber can be accurately measured by measuring the number of rotations of the leak-proof rotor. The rotation of the anti-leakage rotor is transmitted to the counter for counting through the gear on the shaft and other transmission shafts, and the standard pulse signal is output.

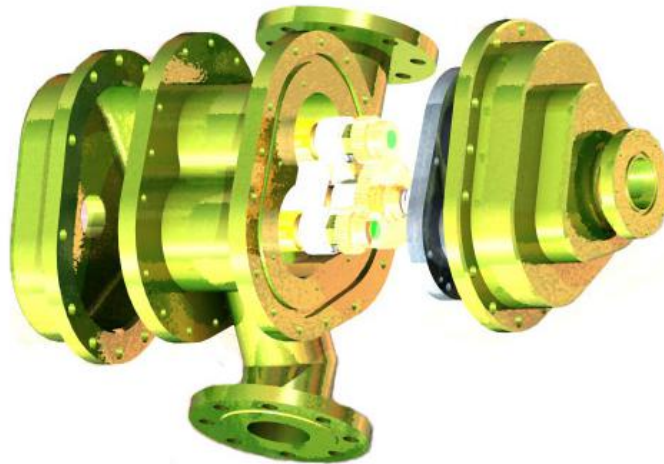


Figure 2 Tri-rotor flow meter measurement chamber

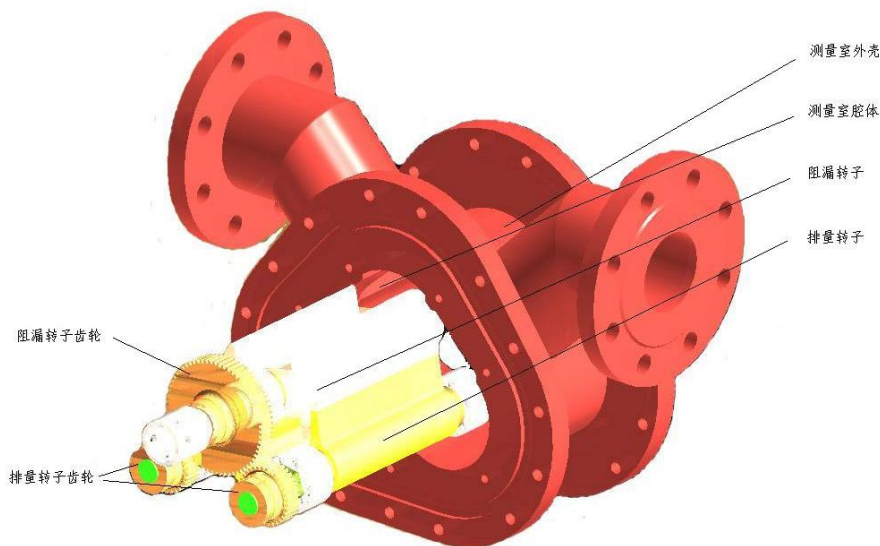


Figure 3 Component of the measurement chamber

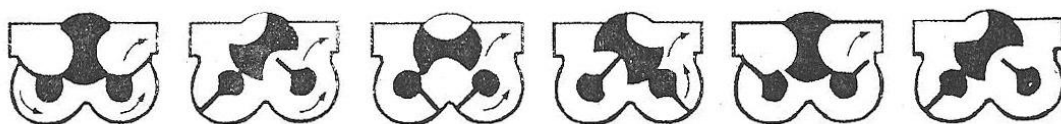


Figure 4 Schematic diagram of rotor operation of tri-rotor flow meter

## Specification

| Parameter              | Specification                                                                                                                                                                                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal pressure (MPa) | 1.6,2.5,4.0,6.3,10                                                                                                                                                                                                                                                                                                        |
| Medium                 | Crude oil, asphalt, glue, ink, pulp, animal feed, cement mixture, liquefied petroleum gas, chemical process, toothpaste, petroleum, cosmetics, fuel oil, lubricating oil, aviation refueling, medicine, beverage, food, alcohol, liquefaction acid, alkali, salt, water, oil and other liquid media such as gas and paint |
| Temperature            | -10℃~80℃<br>Special: -40℃~80℃ (with insulation jacket),<br>+60℃~+350℃ (with extension bracket)                                                                                                                                                                                                                            |
| Medium viscosity       | Low viscosity type: <2mPa.s<br>Normal viscosity type: 2~200 mPa.s<br>High viscosity type: >2~350,000 mPa.s                                                                                                                                                                                                                |
| Diameter               | 15,20,25,40,50,80,100,150,200,250,300,350,400,450,500                                                                                                                                                                                                                                                                     |
| Main material          | Body:<br>Standard type: steel Special type: aluminum, copper, stainless steel<br>Rotor:<br>Standard type: steel Special type: aluminum, copper, stainless steel                                                                                                                                                           |
| Output                 | Pulse signal 4~20mA (three-wire system), 1-5V, 4~20mA +HART protocol, MODBUS, supporting RS232, RS485 communication (optional)                                                                                                                                                                                            |
| Explosion-proof grade  | EXiaIIBT4                                                                                                                                                                                                                                                                                                                 |
| Protection grade       | IP65                                                                                                                                                                                                                                                                                                                      |
| Compensation range     | Mechanical temperature compensation: -30℃~+120℃                                                                                                                                                                                                                                                                           |

**Dimensions**

| DN(mm)   | L   | H   | I   | D   | D1  | n-Φ  |
|----------|-----|-----|-----|-----|-----|------|
| HTWF 20  | 200 | 270 | 89  | 105 | 75  | 4-14 |
| HTWF 25  | 260 | 300 | 122 | 115 | 85  | 4-14 |
| HTWF 40  | 340 | 359 | 144 | 150 | 110 | 4-18 |
| HTWF 50  | 340 | 359 | 144 | 165 | 125 | 4-18 |
| HTWF 65  | 380 | 410 | 194 | 185 | 145 | 8-18 |
| HTWF 80  | 380 | 410 | 194 | 200 | 164 | 8-18 |
| HTWF 100 | 500 | 550 | 273 | 235 | 190 | 8-22 |

