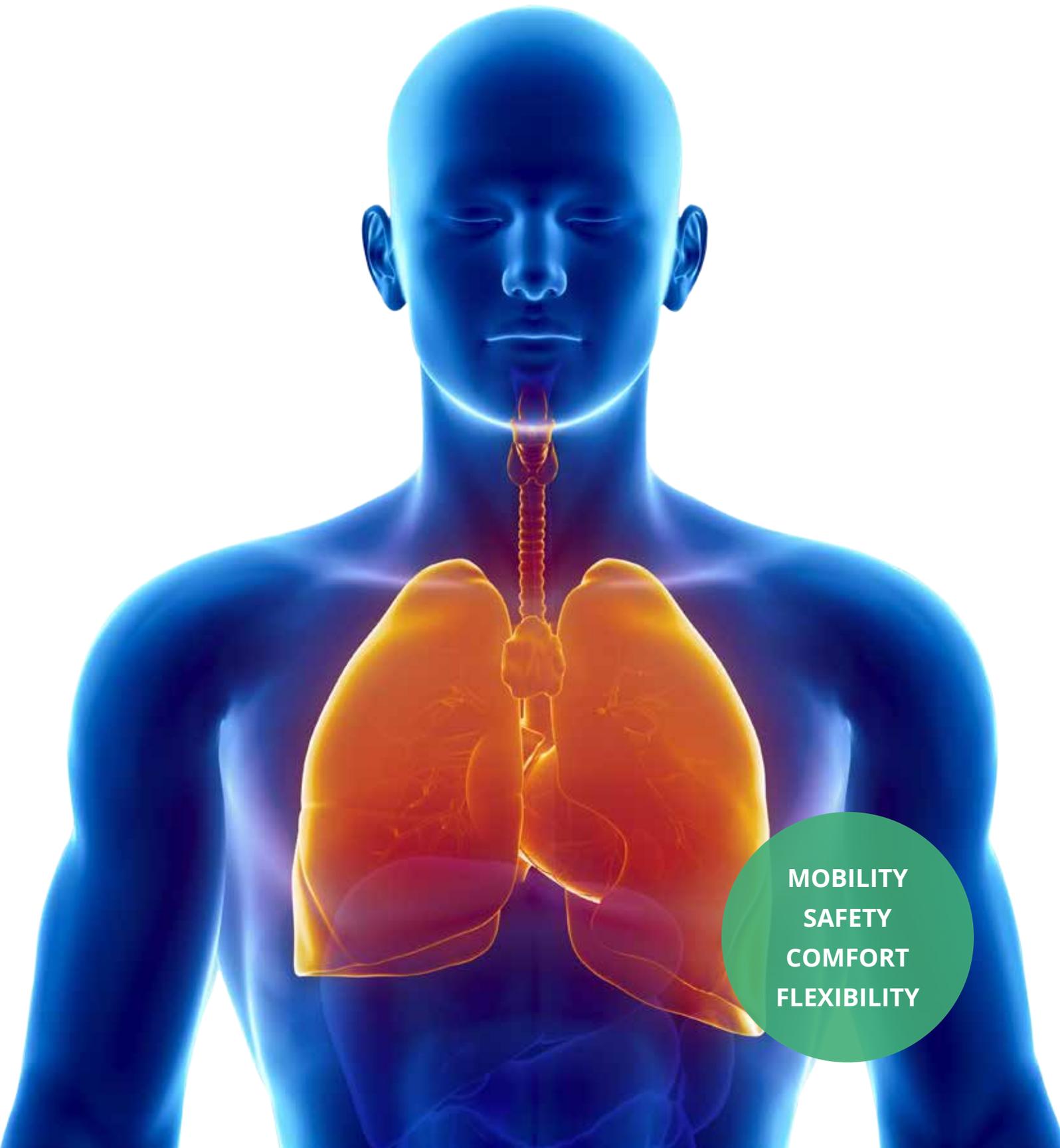


Digital thoracic drainage systems

# ATMOS® Thorax



MOBILITY  
SAFETY  
COMFORT  
FLEXIBILITY

# ATMOS

We don't do anything else.  
But we do it differently.

## The combination makes it special

Development always stands for progress. This applies for thoracic drainage systems which have evolved from simple bottle systems into complex devices.

We have been part of this progress since the development of the first digital thoracic drainage system ATMOS® S 031 Thorax in the year 2003.

