



Oxylog® 2000 plus Pocket Guide

Software version 1.n

The Oxylog 2000 plus Pocket Guide is not a replacement or substitute for the Instructions for Use. Any use of the device requires full understanding and strict observation of the Instructions for Use. The user must be familiar with the device according to the national and local laws and recommendations. There will be no exchange of the Pocket Guide when the product is updated/upgraded.

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Alarms and Measured Values

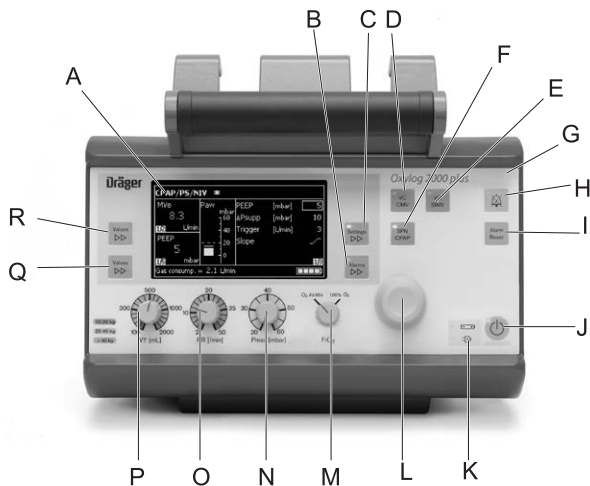
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Trouble Shooting









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Front panel with all options

The Oxylog 2000 *plus* Pocket Guide is not a replacement or substitute for the Instructions for Use. Any use of the device requires full understanding and strict observation of the Instructions for Use.



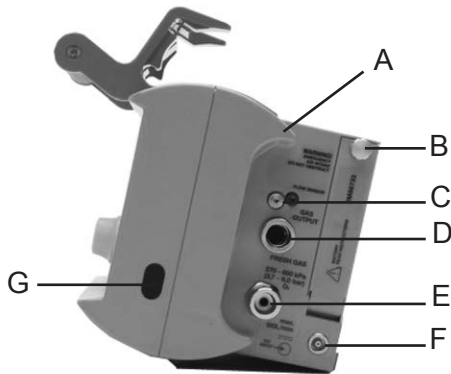
Front panel with all options

- A** Screen with screen pages for the specific application
- B** Key **Alarms**  for setting and displaying alarm limits
- C** Key **Settings**  for setting other ventilation parameters on the screen
- D** Key for ventilation mode **VC-CMV / VC-AC**
- E** Key for ventilation mode **VC-SIMV (PS)***
- F** Key for ventilation mode **SpnCPAP (PS)***
- G** Red and yellow lights (LEDs) as alarm indicators
- H** Key  to suppress the audible alarm for 2minutes
- I** Key **Alarm Reset** for acknowledging alarm messages
- J** Start / Standby key 
- K** Display symbols for the power supply
 -  Charge status of the internal battery
 -  Mains power supply connected
- L** Central rotary knob for making selections / settings and for confirming these
- M** Control knob for setting O₂ AirMix or 100% O₂ FiO₂
- N** Control knob for setting the maximum inspiratory pressure **Pmax**
- O** Control knob for setting the ventilation respiratory rate **RR**
- P** Control knob for setting the tidal volume **VT**
- Q** Key **Values**  to select the displayed measured values
- R** Key **Values**  to select the displayed measured MVe or VT_e values

* Pressure Support and Non-Invasive Ventilation are optional features.

Side view, right

- A** Emergency air intake
- B** Screw to secure the battery compartment cover
- C** Connectors for flow measuring hoses
- D** Connectors for ventilation hose
- E** Connector for medical gas hose
- F** Socket for DC supply
- G** Window for Infrared Data Association (IrDA) interface

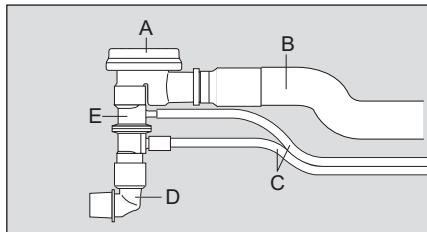


Breathing Systems

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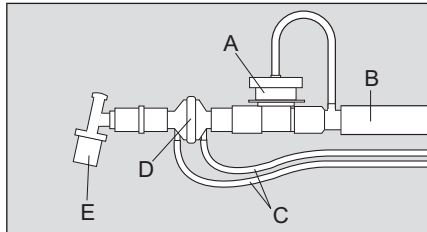
Reusable hose system

- A Breathing valve
- B Ventilation hose
- C Flow and pressure measuring hoses
- D Angled connector
- E Flow sensor



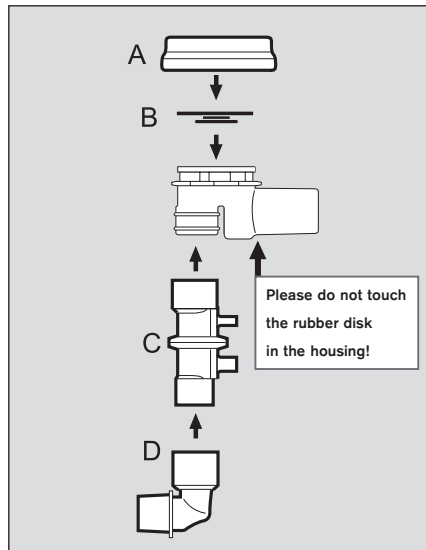
Disposable hose system

- A Breathing valve
- B Ventilation hose
- C Flow and pressure measuring hoses
- D Flow sensor
- E Angled connector

