

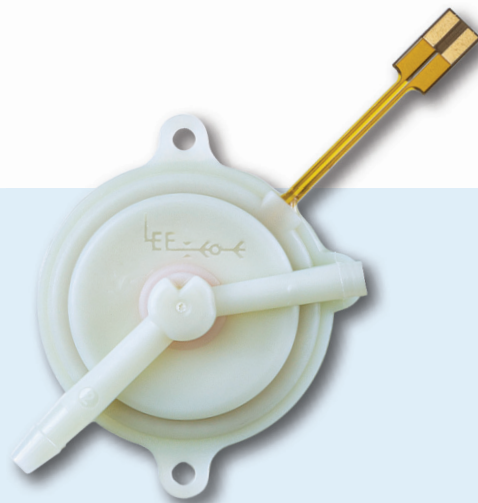
HP SERIES DISC PUMP

The Lee Company's 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. When liquids cannot be exposed to air, the pump can act upon a liquid through an elastic membrane, thereby pumping the isolated liquid through a dispensing valve in a bladder system. 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
- Drug delivery

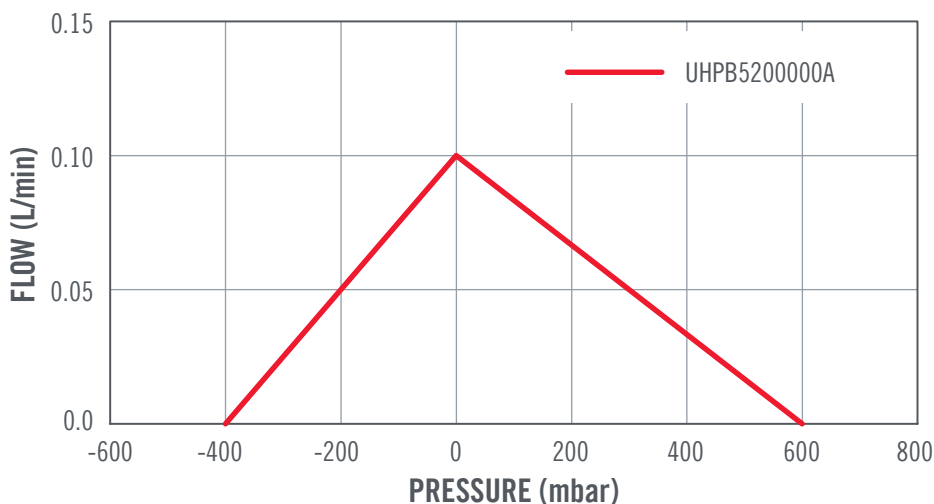
Our disc pumps are RoHS compliant, and their long life allows for maintenance-free system design. The Lee Company is actively developing higher performance pump designs; if the performance listed is not sufficient for your application, please contact us to discuss your requirements.

- True pulsation-free flow
- Vibration-free operation
- Silent: sound level <10 dB³
- 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. Liquids can be controlled indirectly
- Control precision⁶ less than 0.1%
- Infinite turndown ratio⁷



