

English

Operating Instructions

ATMOS® S 351 Natal



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1.1 Notes on operating instructions

These operating instructions contain important notes on how to operate the ATMOS® S 351 Natal safely, correctly and effectively. Therefore, they are intended not only for new operating personnel to be instructed in its use, but also for use as a reference manual. They help to avoid risks, and also to reduce repair costs and down-times. Furthermore, reliability and service-life of the equipment will be increased. For these reasons **these operating instructions must always be kept available near the appliance.**

Prior to first use please peruse the chapter 2.0 "For your safety", in order to be prepared for any possible dangerous situations. To do this during work, would be too late.

The basic principles are:

Judicious and careful work provides best protection against accidents!

Operational safety and readiness for use of the device depend not only on your capabilities, but also on the **care and maintenance** given to the ATMOS® S 351 Natal. For this reason regular cleaning and service work are a must. Major maintenance and repair work may be carried out only by expert personnel authorised by ATMOS. In case of repairs you should insist that original spare parts only are used. You will then have the warranty that operational safety, readiness for work and the value of your appliance will be preserved.

- The product ATMOS® S 351 Natal bears CE marking CE-0124 according to the EC Directive of the council for medical products 93/42/EEC and meets the basic requirements of Appendix I of the directive.
- The product ATMOS® S 351 Natal complies with all applicable requirements of the Directive 2011/65/EC restricting the use of certain hazardous substances in electrical and electronic equipment ("RoHS").
- The declaration of conformity and our general standard terms and conditions can be obtained on our website at www.atmosmed.com.
- The quality management system at ATMOS has been certified according to international standards EN ISO 13485.
- ATMOS will supply a service manual containing detailed circuit descriptions and schematics as well as information on adjustment and servicing to service organizations authorized by ATMOS.
- Reprints - also in extracts - only with permission in written form by ATMOS.
- These operating instructions are effective from serial number 2567350001.

Short cuts / symbols contained in this operating instructions

- Indicating a list
 - Subdivision of a list/activity

The recommended sequence must be followed in each case!

☞ Indicating particularly important advice!

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1.2 Function

The ATMOS® S 351 Natal is a mains-operated suction unit. The quiet, maintenance-free diaphragm pump forms the core of the ATMOS® S 351 Natal. It creates a vacuum in the secretion canister which assists in drawing off and collecting the secretions. The final vacuum required and thus the suction power can be preselected in steps with the press of a button. The ATMOS® S 351 Natal produces this vacuum with the aid of a microprocessor-based controller. The pump switches off when the set value is reached. A control circuit ensures that the pump only runs when the vacuum is less than the value set.

The ATMOS® S 351 Natal is used for fixation of body parts. In particular a baby's head can be fixed with the help of an extraction cup. In addition bodily fluids and rinsing fluids are collected in a secretion canister.

The electronic filling level control, a safety canister (optional) and a bacterial filter prevent secretions being sucked into the unit.

Various monitoring and control functions increase the ease of operation of the ATMOS® S 351 Natal and ensure safe use. These are, for example:

- Electronic filling level monitoring of the secretion canister which provides visual and acoustic signals when the maximum level is exceeded.
- Electronic filter monitoring signalling a blocked (clogged) filter audibly and visually.
- A monitoring function which checks all main equipment functions at regular intervals and activates a service request indicator if a fault is detected.

All components which come into contact with the secretion, such as secretion canister, lid system or suction hoses can be autoclaved (134°C, 3 bar, 5 min 3x fractionated pre-vacuum).

A special equipment trolley can be supplied for mobile use.

1.3 Explanation of symbols

	Caution, observe operating instructions
	Equipment safety fuse
	Device off
	Device on
	"max."
	Alternating current
	Ground wire connection
	Trolley
	Foot controller
	Filter blocked
	Full secretion canister
	Bacterial filter
	Potential equalisation
	Application part type B
	Extraction cup
	Ventilating the extraction cup



