

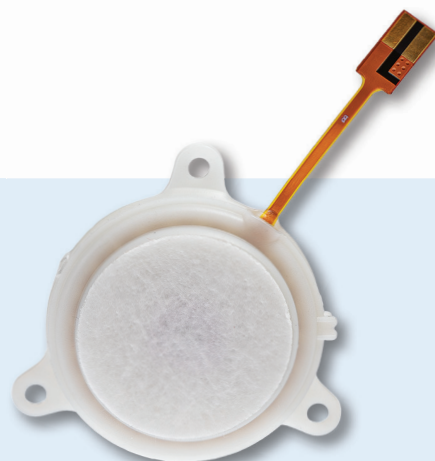
US SERIES DISC PUMP

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 UltraSlim (US) Series Disc Pump offering exceptional performance and efficiency along with a narrow, manifold mount profile. The integrated hydrophobic filter helps further reduce system size and complexity while protecting the pump against debris and liquid ingress. Designed for highly precise, ultra smooth, gas and liquid⁵ flow control, our ultrasonic piezoelectric micropumps deliver unrivaled pneumatic performance and enable innovation wherever precision control of small volumes is critical. Their applications span medical, scientific, and industrial sectors, including:

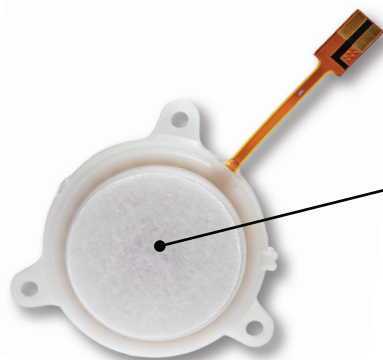
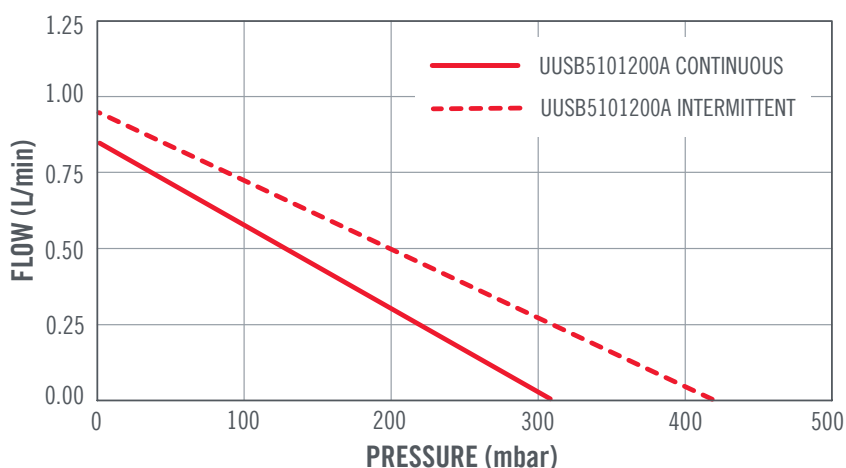
- Wearable, portable devices
- Blood pressure monitoring
- Distributed pneumatics
- Point-of-care diagnostics
- Microfluidics
- Liquid handling

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.

- Integrated 3 µm air filter
- Manifold mount
- True pulsation-free flow
- Silent: sound level <10 dB³
- Lightweight: 4.4 g
- Compact size: 29 mm diameter
29 mm dia x 5.9 mm height
- 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	OPERATION	STALL PRESSURE	FREE FLOW
UUSB5101200A	Intermittent ^{1,3}	420 mbar	0.92 L/min
	Continuous ^{2,3}	310 mbar	0.80 L/min



Integrated filter

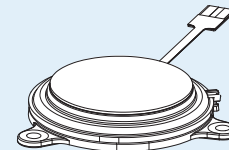
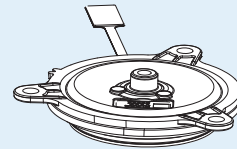
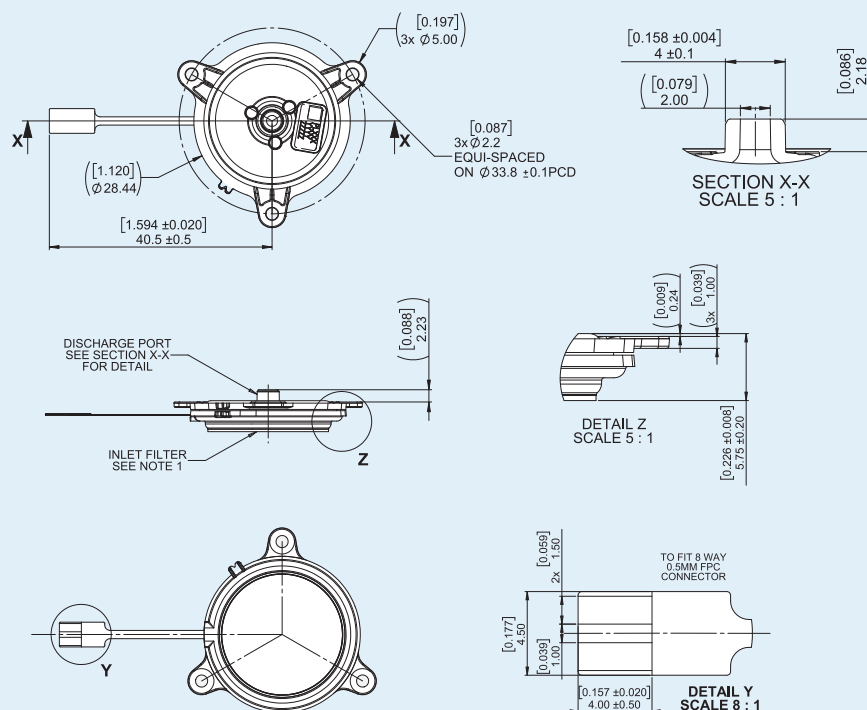
Axial flow design

5.8 mm thick



See dimensional drawings on reverse.

US SERIES DISC PUMP



NOTES:

INLET FILTER CHARACTERISTICS:
HYDROPHOBIC EPTFE MEMBRANE LAMINATE
FUNCTIONAL LAYER: PTFE
BACKER LAYER: POLYESTER
NOMINAL PORE SIZE 3 MICRON

All dimensions are in millimeters [inches].
Drawings are not to scale.

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 $V_{rms} \approx V_{pk}$)
- 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

Notes

1. Intermittent operation at 1.4 W drive power (into the pump). With intermittent operation, the mean power should be less than 1 W with a duty cycle period less than 20s. Operational life may be shortened where mean pump drive power exceeds 1 W. 2. Continuous operation at 1 W drive power (into pump). 3. 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. 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. Other gases / gaseous mixtures may be pumped, contact us for more information. 6. Per ISO 226:2003 and related studies; 30 cm equivalent measurement distance. 7. Pressure and flow: requires pump under closed-loop control with suitable sensor and drive electronics. 8. 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 Lee 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.