We have made it our aim to reduce the complexity of the device into the simplicity in operation. Thus we are convinced to support you in achieving the best possible therapy results.

Our complete product portfolio ranges from simple surgical suction devices to intelligent OT-systems. Let yourself be convinced, by the long standing experience found in each of our products.



*“The option of having the water lock with the ATMOS® S 201 Thorax allows the experienced nurse and surgeon to blend the two systems (analog and digital) together, and help them understand the concept of quantifying the size of an air leak digitally and visually with the bubbles.”*

*“The 12 day graphing system displays the patient’s therapy minute by minute due to the device’s real-time vacuum. Because of the current measurement values and the high sensitivity of this system, I was able to see the patient’s tidaling (max. flow/min. flow) on the graph by watching the increase and decrease of the measured curve in the graph during inspiration and expiration.”*

Dr. Robert J. Cerfolio  
Chief Thoracic Surgery UAB

## Digital thoracic drainage systems made by ATMOS

As one of the leading companies for premium surgical suction devices and ENT units, our high quality products are in use worldwide. Highly innovative products which have been developed close to our customers demands distinguish ATMOS MedizinTechnik for more than 120 years.



## Are these problems familiar?

### Problems

The risky siphon effect

When the drainage hose is sagging, secretion accumulates at the lowest point, and cannot be suctioned by a conventional thoracic drainage system. The hereby arising secretion column decreases the vacuum at the patient. With every cm secretion column the vacuum is lowered by 1 mbar!

**Result:**

Even at -20 mbar in the secretion canister, it could be possible that there is no vacuum at the patient. Therefore the therapy won't show the desired result.

Secretion hose blocked because of coagulation

Especially after cardiac surgery there is a high risk of coagulum development in the drainage hose. These block the hose and prevent further therapy. Conventional drainage systems do not have the ability to rinse out the blood clots.

**Result:**

The hose needs to be milked by hand. This means more work for the nurses and unnecessary pain for the patient.

Secretion hose has a kink

The drainage hose can kink unknowingly for different reasons during the therapy.

**Result:**

The vacuum from the secretion canister cannot be forwarded to the patient. The vacuum in the pleural cavity is undefined and there is no drainage of air and secretion.

Emergency cases and complications are not recognized or it is too late

During a thoracic drainage various complications can occur. When working with conventional drainage systems you must rely on the staffs attentiveness for the early identification of possible problems. The systems have no integrated alarm system.

## We know the solution!

### The ATMOS solution

#### The elaborate ATMOS® measuring & hose rinsing system

- ATMOS® thoracic drainage systems work with a double lumen hose system.
- The larger lumen transports air and secretion from the drainage to the secretion canister, as conventional systems do.
- The smaller lumen is the “rinsing and measuring hose”.

#### Measuring function

The hose is connected to the sensor of the drainage unit.

- Siphons, coagulum or other blockages in the drainage hose have no influence on the measurement result.
- The pump aggregate can regulate the suction accurately in order to reach the target value in the pleural cavity.

#### Rinsing function

After a defined period a valve opens for a millisecond and vents the measuring and rinsing hose.

- Secretion and coagulum which have been deposited in the secretion hose will be flushed into the secretion canister.

#### Reliable warning message systems provide early information regarding complications

Digital thoracic drainage systems by ATMOS offer an elaborate warning management. The systems shows visual and acoustic warning messages, if...

- the target vacuum in the drainage can not be achieved.
- the battery is too low.
- the therapy is inactive after start-up.
- the device is in a tilted position.
- the temperature of the device is too high.

The indication doesn't only show that a problem exists, it also gives possible solutions.

## Are these problems familiar?

### Problems

Insufficient information of the actual therapy progress

With the use of conventional systems the only way to get information regarding the therapy progress is to interpret the bubbles, observe the secretion hose and order expensive x-rays.

**Result:**

Due to this process high costs arise and the right point of time to remove the drain can only be determined imprecisely.

Complex manual documentation of the healing process

Conventional systems do not offer automatic documentation of the healing process.

**Result:**

The documentation must be done manually by the nurses. This results in considerable staffing efforts.

Restricted mobility due to connection to the central vacuum

Conventional Bülau drainages must be connected to the central vacuum or an electrical suction device in order to create a suction.

**Result:**

The patient is spatially bound so the therapy must be interrupted during a transfer. A mobilisation under active suction is only possible to a limited extent.

