The BBraun Perfusor Space™ syringe driver is already in use by ambulance services and retrieval teams but has not previously been assessed for hyperbaric chamber use” Frawley et al (2017).

Abstract:

BACKGROUND: The BBraun Perfusor Space™ syringe driver is already in use by ambulance services and retrieval teams but has not previously been assessed for hyperbaric chamber use.

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METHODS: Pump flow accuracy was tested at rates between 1 and 40 ml· h⁻¹ using three different brands of 50 ml syringe. Function of the occlusion alarms was assessed using the same syringes. The hyperbaric profile involved pressurisation to 284 kPa at 30 kPa· min⁻¹, 30 min at 284 kPa and decompression at 30 kPa· min⁻¹. Output was recorded from differences in weight of collection containers. A single device was tested.

RESULTS: Performance was highly dependent on the syringe type used, with two of the three 50 ml syringes used demonstrating ‘stiction’ at both low and high occlusion pressure alarm settings, most marked during pressurisation. On decompression from 284 kPa all syringes alarmed at significantly lower pressures. Because of the stiction problems only the flow measurements for the BBrown Omni→ x 50 ml syringes are reported. At a pressure of 284 kPa, the difference between programmed and delivered rates was within the manufacturer’s specification of 10%: at 40 ml· h⁻¹ (median variation 1.25%, IQR 0.5-1.7%), 10 ml· h⁻¹ (8.6%, IQR 8-9.2%), 5 ml· h⁻¹ (-8.8%, IQR – 1.6-8.8%) and 1 ml· h⁻¹ (-4%, IQR 4-12%). Pressurisation was associated with significantly lower flow rates whilst decompression was associated with significantly increased rates. Limited testing at 405 kPa was also within the manufacturer’s specifications.

CONCLUSION: A BBraun Infusor Space syringe driver performed within acceptable performance criteria but is highly dependent on syringe type and flow rates. The potential for the device to under deliver on pressurisation and over deliver on depressurisation, however, suggests vigilance and appropriate rate adjustments may be necessary during these phases.

Reference:

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