

Technical Data: beta

Pump Version	Capacity at Maximum Backpressure					Capacity at 1/2 Maximum Backpressure					Pre-Primed Suction Lift		Max. Stroking Rate spm	Suction/Discharge Tubing Connectors**		Shipping Weight (higher weights are for SS)	
	U.S.				U.S.				O.D. x I.D.					lbs.	(kg)		
	psig	(bar)	GPH	(L/h)	mL/ stroke	psig	(bar)	GPH	(L/h)	mL/ stroke	ft.	(m)				inches	
BT4a																	
1000	145	(10)	0.19	(0.74)	0.07	73	(5)	0.21	(0.82)	0.08	16.4	(5)	180	1/4 x 3/16	6.4-7.9	(2.9-3.6)	
1601	253	(17.5)	0.29	(1.1)	0.10	126	(8.75)	0.37	(1.4)	0.13	16.4	(5)	180	1/4 x 3/16	6.4-7.9	(2.9-3.6)	
1602	253	(17.5)	0.55	(2.1)	0.19	126	(8.75)	0.66	(2.5)	0.24	16.4	(5)	180	1/4 x 3/16	6.4-7.9	(2.9-3.6)	
1005	145	(10)	1.1	(4.4)	0.41	73	(5)	1.32	(5.0)	0.46	16.4	(5)	180	1/2 x 3/8	6.8-8.6	(3.1-3.9)	
0708	101	(7)	1.9	(7.1)	0.66	50.5	(3.5)	2.22	(8.4)	0.78	9.8	(3)	180	1/2 x 3/8	6.8-8.6	(3.1-3.9)	
0413	58	(4)	3.2	(12.3)	1.14	29	(2)	3.75	(14.2)	1.31	6.5	(2)	180	1/2 x 3/8	6.8-8.6	(3.1-3.9)	
0220	29	(2)	5.0	(19.0)	1.76	14.5	(1)	5.52	(20.9)	1.94	6.5	(2)	180	1/2 x 3/8	7.3-9.7	(3.3-4.4)	
BT5a																	
1605	253	(17.5)	1.1	(4.1)	0.38	126	(8.75)	1.29	(4.9)	0.45	13.1	(4)	180	1/2 x 3/8	9.9-11.7	(4.5-5.3)	
1008	145	(10)	1.8	(6.8)	0.63	73	(5)	2.19	(8.3)	0.76	9.8	(3)	180	1/2 x 3/8	9.9-11.7	(4.5-5.3)	
0713	101	(7)	2.9	(11.0)	1.02	50.5	(3.5)	3.46	(13.1)	1.21	9.8	(3)	180	1/2 x 3/8	9.9-11.7	(4.5-5.3)	
0420	58	(4)	4.5	(17.1)	1.58	29	(2)	5.04	(19.1)	1.77	9.8	(3)	180	1/2 x 3/8	10.4-12.8	(4.7-5.8)	
0232*	29	(2)	8.4	(32.0)	2.96	14.5	(1)	9.56	(36.2)	3.35	6.5	(2)	180	1/2 x 3/8	11.2-14.6	(5.1-6.6)	

