

## MICROFLUIDIC CONNECTORS

In recent years, substantial advancements have been made in the fields of microfluidics and assay miniaturization. This progress has paved the way for development of next generation, lower-cost life sciences instruments, including point-of-care (POC) devices. It is essential that supporting technologies such as connectors and pumps undergo the same evolution to smaller, faster and more cost effective models before the full benefits of POC diagnosis can be realized.

Toward that end, SFC Fluidics is offering QuickConnect™ (Figure 1) a connector that is small, robust and easy-to-use in microfluidic and traditional applications. The advantages of QuickConnect™ over traditional ferrule, adhesive, clamp and press fit connectors are paramount and include:

1. **Low Cost:** QuickConnect™ is at least 3-5 times cheaper than competing connectors.
2. **Small Size:** QuickConnect™ is ~1/4 inch in diameter and length (2-3 times smaller than competing connectors).
3. **Long Life:** QuickConnect™ can be opened and closed multiple times without any loss of functionality.
4. **Nominal Dead Volume:** The direct connection of QuickConnect™ will not add dead-volume to the system.
5. **Biocompatibility:** The current design is made of polycarbonate or PEEK and Buna-N (O-ring). Other materials available on request.
6. **Multifunctionality:** QuickConnect™ can be designed for single, multiple or branching lines.
7. **Pressurization:** QuickConnect™ is currently rated to 100 psi (Figure 2), which is compatible with traditional microfluidic applications. Higher pressures could be accommodated with minor design changes.

8. **Self-Aligning:** The 'self-connect' of coupling counterparts ensures connection and is compatible with both conventional and automated systems.

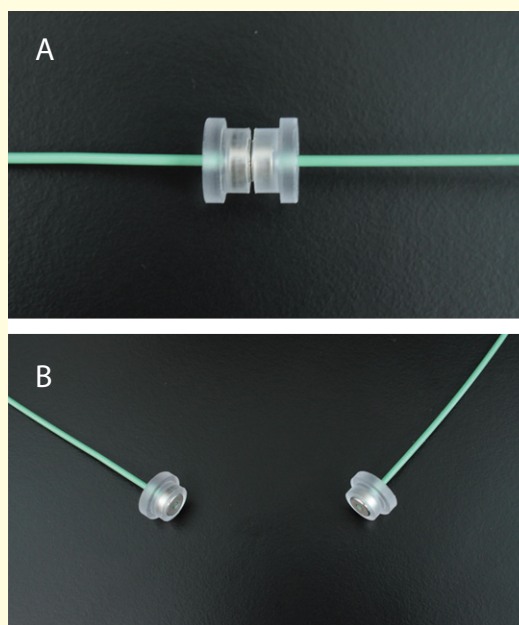


Figure 1: QuickConnect in (A) closed position (B) in open position

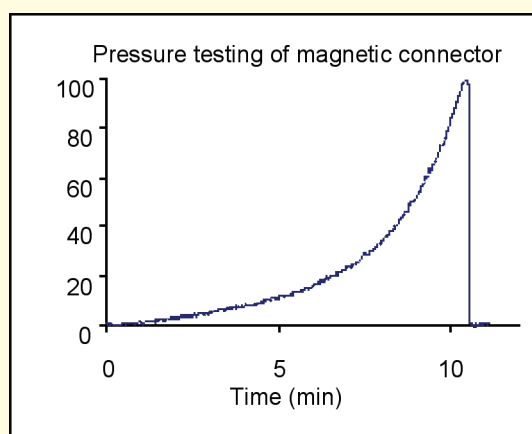


Figure 2: QuickConnect™ is leak proof up to 100 psi.

Figure 3 (Right) shows the QuickConnect™ interface to and from a model microfluidic chip with four inlet and four outlet ports. All the connections are achieved at once in seconds with in 1"x1" chip with 0.25" gap in the middle of the chip for performing optical detection or other subsequent work. In the absence of QuickConnect™ components, these common microfluidic connections would command a larger chip size, more assembly time and several unwieldy thread-type adapters. To further enable rapid prototyping, SFC Fluidics also offers QuickConnect™ Kits (Figure 4, below), which consist of several commonly-used microfluidic components (such as valves, an assay chip, capillary tubing, and QuickConnect™ modules) that can be snapped together for more efficient microfluidic experiments.

**Reference:**

J. Atencia, G.A. Cooksey, A. Jahn, J. M. Zook, W. N. Vreeland and L. E. Locascio, "Magnetic connectors for microfluidic applications," Lab Chip, 2010, 10: 246-249.