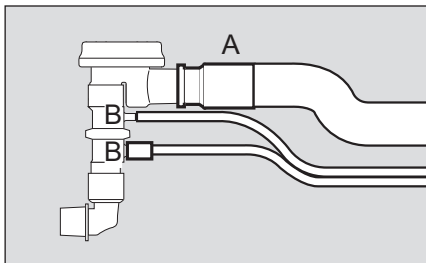


Assemble the reusable hose system

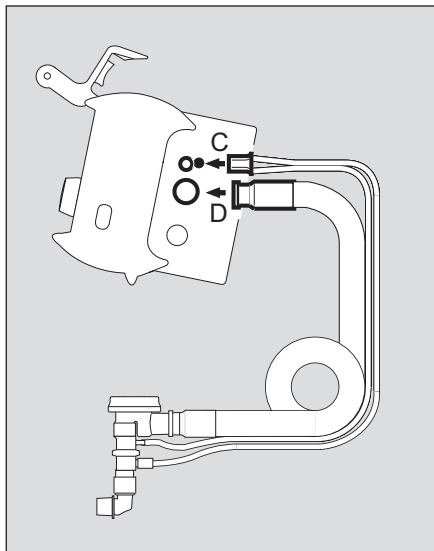
- 1 Place the diaphragm (B) in the breathing valve. Ensure that it is inserted correctly.
- 2 Fit the cover (A) and turn it approximately 90° clockwise to secure into position.
- 3 Push the flow sensor (C) into breathing valve.
Note the preferred position as indicated by the groove.
- 4 Connect the angled connector (D) to the flow sensor.



Connect the reusable hose system



- 1 Connect the ventilation hose (A) to the breathing valve.
- 2 Connect the flow measuring hoses (B) to the nozzles on the flow sensor. Note the different diameters.
- 3 Connect the flow measuring (C) hoses to the Oxylog 2000 *plus*.
- 4 Connect the ventilation hose (D) to the gas outlet on the Oxylog 2000 *plus*.



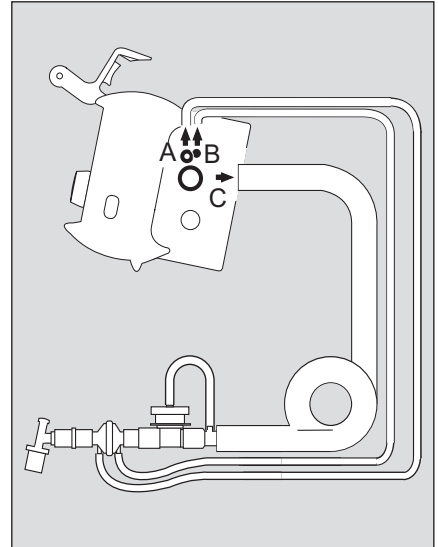
Connect the disposable hose system

- 1 Connect the blue flow measuring hose (B) to the blue gas connector.
- 2 Connect the transparent flow measuring hose (A) to the other gas connector.
- 3 Connect the ventilation hose (C) to the gas outlet on the Oxylog 2000 *plus*.

When changing the ventilation hose system

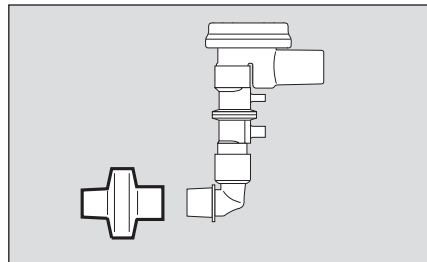
If the reusable ventilation hose system is to be used instead of a disposable hose system or vice versa:

- 1 Have the nozzles on the device changed by trained service specialists.
- 2 Reconfigure the device accordingly.



When using a bacterial filter or HME

Connect the bacterial filter or HME to the angled connector.



Bacterial filter or HME

Connecting the power supply

The Oxylog 2000 *plus* is designed to operate on power supplies with different voltages:

- DC voltage from the on-board power supply:
 - Via DC/DC converter
 - With AC/DC power pack
- With rechargeable battery (specified Smart Battery)

Internal supply with rechargeable battery

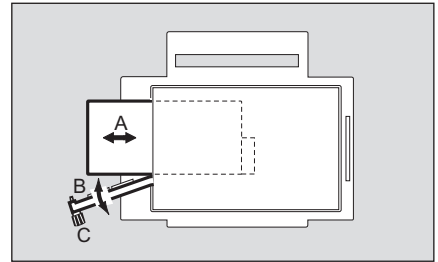
Installing the battery

- 1 Insert a fully charged battery into the battery compartment (A).
- 2 Attach the connector at the bottom.
- 3 Turn the cover upwards (B).
- 4 Tighten the screw (C).



Checking the charge of the battery

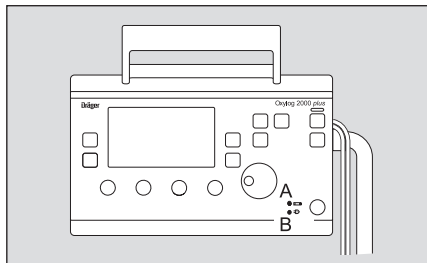
Press the button on the rechargeable battery.

The charge status is indicated as a percentage by LEDs.



