**SUPPLEMENTAL FIGURE LEGENDS**

*Supplemental figures provided as independent high-resolution TIFF files to aid viewing.*

**Supplemental Material Figure 1.** Relationship between set ΔP and ΔPAO;PAW10 cmH2O*,* CL 1.0 mL/cmH2O. Recordings were made with an ETT diameter of 2.5 mm (open symbols) and 3.5 mm (closed symbol) diameter, and at frequency 5 (circles), 10 (squares) and 15 (diamonds) Hz. Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.* For the Sophie and BL8000 set ΔP is expressed as % of maximum amplitude, for all other oscillators absolute applied set ΔP is used. SM3100A: Sensormedics 3100A; SM3100B: Sensormedics 3100B; VN500: Dräger Babylog VN500; BL8000: Dräger Babylog 8000.

**Supplemental Material Figure 2.** Relationship between set ΔP and ΔPTRACH;PAW10 cmH2O*,* CL 1.0 mL/cmH2O. Recordings were made with an ETT diameter of 2.5 mm (open symbols) and 3.5 mm (closed symbol) diameter, and at frequency 5 (circles), 10 (squares) and 15 (diamonds) Hz. Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.* For the Sophie and BL8000 set ΔP is expressed as % of maximum amplitude, for all other oscillators absolute applied set ΔP is used. SM3100A: Sensormedics 3100A; SM3100B: Sensormedics 3100B; VN500: Dräger Babylog VN500; BL8000: Dräger Babylog 8000.

**Supplemental Material Figure 3.** Relationship between set ΔP and VT;PAW10 cmH2O*,* CL 1.0 mL/cmH2O. Recordings were made with an ETT diameter of 2.5 mm (open symbols) and 3.5 mm (closed symbol) diameter, and at frequency 5 (circles), 10 (squares) and 15 (diamonds) Hz. Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.* For the Sophie and BL8000 set ΔP is expressed as % of maximum amplitude, for all other oscillators absolute applied set ΔP is used. SM3100A: Sensormedics 3100A; SM3100B: Sensormedics 3100B; VN500: Dräger Babylog VN500; BL8000: Dräger Babylog 8000.

**Supplemental Material Figure 4.** Relationship between ΔPVENT and ΔPAO; using the same symbols, PAW and CL permutations as main manuscript Figure 2. Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.* Dashed lines represent an ideal line of unity between set ΔPVENT and ΔPAO. SM3100A: Sensormedics 3100A; SM3100B: Sensormedics 3100B; VN500: Dräger Babylog VN500; BL8000: Dräger Babylog 8000.

**Supplemental Material Figure 5.** Relationship between frequency and ΔPVENT (black circles) and tidal volume at the airway opening (VT; open diamonds) at a maximum ΔPVENT or ΔPVENT closest to 50 cmH2O (Sophie and BL8000), CL 1.0 mL/cmH2O, PAW 10 cmH2O and 2.5 mm ETT. Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.* Sensormedics 3100A; SM3100B: Sensormedics 3100B; VN500: Dräger Babylog VN500; BL8000: Dräger Babylog 8000. \*unable to generate ΔPVENT >45 cmH2O at 15 Hz (VN500) or all Frequencies (BL8000).

**Supplemental Material Figure 6.** Difference (attenuation) in the pressure amplitude between PAO and PTRACH, expressed as a percentage of the value at PAO. Data for PAW 10 cmH2O and CL 1.0 mL/cmH2O shown for frequencies 5 (circles), 10 (squares) and 15 (diamonds) Hz and ETT internal diameters of 2.5 mm (open symbols) and 3.5 mm (closed symbols). Panel **A** data for devices tested at 1:2 I:E ratio and Panel **B** devices tested at 1:1 I:E ratio (SM3100B and SLE5000)*.*