



## BiRotor Plus Models B271, B274, B281, B284, B285

### DESCRIPTION

The BiRotor Plus™ meter is a volumetric flow measuring device designed for the accurate measurement of petroleum liquids in a variety of applications. This double case meter combines the rugged durability and long service life of the traditional BiRotor meter with the improved accuracy and pulse output associated with today's most sophisticated devices.

Utilizing single or dual outputs, with two non-wetted pick-offs mounted 90° electrically out of phase, the BiRotor Plus complies with API Level B pulse output standards. Output signals are amplified and shaped by a preamplifier mounted directly on the meter for transmission to accessories such as totalizing counters, digital readout devices, provers and other control equipment and instrumentation.

Typical applications includes loading/unloading, batching, blending and inventory control of petroleum products where accuracy and repeatability are the deciding factors in meter selection. It is recommended for loading and unloading tankers, railcars or trucks, pipelines, aircraft refueling, and general purpose flow measurement.

### DESIGN FEATURES

- Superior performance: Linearity  $\pm 0.075\%$  or better over 30:1 flow range; Repeatability  $\pm 0.01\%$
- Double case construction avoids loss of calibration due to changes in pressure or temperature
- New rotor profile provides high resistance to air slugs and entrained solids
- No metal-to-metal contact
- Dual pulse output meets Level B pulse security described in API manual, Chapter 5.5.4.4.
- Explosion proof amplifier housing
- Single or dual pulse output - non-wetted pickoffs
- Reduced number of parts reduces maintenance requirements.
- Variety of readout instrumentation available
- Horizontal or vertical mounting
- Class I, Division 1, Group C & D, NEMA 4X, UL, cUL, ATEX, PED, SEP, NTEP, CRN (Canada) and Industry Canada (Canada)
- Bi-Directional flow capability (Consult Factory)
- Capable of operating @ 400 cst. max viscosity

### PERFORMANCE

Linearity:  $\pm 0.075\%$  or better over 30:1 flow range  
Repeatability:  $\pm 0.01\%$   
Premium Linearity of less than 0.075% available (Consult Factory)

#### Pick-off Temperature

Standard: -20 to 180°F (-29 to 82°C)  
High Temperature Option: -20 to 325°F (-29 to 163°C)  
Requires extension



### MATERIALS OF CONSTRUCTION

**Housing:** Carbon Steel

#### Measuring Unit

End Plates: Cast Aluminum

Rotors: Cast Aluminum, Hard Anodized

Rotor Shafts: 17-4 ph Stainless Steel

Rotor Bearings: Stainless Steel Ball Bearings

**O-Rings:** Viton Standard (Other elastomers available)

### SPECIFICATIONS - Electrical

Dual channel preamplifier

Single or dual, non-wetted, reluctance pick-offs

#### Preamplifier Performance

Inputs

Supply Voltage: 10 to 30 Vdc

Sensor Type: Reluctance

Type: Sine Wave

Amplitude: 40 mV peak to peak minimum

Outputs

Powered Pulse Output

Type: Square Wave

Frequency Range: 0 to 5 kHz

Amplitude: 0 to 5 V

1 kOhm interval pull-ups, 20 mA max.

Variable Voltage Output

Type: Square Wave

Frequency Range: 0 to 5 kHz.

Amplitude: 0 to Supply Voltage

1 kOhm internal pull-ups, 70 mA max.

Open Collector Output (Per Channel)

Type: Square Wave

Frequency Range: 0 to 5 kHz.

Max. Voltage: 30 Vdc

Max. Current: 125 mA

Max. Power: 0.5 watts

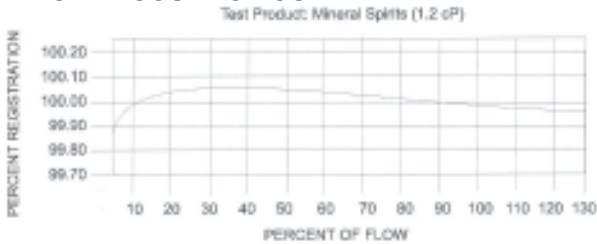
Temperature: -20 to 180°F (-29 to 82°C)