With auto-degassing liquid ends

BT4a															
1601	253	(17.5)	0.16	(0.59)	0.06	126	(8.75)	0.21	(0.78)	0.07	5.9	(1.8)	180	1/4 x 3/16	6.4 (2.9)
1602	253	(17.5)	0.37	(1.4)	0.13	126	(8.75)	0.45	(1.7)	0.16	6.9	(2.1)	180	1/4 x 3/16	6.4 (2.9)
1005	145	(10)	0.95	(3.6)	0.33	73	(5)	1.05	(4.0)	0.37	8.8	(2.7)	180	1/2 x 3/8	6.8 (3.1)
0708	101	(7)	1.74	(6.6)	0.61	50.5	(3.5)	1.98	(7.5)	0.69	6.5	(2.0)	180	1/2 x 3/8	6.8 (3.1)
0413	58	(4)	2.8	(10.8)	1.00	29	(2)	3.3	(12.6)	1.17	6.5	(2.0)	180	1/2 x 3/8	6.8 (3.1)
0220	29	(2)	4.3	(16.2)	1.50	14.5	(1)	4.7	(18.0)	1.67	5.9	(1.8)	180	1/2 x 3/8	7.3 (3.3)
BT5a															
1605	253	(17.5)	0.87	(3.3)	0.31	126	(8.75)	1.00	(3.8)	0.35	9.8	(3)	180	1/2 x 3/8	9.9 (4.5)
1008	145	(10)	1.66	(6.3)	0.58	73	(5)	1.98	(7.5)	0.69	9.8	(3)	180	1/2 x 3/8	9.9 (4.5)
0713	101	(7)	2.77	(10.5)	0.97	50.5	(3.5)	3.2	(12.3)	1.14	8.2	(2.5)	180	1/2 x 3/8	9.9 (4.5)
0420	58	(4)	4.12	(15.6)	1.44	29	(2)	4.6	(17.4)	1.61	8.2	(2.5)	180	1/2 x 3/8	10.4 (4.7)

Above capacities and suction lift refer to pumps tested on water at 115 VAC, 60 Hz, and an ambient temperature of 70°F (20°C). Higher specific gravity fluids will reduce suction lift. Higher viscosity fluids will reduce capacity.

* Not available with bleed valve.

** SS versions use 1/4" female threads except models 0220, 0420, and 0232 which use 3/8" female threads.

Liquid end materials

Version	Liquid End	Suction/Discharge valves	Seals	Valve balls
PPE	Polypropylene	Polypropylene	EPDM	Ceramic
PPB	Polypropylene	Polypropylene	Viton®	Ceramic
PCE	PVC	PVC	EPDM	Ceramic
PCB	PVC	PVC	Viton®	Ceramic
NPE	Acrylic	PVC	EPDM	Ceramic
NPB	Acrylic	PVC	Viton®	Ceramic
TTT	PTFE with carbon	PTFE with Carbon	PTFE	Ceramic
SST	316 Stainless steel	316 Stainless Steel	PTFE	Ceramic

Auto-degassing type with Hastelloy C valve spring and PVDF valve seat.
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Interchangeable liquid ends

The following pump versions have interchangeable liquid ends:

