Flight Medical presents the F60



Reliable Ventilation Across the Spectrum of Care

- Adult & Pediatric
- Pressure/Volume Control
- Basic/Advanced Modes
- Invasive/NIV
- High Pressure/Low Flow O2
- Up to 12 hours batteries
- Curve & Loops
- 5 preset settings



One Vent meets all the needs

F60 in Emergency Rooms







- 5 preset settings for quick start
- ICU parameters
- Same circuit from NIV to Invasive
- Internal mixer
- Intra-Hospital Transport
- ✤ Light weight



One Vent meets all the needs

F60 in Intensive Care Unit





- Same ventilation modes as high-end ventilators
- Internal O2 mixer
- Extensive alarms system
- Flow & Pressure Triggers
- 100% O2 preset
- Customizable apnea ventilation
- 72 hours of Trends
- Curves & Loops
- Intra-Hospital Transport



One Vent meets all the needs F60 in LTAC Facilities: higher acute patients eligible





- Acute Care / ICU/ Transportable
- Independent Ventilator
- Up to twelve hours of internal battery life
- Lightweight, in use transport bag for wheelchair
- High pressure/ low flow O2
- O2 delivered in inspiratory phase only
- Weaning modes
- Ability to monitor data with graphs, loops, and trends
- Compatible with Trach speaking valve
- Splash proof for showers



One Vent meets all the needs F60 in Homecare





- Adults & Infants
- Dual/Single Limb



- ICU modes at home: ACMV / SIMV /APRV and Spontaneous + B-Lev
- Up to 12 hours of autonomy
- Connects to O2 tank and concentrator
- ✤ 60 lpm leak compensation
- Flow up to 220 liters
- Integrated nebulizer
- Lockable screen





One Vent meets all the needs F60 in EMS: Portable Acute Care Ventilator





- ICU modes
- Invasive / NIV
- Compact and lightweight
- Any power source (DC/AC)
- 12 hours of internal battery life
 - + hot swappable batteries
- In use transport bag
- In flight certification
- ✤ 5 preset modes
- 7" color touch screen
- Splash Proof (IP34)



One Vent meets all the needs

Emergency Preparedness and Mass Casualty

- The F60 brings IC ventilation capabilities into the field
- Compact & Lightweight
- Adult/Pediatric
- Invasive & NIV, mouthpiece capable
- 12 hours of internal battery life + hot swappable batteries. Any power source (DC/AC)
- Ease of Use for medical professionals and general caregivers
- 5 preset modes for quick start
- Large color touch screen



Splash Proof (IP34) for showers and outside use in rain



One Vent meets all the needs Ease of Operation



- 7" color touch screen
- Intuitive user interface
- Curves & Loops
- Adjustable alarms
- All parameters and alarms displayed on one screen
- Customizable configurations
- ✤ 15 languages



Flight 60: Advanced modes



PRVC
B-Lev (APRV)
Volume Guarantee
VtG (AVAPS)
MVG



One Vent meets all the needs PRVC mode – Pressure Regulated Volume Control

- Considered Dual Mode of Ventilation
- Combines the advantages of both Volume Controlled & Pressure Controlled Ventilation
- In PRVC, the ventilator will attempt to deliver the desired set tidal volume (Vt) using the lowest possible pressure
- PRVC mode is available in ACMV & SIMV
- In practice, should be used as standard volume control mode



One Vent meets all the needs How does PRVC work ?

- When switching to PRVC mode the ventilator first delivers a set of volume 'test' breaths to determine lung compliance and the necessary pressure required to deliver the targeted volume
- Pressures are then adjusted breath by breath, regulating the amount of pressure needed to achieve the set Vt
- Maximum change in pressure per breath +/- 3 cm H2o. Therefore, achieving target Vt is accomplished over a number of breaths



PRVC FLOW CHART





Advantages of PRVC

"Guarantees" delivery of Vt

- Minimizes risk of barotrauma due to increased peak pressures
- Decelerating flow pattern may provide better distribution of ventilation & oxygenation

Can better meet inspiratory flow demands

"Among elderly COPD patients with respiratory failure, application of PRVC resulted in rapid improvement in arterial blood gas analyses while maintaining a low peak inspiratory pressure. PRVC can reduce pulmonary barotrauma risk, making it a safer protective ventilation mode than synchronized intermittent mandatory ventilation - volume control." Chang S, Shi J, Fu C, Wu X, Li S.