**SPECIFICATIONS - METER**

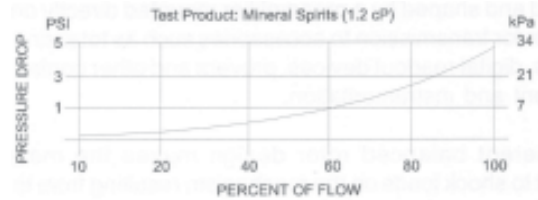
SPECIFICATIONS - METER					Extended Flow Range	
Model Number	Flange Connections	Maximum Safe Working Pressure	Maximum Safe Working Temp. <sup>(1)</sup>	Standard Flow	Minimum	Intermittent Maximum <sup>(2)</sup>
B271	3", 150 lb. ANSI DN 80 PN 16	285 psi; 1964 kPa; 16 Bar	-20° to 180° F -29° to 82° C	43 to 425 U.S. gpm 163 to 1609 lpm	30 gpm 114 lpm	550 gpm 2081 lpm
B274	3", 300 lb. ANSI DN 80 PN 40	740 psi; 5099 kPa; 40 Bar	-20° to 180° F -29° to 82° C			
B281	4", 150 lb. ANSI DN 100 PN 16	285 psi; 1964 kPa; 16 Bar	-20° to 180° F -29° to 82° C	65 to 1000 U.S. gpm 246 to 3785 lpm	40 gpm 151 lpm	1200 gpm 4542 lpm
B284	4", 300 lb. ANSI DN 100 PN 40	740 psi; 5099 kPa; 40 Bar	-20° to 180° F -29° to 82° C			
B285	6", 150 lb. ANSI	285 psi; 1964 kPa; 16 Bar	-20° to 180° F -29° to 82° C	65 to 1000 U.S. gpm 246 to 3785 lpm	40 gpm 151 lpm	1200 gpm 4542 lpm

(1) Standard temperature shown. See high temperature option. (2) Intermittent usage equals 5 hours or less in a 24 hour period.

**TYPICAL ACCURACY CURVE**



**TYPICAL PRESSURE DROP CURVE**



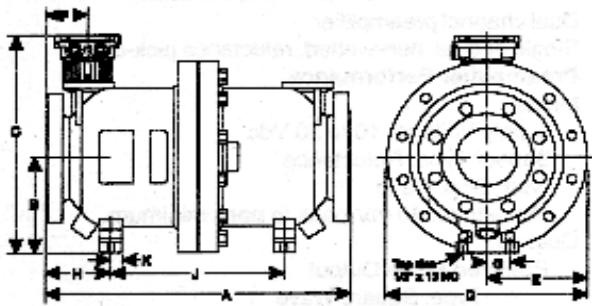
**K-Factor - Nominal**

3" Model B271 & B274; 159 pulses/gallon (42 pulses/liter)

4" Model B281 & B284; 96 pulses/gallon (25 pulses/liter)

Note: K-Factor will vary for each meter

**DIMENSIONS -** (For Certified Dimension Prints - Consult Factory)



**SHIPPING WEIGHT AND VOLUME (APPROX.)**

MODEL B271 & B274; 193lb. (88 kg), 9.3 ft<sup>3</sup> (0.27 M<sup>3</sup>)

Model B281 & B284; 293 lb. (133 kg.), 9.5 ft<sup>3</sup> (0.27 M<sup>3</sup>)

**ACCESSORIES**

Electronic Register

The BiRotor Plus is compatible with most electronic monitoring and measurement systems.

**ORDERING INFORMATION**

When ordering, please specify product to be metered, product viscosity, product temperature range, rate of flow, operating pressure and accessories.

MODEL	SIZE	A	B	C	D	E	F	G	H	J
B271 & B274	3" 150 lb. ANSI	16-3/4"	6"	13-7/8"	11-3/4"	5-7/8"	2-11/16"	1-3/8"	3-5/8"	9-19/32"
	3" 300 lb. ANSI	17-1/8"	6"	13-7/8"	11-3/4"	5-7/8"	2-11/16"	1-3/8"	3-13/16"	9-19/32"
B281 & B284	4" 150 lb ANSI	20"	6-5/8"	16"	13-3/4"	6-5/8"	2-3/4"	1-1/2"	4-1/4"	11-1/2"
	4" 300 lb ANSI	20-5/8"	6-5/8"	16"	13-3/4"	6-5/8"	2-3/4"	1-1/2"	4-9/16"	11-1/2"
B285	6" 150 lb ANSI	Consult Factory								



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