Disturbance due to intense bubble generation in the control canister

Conventionally two- or three-canister systems are connected to intense bubbling in the control canisters.

**Result:**

This leads to a permanent noise exposure for patients and nurses.

## We know the solution!

### The ATMOS solution

#### Digital storage of measured values

ATMOS® thoracic drainage systems have a complex sensor technology and an elaborate data analysis. In the display the target vacuum, the actual vacuum and the actual flow value are displayed digitally.

The ATMOS® C 051 Thorax offers from software version 1.1. the possibility to transfer the therapy data as PDF or excel-sheet via USB stick.

From now on there is the possibility to export the therapy data via USB stick for documentation and further processing even with the ATMOS® S 201 Thorax.

In the long-term display the ATMOS® thoracic drainage systems offer the option to show graphs of real-time vacuum and real-time flow for the past 12 days. A detailed view of therapy data is guaranteed by zooming in the graphs. Based on this graph curve a decision-making basis for determining the right time to remove the catheter is given. In addition there is the possibility to visualize coughing tests in the short-term display. Therefore, conclusions can be drawn regarding any possible air leaks.

#### Battery operated, adjustable suction system creates mobility and safety

ATMOS® thoracic drainage systems are fully integratable systems. The systems contain fine adjustable, powerful suction aggregates. Due to the automatic control the aggregate always provides the exact flow which is required to maintain the target vacuum. Herewith results...

- minimal noise exposure
- and a gentle drainage

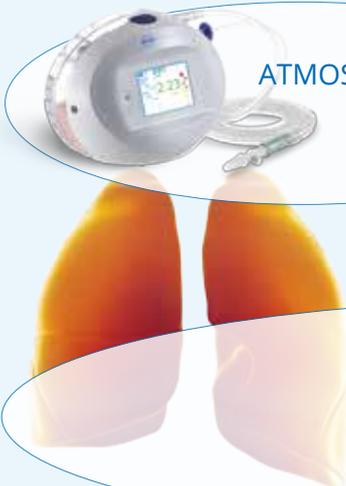
Due to perfected lithium-ionic batteries the units can operate up to 12 h without connection to the main power supply. Therefore, transportation of the patient from OR to the ward and the mobilization of the patient are possible without interrupting the therapy. Patient remains on suction during ambulation and transport.

The recharging time for a fully discharged battery is max. 4 h.

## ATMOS – The full-range supplier

In daily clinic life you are confronted with a variety of medical indications which need a thoracic drainage for therapy.

Are you looking for thoracic drainage systems which you can use after thoracic surgeries as well as in emergency medicine, intensive care and cardiac surgery?

Thoracic surgery and pneumology	General, intensive care and emergency medicine	Cardiac surgery
 <p>ATMOS® C 051 Thorax</p>	 <p>ATMOS® S 201 Thorax</p>	

