



RE: Use of the CLAVE[®] NeedleFree Connector with Power Injectors

Thank you for your interest in the CLAVE Connector and its compatibility with power injectors and related procedures. The CLAVE has neither a small restriction nor a high internal compliance. The flow rate of the CLAVE is equivalent to a 16 gauge needle, so it does not present a significant restriction. The dead-space of the CLAVE is low (.06mL), and the fluid path is comprised of a straight rigid cannula, resulting in a non-turbulent flow pattern which, results in a very low internal compliance.

In order to validate the use of the CLAVE with power infusion procedures, samples were attached to a fluid pressure vessel filled with contrast media (Omnipaque™ Injection, GE Healthcare). Pressures were set between 50psig and 95psig for delivery of the contrast. Flow rate was then measured in milliliters per second (mL/sec). Results are reported below.

Infusion Pressure	Flow Rate mL/sec
50psig	>10mL/sec
95psig	>15mL/sec

CLAVE and the associated high pressure extension sets have been tested to otherwise hold a maximum pressure of 400psig. Problems, however, can be experienced with tubing that the CLAVE may be connected to bursting when that tubing is not rated for high pressure. To avoid this problem use only tubing rated for high pressure infusion which is available through ICU Medical. **Use of the CLAVE in power injector applications should not affect the pressure of the infusion or restrict the fluid flow.**

Thank you again for your interest, for further questions or concerns, please visit our website at icumed.com or contact our corporate offices at 800-824-7890 or 949-366-2183.

Technical Services
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