





*Falcon SE –
Sophistication wrapped in ease of use*



When quality matters

You require a sophisticated machine that embodies technological perfection. You want a machine of the highest quality and that is intuitively easy to use. You want a machine of the latest design and the best ergonomically thought out solution.

– All this to meet today's increased demands in anaesthesia care.

Manufacturing high quality products has always been the fundamental objective at Anmedic. Your special product requests are given extensive attention at every stage of the design process. We develop products for you to benefit from and enjoy!

General description

The Falcon SE is a modern anaesthesia system combining a sophisticated anaesthesia ventilator a pleasing ergonomic design and a proven gas machine.

MACHINE INFORMATION

The ventilator control panel is conveniently located on the swivel arm and is adjustable for optimum viewing angle whether standing or sitting.

The ventilator control panel has a clear colour display for waveforms and numerics.

The ventilator has CMV, PCV and SIMV modes.

The ventilator tidal volume is compensated for fresh gas flow and compliance in CMV and SIMV.

Pressure and flow monitoring waveforms are shown on the ventilator display.

Dual precision tubes facilitate easy and accurate minimal/low flow anaesthesia.

The lockable swivel arm facilitates both the placing of the circle system, the cable management close to the patient and the positioning of the workstation to provide an ergonomic 'cockpit' presentation of the key controls and displays to the user.

The common gas outlet as well as breathing system pressure monitoring line connector is at the end of the swivel arm to minimize hose clutter.

Easy to assemble compact patient circuit with an optional shunt valve. Available with disposable and reusable absorber canisters.

Installation options for monitoring systems.

A generic RS232 output of ventilator parameters as well as a Philips Vuelink interface.

Spacious tabletop, top shelf, pullout writing surface, 2 drawers and a footrest are provided.

Dual castor wheel assemblies, front wheels lockable.



DIMENSIONS

Height (excluding any monitors):	1380 mm
Width (including bag-in-bottle assembly):	865 mm
Width (excluding bag-in-bottle):	700 mm
Depth (excluding reserve gas-cylinders):	750 mm
Weight (approximately):	165 kg
Top shelf (approximately):	670 x 360 mm (rectangular area)
Tabletop (approximately):	620 x 300 mm (rectangular area)
Pull-out writing surface (approximately):	455 x 230 mm (rectangular area)
Drawer inside dimensions:	470 x 330 x 110 mm (w x d x h)

MACHINE SUPPLIES

Gas supplies (pipeline):	Oxygen, Air, Nitrous Oxide (280 - 600 kPa)
Pipeline connections:	NIST or DISS (rear side frame)
Gas supplies (cylinder):	Oxygen, Nitrous Oxide & AIR according to customer choice
Cylinder connections:	Cylinder yokes (BS/ISO) or DIN connectors
Cylinder sizes:	ISO, pin-indexed, E or smaller DIN 477, 3 litre DIN 477, 10 - 11 litre
Pressure gauges:	Mechanical, analogue. Accuracy = $\pm 1.6\%$ FSD
Electrical supplies:	220 - 250 VAC, 50 - 60 Hz (max. load 12A) or 110 - 125 VAC
Power consumption:	0.5A, 80W
Safety Class:	Protection Class 1
Safety Type:	B

OPERATING ENVIRONMENT

Ambient Temperature range:	+10 °C to +40 °C
Relative Humidity range:	25% to 90%
Atmospheric Pressure range:	700 hPa to 1060 hPa

STORAGE ENVIRONMENT

Temperature:	-10 °C to +60 °C
Relative Humidity:	Max. 95% RH, non condensing conditions

SAFE SHELF LOADING

Top Shelf:	30 kg (distributed)
Drawer:	30 kg (distributed)
Swivel Arm:	50 kg (distributed)

CLASSIFICATION OR PROTECTION AGAINST INGRESS OF FLUIDS

IPX1

Gas delivery

The Falcon SE combines traditional, reliable anaesthesia gas delivery and anti-hypoxia safety features.

The Falcon SE has been designed to offer the ideal operational platform for the practice of low flow anaesthesia, a technique that enables users to significantly lower both operational costs and the polluting effects on our environment without compromising patient safety.