**ATMOS offers you the right solution for every application!**

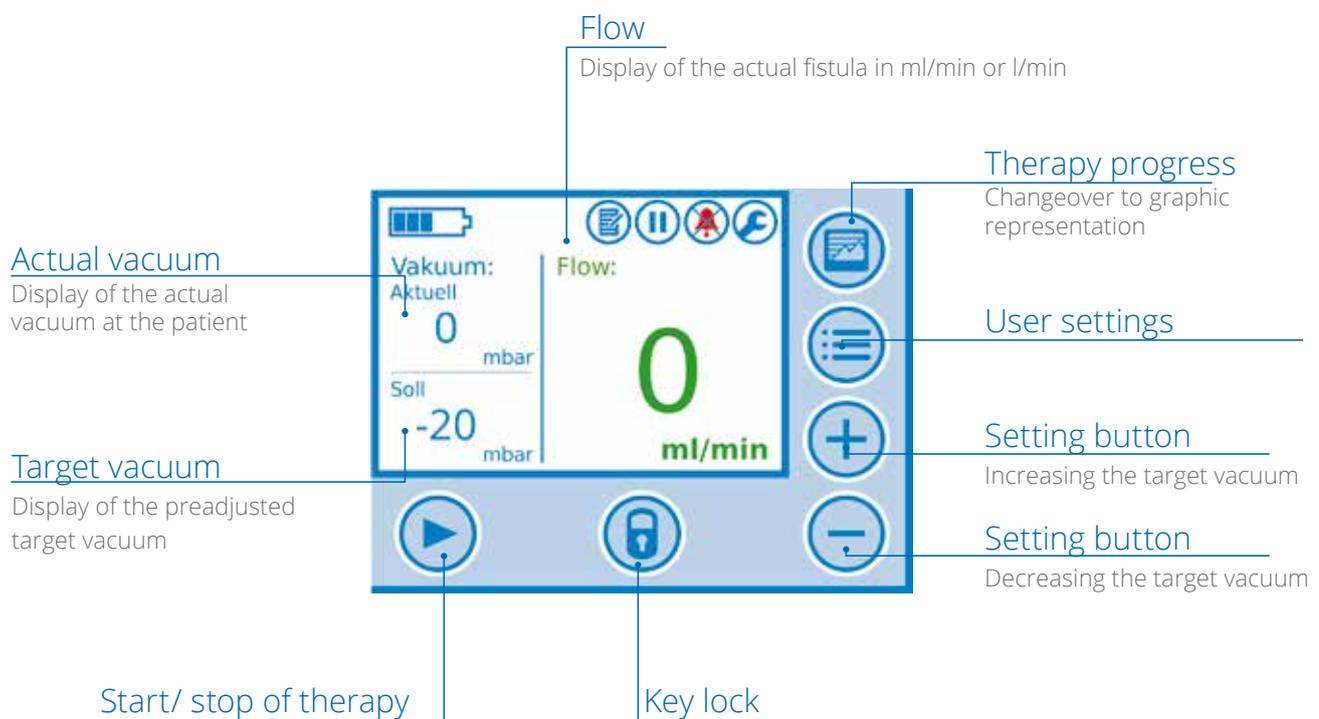
With the ATMOS® C 051 Thorax we offer a very compact and mobile solution for pulmonary intensive care, emergency medical care and for pneumology.

With the application of the more powerful ATMOS® S 201 Thorax large coagulation as well as high flow of secretion and liquids, which are typical for cardiac surgery are no problem.

According to the medical indication in general, intensive care and emergency medicine both versions of the ATMOS® thoracic drainage system can be used.

## Two solutions – one operating concept

ATMOS® thoracic drainage systems of the new generation stand out by their uniform operating concept. This prevents doctors and nurses have to adapt to two different devices. The intuitive and virtually foolproof operation supports this decisively.



## One hose...

All digital thoracic drainage systems developed by ATMOS use the same hose system.

If your clinic uses various ATMOS® thoracic drainage systems this offers a wide range of advantages:

- Easy compound management: Only one hose for all devices and all thoracic drainage applications
- One operating concept: The connection of the ATMOS® thoracic drainage systems is also standardized
- Different ATMOS® thoracic drainage systems can be used in combination

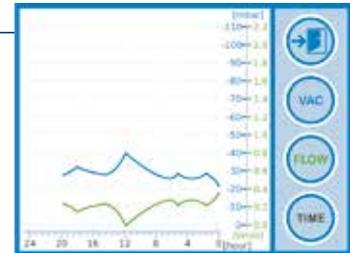
## The all-rounder...

### Automatic night mode

The updated ATMOS® S 201 Thorax has an automatic night mode. A light sensor automatically detects the ambient light and the device automatically switches to night mode. The result is a more pleasant sleeping atmosphere for the patient.

### Therapy process control

- On the main display of the device the target vacuum, the actual flow rate and the vacuum are displayed as a numerical value.
- The course of therapy is graphically displayed for 12 days.
- In addition it is possible to download the therapy data as PDF and excel file via USB stick for further processing.



### Powerful

The speed-controlled  $18 \pm 2$  l/min suction aggregate meets all application requirements. Whether strong coagulation, high secretion flow or connection of several catheters – no problem for the ATMOS® S 201 Thorax!

### Fully transparent disposable canister system

- 4-chamber system with inscribable scaling sticker for ideal readability and balancing in fine steps up from 10 ml.
- Optional fillable water lock for visualisation of flow/air leaks.
- Overpressure reduction is guaranteed by the integrated pop-off valve.
- The hydrophobic bacterial filter with integrated overflow stop is used to protect the device and the environment against penetration of fluids and contamination.
- Canister connection to the device by „Direct-Docking-System“.

### Gravity drainage mode

- The target vacuum can be reduced to -5 mbar. Thus the drainage can be performed at physiological vacuum. The advantages of digital drainage are retained.



