

Technical Data

Large Mechanical BiRotors

Model B10x	Model B20x
Model B11x	Model B21x
Model B12x	Model B22x
Model B13x	Model B23x



General

The BiRotor Meter is a positive displacement meter utilized in the most demanding applications requiring accuracy, long life and ruggedness.

The electronic "P" Series meter configuration features a sealed measuring chamber with one reluctance type electronic sensor. The sealed electronic sensor transmits amplified signals to local or remote instruments. A second optional sensor is available to allow dual channel pulses that are 90 degrees electrically out of phase.

Accuracy

The Mechanical BiRotor's accuracy is attained by the unique BiRotor design which features two finely balanced rotors. An adjuster, incorporated on the meter, is used to assure maximum accuracy within the meter's flow range (Mechanical Only).

Principle of Operation

The two spiral fluted rotors within the measuring unit are dynamically balanced to minimize bearing wear. (Refer to Figure 1). As the product enters the intake of the measuring unit, the two rotors divide the product into precise segments of volume momentarily and then return these segments to the outlet of the measuring unit. During this "liquid transition", the rotation of the two rotors is directly proportional to the flow rate of the liquid thruput. A gear train located outside the measuring unit chamber conveys mechanical rotation of the rotors to a mechanical or electronic register for totalization of liquid thruput. For P-Style units, a pulse verification gear located outside the measuring unit chamber conveys mechanical rotation of the rotors to the sensor and to the electronic register for totalization of liquid thruput.

Dependability

There is no metal to metal contact between the rotors and the measurement chamber. The meter is therefore extremely durable. The rotors, bearings and timing gears are the only moving parts. Maintenance requirements are the lowest in the industry. In addition, materials incorporated within the meter assembly are selected specifically for a wide range of petroleum and industrial liquid applications.

Affordability

In spite of its superior performance, Brodie can offer the Mechanical BiRotor at a very competitive price.

Electrical Classification (P-Style)

Class 1, Groups C & D, Division 1, Explosion proof; Recommended connecting cables Belden 8770, 3 Conductor Shielded, 18 gauge stranded. Maximum recommended cable length 3000 feet (914 meters). Input power: 6-28 Vdc at 20 mA, Output Signal: TTL (0-5V) or voltage dependent.

Design Features

- Extremely long service life
- Economical low maintenance
- Two simple rotors with no metal-to-metal contact are the only moving parts in the measuring chamber.
- No oscillating, reciprocating or sliding parts or cranks to wear or disturb the balanced rotary.
- Conforms with International standards of flowmeter accuracy.

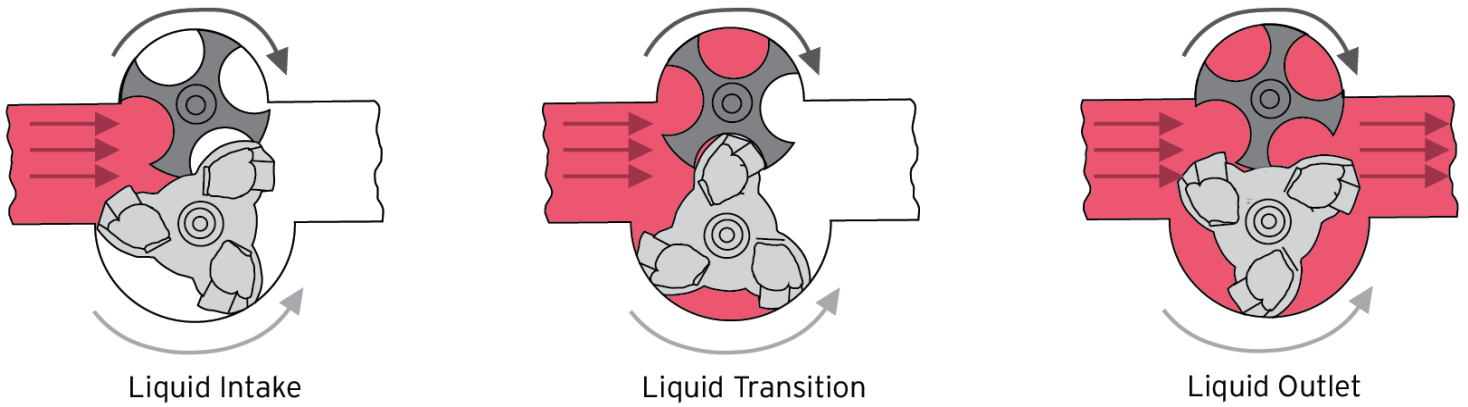


Figure 1 - BiRotor Meter Principle of Operation Diagram

Accessories

Mechanical:

- Preset Counters
- Control Valves
- Large Numerical Registers
- Pulse Transmitters
- Ticket Printers
- Strainers

P-Style:

- Electronic Register
- Dual Pickoffs for "B" Level Pulse Security
- Preamp

Ordering Information

In order to accurately process an order, such information as product to be metered, product viscosity, product temperature range, ambient temperature range, rate of flow, operating pressure, units of registration, accessories required, and optional features needed must be specified by the customer.

Materials of Construction

Housing:

Welded Steel Construction Combining Steel Castings and Drawn Steel Plate

Measuring Unit:

Rotors:

Three Lobe Rotor - Cast Iron
Four Fluted Rotor - Aluminum

Rotor Shafts:

E.T.D 150

Rotor Bearings:

Stainless Steel

Body and End Covers:

Cast Iron

Counter Base Plate:

Body:

Steel

O-Ring:

Viton (Standard)

Drive Shafts:

Stainless Steel

Drive Gears:

Stainless Steel

Ball Bearings:

Stainless Steel

Flow Ranges

Models		K-Factor	10 cP Accuracy +/-0.15%		100 cP Accuracy +/-0.10%		300 cP Accuracy +/-0.10%		500 cP Accuracy +/-0.10%	
			Min	Max	Min	Max	Min	Max	Min	Max
B10X	BPH	840 pul/bbl	214	2,142	43	2,142	43	2,142	34	1,713
	M ³ H	134 pul/M ³	34	341	7	341	7	341	5	273
B11X	BPH	588 pul/bbl	357	3,571	178	3,571	72	3,571	36	2,856
	M ³ H	94 pul/M ³	57	567	29	567	12	567	6	453
B12X	BPH	350 pul/bbl	1,000	5,000	250	5,000	100	5,000	50	4,000
	M ³ H	56 pul/M ³	158	794	40	794	16	794	8	635
B13X	BPH	175 pul/bbl	2,500	12,500	625	12,500	250	12,500	125	10,000
	M ³ H	28 pul/M ³	391	1,987	100	1,987	40	1,987	20	1,590
B20X	BPH	840 pul/bbl	900	3,000	757	3,000	300	3,000	240	2,400
	M ³ H	134 pul/M ³	143	476	120	476	47	476	37	380
B21X	BPH	588 pul/bbl	1,414	4,714	821	4,714	642	4,714	471	3,770
	M ³ H	94 pul/M ³	224	749	130	749	102	749	75	600
B22X	BPH	350 pul/bbl	1,857	6,250	1,071	6,250	857	6,250	624	5,000
	M ³ H	56 pul/M ³	295	993	170	993	136	993	100	795
B23X	BPH	175 pul/bbl	3,857	13,000	2,214	13,000	1,714	13,000	1,300	10,400
	M ³ H	28 pul/M ³	613	2,066	352	2,066	272	2,066	206	1,653