- The vacuum must be built up slowly in a controlled manner for vacuum extraction.
- The user must continuously check the vacuum during vacuum extraction.
- If the vacuum cannot be reduced despite correct adjustment of the equipment (defective auxiliary air valve), we recommend closing the suction hose between pump connection and bacterial filter in an air-tight manner (pinch) and then removing the suction hose from the pump connection or cutting through the suction hose on the pump connection with a scalpel. Then carefully let air back into the suction hose (carefully release the pinched suction hose) so that the vacuum is removed as slowly as possible.
- The ATMOS® S 351 Natal version for vacuum extraction on trolley 320.0070.0 must not be used as fluid suction unit for operations as the electronic secretion canister overflow monitor on this trolley does not work.
- The buffer canister for vacuum extraction must have a volume of at least 1 litre.
- During vacuum extraction, the automatic mode can be disabled by operating the foot controller.
- Prior to and during vacuum extraction, pay attention that connection hoses are not kinked and that no blocked filter is used. Prior to each application, check whether the filter is blocked.
- Vacuum extraction may not be possible at elevated altitudes as it may not be possible to achieve the vacuum required. It is at the discretion of the specialist whether an operation using the suction unit can be carried out at the final vacuum obtained.
- The canister overflow safety is deactivated during vacuum extraction.
- In case of a failure of the mains power supply or accidental switching off of the equipment during extraction, this must be aborted and production of the vacuum has to be re-started after the equipment has been successfully restarted. The best way to do this is by pinching the suction hose to maintain the vacuum in the cup, venting by pressing the END button and building the vacuum again (pressing the extraction cup button) and then applying the vacuum by releasing the pinched hose.
- Only approved extraction cups with CE marking in accordance with RL 93/42 must be used.
- The system must not be ventilated suddenly with simultaneous pulling on the extraction cup.
- If the final vacuum set is not achieved, the ATMOS® S 351 Natal will not issue an audible signal „final vacuum achieved“.
- The treating doctor is responsible for the proper surgical procedure and technology! The adequacy and the kind of application must be decided by a trained doctor according to circumstances.
- The ATMOS® S 351 Natal may be used only by trained staff under supervision (IEC 601-1 / EN 60601-1).
- The ATMOS® S 351 Natal meets the immunity to interference requirements of IEC 601-1-2 / EN 60601-1-2 „Electromagnetic Compatibility – Medical Electrical Devices“.
- Always set up the unit in such a way that the operating elements are in clear view and within easy reach of the operator. Pay attention to maximum stability of the installation surface.
- The ATMOS® S 351 Natal has been designed in accordance with IEC 601/ EN 60601. The equipment conforms to VDE Safety Class I. It must only be connected to a properly installed earthed socket.
- Before connecting the device it needs to be checked whether the requested mains voltage of the device matches the mains voltage of the mains power supply.
- Use only correctly installed mains sockets and extension cables.
- Check device, secretion canister, power cable, accessories, connection cables and hoses for damage before start-up. Defect cables and hoses must be replaced immediately. Check functions of the device prior to using it!
- To disconnect the device from the mains supply, first remove the plug from the wall outlet. Disconnect the connection line on the device afterwards only. Never touch plug or line with wet hands.
- Following transportation at low temperatures the appliance must be held for up to six hours at ambient temperature before first start-up. If the device is not acclimatized it may not be used as damages to the electronic components could occur.
- When switching on the unit, a high vacuum value might be present.
- This product is not re-sterilizable. Repeated reuse of components which are marked with a ⓧ is forbidden. In case of repeated reuse these components lose their function and there is a high infection risk.



- The suction hose must never come into direct contact with the suction area. A suction catheter, suction attachment or medical suction instruments must always be used.
- Too high vacuum values may lead to tissue damages.
- Only use transparent hoses or hoses destined for vacuum extraction.
- Please observe the ambient conditions stated in the technical data (chapter 10.0).
- The device must only be operated in rooms designated for medical use. The ATMOS® S 351 Natal is not designed for use in explosion-hazardous areas and in oxygen rich environments. Explosion-hazardous areas may be caused by the use of flammable anaesthetics, skin cleansing products and skin disinfectants.
- The foot switch is suitable for operation in the above mentioned areas.
- If demineralized / slightly mineralised water or tap water is sucked off, the overflow monitoring of the ATMOS® S 351 Natal does not function reliably as it works on an electrical basis.
- Do not allow any liquid to get into the device. If liquid has penetrated the unit, it may not be operated again until it has been checked by the customer service centre.
- When using on a patient (e.g. during surgery), an additional equivalent device should be ready in case of failure of the device (backup suction device).
- The level of preselected vacuum and the selection of additional products must be as instructed by the specialist for all applications on a patient, e.g. for vacuum extraction.
- Particularly important notes are placed in a frame in these instructions.
- The software detects a full secretion canister respectively the short-circuit between the contact terminals“ and issues a warning at regular intervals. This does not interrupt the process of vacuum extraction.
- Dispose of wrappings accordingly.
- Please note:
A medical insulating transformer with earth leakage monitor or any similar safety system acc. to EN 60 601-1 is required, if several devices are connected over one common power supply. The transformer must correspond to the power consumption of all the devices to be connected.