## The small marvel ... ATMOS® C 051 Thorax

### Mobile & flexible

- Up to 16 hours of battery operation.
- With only 1.3 kg dead weight, an ergonomic design and a comfortable carrying strap this system is perfect for the fast mobilization of the patient.
- The optional 360° adjustable universal bracket allows the connection to wheelchairs, beds and infusion stands.

### Touchscreen

The ATMOS® C 051 Thorax uses a touchscreen as an input interface. As a result it was possible to create even simpler icons and to arrange the buttons in an easier and more user-friendly way.

### Gravity drainage mode

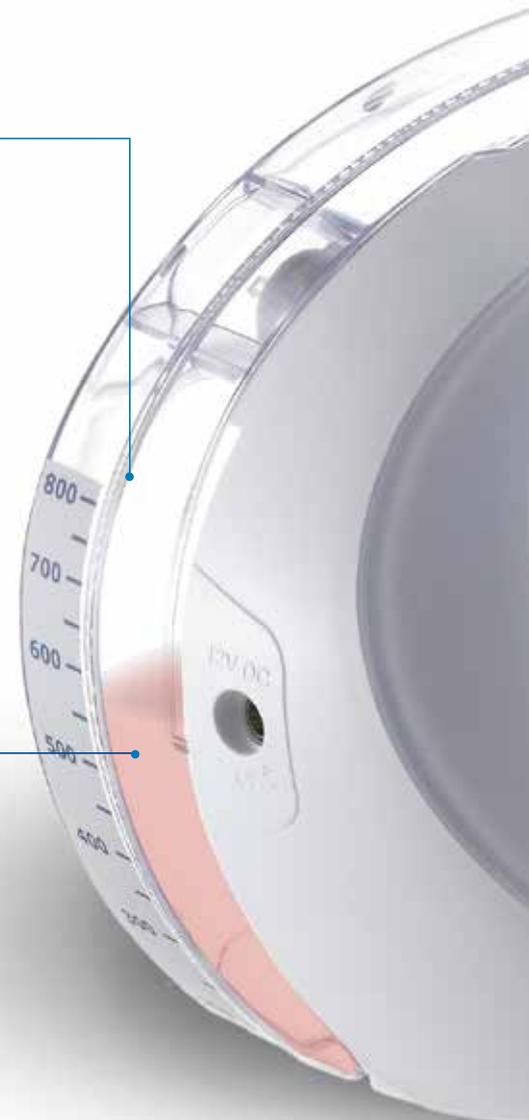
The active suction can be set to -5 mbar. Thus the unit only preserves the biological normal vacuum and emits air and secretion.

Advantages:

- Physiological effect like a gravity drainage
- The position of the unit in the room has no effect on the drainage
- Warning message
- Hose rinsing
- Digital information regarding fistulization remains active

### Clear view of the secretion

The 800 ml secretion canister of the ATMOS® C 051 Thorax is divided into a 180 ml and a 620 ml compartment. This leads to ideal balancing requirements.



## Therapy progress control

- On the main screen the target vacuum, the current vacuum and the current flow rates are displayed as a numerical value.
- The therapy progress is displayed graphically over 12 days.
- In addition it is possible to download the therapy data as PDF or excel file via USB stick.

## Automatic night mode

From software version 1.1 the ATMOS® C 051 Thorax has an automatic night mode. A light sensor automatically detects the ambient light and the device automatically switches to night mode. This results in a more pleasant sleeping atmosphere for the patient.



## Secretion canisters with a difference...

### Easy canister change

Protected by a hydrophobic bacterial filter and integrated overflow stop.

### Sealing caps

- For an easy handling the caps can be found directly on the device.
- The use of sealing caps prevents the leakage of liquids during disposal of the canisters.

### Easily recognizable scaling

The scales are marked on the left and right hand side of the canister. Large numbers and a high contrast ensures optimal readability. The white background and the hard surface allow for easy marking.



### 2 chambers for better readability

The canister is divided into two chambers, the first has a capacity of 180 ml and the second one 620 ml.

### Application with the hose system

The hose system is connected to the canister via Luer-Lock. Only one hose for all the ATMOS® thoracic drainage units.

