

QB2-SD

SINGLE-USE PRECISION MICROPUMP



Introducing a new microdosing technology from the makers of the biopharma industry's most trusted pump technology – the four-piston diaphragm pump from Quattroflow®. This innovation is a game-changer in liquid-handling operations that require precise and delicate dosing of products, especially those found in cell and gene therapy, laboratory, and small-scale upstream and downstream applications.

The new single-use Quattroflow® Microdosing QB2-Standard (QB2-SD) Pump operates entirely differently from the legacy line of Quattroflow products. Using the principle of positive displacement with a rotary action, the lightweight QB2-SD gently transfers fixed cavities of liquid of 25 µl with a maximum flow rate of 2.7 L/hr around a rotor from inlet to outlet. This provides high levels of accuracy without the need for additional sensors that are typically combined with peristaltic pumps. The pumps also generate a high vacuum capability and handle high viscosities. The system allows easy and rapid changeovers since the single-use pumps simply click in and out of a motor drive, which is especially convenient when wearing full PPE.

Also available from PSG Biotech is a plug-and-play drive device called the Quattroflow Q-Drive-Alpha. This device is intuitively easy to use and can allow commercial use of the pumps in laboratories and similar environments.

The QB2-SD Microdosing Pump can be Gamma Irradiated up to 50 kGy with USP <88> Class VI certified materials, making it an ideal solution for handling biologics, including cells, proteins, mAbs, etc.

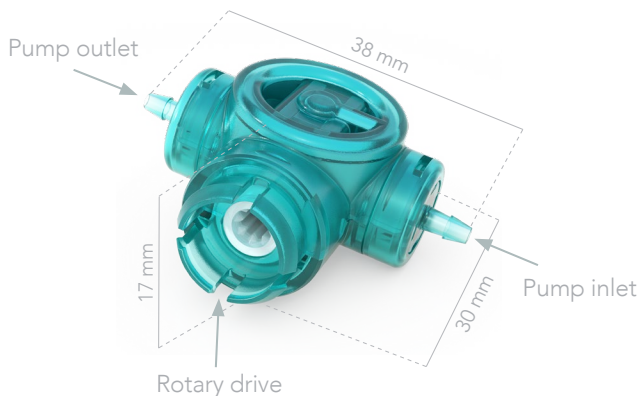
APPROVED BIOPHARMA CERTIFICATIONS

- ✓ Particulate Testing (Sub-visible testing per USP 788)
- ✓ Microbial Ingress
- ✓ Endotoxin (USP 85)
- ✓ Bioburden (ISO 11737-1)

FEATURES & BENEFITS

- ✔ Single-use – **rapid changeovers with no cross-contamination**
- ✔ Lightweight, compact design – **saving valuable space**
- ✔ Dosing with a minimum flowrate of 75 µl/s (at 1 rps) – **for precision microdosing**
- ✔ Suitable for single transfer of cells with low shear – **protecting product integrity**
- ✔ Self-priming, high vacuum capabilities – **for positioning flexibility & higher product recovery**
- ✔ Low hold-up volume – **for minimum product waste**
- ✔ Bi-directional pumping – **avoids drips during filling**
- ✔ Easy installation/operation – **for fast and error-proof handling**
- ✔ Gamma compatible up to 1 x 50 kGy – **compatible with standard sterilization methods**
- ✔ USP <88> Class VI certified materials – **ensuring biocompatibility**