BT4a 1005 and BT5a 1605

BT4a 0708 and BT5a 1008

BT4a 0413 and BT5a 0713

BT4a 0220 and BT5a 0420

Specifications: beta

Maximum stroke length:	0.05" (1.25 mm)		
Materials of construction			
Housing:	Fiberglass reinforced PPE		
Diaphragm:	PTFE-faced EPDM with plastic core		
Liquid end options:	Polypropylene, PVC, Acrylic/PVC, PTFE, 316 SS		
Enclosure rating:	NEMA 4X (IP 65)		
Motor insulation class:	F		
Power supply:	100-115 VAC, 200-230 VAC or 100-230 VAC, 1 phase, 50/60 Hz, +/- 10%		
Check valves:	Double ball		
Repeatability of the metering:	When used according to operating instructions, ±2% under constant conditions and at minimum 30% stroke length		
Power cord:	6 foot (2 m)		
Relay cable (optional):	6 foot (2 m)		
Relay load			
Fault relay only (options 1 & 3):	Contact load: 250 VAC, 2 A, 50/60 Hz Operating life: > 200,000 switch functions		
Fault and pacing relay (options 4 & 5):	Contact load: 250 VAC/DC, 2 A, 50/60 Hz Operating life: > 200,000 switch functions Residual impedance in ON-position ($R_{DS(on)}$): < 8 Ω Residual current in OFF-position: <1μA Maximum current: < 100 mA Maximum voltage: 24 VDC Switch functions: 15x10 ⁹ Contact closure: 100 ms (for pacing relay)		
Ambient temperature range:	14°F (-10°C) to 113°F (45°C)		
Max. fluid operating temperatures:	<u>Material</u>	<u>Constant</u>	<u>Short Term</u>
	Acrylic/PVC	113°F (45°C)	140°F (60°C)
	Polypropylene	122°F (50°C)	212°F (100°C)
	PVC	113°F (45°C)	140°F (60°C)
	PTFE	122°F (50°C)	248°F (120°C)
	316 SS	122°F (50°C)	248°F (120°C)
Average power drain at maximum stroking rate (Watts) / current drain at pump stroke (Amps)			
BT4a:	17W / 2.0 A or 15 A (peak current for approx. 1 ms)		
BT5a:	22W / 2.0 A or 15 A (peak current for approx. 1 ms)		
Service factor:	1.15		
Warranty:	2 years on drive, 1 year on liquid end		
Industry standards:	CE, CSA and UL approved		
Valve threads:	NP, PP, PC, TT Versions: M20 x 1.5 (provided with tubing adapters)		
Standard Production Test:	All pumps are tested for capacity at maximum pressure prior to shipment		
Max. solids size in fluid:	Pumps with 1/4" valves: 15μ - Pumps with 1/2" valves: 50μ		
Controlling contact (pulse):	With voltage free contact, or with semiconductor sink logic control (NPN), not source logic (PNP). With a residual voltage of <700 mV, the contact load is approximately 0.5 mA at +5 VDC. (Note: Semiconductor contacts that require >700 mV across a closed contact should not be used.) Pump ignores contacts exceeding maximum input rate, and will not remember.		
Necessary contact duration:	20 ms		
Recommended Viscosity:	max. 200 cPs for standard liquid end max. 500 cPs for bleed valve max. 50 cPs for auto-degassing metering pumps		

Identity code: beta metering pumps

Series:
BT4a beta/ 4 version a
BT5a beta/ 5 version a

BT4a 1000 1601 1602 1005 0708 0413 0220		BT5a 1605 1008 0713 0420 0232		Pump version:									
		Liquid end materials: PP Polypropylene PC PVC NP Acrylic/PVC TT PTFE SS SS											
		Seal: E EPDM seals (PP, PC, NP) B Viton® seals (PP, PC, NP) T PTFE seals (TT, SS)		Viton® is a registered trademark of DuPont Dow Elastomers									
				Liquid end version: 0 W/o bleed valve, w/o springs (TT, SS and version 0232) 1 W/o bleed valve, with springs (TT, SS and version 0232) 2 With bleed valve, w/o springs (PP, PC, NP except version 0232) 3 With bleed valve, with springs (PP, PC, NP except version 0232) 9 With auto-degassing (PP, NP - except versions 1000, 0232)									
				Connection: 0 Standard according to technical data 6 1/2" x 3/8" tube fittings		NOTE: Connector option 6 must be used on all pumps with standard 1/2" x 3/8" tubing connections, and it may be used on pumps with 1/4" x 3/16" tubing connectors. Use option 0 on all pumps with standard NPT connections.							
				Labeling: 0 Standard, with logo									
				Electrical connection (± 10%): A 200-230 V, 50/60 Hz B 100-115 V, 50/60 Hz U 100-230 V, 50/60 Hz									
				Cable and plug with 6 ft (2 m) power cord, single phase: A European plug D N. American plug, 115 V U N. American plug, 230 V									
				Relay: 0 Without relay 1 Fault annunciating relay, drops out 3 Fault annunciating relay, pulls in 4 Option 1 + pacing relay 5 Option 3 + pacing relay									
				Accessories: 0 Standard for PP, PC, NP; none for TT, SS									
				Operating mode configuration: 0 Standard operating mode 1 With lock for one operating mode: external or manual									
				Options: 000 Standard									
BT4a 1602 NP B 9 0 0 B D 0 0 0 000													