Charging the battery

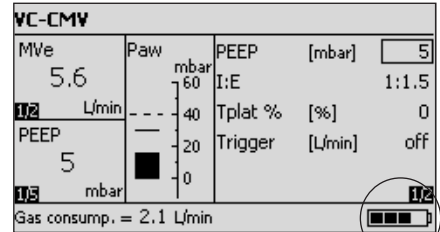
- 1 The green lamp  (B) lights up when the battery is actively charging.
- 2 A three colored indicator  (A) lights up to show the current charge status of the internal battery:
 - Green: when the battery has been fully charged.
 - Yellow: while the battery is being charged.
 - Red: if a battery has not been inserted or a technical failure occurred.
- Indicators (A) and (B) remain off while the ventilator is being operated from the internal battery.
- Additional alarms can draw attention to the remaining operating time of the battery.
- When operated via the rechargeable battery, the brightness of the ventilator screen is reduced in order to save power.
- The screen brightness is automatically increased to maximum for one minute while settings are being made.



Indication of battery capacity / battery operation

The remaining capacity of the battery is indicated by Oxylog 2000 *plus* in 25% increments in the lower right section of the information window when power is ON.


The capacity indication is overwritten if higher priority messages are activated.

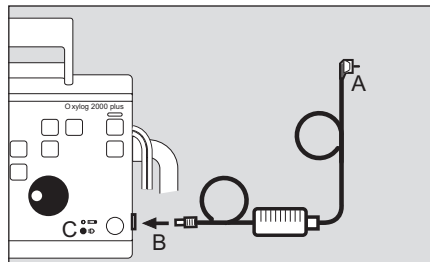


Example: 75% charge

External power supply

External power supply from mains power (AC/DC power pack)


- 1 Connect the mains plug (A) to the mains outlet.
- 2 Connect the DC plug (B) to the DC connector on the Oxylog 2000 *plus*.
- 3 When the Oxylog 2000 *plus* is connected to an external supply, the indicator  (C) lights up.

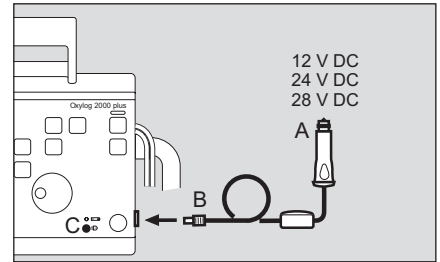


External power supply

External power supply with DC/DC converter

The DC/DC converter must be used to connect the *Oxylog 2000 plus* to permanently installed onboard battery systems of different voltages (12 V, 24 V, 28 V DC).

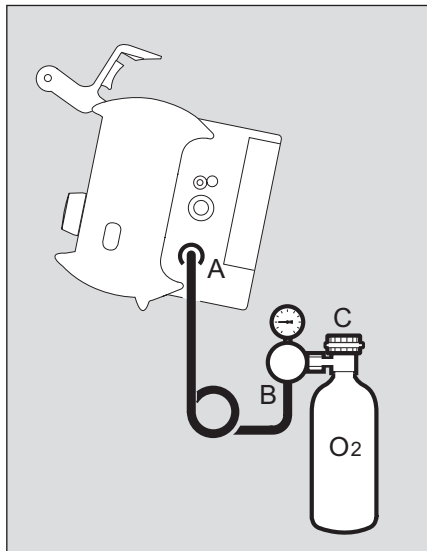
- 1 Plug the large connector (A) of the DC/DC converter into the on-board supply.
- 2 Plug the small connector (B) into the DC connector of the *Oxylog 2000 plus*.
- 3 When the *Oxylog 2000 plus* is connected to an external supply, the indicator  (C) lights up.



Connecting the gas supply from an O₂ cylinder

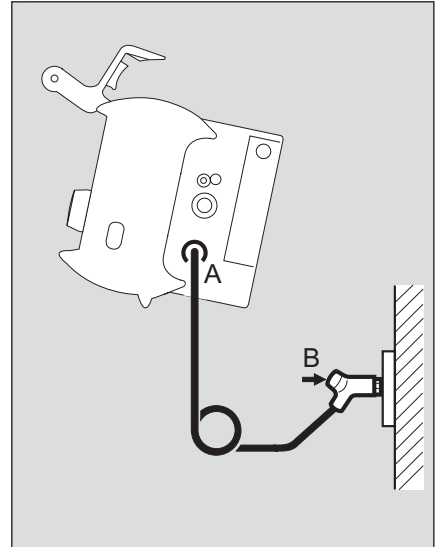
Connecting the gas supply supply from an O₂ cylinder

- 1 Use a full O₂ cylinder.
- 2 Connect the pressure reducer (270 to 600 kPa delivery pressure, 500 kPa nominal pressure) to the O₂ cylinder.
- 3 Connect the O₂ medical gas hose (A) to the Oxylog 2000 *plus*.
- 4 Connect the O₂ medical gas hose to the pressure reducer (B).
- 5 Rotate the cylinder valve (C) slowly and open fully.



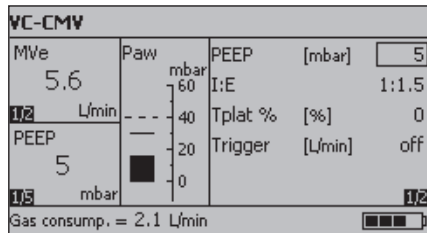
Supply from a piped medical gas system

- 1 Connect the O₂ medical gas hose (A) to the Oxylog 2000 *plus*.
- 2 Connect the gas hose (B) to the O₂ terminal unit until the supply of O₂ is confirmed.



Determining the approximate pneumatic operating time for the Oxylog[®] 2000 *plus*

The pneumatic operation time increases when Oxylog 2000 *plus* operates with O₂ AirMix, as ambient air is drawn into the device. The amount of gas from the high-pressure supply, which is currently being consumed, is indicated by the Oxylog 2000 *plus* in the lower left section of the information window in L/min. This display is overwritten when a higher priority message is activated.