- ☞ ATMOS is not liable for personal injury and damage to property if
 - no original ATMOS parts are being used,
 - the advice for use in these operating instructions is not being observed,
 - assembly, new settings, alterations, extensions and repairs have been carried out by personnel not authorised by ATMOS.

References

Medical product law (MPG) dd. 07.08.2002

EN 60601-1/1996: Medical electrical equipment. General safety information, main section 6. Protection against the danger of ignition of flammable mixtures.

DIN VDE 0751 Part 1/10.90: Repair, modifications and testing of medical electrical equipment, Part 1: General specifications.

Obtainable from: VDE-Verlag GmbH, Bismarckstraße 33, 12157 Berlin, Germany.



Name:	ATMOS® S 351 Natal
Main functions:	<p>The ATMOS® S 351 Natal is indicated for vacuum extraction, suction curettage, suction biopsy, aspiration and removal of tissue, body fluids or infected material from wounds, either during surgical procedure or on the ward.</p> <p>The ATMOS® S 351 Natal is also indicated for freeing the respiratory tract on patients and as a breast pump (removal of galactostasis and removal of milk).</p>
Medical indications / application:	For application on human bodies
Specification of the main function:	As a result of the generated and controlled vacuum parts of the body (especially the head of the baby) are fixed and body fluids (secretion) as well as rinsing fluids are collected in a secretion canister.
Application organ:	Natural orifices and openings which result from surgical procedures
Application time:	Temporary
Application site:	OT, delivery room
Contraindications:	<p>The ATMOS® S 351 Natal is contraindicated for the following applications:</p> <ul style="list-style-type: none">• Outside medical areas• For drainage of flammable or explosive liquids and gases• For drainage with a low vacuum (e.g. mediastinal, thoracic or pleural drainage)
The product is:	active
Sterility:	Not necessary
Single-use product / reprocessing:	The device and parts of the accessories are reusable, for information on reprocessing and disinfection please see the operating instructions.

