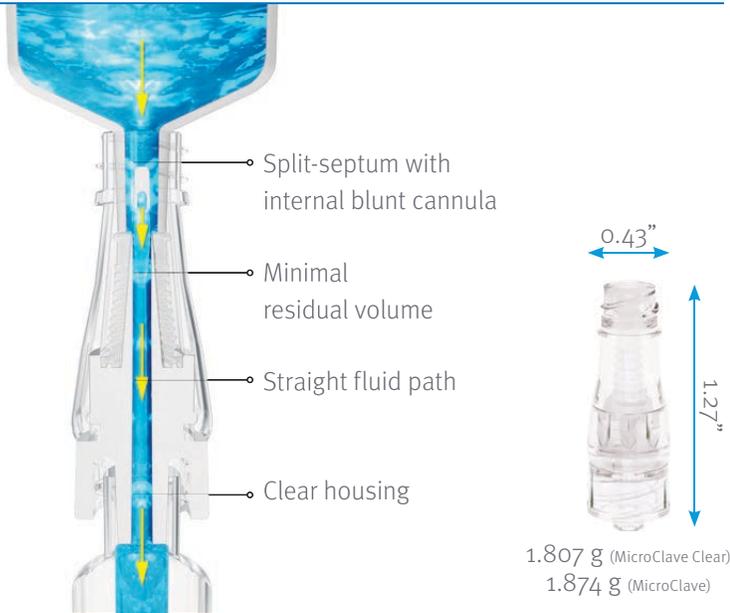
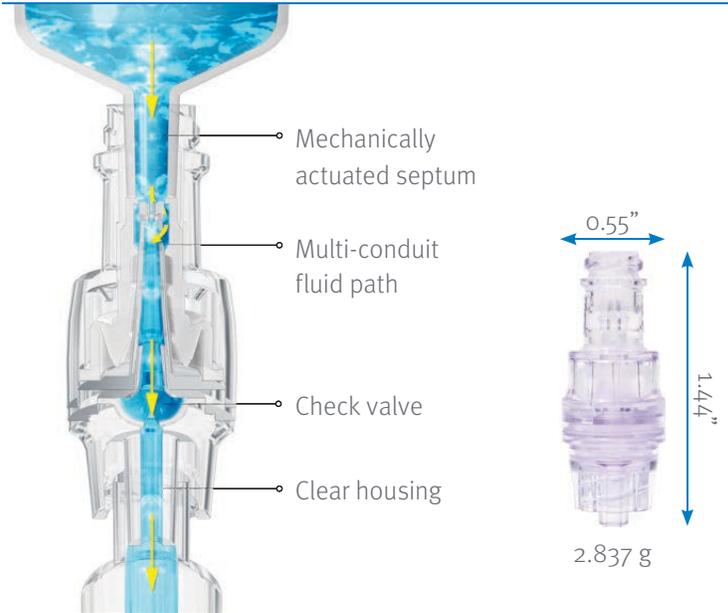


MicroClave® and TKO-6 Comparative Matrix

MicroClave by ICU Medical Inc.



TKO-6 Nexus Medical, LLC.



PRODUCT PERFORMANCE	MICROCLAVE TECHNOLOGY	TKO-6 TECHNOLOGY
Base Technology	Internal cannula and silicone compression seal split-septum. Internal cannula windows are exposed by the insertion of a male luer and cannula enters the male luer's internal space to achieve flow.	Mechanically actuated silicone septum. Insertion of a male luer compresses the silicone seal forcing it against a rigid column, spreading open the top of the seal. Fluid enters the silicone seal chamber, then enters the column through a single window, achieving flow.
Displacement	Neutral: 0 to -0.01 mL	Neutral: Allows less than 0.01 mL of reflux (fluid retrograde) upon disconnection of standard syringe. ¹ Allows between 1/16 inch and 1/8 inch of reflux in standard small bore tubing with 0.047" inner diameter. ²
Residual Volume	0.04 mL	0.15 mL ²
Fluid Path	Straight through polycarbonate cannula. Enhances flushing efficiency.	Fluid exits male luer into a silicone chamber, then into a polycarbonate column, then through an anti-reflux valve.
Disinfection Directions	Swab with 70% isopropyl alcohol using an aggressive circular motion for three seconds.	Swab the Nexus TKO-6 in a circular motion for a minimum of 5 seconds with an alcohol prep pad, flip the pad over and swab for an additional 5 seconds and allow to dry.
Moving Parts in Fluid Path	No	Yes
Number of Assembly Parts	3, of which 1 moves on luer access.	6, of which 1 moves on luer access.
Fluid Residual External on Disconnect	Minimal	Minimal
Clamping Sequence	None required	None required
Flow Rate	165 mL/min	75 mL/min claimed. 64 mL/min tested. ²
Clear Available	Yes	Yes
Antimicrobial Available	Yes	No
Patient Comfort	22% smaller profile, 34 to 36% less weight. Smooth profile.	Larger and heavier than MicroClave. Irregular profile.
Bacterial Transfer Performance	The least amount of bacterial transfer of any connector tested. ³	Exhibits a higher bacterial transfer rate than MicroClave. ⁴
Flushing Performance	Highly efficient. Connector clear of blood elements with minimal flush volumes from 2 to 75 mL. ⁵ Not recommended to change connector after blood draw.	Moderately efficient. Connector cleared of blood elements with approx. 8 mL. ⁶