Example: O₂ consumption = 2.1 L/min

Determining the approximate pneumatic operating time for the Oxylog® 2000 plus

Example for supply of medical gas:

- Cylinder pressure measured on the pressure gauge of the pressure reducer: 20,000 kPa (200 bar)
- Liquid capacity of the O₂ cylinder: 2.1 L

Supply of medical gas:

2.1 L x 20,000 kPa = approximately 420 L

Example for pneumatic operation time:

- VC-CMV mode, respiratory rate 10 breaths /min, VT = 1 L, O₂ = 100%
- Minute volume = 10 breaths /min x 1 L = 10L/min

$$\text{Operation time} = \frac{\text{Medical gas supply [L]}}{(\text{MV} + 0.5^*) \text{ [L/min]}}$$


$$\text{Operation time} = \frac{420}{10.5} = \text{approx. 40 minutes}$$

* Calculated with average gas consumption of ventilator: 0.5 L/min

Starting operation

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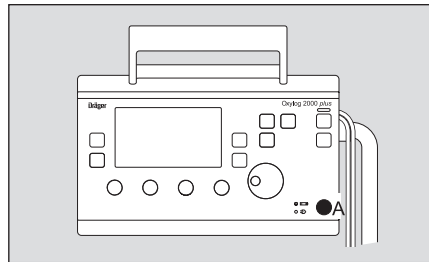
Switch ON

- Briefly press the  key (A).
The Oxylog 2000 *plus* performs a self-test.
 - The self-test will be completed in approximately six seconds.

Upon completion of the self-test, the ventilator automatically begins ventilation with the default settings. The opening display with configured settings is displayed if the central rotary knob is not pressed.


The manufacturer's default settings are:

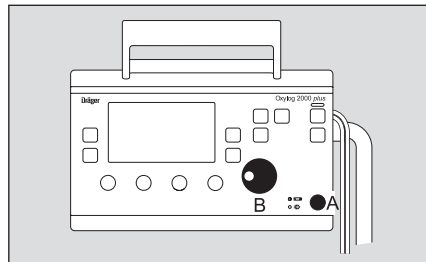
- Ventilation mode **VC-CMV**.
- Ventilation time ratio **I:E** = 1:1.5.
- Positive end expiratory pressure **PEEP** = 5 mbar.
- Plateau time **T_{plat}** % = 0%.
- **Trigger** = OFF.



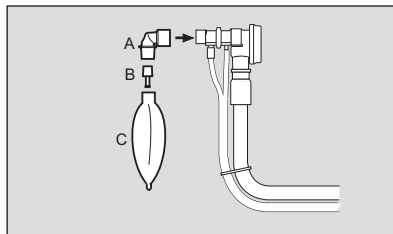
Shutdown

After disconnecting the patient switch the ventilator OFF:

- 1 Press the key  (A) for approximately 3 seconds.
The yellow lamp flashes and ventilation is terminated by the device.
- 2 Press the rotary knob (B) to acknowledge the alarm
!!! Confirm device OFF with rotary knob.

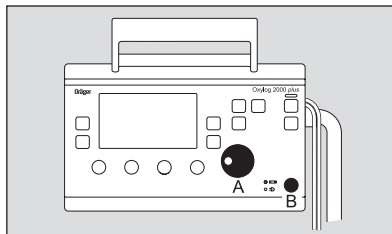


Perform device check




Connect the test lung

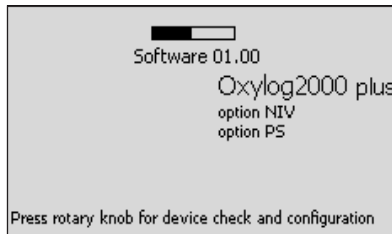
- 1 Connect the angled adapter (A) to the breathing valve.
- 2 Connect the catheter connector (B), diameter 7 mm, to the angled adapter. The catheter connector simulates the resistance of the airways.
- 3 Connect the test lung (C).



Switch ON

- 1 To switch ON briefly press the  key (B).

The device performs a self-test and the operator is prompted, on the display, to activate the configuration menu or device check:



- 2 Press the rotary knob (A) to confirm, before the bar is full.
- 3 Select Device check in the main menu and confirm.

NOTE:

The device check can be discontinued at any time by pressing the »Alarm Reset« key.

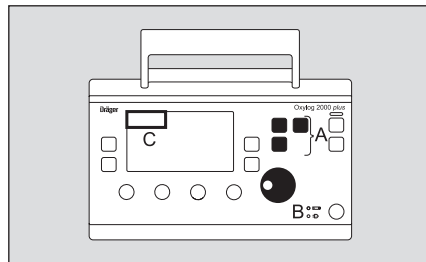
Ventilation controls

Selecting the ventilation mode

1. Press the appropriate ventilation mode key (A) for approximately 3 seconds.

Or

- 1 Press the appropriate ventilation mode key (A).
- 2 Press the rotary knob (B) to confirm. The selected ventilation mode will be activated.
- 3 The active ventilation mode is displayed in the upper left corner of the display (C).



Preparing ventilation mode

Set ventilation parameters

1 Set the required control below the display.

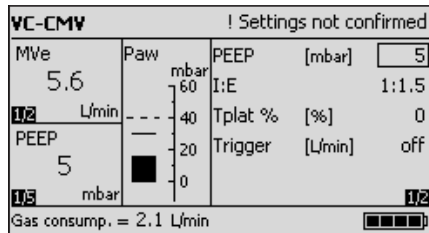
Or

2 Select, set and confirm a parameter on the display with the rotary knob.

The former settings are retained if confirmation is not received within 15 seconds. Attention is drawn to this fact by the advisory message.