GAS MIXER AND DELIVERY SYSTEM

Main pneumatic switch:

Flow control valves:

Flow tubes:

Common gas outlet:

Common gas outlet location:

Oxygen flush:

Auxiliary outlets:

Backbar fitting:

3-position, rotary pneumatic switch with visual indicator

Rotary needle valves with positive stops

Length indexed: Accuracy = 1.85% of indicated flow

Co-axial, 15/22 mm

At the end of swivel arm

35 kPa (maximum) at 25 - 75 l/min

AIR and O₂, 95 l/min at 380 kPa

1-2 vaporizer Selectatec®-type mount

SAFETY SYSTEM

Oxygen pressure loss:

Overpressure relief:

Gas ratio system (hypoxic guard):

Audible warning below 220 kPa (32 lbf/in²)

Automatic N₂O cut-off

Automatic reset when oxygen is restored

Manifold relief valves for each gas supply (750 kPa)

Backbar valve opens at 35 kPa

Ensures that minimum O₂ content in fresh gas never is below 22%

Ventilator

The Falcon SE has a sophisticated electronically controlled and air or oxygen driven anaesthesia ventilator, which features PCV and SIMV modes in addition to volume controlled ventilation.

The ventilator control panel, featuring a 6.4 inch colour display, is mounted on the swivel arm. It can be easily adjusted to achieve the optimum viewing angle whether in the standing or sitting position. The change between manual and automatic ventilation is done through the control panel without needing any switch selection on the patient circle.



VENTILATION MODES

CMV

Tidal volume:	20 - 1500 ml
TV compensated for fresh gas flow:	Yes
TV compensated for compliance:	Yes
I:E Ratio:	3:1 - 1:9.9
Frequency:	4 - 60 BPM
Insp. flow:	2 - 80 l/min
Pressure limit:	10 - 65 hPa
PEEP adjustment range:	OFF, 4 - 20 hPa

SIMV

Values correspond directly with CMV
Trigger sensitivity 3 l/min for 30ms

PCV

Frequency:	4 - 60 BPM
I:E Ratio:	3:1 - 1:9.9
Insp. flow:	2 - 80 l/min
Breath pressure:	5 - 55 hPa
Pressure limit:	15 - 65 hPa
PEEP adjustment range:	OFF, 4 - 20 hPa

MANUAL

APL valve range:	1.5 - 60 hPa
In Manual-mode:	Pressure and flow monitoring, alarms active
In Standby-mode:	No pressure, flow or alarms monitoring but manual ventilation possible
Bag/Vent Switch	Automatic, pneumatic control
Ventilator frequency tolerance:	0.01%

Flow rates and volumes are measured under STPD conditions (standard temperature & pressure, dry conditions)

PRESSURE RANGES

Max. pressure limitation:	70 hPa (pressure limiting valve)
Adjustable pressure limitation:	10 - 65 hPa (CMV, SIMV) 15 - 65 hPa (PCV)

PEEP range: 3 - 20 hPa
Display error: ±0.5% of pressure end value

BACK-UP BATTERY

Battery capacity: 2.6 Ah
Charging current (machine ON): >200 mA
Charging time (STANDBY): 12 hours (approx.)
Battery operation duration: 30 mins (fully charged, approx.)
Charging current circuit: Overload protected

DRIVING GAS SUPPLY

Air or Oxygen (factory set): 280 to 600 kPa
Driving gas consumption approximately equals minute volume in CMV with no PEEP.

ALARM MESSAGES

Disconnection
System Pressure
Overpressure
Fresh gas high
Bellows drive
Pressure limit
Batt. overloaded
Batt. discharged
Mains failure
Hardware fault
Watchdog error
Fan fault
Pressure fault
Water trap disconnected

T1 TEST (Ventilator self-test)
Comprises the following tests:

Battery
Mains supply
Solenoid valves
Overpressure valve (Driving Gas)
APL valve
Circuit volume
SIMV Flow sensor
Fresh gas flow
Compliance and leakage
Switches/Displays

T1 Test is repeatable
T1 Test adaptor is a 15 mm taper connector

TRENDS AND LOG FUNCTIONALITY

There are numerical trends showing ventilator parameters at 5-minute intervals for the last two hours.
The following stored data are user accessible:

Date and time of starts without T1-test
Date and time of last performed T1-test
Date of last performed service on Falcon SE
Date of next service
Service technician accessible log storing the following data:
High priority alarms

TEST STANDARDS

The ventilator has been tested in accordance with the following standards to ensure that any faults do not result in dangerous conditions:

Software: DIN VDE 0801
EMC electromagnetic compatibility: IEC 60601-1-2
Electrical safety: IEC 60601-2-13 Amendment 1
Functional safety: ICE 60601-1

Ventilatory monitoring

PATIENT SYSTEM PRESSURE MONITORING

Patient system pressure is measured from the patient circle and its numerical values and waveform are shown on the ventilator control panel display.