4.1 Display and control elements

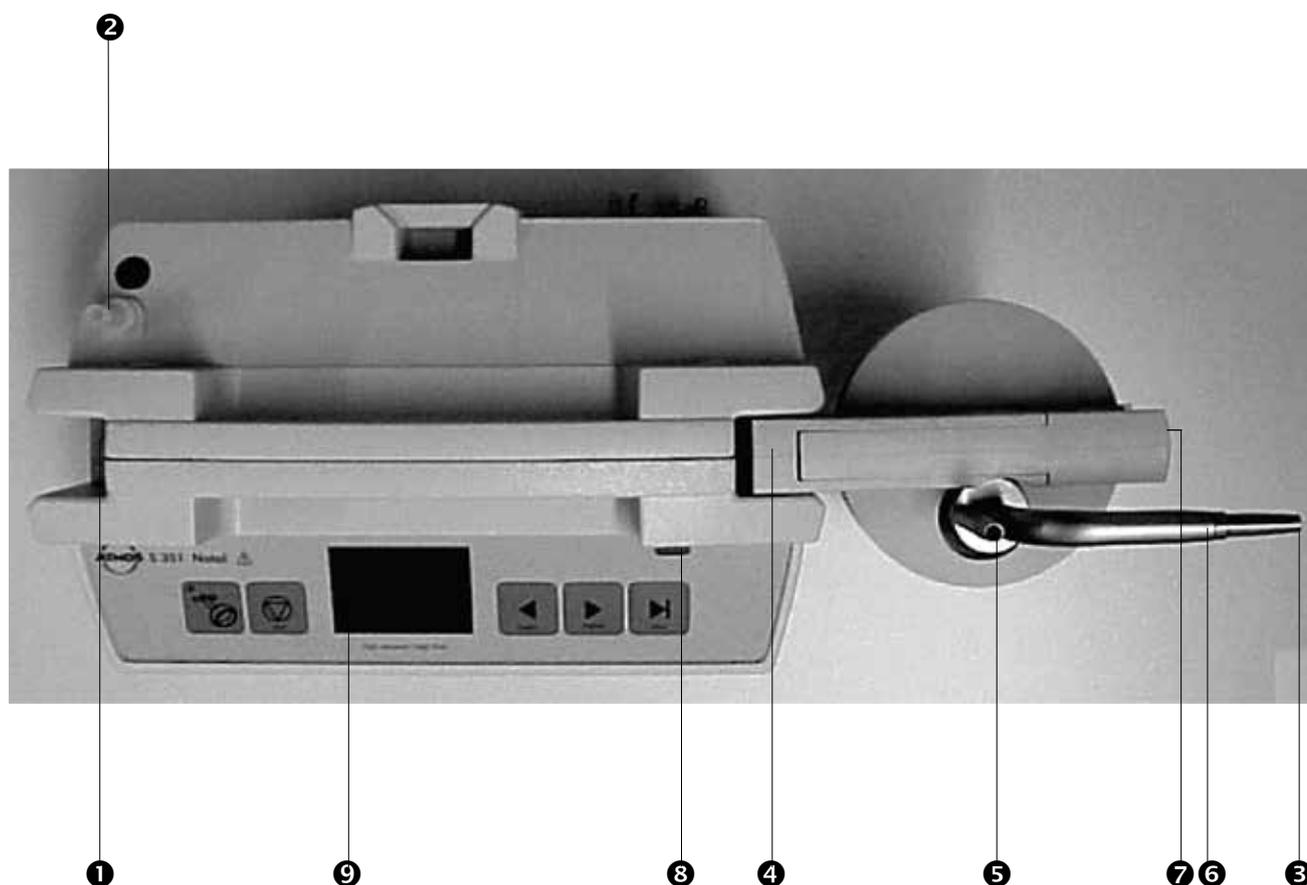


Fig. 1. ATMOS® S 351 Natal

- ❶ Bracket and contact element for secretion canister
- ❷ Pump connection
- ❸ Hose reducer 10 - 6 mm
- ❹ Bracket for secretion canister
- ❺ Connection for hose to safety canister
- ❻ Connection for suction hose
- ❼ Release button for locking system (lid of secretion canister)
- ❽ ON/OFF switch
- ❾ Indicators and control panel



Fig. 2. ATMOS® S 351 Natal (rear)

- ⑩ Mains supply
- ⑪ Equipment safety fuses
- ⑫ Connection for potential equalization
- ⑬ Connection for foot controller
- ⑭ Vent

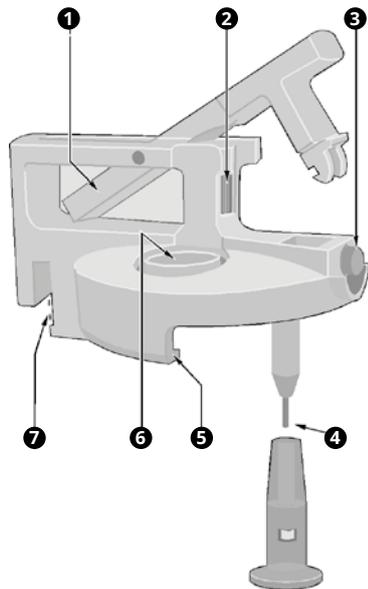


Fig. 3. Closure system

- ❶ Locking handle
- ❷ Knurled screw to lock the cap insert and to adjust the contact force
- ❸ Release button
- ❹ Level sensor with anti-foaming device
- ❺ Lid rim
- ❻ Opening for double connecting nipple
- ❼ Contacts for filling level sensor

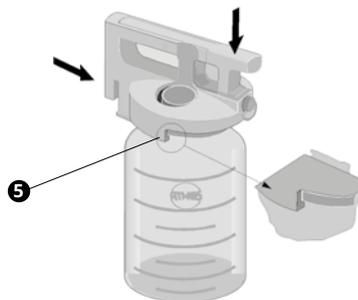


Fig. 4. Fitting the lid



Fig. 7. Inserting the double connecting nipple

4.2 Initial starting up

This section will explain

- how to handle the closure system of the secretion canister lid
- how to lock and insert the secretion canister
- which hoses have to be connected
- how to connect the ATMOS® S 351 Natal to mains electricity.

☞ Peruse safety information in part 2.0 “For your safety” prior to starting up the device for the first time.

The closure system must tightly seal the secretion canister so that the vacuum required can build up within. Fig. 3 shows the closure system with the locking handle open.

☞ The anti-foaming device must be placed on the filling level sensor for strongly foaming secretions.

- Push the closure system over the secretion canister in accordance with Fig. 4 (take care that the lid rim (❺, Fig. 4) is below the bead of the secretion canister) and press the locking handle downwards until it engages.

- Force of the lid system can be changed by turning the knurled screw (❷, Fig. 3).

- Finally insert the double connecting nipple into the secretion canister lid (Fig. 7). Ensure that it engages by twisting it slightly.