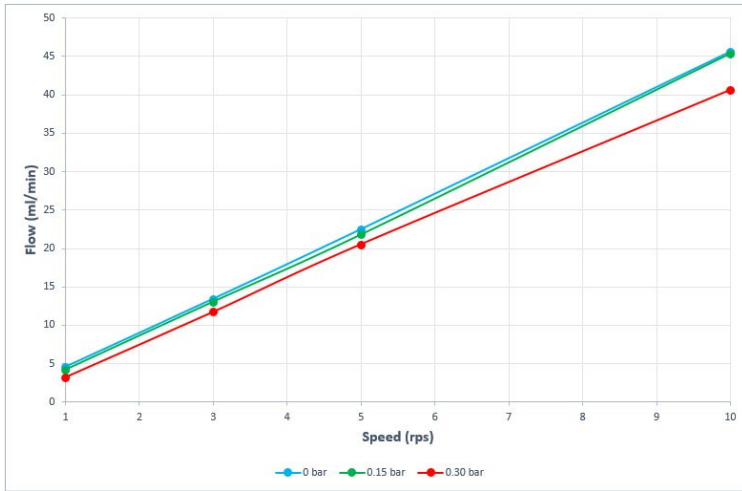
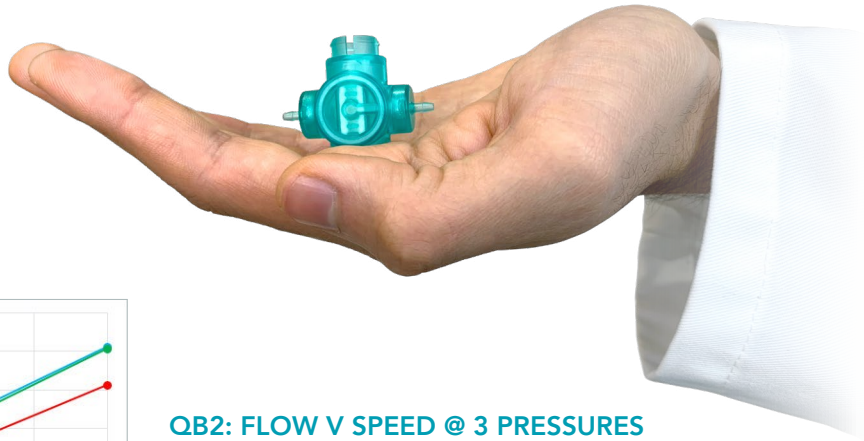
MICRODOSING PUMP



QB2-SD TECHNICAL SPECIFICATIONS

Using the principle of positive displacement with a rotary action, the QB2-SD has a 6 mm rotor that carries 3 cavities of fluid, each with a volume of 25 µl. This lightweight, in-line pump features hose-barbed connectors making it easy to attach tubing to the inlet and outlet. The pump is driven by a stepper or DC motor at a maximum operating speed of 10 rps. The QB2-SD simply clicks in and out of the motor drive in seconds, making it quick and easy to swap fluids without cross-contamination. It is bi-directional, high-vacuum, and self-priming, with a low dead volume.

CRITERIA	EXAMPLE for QB2
Max. flow rate	45 ml/min (2.7 L/hr)
Resolution	25 µl
Operating speed	1 - 10 rps
Baseline accuracy	±6% 3SD
Max. pressure	0.2 bar
Max. vacuum	-0.6 bar
Max. torque	100 mNm
Max. fluid viscosity	500 cP
Operating temperature	2-40°C
Dimensions (mm)	38W, 30L, 17H
Weight	6.4 g
Wetted materials	MBS, HDPE, SIL
Connector sizing	Hose barb for pump inlet and outlet. For use with 2 mm ID flexible tubing.
Longevity	Up to 5L @ 5 rps Up to 3L @ 10 rps
Shelf life	1 year
Gamma stability	1 x 50 kGy