Int J Chron Obstruct Pulmon Dis. 2016 May 17;11:1023-9. doi: 10.2147/COPD.S99156. eCollection 2016.



One Vent meets all the needs B-Lev mode – Bi Phasic Ventilation (APRV / Bi-Level)

B-Lev is a time cycled pressure mode. The ventilator cycles between two different baseline pressures, based on time
 The patient is able to breathe spontaneously at both high and low pressure baselines. Pressure support can be added during the low pressure baseline period to improve comfort



One Vent meets all the needs How does B-Lev work ?

- The F60 applies a high pressure (P High) for a prolonged time (T High) to maintain adequate lung volume and alveolar recruitment
- This phase is followed by a time cycled release phase set to a lower pressure (P low) for a short period of time (T low or release time) where most of the Co2 removal and ventilation occurs



One Vent meets all the needs

Time-cycled between high and low pressure levels

Bi-Level can be described as a pressure controlled continuous high flow positive airway pressure system with a time-cycled change between a high inspiratory pressure level and a lower expiratory pressure level.

Enables recruitment maneuver

Recruitment maneuvers are used to re-inflate collapsed alveoli, a sustained pressure above the tidal ventilation range is applied, and PEEP is used to prevent de-recruitment. B-Lev can be set to apply elevated pressure for up to 40 seconds!

Breathing is POSSIBLE at any moment

Due to very long Ti values required for lung recruitment maneuvers unrestricted spontaneous breathing is possible at any moment of the mechanically supported ventilatory cycle.



Advantages of B-Lev

- Decreased atelectasis
- Preservation of spontaneous breathing
- Improved oxygenation (stabilizing collapsed alveoli)
- Ventilation to dependent lung regions (with spontaneous breathing)
- Patient ventilator synchrony (comfort)
- Improved Hemodynamics (Spontaneous breathing augments cardiac filling)

"In patients suffering from moderate to severe ARDS, application of APRV improved lung function and hemodynamics. It also reduced the need for sedatives and the duration of mechanical ventilation as well as days in ICU."

<u>Li JQ¹, Li N, Han GJ, Pan CG, Zhang YH, Shi XZ, Xu JY, Lu B, Li MQ</u>. <u>Eur Rev Med Pharmacol Sci.</u> 2016 Jun;20(12):2634-41.



B-Lev





One Vent meets all the needs Volume Guarantee

- Pressure mode ensuring a guaranteed volume by using a targeted tidal volume (VtG) with an optional minimum preset rate (MVG) to provide a minimum minute volume
- Volume Guarantee adapts to short term patient changing needs (due to sleep stages, body position) and longer term changes such as disease progression to ensure efficacy together with greater comfort of ventilation



"The right pressure at the right time"



"best of volume control ventilation and pressure control ventilation"



VtG (Tidal Volume Guarantee) Spontaneous Only

In VtG mode, the target volume is reached by controlling the pressure support applied to the patient based on three parameter settings:

- **Target VtG** The target Tidal Volume
- **PSV min** The minimum pressure allowed (set by the operator)
- **PSV max** The maximum pressure allowed (set by the operator)

MVG (Minute Volume Guarantee)

In MVG mode, when the patient fails to trigger a breath within the interval determined by the Rate control, the ventilator triggers a mandatory breath with a set Ti.

The Rate, in combination with the Target VtG setting, determines the minimum delivered minute volume.

- Target VtG The target tidal volume
- **PSV min** The minimum pressure that can be applied
- **PSV max** The maximum pressure that can be applied
- **Rate** The minimum rate (determines the interval)
- **Ti** The inspiratory time of the mandatory breaths



Flight 60 Tech Specs

Intended Use

Ventilator designed to provide Invasive and Non-Invasive ventilation for the critical care management of adult and pediatric patients greater than 5 kg

Μ	odes of Ventilation				
	Spont	(CPAP/BiPAP/BiPAP ST/PSV)			
•	ACMV	(Pressure control/Volume control/PRVC)			
•	SIMV	(Pressure control/Volume control/PRVC)			
•	B-Lev	(Bi-Level, APRV, Bi-Phasic, Duo-PAP)			
•	Volume Guarantee	VtG & MVG (VG PS/ AVAPS)			
•	 NIV with leak compensation up to 60 lpm (F60 T) 				
0	perating Environment				
	Temperature	-18°C to 50°C / -0.4°F to 122°F			
	Humidity	15% to 95% at 31°C/88°F			
•	Altitude:	70kPa to 110kPa			
•	Storage T°	-20°C to 71°C / -4°F to 160°F			
•	Water/Dust Resistance	IP34 (Splash Proof)			
D	imensions				
	Width	29 cm /11.4"			
•	Height	25 cm /9.8"			
•	Depth	28 cm/11.0"			
W	leight (including batte	eries)			
	Turbine	5.5 kg / 6 kg with integrated mixer			
•	Piston	6.3 / 6.9 kg with integrated mixer			
U	ser Interface				
	7" easy to use color LCD	touchscreen			
	Languages: English, German, French, Italian, Spanish, Portuguese,				
	Russian, Polish, Hungarian, Greek, Turkish, Japanese, Chinese				
	Buzzer Level: Low/High				
•	5 preset customizable settings				
	Lockable keypad buttons	5			