☞ It is advisable to treat the secretion canister opening with vaseline or silicone for a better sealing and to care for the sealing rings.

4.0 Setting up and starting up



Fig. 5. Attaching the 1.5 litre secretion canister

- Attach the 1.5 litre secretion canister either to the left-hand or right-hand bracket in accordance with Fig. 5.
- ☞ Please do not use the secretion canister brackets on the ATMOS® S 351 Natal and the trolley for any other purposes. This will prevent malfunctions.

4.2.1 Using a trolley

Trolley REF 444.0020.0

- If you are using a 3 litre or 5 litre secretion canister, attach it to the trolley in accordance with Fig. 6a.
- ☞ When using the trolley, the ATMOS® S 351 Natal must be firmly connected to the trolley table using the two fixing screws (underside of trolley table) (contacts for level sensor). The following symbol will be shown on the display .



Fig. 6a. Attaching the 3 litre or 5 litre secretion canister to the equipment trolley, REF 444.0020.0

Trolley REF 320.0070.0

- 1 Unit support
 - 2 Fixing screws (countersunk screw M 6x16)
 - 3 Table support
 - 4 Accessories rail
 - 5 Castor holder
 - 6 Castor
 - 7 Fixing screws (countersunk screw M 6x50, alternatively: cylindric screw M 6x50)
 - 8 Unit fastening parts
- Also contained in scope of supply: Fitting tool

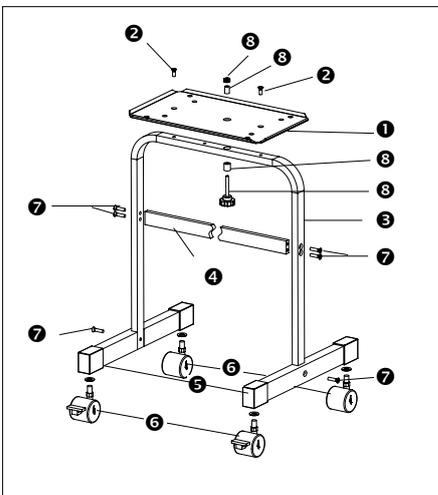


Fig. 6b. Trolley REF 320.0070.0

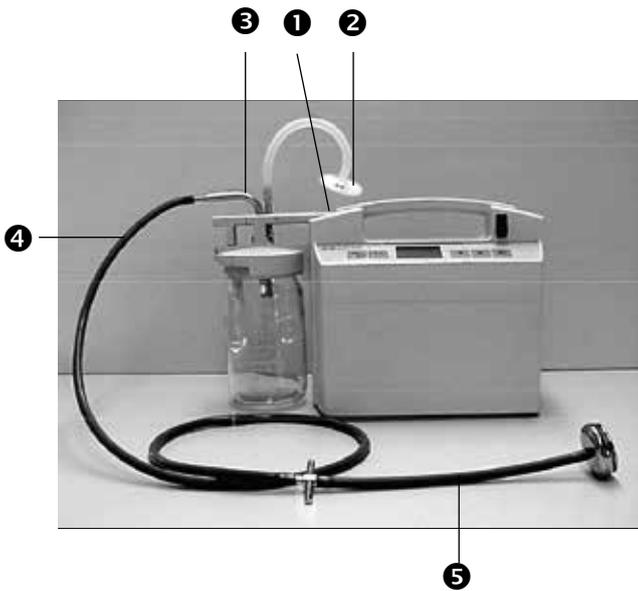


Fig. 8a. Hose connections for vacuum extraction

- ❶ Pump connection
- ❷ Bacterial filter
- ❸ Double socket nipple
- ❹ Vacuum extraction hose
- ❺ Extraction cup (incl. cross handle, chain, hose)

4.2.2 Hose connections for vacuum extraction

- Only use transparent hoses or those specially designed for the vacuum extraction, in order to be able to assess the condition of the hoses.
- Connect a short hose with the pump connection (❶, Fig. 8a) and the bacterial filter (❷). Connect a second short hose to the printed side of the bacterial filter and join it with the vertical connection of the double connecting nipple (❸). Use the vacuum extraction hose (❹) to join the horizontal connection of the double connecting nipple with the cross handle of the extraction cup (❺).

4.2.3 Hose connections for suction mode

- Only use transparent hoses in order to be able to assess the condition of the hoses.
- Connect pump connection (❶, Fig. 8b) and bacterial filter (❷) with a short hose. Connect a second short hose to the printed side of the bacterial filter and join it with the safety canister lid (❸). Connect the longer hose to the vertical connection of the double connecting nipple (❹) and the connection (❺) of the safety canister.
- When using the optional bacterial filter with the safety canister, the bacterial filter (❷) is not required. In this case connect the short hose to pump connection (❶) and directly to the safety canister lid (❸).