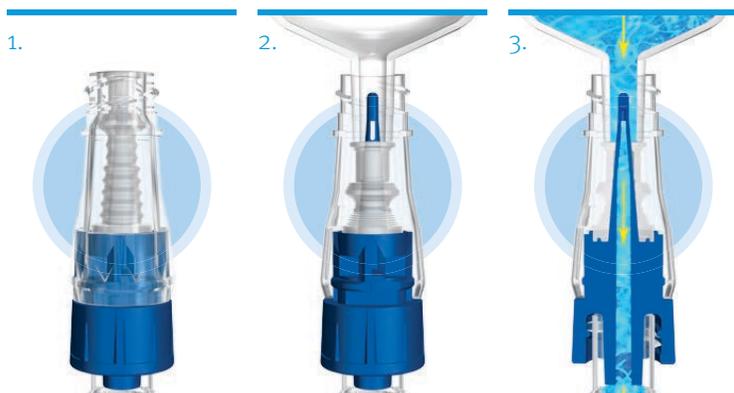
Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Reference ENG-433

Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Nexus TKO-6 Engineering Test, October 10, 2012

How does MicroClave fluid path technology differ from TKO-6?

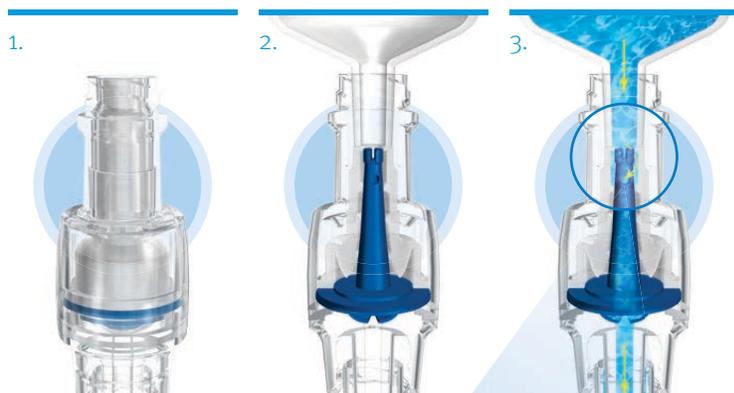
MicroClave

The MicroClave incorporates an internal cannula and split-septum silicone compression seal. Upon insertion of a male luer, the silicone seal is depressed and the fluid path windows are exposed through the device's split-septum. MicroClave's patented split-septum/blunt cannula design allows for a straight-through fluid path with minimal residual volume.

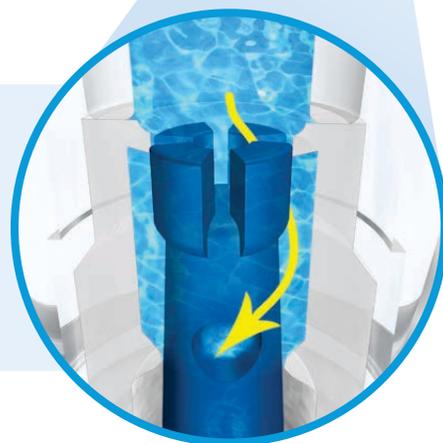


TKO-6

Insertion of a male luer compresses the silicone seal, forcing it against a rigid column and spreading open the top of the seal. Fluid enters the silicone seal chamber and then enters the column through two windows, achieving flow.



The male luer depresses the silicone, forcing it against a rigid internal column which spreads the pre-split septum. The rigid column incorporates four channels to allow fluid flow around the spike, into the silicone, then into the windows of the spike.



1. Nexus TKO-6 Technical Specification Sheet
2. ICU Medical Engineering Lab Test Report
3. Ryder M, James G, Pulchini E, Bickle L, Parker A. Presented at the Infusion Nursing Society Meeting, May 2011. Differences in bacterial transfer and fluid path colonization through needlefree connector-catheter systems in vitro.
4. Ryder M, Pulcini E, Parker A, James G. Presented at the World Congress on Vascular Access, June 2014. Comparison of bacterial transfer and biofilm formation on intraluminal catheter surfaces among fourteen Connectors in a clinically simulated in vitro model.
5. Breznock E, Sylvia C. BioSurg, Inc., March 2011. The in-vivo evaluation of the flushing efficiency of different designs of clear needlefree connectors.
6. Breznock, E. Biosurg, Inc. 2012