! Settings not confirmed.

When the PEEP setting is increased above 10 mbar, a message **Confirm PEEP above 10 mbar?** will appear to request confirmation of the change. The PEEP setting can be increased to the desired setting after the message is acknowledged with the rotary knob.



Available ventilation modes

Available ventilation modes

- **VC-CMV / VC-AC**

Volume Controlled - Controlled Mandatory Ventilation with PEEP. Volume Controlled - Assist Control with PEEP.

- **VC-SIMV (Optionally with Pressure Support)**

Volume Controlled - Synchronized Intermittent Mandatory Ventilation with PEEP.

- **SpnCpap Continuous Positive Airway Pressure (Optionally with Pressure Support)**

Spontaneous breathing with positive airway pressure.

For heart-lung resuscitation

During heart-lung resuscitation, the airway pressure P_{aw} is limited to the set P_{max} value by the Oxylog 2000 *plus*, without ending inspiration prematurely (pressure-limited, nonconstant-volume ventilation when P_{max} is reached).

If P_{max} is set to a higher value, a higher minute volume is possible.

VC-CMV / VC-AC

VC-CMV – Volume Controlled - Controlled Mandatory Ventilation.

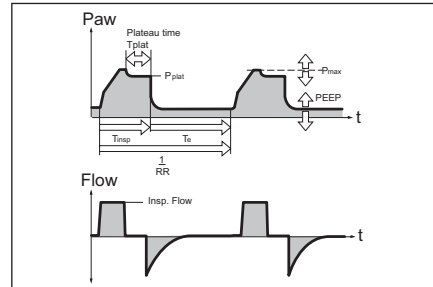
Volume-controlled ventilation with fixed mandatory minute volume MV, set with tidal volume VT and respiratory rate RR.

Set the ventilation pattern with the controls below the display:

- Tidal volume **VT**.
- Ventilation respiratory rate **RR**.
(minimum possible respiratory rate: 5 per min).
- Maximum airway pressure **Pmax**.
- O₂ setting, O₂ AirMix or 100% O₂ FiO₂.

The following can be set on the display:

- Positive end expiratory pressure **PEEP**.
- Ventilation time ratio **I:E**.
- Plateau time **Tplat** %, in % of the inspiration time.



VC-CMV			
MVe	Paw	PEEP	[mbar]
4.6	mbar	5	
1/2 L/min	60	I:E	1:1.5
PEEP	40	Tplat %	0
5	20	Trigger	[L/min] off
1/5 mbar	0		
VT = 500 mL	Ti = 2.0s		Flow = 15 L/min

Trigger (VC-AC)

Activating/setting the trigger

- 1 Press the key **Settings** $\triangleright\triangleright$ (A) until the trigger parameter is displayed.
- 2 Select the line **Trigger** on the display and then set and confirm the value with the rotary knob.
Small value = high sensitivity.

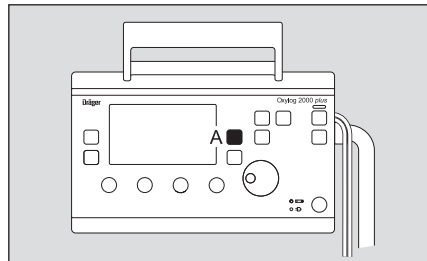
The ventilation mode **VC-AC** is shown on the display.

Deactivate trigger

- 1 Set a value less than 3 L/min or greater than 15 L/min (**off** is displayed instead of a value).
- 2 Press the rotary knob to confirm.

The last effective trigger value is adopted by the ventilator when changing from VC-AC to SpnCPAP.

Successful patient triggering is briefly indicated by an asterisk (*) in the middle of the status and alarm message window.



NOTE

If in VC-CMV the trigger is set »on«, the ventilation mode changes into VC-AC.

VC-SIMV (optional PS)

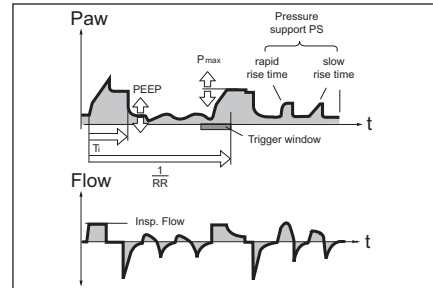
VC-SIMV - Volume Controlled - Synchronized Intermittent Mandatory Ventilation

For patients with inadequate spontaneous breathing, or for patients who are to be weaned gradually.

Fixed mandatory minute volume MV is set with tidal volume VT and ventilation respiratory rate RR. The patient can breathe spontaneously between the mandatory ventilation strokes and thus contribute to the total minute volume. Spontaneous breathing can be assisted with PS.

Set the ventilation pattern with the controls below the display:

- Tidal volume **VT**.
- Respiratory Rate **RR**.
(minimum possible respiratory rate: 2 per min).
- Maximum airway pressure **Pmax**.
- O₂ setting **FiO₂**.
- Inspiration time **Ti**.
- Plateau time **Tplat** %, in % of the inspiration time.
- Positive end expiratory pressure **PEEP**
- Sensitivity **Trigger**.



VC-SIMV			
MVe	Paw	Ti	[s] 2.0
5.9	mbar	Tplat %	[%] 0
112 L/min	60	PEEP	[mbar] 5
PEEP	40		
5 mbar	20		
115	0		118
Gas consump. = 2.1 L/min			

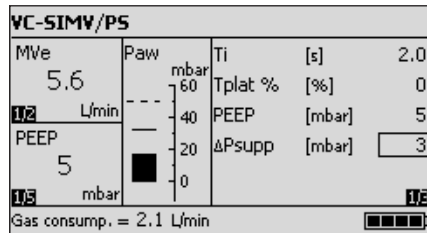
VC-SIMV (optional PS)

Pressure support (optional)

The following can also be set on the display for VC-SIMV / PS:

- Setting on page 1:
Pressure support ΔP_{supp} above PEEP.
- Setting on page 2:
Pressure rise time **Slope**

- ∕ flat ramp = long pressure rise time
- ∕ medium ramp = medium pressure rise time
- ┌ steep ramp = short pressure rise time.