Fig. 8b. Hose connections for suction mode

- ❶ Pump connection
- ❷ Bacterial filter
- ❸ Safety canister lid
- ❹ Connection on safety canister
- ❺ Double socket nipple

⚠ The ATMOS® S 351 Natal must never be used without a bacterial filter.



Fig. 9. Connecting the suction hose

- Now fit the suction hose to the angled connection of the double socket nipple.

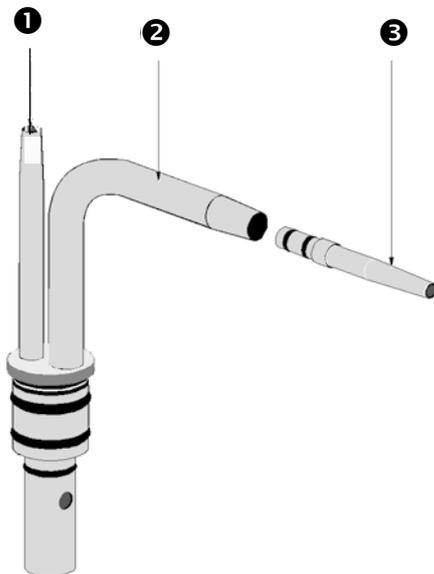


Fig. 10. Double socket nipple

- ❶ Connection for hose to safety canister
- ❷ Connection for suction hose 10 mm
- ❸ Hose reducer for 6 mm hose

- The 10 mm diameter suction hose is fitted directly to connection (❷, Fig. 10) the 6 mm dia. hose is fitted via the hose reducer ❸.



Fig. 11.

- Check whether the voltage and frequency data listed on the equipment correspond to the power supply and connect the ATMOS® S 351 Natal via the connector (❶, Fig. 11) to mains power. Secure the mains cable against accidental removal using safety clamp ❷.
- If the ATMOS® S 351 Natal is used for surgical procedures, we recommend connecting it to the equipotential bonding connection of the room via connection ❸.
- If you have a foot controller, connect it to its connection (❹, Fig. 11).

The ATMOS® S 351 Natal is now ready for operation.

4.2.4 Display and control panel

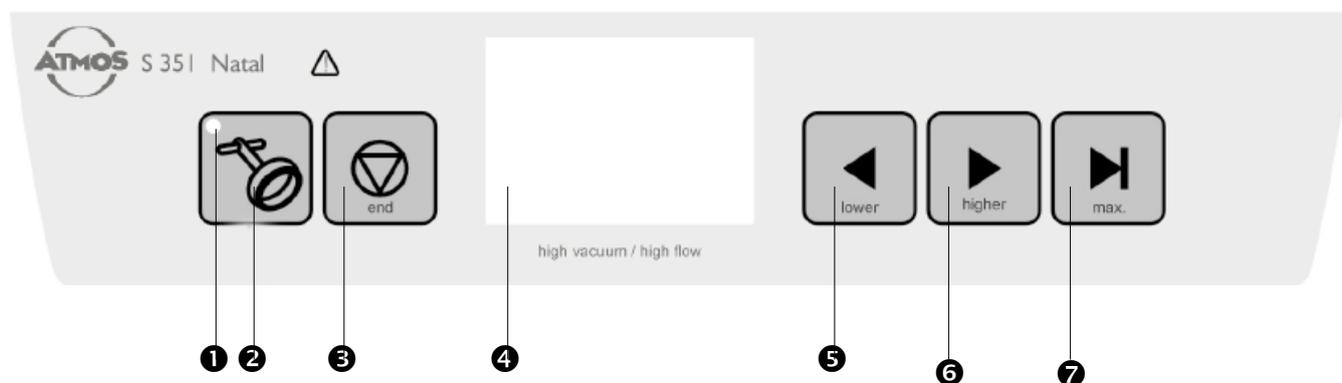


Fig. 12. Display and control panel

- ❶ Display LED of vacuum extraction function
- ❷ Button for switching on the automatic vacuum build up
- ❸ Button for switching on the automatic vacuum release
- ❹ Display (graphics)
- ❺ Button for reducing the vacuum (with suction function)
- ❻ Button for increasing the vacuum (with suction function)
- ❼ Button for selecting the maximum vacuum (with suction function)



- ☞ Please ensure that the following parts have been reprocessed before treating a new patient:
 - suction hose including suction attachment or suction instrument
 - secretion canister including lid and double socket nipple
 - the connection hose to the safety canister as well as the safety canister, where applicable.