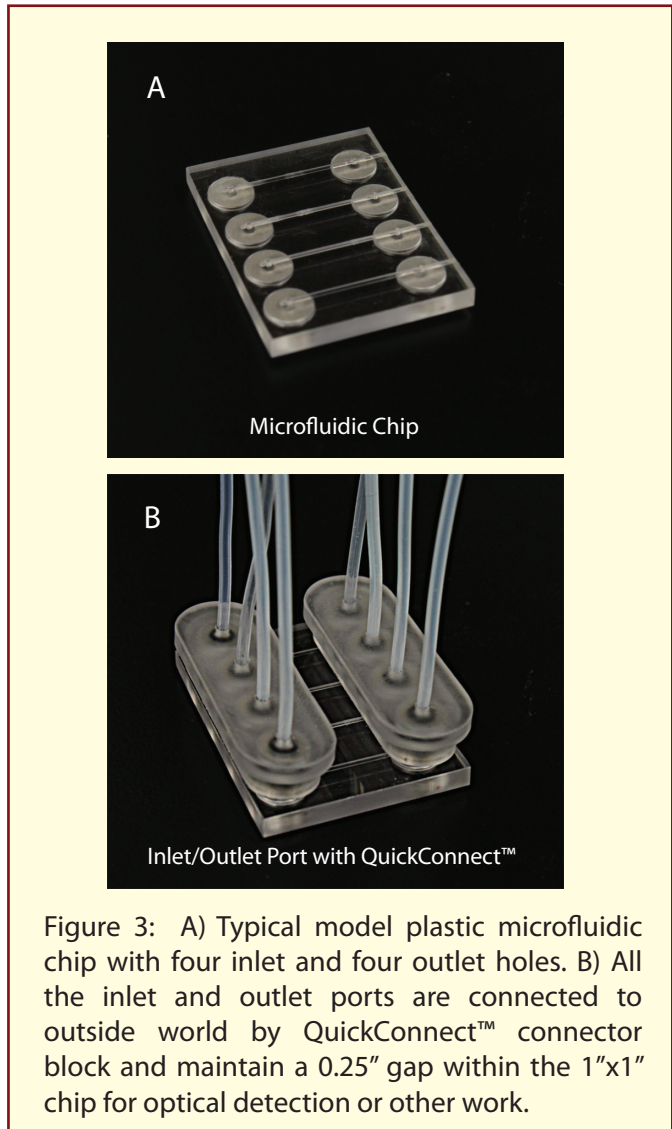


Figure 3: A) Typical model plastic microfluidic chip with four inlet and four outlet holes. B) All the inlet and outlet ports are connected to outside world by QuickConnect™ connector block and maintain a 0.25" gap within the 1"x1" chip for optical detection or other work.

**Contact Information:**

QuickConnect™ technology is exclusively licensed (Locascio U.S. Patent Application 12/820,218) from National Institute of Standards and Technology (NIST).

For further technical assistance and purchasing information, contact

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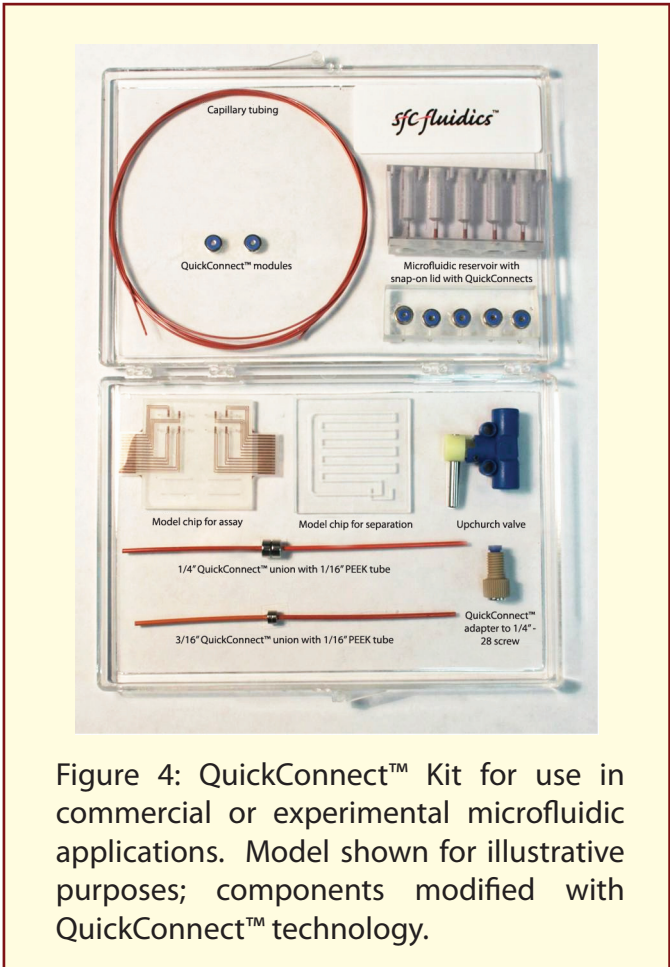


Figure 4: QuickConnect™ Kit for use in commercial or experimental microfluidic applications. Model shown for illustrative purposes; components modified with QuickConnect™ technology.