SpnCPAP (optional PS) (optional NIV)

SpnCPAP - Continuous Positive Airway Pressure

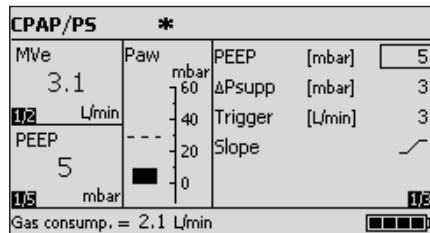
Set the ventilation pattern with the controls below the display:

- Maximum airway pressure **P_{max}**.
- O₂ setting **FiO₂**.

Pressure support (optional)

The following can additionally be set on the display for SpnCPAP / PS:

- Pressure support **ΔP_{supp}** above PEEP.
- Sensitivity **Trigger** (for synchronization with the patient's spontaneous breathing efforts). Successful patient triggering is briefly indicated by an asterisk(*) in the middle of the status alarm messages window.
- Pressure rise time **Slope** (for pressure support **ΔP_{supp}**).



SpnCPAP (Apnea Ventilation)

Apnea back-up ventilation is only applicable when using the SpnCPAP mode. In the event of an apnea, the ventilator will automatically activate volume controlled mandatory ventilation (VC-CMV).

Setting apnea ventilation

On the display:

- 1 Press the **Settings** $\triangleright\triangleright$ key until page **2/3** appears.
- 2 Set **Tapn** with the rotary knob to a value between 15 and 60 sec.
- 3 Set **RRapn** and **VTapn**.
- 4 Set **Pmax**. This determines the maximum airway pressure allowed during apnea ventilation.

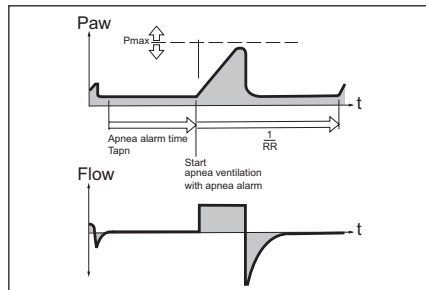
The ventilation time ratio I:E = 1:1.5 and the plateau time $T_{plat} \% = 0$ are preset during apnea ventilation.

To switch apnea ventilation OFF

- Set **Tapn** to OFF (see setting apnea ventilation above)

To end apnea ventilation

- Press the **Alarm Reset** key.

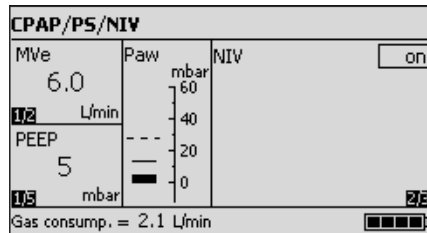


CPAP/PS		!!! Apnea ventilation	
MVe	3.6	Paw	mbar
1/2 L/min		60	
PEEP	5	40	
1/5 mbar		20	
		0	
		NIV	off
		Tapn	[s] 15
		VTapn	[mL] 500
		RRapn	[/min] 12
			2/3
Gas consump. = 2.1 L/min			■■■■

NIV – Non-Invasive Ventilation (optional)

NIV (optional) can only be activated as a supplementary function in the pressure controlled ventilation modes SpnCPAP and SpnCPAP / PS. Mask leakages are detected by the device, compensated and included in the measured values for VT_e and MV_e. The leakage alarm is inactive.

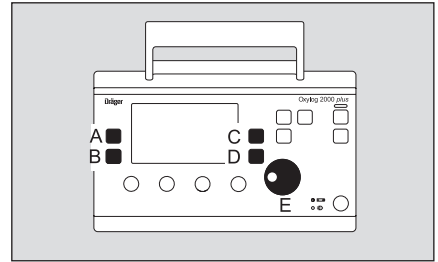
- The supplement NIV appears in the upper section of the display.



Please refer to the NIV section of the Instructions for Use for a clear understanding of risks associated with NIV use.

Display operating controls

- A Values** ▷▷key; to change screen pages in the „Measured Values“ window, to display MVe or VTe.
- B Values** ▷▷key; to change screen pages in the „Measured values“ window, to display the measured values.
- C Settings** ▷▷key; to change screen pages in the „Setting“ window, to set other ventilation parameters.
- D Alarms** ▷▷key; to change screen pages in the „Alarms“ window, to set and display the alarm limits.
- E** Central rotary knob for selecting and confirming options on the display.



In the event of an alarm

The Oxylog 2000 *plus* Pocket Guide is not a replacement or substitute for the Instructions for Use. Any use of the device requires full understanding and strict observation of the Instructions for Use.

- The LED (A) flashes red or yellow.
And
- The alarm message appears on the right of the status and alarm message window (C).


When the fault has been remedied the alarm tone is cancelled.

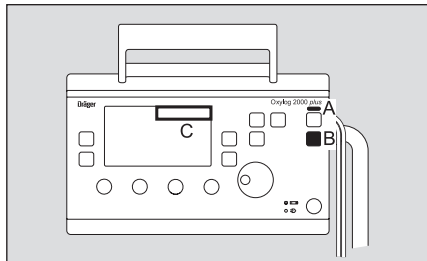
Alarms which have been remedied remain on the display and can be acknowledged (reset):

- 1 Press the **Alarm Reset** key (B).