QB2: FLOW V SPEED @ 3 PRESSURES

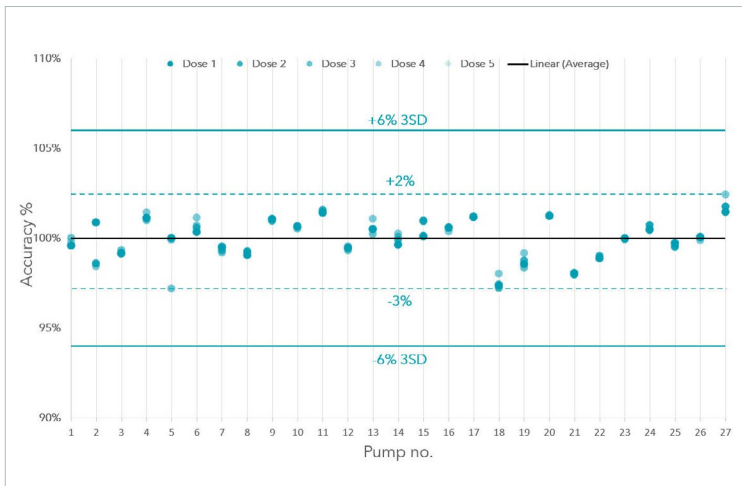
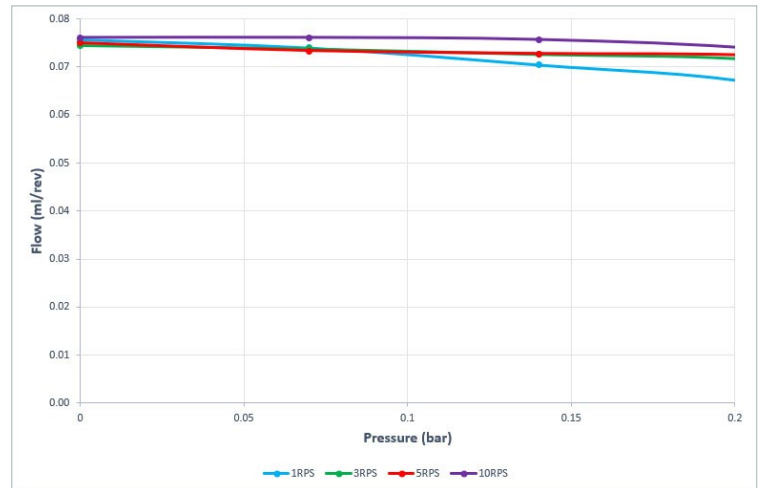
The chart shows the behavior of the QB2 pump up to a maximum speed of 10 rps. Flow v speed is directly proportional.

Efficiency drops are present as back pressure increases.

FLOW (PER REV) V PRESSURE @ 4 SPEEDS

In the absence of pressure, the flow per rev remains consistent regardless of pump speed. At low pressures, the flow remains consistent.

At high pressures, the pumps are, in general, less efficient at lower speeds.



QB2-SD - FLOW REPEATABILITY & ACCURACY

The chart shows the recorded data of 27 pumps, post gamma at 50 kGy with accelerated aging to reflect a 1-year shelf life. Each pump was run at 400 rpm for 1 minute with 5 doses taken per pump, demonstrating accurate repeatability.

The dashed lines show an accuracy of min. -3% and max. +2%, which is well within the claimed $\pm 6\%$ 3SD (i.e., the solid lines).

Testing was with water at room temperature.

Q-DRIVE-ALPHA

A FULLY INTEGRATED DRIVE DEVICE
FOR EVALUATION, PRODUCTION,
AND LABORATORY USE.



Compatible with the Quattroflow QB2-SD Microdosing Pump, the drive features a stainless-steel body and a 7" color touchscreen for programming desired functions such as speed, flow, dose volume, self-priming, cycling and reverse.

FEATURES AND BENEFITS

- Plug and play, easy-to-use
- Integrated driver and screen for direct control
- Compatible with the Quattroflow QB2-SD Microdosing Pump
- Select and change your flow rate as desired

FEATURES

Functions	Description
Speed / Flow Rate	Select flow rate either as motor rps/rpm or ml/min
Dose Volume	Select dose volume either in ml/L or pump revolutions
Loops	Program multiple loops for duty cycle running
Loop Pause	Select pause time for multiple cycle running
Calibration	Modify dispense volume calibration factor
Reverse Motor Drive	End of dose reversing, pressure venting
Pump Selector	Choose between two product families
Prime Mode	Direct control of motor for self-priming at multiple speeds
Programmable Memory	Save 8 programs per pump

For more technical information please contact us at biotech@psgdover.com, or, for full specification and user instruction: [Q-Drive-Alpha Product Manual](#).

PBT-Q-10003-F-01

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