Flange Connections, Mechanical

Model	Connections	Max Working Pressure @ 100F	DIN Connections	Max Working Pressure
B101	8" 150 lb. ANSI	285 PSI	DN 200 PN 16	16 bar
			DN 200 PN 25	19.6 Bar
B103	8" 300 lb. ANSI	300 PSI	DN 200 PN 25	20.7 Bar
B104	8" 300 lb. ANSI	740 PSI	DN 200 PN 25	25 Bar
			DN 200 PN 40	40 Bar
			DN 200 PN 64	51 Bar
B105	8" 600 lb. ANSI	1480 PSI	DN 200 PN 64	64 Bar
			DN 200 PN 100	100 Bar
B111	10" 150 lb. ANSI	285 PSI	DN 250 PN 16	16 bar
			DN 250 PN 25	19.6 Bar
B113	10" 300 lb. ANSI	300 PSI	DN 250 PN 25	20.7 Bar
B114	10" 300 lb. ANSI	740 PSI	DN 250 PN 25	25 Bar
			DN 250 PN 40	40 Bar
			DN 250 PN 64	51 Bar
B115	10" 600 lb. ANSI	1480 PSI	DN 250 PN 64	64 Bar
			DN 250 PN 100	100 Bar
B121	12" 150 lb. ANSI	285 PSI	DN 300 PN 16	16 bar
			DN 300 PN 25	19.6 Bar
B123	12" 300 lb. ANSI	300 PSI	DN 300 PN 25	20.7 Bar
B124	12" 300 lb. ANSI	740 PSI	DN 300 PN 25	25 Bar
			DN 300 PN 40	40 Bar
			DN 300 PN 64	51 Bar
B125	12" 600 lb. ANSI	1480 PSI	DN 300 PN 64	64 Bar
			DN 300 PN 100	100 Bar
B131	16" 150 lb. ANSI	285 PSI	DN 400 PN 16	16 Bar
			DN 400 PN 25	19.6 Bar
B133	16" 300 lb. ANSI	300 PSI	DN 400 PN 25	20.7 Bar
B134	16" 300 lb. ANSI	740 PSI	DN 400 PN 25	25 Bar
			DN 400 PN 40	40 Bar
			DN 400 PN 64	51 Bar
B135	16" 600 lb. ANSI	1480 PSI	DN 400 PN 64	62 Bar
			DN 400 PN 100	62 Bar

Flange Connections, Mechanical APL

Model	Connections	Max Working Pressure @ 100F	DIN Connections	Max Working Pressure
B201	8" 150 lb. ANSI	285 PSI	DN 200 PN 16	16 Bar
			DN 200 PN 25	19.6 Bar
B203	8" 300 lb. ANSI	300 PSI	DN 200 PN 25	20.7 Bar
B204	8" 300 lb. ANSI	740 PSI	DN 200 PN 25	25 Bar
			DN 200 PN 40	40 Bar
			DN 200 PN 64	51 Bar
B205	8" 600 lb. ANSI	1480 PSI	DN 200 PN 64	64 Bar
			DN 200 PN 100	100 Bar
B211	10" 150 lb. ANSI	285 PSI	DN 250 PN 16	16 Bar
			DN 250 PN 25	19.6 Bar
B213	10" 300 lb. ANSI	300 PSI	DN 250 PN 25	20.7 Bar
B214	10" 300 lb. ANSI	740 PSI	DN 250 PN 25	25 Bar
			DN 250 PN 40	40 Bar
			DN 250 PN 64	51 Bar
B215	10" 600 lb. ANSI	1480 PSI	DN 250 PN 64	64 Bar
			DN 250 PN 100	100 Bar
B221HC	12" 150 lb. ANSI	285 PSI	DN 300 PN 16	16 Bar
			DN 300 PN 25	19.6 Bar
B223HC	12" 300 lb. ANSI	300 PSI	DN 300 PN 25	20.7 Bar
B224HC	12" 300 lb. ANSI	740 PSI	DN 300 PN 25	25 Bar
			DN 300 PN 40	40 Bar
			DN 300 PN 64	51 Bar
B225HC	12" 600 lb. ANSI	1480 PSI	DN 300 PN 64	64 Bar
			DN 300 PN 100	100 Bar
B231	16" 150 # ANSI	285 PSI	DN 300 PN 16	16 Bar
			DN 300 PN 25	19.6 Bar
B233	16" 300# ANSI	300 PSI	DN 300 PN 25	20.7 Bar
B234	16" 300# ANSI	740 PSI	DN 300 PN 25	25 Bar
			DN 300 PN 40	40 Bar
			DN 300 PN 64	51 Bar
B235	16" 600# ANSI	1480 PSI	DN 300 PN 64	62 Bar
			DN 300 PN 100	102 Bar

