

HP SERIES DISC PUMP

The Lee Company's novel family of multiple award-winning disc pumps generate pressure and vacuum in a small, silent, vibration-free form factor and are available with or without integrated electronics for added simplicity. The disc pump family is differentiated into various product series, with the HP Series Disc Pump targeting applications that require high pressure in a compact size. The HP model delivers in excess of 600 mbar. The ability to generate such high pressures from a small, controllable, and non-pulsatile pump opens up exciting opportunities in microfluidics. These pumps are ideal for use in pressure-driven flow (air over liquid) systems and in medical, scientific and industrial applications where high differential pressure is required. Designed for highly precise, ultra-smooth, gas and liquid flow control, our ultrasonic piezoelectric micropumps deliver unrivaled pneumatic performance and enable innovation wherever precision control of small volumes is critical. Their applications include:

- Microfluidics
- Point-of-care diagnostics
- Liquid handling
- Prosthetics
- Distributed pneumatics
- Portable instrumentation
- Wearable medical devices

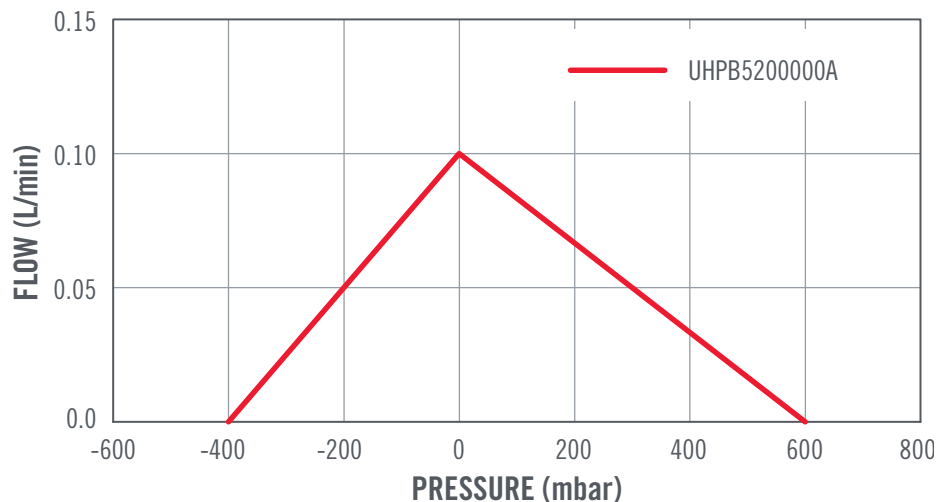
Our disc pumps are RoHS compliant, and their long life allows for maintenance-free system design. The Lee Company is actively developing higher performance pump designs; if the performance listed herein is not sufficient for your application, please contact us to discuss your requirements.



- True pulsation-free flow
- Vibration-free operation
- Silent: sound level <math><10\text{ dB}^3</math>
- Lightweight: 5 g
- Compact size: 29 mm diameter
- Ultra fast millisecond response
- Exceptional power efficiency
- Operating temperature range: 41°F to 104°F (5°C to 40°C)
- Humidity range⁴: 0 to 95% RH
- Pumping medium⁵: air
- Control precision⁶ less than 0.1%
- Infinite turndown ratio⁷