The alarm message is removed from the display.

Every alarm which has been remedied, but not acknowledged, will be overwritten by a new alarm or advisory message.

- A**  key for suppressing the audible alarm for 2 minutes.
- B** **Alarm Reset** key for acknowledging alarm messages.



Setting alarm limits

To set alarm limits for MV and RRsp

- Press the key **Alarms** $\triangleright \triangleright (A)$.

Display example Alarms screen with variable alarm limits:

\surd = lower alarm limit.

\surd = upper alarm limit.

Alarm	Range
MV	2 to 41 L/min
MV	0.5 to 40 L/min
RRsp	10 to 100 /min

Set the maximum airway pressure Pmax via the Pmax control (B).

The airway pressure is limited when Pmax is reached; inspiration will not be terminated prematurely.

Setting alarm limits automatically (Autoset)

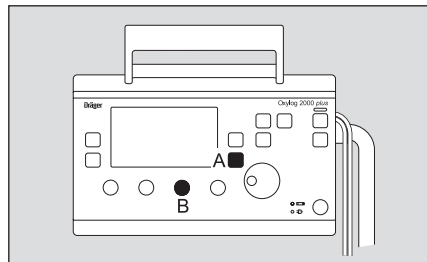
The function Auto alarm limits sets the alarm limits on the basis of the following actual measured values at the time of activation:

MV \surd : Measured value MV + 2 L/min

MV \surd : Measured value MV - 2 L/min

RRsp \surd : Measured value RRsp + 5 /min, with a minimum of 10/min.

This automatic selection of alarm limits is performed only once, when confirmed, via the rotary knob.



Displaying other measured values

MVe / VTe window

- A Parameter measured.
- B Measured value.
- C Unit of measure.
- D Page number.

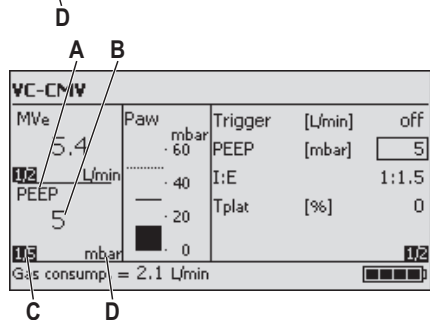
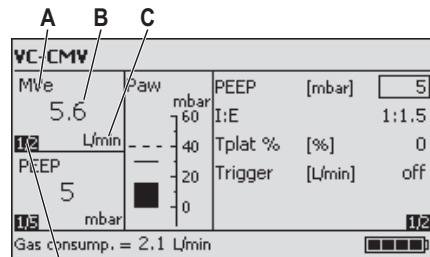
Values window

In the values window five different values can be displayed.

To switch between the values:

- Press the lower **Values** $\triangleright\triangleright$ key: the next value is displayed on the screen.

- A Parameter measured.
- B Measured value.
- C Page number
- D Unit of measure



Alarm - Cause - Remedy

The Oxylog 2000 *plus* Pocket Guide is not a replacement or substitute for the Instructions for Use. Any use of the device requires full understanding and strict observation of the Instructions for Use.

Oxylog 2000 *plus* classifies alarm messages according to three priority levels and identifies these accordingly with the aid of exclamation marks:



!!! Warning	High priority alarm message
!! Caution	Medium priority alarm message
! Advisory	Low priority alarm message

The following pages list the alarm messages in alphabetical order. If an alarm occurs, the table helps to identify causes and remedies.

Messages in the alarm window

Alarm	Cause	Remedy
!!! Apnea	Spontaneous breathing by the patient has failed, or disconnection. Faulty flow sensor.	Ventilate in VC-CMV mode. Ensure that hose connections are tight. Replace flow sensor.
!!! Apnea ventilation (only for SpnCPAP)	The ventilator has automatically switched over to mandatory ventilation after detecting an apnea (only in SpnCPAP mode).	Check ventilation mode. To return to original ventilation mode: Press the Alarm Reset key.
!! Charge int. battery	Oxylog 2000 <i>plus</i> draws its power from the internal battery due to the absence of an external DC supply. Only a few minutes of operating time remain (approximately 10 minutes).	The ventilator must immediately be reconnected to the mains supply, an onboard DC supply or a fully charged battery.
!! Check settings flow	The flow resulting from the settings for „Tidal volume VT per unit time“ is not possible.	Change tidal volume VT or inspiratory time Ti or ventilation time ratio I:E .
!! Check settings time	The expiration time resulting from the settings for RR and I:E or Ti is not possible.	Change RR or I:E or Ti .

Messages in the alarm window

Alarm	Cause	Remedy
!!! Confirm device OFF with rotary knob	Key  has been pressed for 3 seconds.	To switch OFF: confirm with the rotary knob. To continue ventilation, press key  again.
!!! Device failure	Technical defect.	Contact your local DrägerService for additional support.
!! Flow measurement inop	Measurement hoses for flow measurement hoses kinked, disconnected or leaking.	Ensure flow measurement hoses are connected correctly.
	Flow sensor defective.	Replace flow sensor.
	Technical defect.	Contact your local DrägerService for additional support – restricted operation is now possible.
!! Gas delivery failure	Technical defect.	Contact your local DrägerService for additional support.