Range:	0 - 70 mbar
Accuracy:	±3.5%
Numerical value shown:	Peak, mean or plateau
alarm limits (CMV, SIMV):	10 to 65 hPa
Alarm limits (PCV):	15 to 65 hPa



EXPIRED VOLUME MONITORING

Expired volume is measured using the flow sensor under the Bag in bottle. Its numerical values and the flow waveform are shown on the ventilator control display. The values are updated breath by breath.

Range:	20 - 1500 ml
Accuracy for tidal volumes:	The higher of ±10% of actual reading or ±10 ml with gas mixture O ₂ /N ₂ O = 40/60% (V/V)
Minute volume alarm limits:	0.5 to 60 l

OXYGEN MONITORING (OPTIONAL)

Depending on user preference, oxygen concentration may be measured either from the fresh gas inlet to the patient circuit (fresh gas O₂) or from the inspiratory limb of the patient system (FiO₂).

Range:	18% to 110%
Tolerance:	±3%
Alarm limits:	25 to 100%
Sample flow rate:	100 ml/min
Delay time:	<1minute
Water trap:	Artema Dryline®

Q-CIRCLE SYSTEM

The Anmedic Q-Circle systems consist of a compact, robust and reliable valve block fitted with either disposable or reusable absorber canisters. All the connections are on the valve block making assembly of the patient system fast and easy. The valve block features a by-pass valve that will close the system to prevent leakage into the room when changing the absorber canister during operation. The one-way valve assembly is located on the front side of the valve block for good visibility. A practical cleaning cassette is available to facilitate cleaning the valve block in a washing machine.

Two types of Q-Circle system are offered: Q2 Circle system and Q-mix Circle system. The difference between the two systems is that Q-mix is equipped with a shunt valve, which allows the user to easily control the patient's EtCO₂ by selecting the proportion of expiratory gas that will by-pass the absorber canister.

The Circle systems is located on a lockable 400 mm long swivel arm.



Breathing system

Compliance:	4.9 ml/hPa
Volume:	270 ml + BiB
Resistance@ 60 lpm:	Exp. 6 cm H ₂ O, Insp. 5 cm H ₂ O

Internal compliance

Circle compliance:	0.2 ml/hPa
Absorber compliance:	0.9 ml/hPa
Leakage:	10 ml/min

Soda lime capacity of disposable absorber canister:	650 ml (550g) sufficient for 8 hours of anaesthesia (enough to absorb about 72 l of CO ₂)
Soda lime capacity of reusable absorber canister:	750 ml (600g)
Uni-directional valve, pressure generated (when wet):	1.2 cm H ₂ O
Uni-directional valve, opening pressure (when wet):	1.0 cm H ₂ O
Weight:	1.6 kg (approx.)

Patient monitoring provisions

The Falcon SE may be used with any patient monitoring equipment fulfilling appropriate minimum monitoring requirements and the users' individual needs.

The machine features as a option a GCX arm interface located at the rear top left corner of the machine. The GCX arm may be used for mounting flat displays of monitoring systems or even complete light or compact size monitors. The machine top shelf may also be used for monitoring equipment.

Anaesthesia information management provisions

INFORMATION MANAGEMENT PROVISIONS (AIM)

For AIM the Falcon SE ventilator provides two kinds of digital outputs through its 25-pin DIN-connector: a Philips Vuelink and a generic serial output. The generic serial output function sends a data string every 10 seconds. The detailed protocol specifications are provided in the Falcon SE product documentation.



All possible care has been taken in preparation of these technical specifications but Anmedic AB accepts no liability for any inaccuracies that might be found.

Following a policy of continuous improvement, Anmedic AB reserves the right to changes without prior notice to this specification leaflet as well as to the Swift.



Galgbacksvägen 6 • SE-186 30 Vallentuna • Sweden
Tel: +46 (0)8 514 30 600 • Fax: +46 (0)8 514 30 620

www.anmedic.com