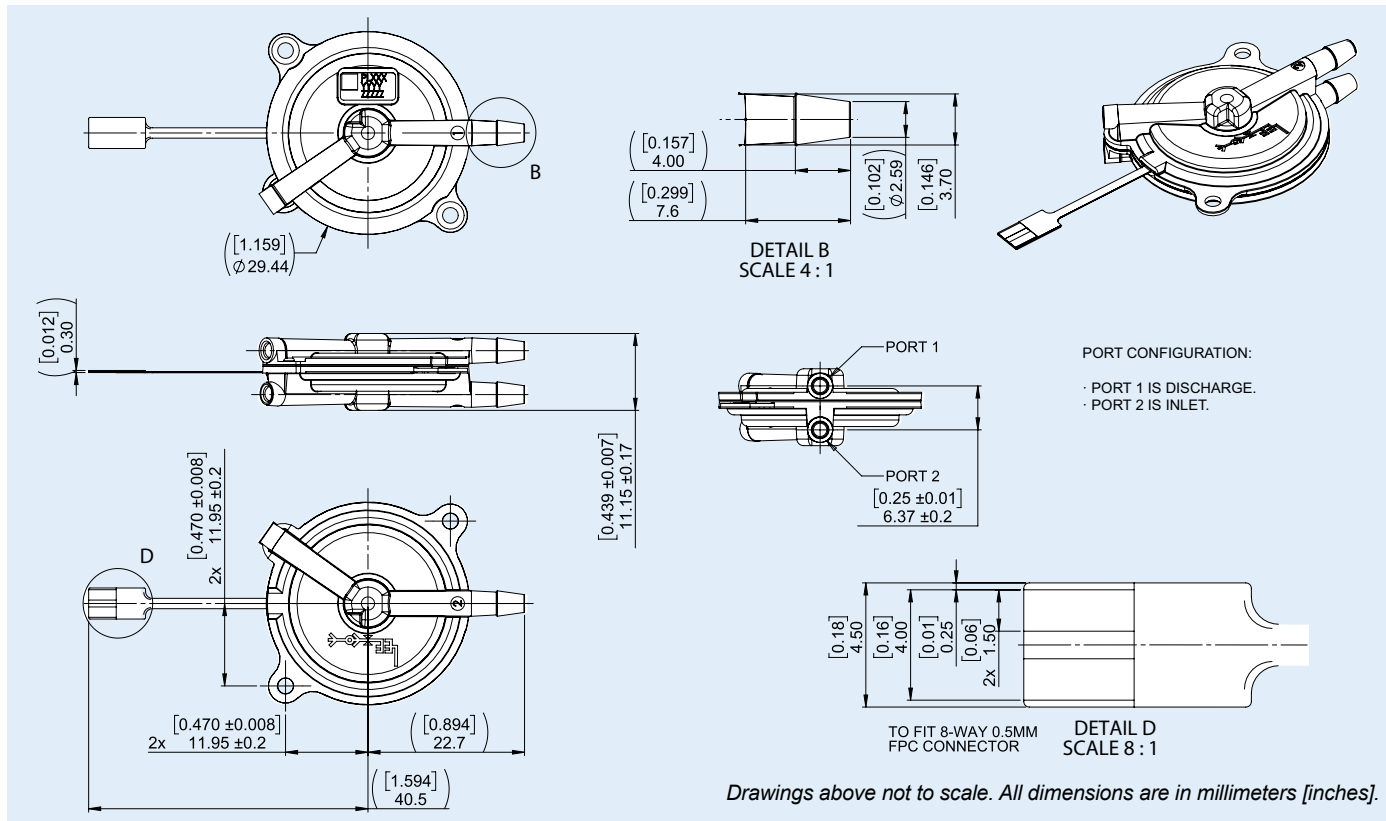
PART NUMBER	STALL PRESSURE ^{1,2}	FREE FLOW ^{1,2}	STALL VACUUM ^{1,2}
UHPB5200000A	600 mbar	0.10 L/min	400 mbar

*For fourth letter in Part Number: B = pump only, C = pump mounted on Smart Pump Module (SPM).
For more information on the SPM, please see PDS 196.*



See dimensional drawings on reverse.

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MOUNTING GUIDANCE

Mount in any orientation using compliant materials. If using mounting eyes on pump body, The Lee Company recommends using four compliant O-rings (e.g. 1.42 mm ID x 1.78 mm CS nitrile 70 Shore A) with two O-rings per mounting eye (one above and one below the eye), a nylon M2 bolt, and a 4.35 mm x 5 mm threaded mounting stud. This mounting scheme isolates high-frequency vibration and prevents audible noise. Note that metal bolts are not recommended for this reason.

FILTRATION

The use of an inlet filter with a pore size of 3 µm or less is strongly recommended to prevent the ingress of particulates that might otherwise limit the lifetime of the pump.

ELECTRICAL OPERATION

- Typical driver requires 3.7 to 5 V supply
- Pump requires AC drive waveform of 20 to 22 kHz. Pump Drive Voltage must not exceed 48 Vrms.
- Power: 0 to 1 W (continuous)
- Pump efficiency is application dependent
- Drive PCB and evaluation electronics available
- Reference circuits and firmware available to support product integration

DISC PUMP EVALUATION KIT

Our evaluation kits include everything necessary to start testing, including pumps, electronics, and a PC application for configuration and control. The plug-and-play nature of the kit allows for valuable test output in mere minutes, drastically reducing development time. The evaluation kits are suitable for laboratory testing, proof of concept, and product prototyping. **Contact your local Lee Sales Engineer to request a quote.**

Visit our website for a user manual and video guide for the evaluation kit.



Notes

1. Continuous operation at 1 W drive power (into pump).
2. Performance data presented collected under normal temperature and pressure and ambient humidity conditions. Performance under other conditions may vary. In particular, note that performance decreases with altitude and may decrease at elevated temperature.
3. Per ISO 226:2003 and related studies; 30 cm equivalent measurement distance.
4. Non-condensing; ingress of liquid-phase water will halt pump operation.
5. Liquid may be pumped indirectly in a "pressure-driven flow" / "air displacement" regime.
6. Pressure and flow: requires pump under closed-loop control with suitable sensor and drive electronics.
7. The disc pump's piezoelectric drive actuator has no stall speed. The pump can be controlled continuously between 0 and 100% maximum output.

The information presented herein is based on engineering data and test results of nominal preliminary units. It is believed to be accurate and reliable and is offered as an aid to guide in the selection of The Lee Company products. It is the responsibility of the customer to determine the suitability of the product for the intended use and the customer assumes all risk and liability whatsoever in connection therewith. The Lee Company does not warrant, guarantee, or assume any obligation or liability in connection with this information. Product specifications may change without notice.