Messages in the alarm window

Alarm	Cause	Remedy
!! High respiratory rate	Patient breathes at a high spontaneous rate.	Check patient's condition, check ventilation pattern, correct alarm limit RRsp if necessary.
!! Int. battery charging inop	Technical defect.	Contact your local DrägerService for additional support – restricted operation is now possible.
!!! Int. battery discharged	The operating time for operation with the internal battery has expired and an external DC supply has not been connected.	The ventilator must immediately be reconnected to a mains supply, an on-board DC supply or a fully charged battery.
!! Int. battery in use	Oxylog 2000 <i>plus</i> draws its power from the internal battery due to the absence of an external DC supply.	Press the Alarm Reset key to confirm the alarm.
!! Key failed	Technical defect.	Contact your local DrägerService for additional support – restricted operation is now possible.

Messages in the alarm window

Alarm	Cause	Remedy
!!! Leakage (not in NIV)	The measured expiratory tidal volume V_{Te} is approximately 40% lower than the inspiratory value.	Repair leaks in hose system and possibly in the tube.
	Faulty flow sensor.	Use new flow measuring hoses.
	The ventilator may not function properly.	Replace flow sensor.
!! Loss of data	Technical defect.	Contact your local DrägerService for additional support.
!! Loudspeaker inop	Technical defect.	Contact your local DrägerService for additional support – restricted operation is now possible.
!!! MV high	The upper alarm limit for the minute volume MV has been exceeded.	Check patient's condition, check ventilation pattern, adjust alarm limits if necessary.
	Faulty flow sensor.	Replace flow sensor.
	The ventilator may not function properly.	Contact your local DrägerService for additional support.

Messages in the alarm window

Alarm	Cause	Remedy
!!! MV low	The minute volume MV has dropped below its lower alarm limit.	Check patient's condition, check ventilation pattern, adjust alarm limits if necessary.
	Leak in exhalation system.	Ensure connections in exhalation system are tight.
	Faulty flow sensor.	Replace flow sensor.
	The ventilator may not function properly.	Contact your local DrägerService for additional support.
!! No int. battery ?	Internal battery not installed, faulty or wrong battery installed.	Fit battery or confirm alarm or change internal battery.
! No int. battery ?	Internal battery not installed, faulty or wrong battery installed.	Advisory message, is displayed continuously when confirmed. Change internal battery.
! No int. battery charging	Internal battery cannot be charged.	Press the Alarm Reset key to confirm the alarm. Change internal battery.

Messages in the alarm window

Alarm	Cause	Remedy
!!! Paw high	The alarm limit Pmax for the airway pressure has been reached. Patient „fights“ the ventilator, coughing.	Check patient's condition, check ventilation pattern, adjust alarm limits if necessary.
	Ventilation hose kinked, or obstructed.	Check hose system, breathing valve and tube.
!!! Paw low	No pressure difference >5 mbar between inspiration and expiration or set pressure level is not achieved.	Inflate cuff and check for leaks.
	Leak in cuff. Leakage or disconnection.	Check hose system for leaking connections. Ensure that the breathing valve has been installed correctly.


Messages in the alarm window

Alarm	Cause	Remedy
!! Paw measurement inop	Fault in flow measurement hoses.	Ensure hose system for loose connections. Ensure flow measurement hoses are connected correctly.
	Technical defect.	Contact your local DrägerService for additional support – restricted operation is now possible.
! Self test OK	The device has been switched on and the selftest completed successfully.	The message can be confirmed or it will be cancelled automatically with the next message.
!! Set correct FiO₂	The control knob for setting O ₂ AirMix or 100% O ₂ is set in a middle position.	Set the control knob in the right or left position.
! Settings not confirmed	Parameters have been changed on the screen but not confirmed.	Press the rotary knob to confirm the parameter changes.
!! Supply pressure low	Supply pressure <270 kPa.	Ensure that supply pressure exceeds 270 kPa.

Error messages during the device check

Message in the alarm window	Cause	Explanation/Remedy
No communication control- / charge-board	Device defective.	Contact your local DrägerService
System leakage	Leak in ventilation hose system and/or test lung.	Check hoses, breathing valve, flow sensor and test lung for leaks and replace if necessary.
No test lung	Test lung not connected or major leakage.	Connect test lung. Check hoses, breathing valve, flow sensor and test lung for leaks and replace if necessary.
Breathing valve inop	Breathing valve has malfunctioned.	Check correct condition of breathing valve including diaphragm and rubber disc; fit a new breathing valve if necessary or use a new disposable hose set.
Pressure measurement inop	The ventilation hose system has not been connected correctly. Pressure measurement is not possible.	Connect ventilation system correctly. Contact your local DrägerService for additional support.
PEEP-valve inop	Internal leak in system. Device defective.	Check hoses, breathing valve, flow sensor and test lung for leaks and replace if necessary. Contact your local DrägerService for additional support.

Messages in the information window

Message	Cause	Explanation/Remedy
RR = 12 per min or VT = 800 mL I : E = 1 : 1.5 Flow = 15 L/min	Change in Ti, RR or VT in ventilation mode VC-SIMV.	
RR = 12 per min or VT = 800 mL Ti = 0.7 s Flow = 35 L/min	Change in I:E, RR or VT in ventilation mode VC-CMV, VC-AC.	
I : E = 1 : 1.5 Te = 2 s	Change in Ti.	
Confirm PEEP above 10 mbar ?	PEEP >10 mbar has been set but not confirmed.	The required setting of PEEP >10 mbar is only possible when confirmed via the rotary knob.
Gas consumption = 10 L/min	Standard display in information window for the current gas consumption.	
 (Battery capacity)	Standard display in information window for the current battery capacity.	
Psupp = 22mbar	Change in ΔP_{supp} or PEEP.	Psupp is the absolute pressure resulting from PEEP + ΔP_{supp} .

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