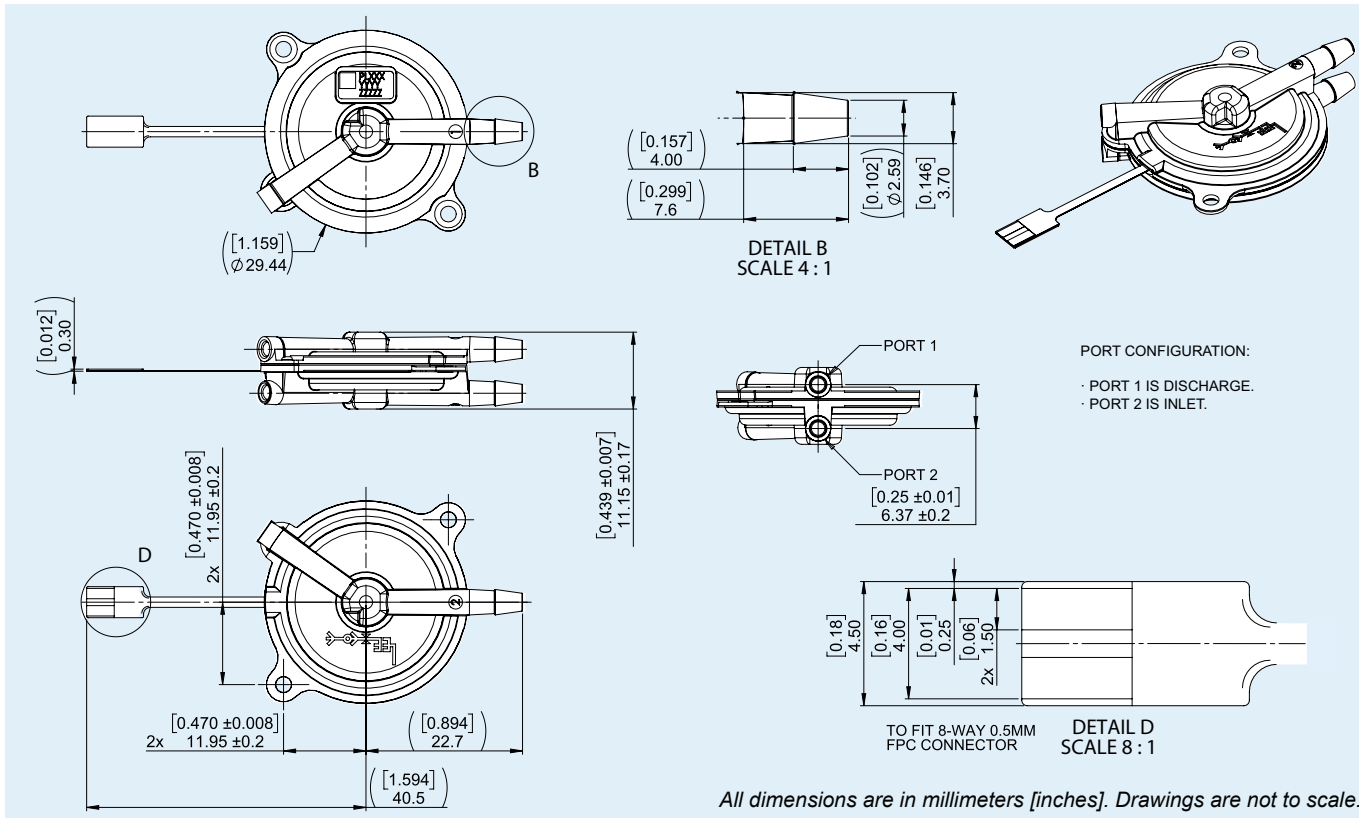
| PART NUMBER | STALL PRESSURE ^{1,2} | FREE FLOW ^{1,2} | STALL VACUUM ^{1,2} |
|--------------|-------------------------------|--------------------------|-----------------------------|
| UHPB5200000A | 600 mbar | 0.10 L/min | 400 mbar |

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, it is recommended to use 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.

ELECTRICAL OPERATION

- Typical driver requires 3.5 to 5 V supply
- Pump requires AC drive waveform of 20 to 22 kHz
- Pump drive voltage must not exceed 48 Vrms (where a typical square-wave drive Vrms ≈ Vpk)
- 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

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.

Notes

1. Operation at 1 W drive power (into the pump). It is recommended that the pump is operated at a duty cycle of less than 50% to manage temperature rise. Extended operation at higher duty cycles or elevated temperatures may require alternative drive protocols for optimal performance. Contact a Sales Engineer for more information
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.

DEVELOPMENT KIT

This versatile plug and play kit (part number UEKA0500300A) enables control of solenoid valves and up to five disc pumps. With a user-friendly GUI, easily accessible software, onboard pressure sensors, and integrated valve drivers, the kit offers advanced fluidic control and allows you to quickly create functional prototypes for a wide range of applications, from microfluidic and liquid handling systems to medical devices and industrial instruments.



Pump(s) and valves sold separately. Contact your local Lee Sales Engineer, or visit our website at theleeco.com/devkit to learn more.