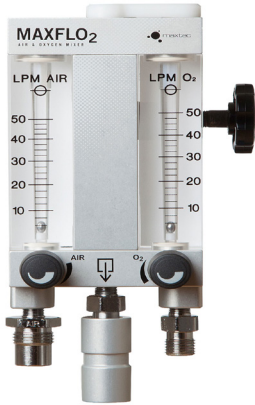


High Flow Device Noise Test Summary



Purpose: The purpose of this test is to measure sound levels at various flows including maximum and minimum flows for the MaxFLO₂ High Flow, High Flow Microblender, and MaxVenturi.

MaxFLO2 High Flow Results

Flow	Ambient Noise	10 LPM	30 LPM	50 LPM	Maximum Flush
MaxFLO ₂ decibel levels with tube parallel to the sound level meter	50.5	50.7	57.9	67.7	77.6
MaxFLO ₂ with the tube perpendicular to the sound level meter	—	50.6	58.7	69.4	78.3
MaxFLO ₂ with nasal cannula	—	50.5	51.8	58.6	65.5
Average decibel levels (all variations)		50.6	56.1	65.2	73.8

High Flow Blender Results

Flow	Ambient Noise	10 LPM	35 LPM	70 LPM	Maximum Flush
High Flow Blender with the tube parallel to the sound level meter	50.5	70.7	79.2	81.9	80.2
High Flow Blender with the tube perpendicular to the sound level meter	—	71.2	81.6	82.4	81.9
High Flow Blender with Nasal Cannula	—	56.8	64.4	68.6	69.4
High Flow Blender with adapter. Tube parallel to the sound level meter	—	67.9	84.8	82.7	82.5
High Flow Blender with the adapter. Tube perpendicular to the sound level meter	—	69.0	87.4	85.3	84.4
High Flow Blender with Nasal Cannula	—	56.2	70.4	69.3	72.8
Average decibel levels (all variations)		65.3	78.0	78.4	78.5

MaxVenturi Results

Flow	Ambient Noise	20 LPM	35 LPM	50 LPM	Maximum Flush
MaxVenturi-Tube-Filter with tube parallel to the sound level meter	50.2	52.2	57.3	63.5	64.9
MaxVenturi-Tube-Filter with tube perpendicular to the sound level meter	—	52.4	57.6	53.8	65.7
MaxVenturi-Tube-Filter & Nasal Cannula	—	51.6	57.6	53.8	65.7
MaxVenturi-Filter-Tube with tube parallel to the sound level meter	—	51.8	56.8	62.7	64.4
MaxVenturi-Filter-Tube with tube perpendicular to the sound level meter	—	51.9	57.4	63.4	65.7
MaxVenturi-Filter-Tube with Nasal Cannula	—	50.7	53.3	57.3	58.4
Average decibel rating (all variations)		51.8	56.7	59.1	64.1

Conclusions

The sound level study shows that a high flow blender is significantly louder than a MaxVenturi or MaxFLO₂. For example, at 50 LPM, a MaxVenturi produces about 60 dB of sound, while a high flow MaxFLO₂ will produce 65 dB (3x louder, and a high flow blender 80 dB of sound (100x louder). A high flow blender reaches maximum loudness at approximately 30 LPM while the MaxVenturi and MaxFLO₂ will slowly increase in loudness with increased flow rate. In all instances attaching a nasal cannula to the end of a patient circuit will decrease the noise level by 10 dB (10x). This study has shown that sound travels readily with gas flow typically along a patient circuit. Modifying a MaxVenturi to suppress sound accomplishes little compared to the noise dampening capabilities of a nasal cannula. In conclusion, both the MaxVenturi and MaxFLO₂ were significantly quieter than a high flow blender with the Venturi being the quietest of all. However, a MaxFLO₂ has a much higher flow capability than a Venturi and is not susceptible to back-pressure.