- ☞ Prior to each use please check whether the bacterial filter has to be replaced. You must use only a clean and dry filter. The electronic filter monitoring signals when the filter is blocked (clogged).
- ☞ Replace the bacterial filter with every cleaning. For hygienic reasons, the bacterial filter must be replaced at least once a day!

- ☞ The suction hose must never come into direct contact with the patient. A suction catheter, suction attachment or medical suction instruments must always be used.

5.1 Basic operation

5.1.1 Switching on

After switching on, the VE mode is active. The adjustments for the vacuum to be generated (final vacuum) and the available time (build-up time) correspond to the adjustments made in the service menu (see chapter adjustments 5.3, page 28).

Exception: If there is already a vacuum present when switching on, this value is assumed as start value for vacuum generation. Build-up time will then decrease accordingly.

Ex works, the final vacuum is adjusted to -80 kPa and build-up time to 120 s.

Graphics display

All operating states are shown on the graphics display.

Changing unities

The display of the ATMOS® S 351 Natal can be adjusted to 3 unities: mbar, mmHg and kPa. This switching-over is described in chapter 5.3, page 28.

Electronic filling level monitoring (suction function)

The ATMOS® S 351 Natal is equipped with an electronic filling level monitoring which, in VE mode, does not affect the performance of the pump. The vacuum is not decreased. The alarm signal for a full canister (Fig. 13) appears in regular intervals.

In suction mode, the pump is switched off when the maximum filling level is reached. The device gives an audible signal and the indication for full canister  (Fig. 13) appears.

The maximum filling level is reached when the liquid comes into contact with the sensor (④, Fig. 3, page 11) in the closure system. If a large amount of foam is generated, you should fit the enclosed anti-foaming device over the sensor so that the unit does not switch off prematurely. As soon as the sensor is no longer in contact with the liquid (e.g. on replacing the double socket nipple), the unit switches on again.

Electronic filter monitoring

The ATMOS® S 351 has an electronic filter monitoring which monitors whether the filter is blocked. The pump does not switch off when the filter blocked state is detected so that work can continue. Change the filter as soon as possible when this message is displayed.

☞ The message is also displayed when the hose is pinched near the unit. This message is also displayed while the drainage accessories are connected. Remove the parts in question in this case.

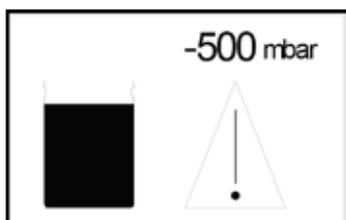


Fig. 13. Indication for secretion canister full

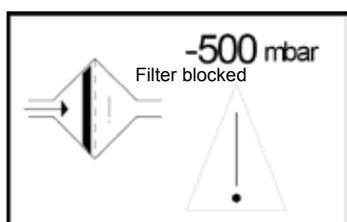


Fig. 14. Indication for filter blocked



Function vacuum extraction

For vacuum extraction, we recommend to use a small secretion canister (1.5 l) to enable a quick generation of the required vacuum value.

Automatic vacuum build up

During automatic vacuum build up, the vacuum is generated evenly and final vacuum is reached in the preset time (standard adjustment = 120 s). For changing this vacuum build-up time, refer to chapter 5.3 Adjustments, page 27. During vacuum generation, the green LED flashes. When the final vacuum is reached the device gives an audible signal. The green LED lights up constantly.

The device offers the possibility to select between a fully automatic vacuum build-up (VE Auto Mode) and a semi-automatic vacuum build-up (VE Semi Mode) (see chapter 5.3 Adjustments, page 28).

The fully automatic vacuum build-up is standardly preset.

5.1.2 Fully automatic vacuum build up (VE Auto Mode)

- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.

Then, the switching-on menu (Fig. 15) is shown in the display for approx. 2 seconds.



