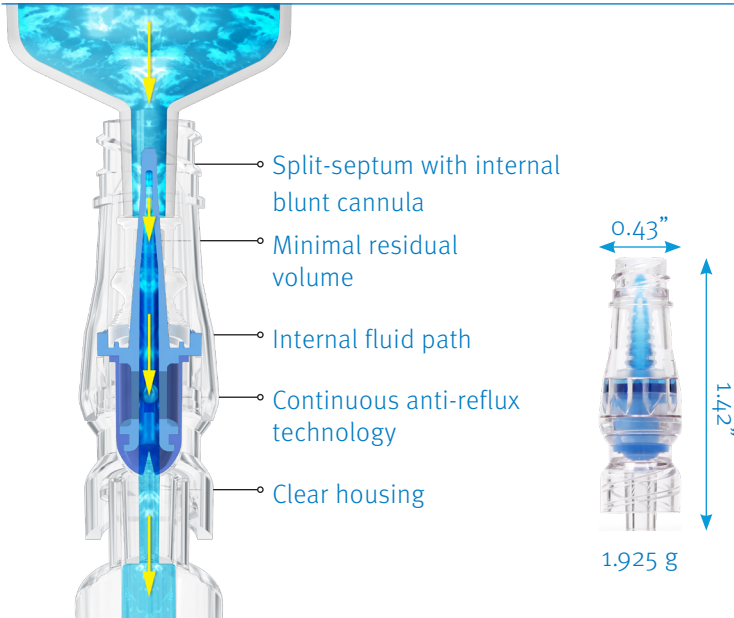
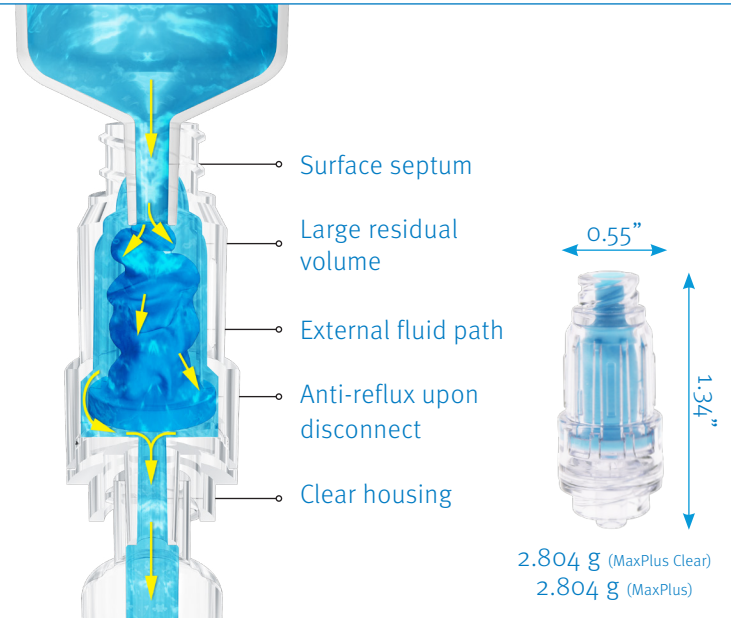


Neutron™ and MaxPlus® Comparative Matrix

Neutron by ICU Medical Inc.



MaxPlus by CareFusion (formerly Medegen)



PRODUCT PERFORMANCE	NEUTRON TECHNOLOGY	MAXPLUS 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.	Surface septum. Crushable elastomer piston deforms upon luer connection to allow fluid flow around the septum.
Anti-Reflux Technology	100% of the time. Bi-directional silicone valve and bellows combination remains closed unless infusion or aspiration pressure is exerted. The unique design actively absorbs and physically compensates for pressure variations that can result in blood reflux into a catheter.	Only during male luer disconnect. The crushable elastomer piston forces fluid into the valve and catheter lumen on luer access then out of the valve and catheter lumen on de-access. When the valve is accessed, it is open to free flow in both directions, which can result in reflux into a catheter.
Displacement	Neutral: 0 mL	Positive: +0.01 to +0.03 mL Note: The Society for Healthcare Epidemiologists of America (SHEA) and Infectious Disease Society of America (IDSA) have recommended against using positive displacement needleless connectors with mechanical valves without a thorough assessment of risks and benefits.
Residual Volume	0.1 mL	0.32 mL (>3 times larger)
Fluid Path	Straight through polycarbonate cannula. Laminar flow optimized through anti-reflux valve and bellows. Enhances flushing efficiency.	Between external housing and piston. Results in comparatively large residual volume.
Fluid Residual External on Disconnect	Minimal	Yes
Clamping Sequence	None required	Yes. Clamp after disconnect.
Flow Rate	100 mL/min	198 mL/min
Clear Available	Yes	Yes
Patient Comfort	22% smaller profile 31% less weight	Larger and heavier than Neutron.
Catheter Patency Performance	The ICU Medical Neutron was the only connector to maintain catheter patency in all three tested connectors throughout the 11-day pilot study period, including through three simulated reflux events on days 3, 6, and 9. ¹	None of the MaxPlus devices maintained catheter patency past seven days, with one device failing at five days and the other at six days. ¹
Flushing Performance	Highly efficient. Connector cleared of blood elements with minimal flush volumes (approx. 4.5 mL). ² Not recommended to change connector after blood draw.	Connector unable to be cleared of blood elements at maximum flush volumes (10 mL). ² Recommended to change connector according to facility protocol or in accordance with currently recognized guidelines for IV therapy.

Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Neutron Engineering Evaluation Test, in vivo pilot test July 11, 2011

Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Reference SE02-041t

- Ryder M. June 2011. A pilot study evaluation of three needlefree IV connectors and their ability to maintain catheter patency over an 11-day period.
- Breznock E, Sylvia C. BioSurg, Inc., 2011. The in vivo evaluation of the flushing efficiency of the Neutron needlefree catheter patency device compared to two other connectors commonly used on central and PICC lines.