Luer-Lock - connection for secretion hose

Pop-off valve

Hydrophobic bacterial filter

with integrated overflow protection

Sealing caps

For secretion channel

For pop-off-valve

4-chambers for easy secretion balancing  
(in milliliters)

Optional water lock

- Flow visualisation through bubbles



Specifications overview of digital thoracic drainage systems	ATMOS® S 201 Thorax	ATMOS® C 051 Thorax
		
Max. suction performance	18 ± 2 l/min	5 ± 0,5 l/min
Vacuum regulation freely selectable	-5 to -100 bar in -1 mbar steps	-5 to -100 bar in -1 mbar steps
Battery operation up to	12 h	16 h
Disposable secretion canister system	2 l 4-chambers system	800 ml 2-chambers system
Hose system – one hose for both systems	✓	✓
Graphic color display	✓	✓
Touchscreen	✓	✓
Vacuum measurement at the patient	✓	✓
Real time flow measurement	✓	✓
Monitoring function in long- and short-term (flow, vakuum, time)	✓	✓
Reading out therapy data	PDF/ excel report via USB stick	PDF/ excel report via USB stick
Gravity drainage mode	Digital gravity drainage mode at -5 mbar	Digital gravity drainage mode at -5 mbar
Night mode	✓	✓
Rinsing function	✓	✓
Mobility	Universal bracket and/or carrying bag for canister	Universal bracket and/or carrying strap

Secretion canister	ATMOS® S 201 Thorax	ATMOS® C 051 Thorax
		
Canister volume	2000 ml	800 ml
Volume of the first chamber	375 ml	180 ml
Full transparency for easy readout and balancing in fine steps up from 10 ml	✓	✓
Sealing cap for easy disposal	✓	✓
Hydrophobic bacterial filter with integrated overflow stop	✓	✓
Pop-off valve for safety when coughing and by artificial respiration	✓	✓
Water lock	✓	○
Luer lock connection for safe and easy connection and disconnection of the hose system	✓	✓
Ergonomical design	✓	✓

# ATMOS® S 201 Thorax

## Accessories & consumables

ATMOS® S 201 Thorax	REF
<p>Mobile thoracic drainage system of the "S-class". Suitable for transport within the hospital and to accompany the patient from the surgical intervention up to the end of therapy. Fully electronic monitoring, automatic rinsing function, real-time flow measurement, flow history, data export via USB stick, warnings, night mode, ergonomic touchscreen colour display.</p> <p><b>Technical data:</b> Pump performance: 18 ± 2 l/min Noise level: max. 31 dB (A) @ 1 m (acc. to ISO 7779) Dimensions (H x W x D): 336 x 250 x 168 mm</p> <p><b>Included in delivery:</b> Basic unit, power supply cable, operating instructions quick guide</p>	312.1100.0
Accessories ATMOS® S 201 Thorax	
1 Universal bracket	312.1160.0
Carrying strap for ATMOS® S 201 Thorax	312.0850.0
Hose clamp	061.0079.0
Hose support	312.1029.0
Consumables ATMOS® S 201 Thorax	
2 OR-Set for ATMOS® S 201 Thorax, pu 10	312.1031.0
3 Hose system, pu 10	312.1170.0
4 Disposable secretion canister , 2 l , pu 5	312.1150.5



1 REF 312.1160.0



2 REF 312.1031.0



3 REF 312.1170.0



4 REF 312.1150.5

# ATMOS® C 051 Thorax

## Accessories & consumables

ATMOS® C 051 Thorax	REF
<p>Mobile thoracic drainage system of the "C-class".            Suitable for transport within the hospital and to accompany the patient from the surgical intervention up to the end of therapy. Fully electronic monitoring, automatic rinsing function, real-time flow measurement, flow history, data export via USB stick, warnings, night mode, ergonomic touchscreen colour display.</p> <p><b>Technical data:</b> Pump performance: <math>5 \pm 0.5</math> l/min            Noise level: max. 34 dB (A) @ 1 m (acc. to ISO 7779)            Dimensions (H x W x D): 164 x 206 x 95 mm</p> <p><b>Included in delivery:</b>            Basic unit, carrying strap, charging device, 2-pole power supply cable, operating instructions, quick guide</p>	317.0000.0
Accessories ATMOS® C 051 Thorax	REF
1 Device bracket	316.0200.0
2 Carrying strap	316.1100.0
Consumables ATMOS® C 051 Thorax	REF
3 OR-Set for ATMOS® C 051 Thorax, pu 10	317.1100.0
4 Hose system, pu 10	312.1170.0
5 Disposable secretion canister, 800 ml, pu 10	317.1000.0



1 REF 316.0200.0



2 REF 316.1100.0



3 REF 317.1100.0



4 REF 312.1170.0



5 REF 317.1000.0



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