Power Sources

	AC	100 to 240V, 50-60Hz
٠	DC	12 to 15V
	Hot swappable 8 t	o 12 hours lithium-ion batteries
٠	Power Save	On/Off/Night

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•	Flow	F60T: 2 to	220 lpm; F60: 2 to 100 lpm
•	Tidal Volume	30 to 2,20	0 ml
•	Breath Rate	1 to 99 bp	m
•	Manual Breath	0 to 3 sec	
•	Pressure Control	5 to 80 cm	1H ₂ O
•	Volume Control	Time/Flow	N
•	Pressure Support	0 to 60 cm	1H ₂ O
•	PSV flow termination	10% to 90	9%
•	PEEP/CPAP	0 to 40 cm	nH ₂ O
•	Pressure Trigger	-20 to -0.1	L cmH ₂ O
•	Flow Trigger	1 to 20 lpr	m
•	Rise Profile	5 levels	
•	Inspiratory Time (Ti)	0.1 to 3 se	2C
٠	FiO ₂	21% to 10	00%
•	2 min 100%O ₂ delivery		
•	Sigh		On/Off
•	Synchronized nebulizer		5 to 60 min
•	Hold Breath		1 to 6 sec (F60 only)
٠	Maneuvers		Inspiratory/Expiratory hold (F60 only
•	Altitude compensation		Off, 500 to 4,500 m
•	Automatic Purge circuit		60 to 300 sec
•	Customizable Apnea Vent	tilation	
B	-Lev Controls (APRV)		
٠	T high (Inspiratory Time)		1 to 15 sec
٠	T low (Expiratory Time)		0.5 to 5 sec
•	P high (Inspiratory Pressu	ıre)	3 to 60 cmH ₂ O
٠	P low (Expiratory Pressur	e)	0 to 40 cmH ₂ O
•	Inverse I:E		30:1
A	larms		
٠	Alarm prioritization		3 levels – Caution/Medium/High
•	Apnea		10 to 60 sec
•	Battery		Low/Empty/Disconnection
•	Low/High Minute Volume		
•	Low/High Pressure		
	Low/High FiO ₂		

Low Vti/Vte	
Check patient circuit	
 O₂ sensor defective 	
 O₂ supply failed 	
Low/High Breath Rate	
Monitors	
Airway pressure LED Gauge	-10 to 120 cmH ₂ O
Peak Inspiratory Pressure (PIP)	0 to 120 cmH ₂ O
Exhaled / Inhaled Tidal Volume	0 to 10 L
Inhaled / Exhaled Minute Volume	0 to 99 lpm
Base / Mean Pressure	0 to 99 cmH ₂ O
Actual breath rate	0 to 99 bpm
 FiO₂ 	21% to 100%
I:E Ratio	1:99 to 3:1
RSBI	0 to 200
Waveforms	Pressure, Flow, Volume
Loops	Pressure vs Volume, Flow vs Volume
Trends	Breath rate, PIP, Vte (up to 72 hours)
 Lung mechanics: Static & Dynami Auto PEEP (F60 only) 	c compliance - Resistance, P Plateau,
Oxygen	
 Optional O₂ mixer 	internal electronically controlled
 High Pressure/Low Flow Port 	35 to 90 psi / 0 to 15lpm
Compatible with oxygen tanks an	d concentrator
Communication	
Communication	
2 USB ports	Download logs, SW upgrade
 2 USB ports 2 external RS232 connectors: 	Download logs, SW upgrade Remote Alarm and Monitoring
 2 USB ports 2 external RS232 connectors: RJ 45 connector 	Download logs, SW upgrade Remote Alarm and Monitoring
2 USB ports 2 external RS232 connectors: RJ 45 connector Standards	Download logs, SW upgrade Remote Alarm and Monitoring



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