Shipping Weights and Volume

Model	Approximate Weight & Volume	Model	Approximate Weight & Volume
B101	842 lbs. @ 20.7 Cu. Feet 382 kgs. @ .58 Cu. Meters	B201	842 lbs. @ 20.7 Cu. Feet 382 kgs. @ .58 Cu. Meters
B103	898 lbs. @ 20.7 Cu. Feet 407 kgs. @ .58 Cu. Meters	B203	898 lbs. @ 20.7 Cu. Feet 407 kgs. @ .58 Cu. Meters
B104	1,275 lbs. @ 23.1 Cu. Feet 578 kgs. @ .65 Cu. Meters	B204	1,275 lbs. @ 23.1 Cu. Feet 578 kgs. @ .65 Cu. Meters
B105	1,766 lbs. @ 24.1 Cu. Feet 801 kgs. @ .68 Cu. Meters	B205	1,766 lbs. @ 24.1 Cu. Feet 801 kgs. @ .68 Cu. Meters
B111	1,294 lbs. @ 24.5 Cu. Feet 587 kgs. @ .69 Cu. Meters	B211	1,294 lbs. @ 24.5 Cu. Feet 587 kgs. @ .69 Cu. Meters
B113	1,368 lbs. @ 24.5 Cu. Feet 620 kgs. @ .69 Cu. Meters	B213	1,368 lbs. @ 24.5 Cu. Feet 620 kgs. @ .69 Cu. Meters
B114	1,623 lbs. @ 27.6 Cu. Feet 736 kgs. @ .78 Cu. Meters	B214	1,623 lbs. @ 27.6 Cu. Feet 736 kgs. @ .78 Cu. Meters
B115	2,475 lbs. @ 29.7 Cu. Feet 1,122 kgs. @ .84 Cu. Meters	B215	2,475 lbs. @ 29.7 Cu. Feet 1,122 kgs. @ .84 Cu. Meters
B121	3,050 lbs. @ 48 Cu. Feet 1,383 kgs. @ 1.36 Cu. Meters	B221	3,050 lbs. @ 48 Cu. Feet 1,383 kgs. @ 1.36 Cu. Meters
B123	3,154 lbs. @ 48 Cu. Feet 1,430 kgs. @ 1.36 Cu. Meters	B223	3,154 lbs. @ 48 Cu. Feet 1,430 kgs. @ 1.36 Cu. Meters
B124	3,495 lbs. @ 49 Cu. Feet 1,585 kgs. @ .78 Cu. Meters	B224	3,495 lbs. @ 49 Cu. Feet 1,585 kgs. @ 1.38 Cu. Meters
B125	4,895 lbs. @ 51 Cu. Feet 2,220 kgs. @ 1.44 Cu. Meters	B225	4,895 lbs. @ 51Cu. Feet 2,220 kgs. @ 1.44 Cu. Meters
B131	8,500 lbs. @ 136 Cu. Feet 3,855 kgs. @ 3.85 Cu. Meters	B231	8,500 lbs. @ 136 Cu. Feet 3,855 kgs. @ 3.85 Cu. Meters
B133	8,550 lbs. @ 136 Cu. Feet 3,878 kgs. @ 3.85 Cu. Meters	B233	8,550 lbs. @ 136 Cu. Feet 3,878 kgs. @ 3.85 Cu. Meters
B134	8,800 lbs. @ 136 Cu. Feet 3,991 kgs. @ 3.85 Cu. Meters	B234	8,800 lbs. @ 136 Cu. Feet 3,991 kgs. @ 3.85 Cu. Meters
B135	8,900 lbs. @ 136 Cu. Feet 4,036 kgs. @ 3.85Cu. Meters	B235	8,900 lbs. @ 136 Cu. Feet 4,036 kgs. @ 3.85Cu. Meters

NOTE:

Do NOT operate this instrument in excess of the specifications listed. Failure to heed this warning could result in serious injury and/or damage to the equipment.

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