Fig. 15. Display directly after switching on

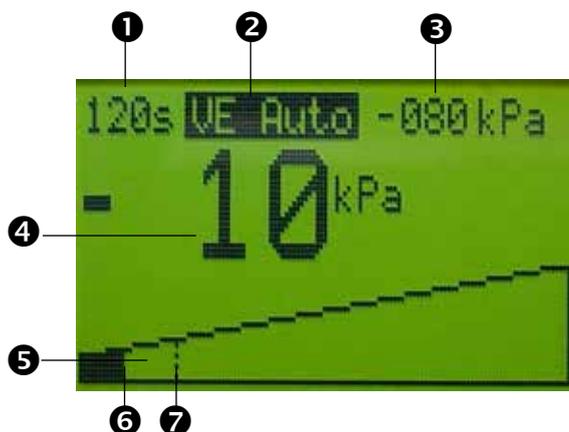


Fig. 16. Display after automatic change over into the VE Auto Menu

- ❶ Desired vacuum build up time
- ❷ Selected mode
- ❸ Final vacuum, target value
- ❹ Actual vacuum-flow value (number)
- ❺ Bar graph for vacuum / time
- ❻ Current vacuum-flow value (graphics)
- ❼ Basic vacuum -20 kPA (graphics)



Fig. 17. Display during automatic vacuum generation

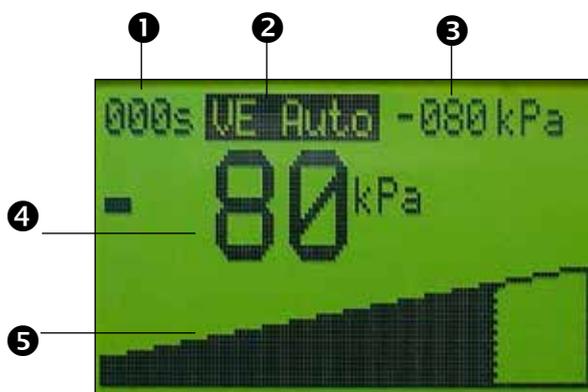


Fig. 18. Display after having reached the final vacuum

- ❶ Desired vacuum build up time
- ❷ Selected mode
- ❸ Final vacuum, desired value
- ❹ Current vacuum value
- ❺ Bar graph for vacuum / time

Then, the ATMOS® S 351 Natal automatically changes over into the so-called VE Auto Menu (Fig. 16).

Here, the vacuum generated is displayed. In addition, the desired vacuum build up time (default = 120 s) is shown top left and the final vacuum set at the top right (default = -80 kPa).

The ATMOS® S 351 Natal attempts to build up the base vacuum of -20 kPa.

- Apply the extraction cup.

- After having reached the base vacuum of -20 kPa, the automatic vacuum build up is started and indicated by an alert tone. The remaining time (in seconds) to final vacuum is shown at the top left of the display (Fig. 17).

- When the final vacuum is achieved the device gives an alert tone (long tone with one short break). The time displayed is 0 s (Fig. 18). The final vacuum is held.



Fig. 19. Extraction cup button



Fig. 20. VE Semi Menu. The device attempts to generate a base vacuum of -20 kPa.

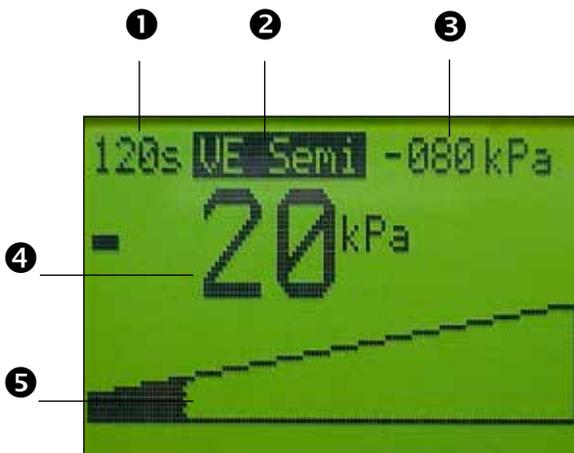


Fig. 21. VE Semi Menu after having reached the the base vacuum of -20 kPa.

- ❶ Desired vacuum build up time
- ❷ Selected mode
- ❸ Final vacuum, desired value
- ❹ Current vacuum value
- ❺ Bar graph for vacuum / time

5.1.3 Semi automatic vacuum build up (VE Semi Mode)

For semi-automatic vacuum build up, the start of the automatic vacuum build up must be confirmed with the extraction cup button (Fig. 19).

- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.

Then, the switching-on menu (Fig. 18, page 18) is shown in the display for approx. 2 seconds.

Then, the device automatically changes over into the so-called VE Semi Menu (Fig. 20 and 21). Here, the vacuum generated is displayed. In addition, the desired vacuum build up time (default = 120 s) is shown top left and the final vacuum set at the top right (default = -80 kPa). The ATMOS® S 351 Natal attempts to build up the base vacuum of -20 kPa.

- Apply the extraction cup.



Fig. 22. Automatic vacuum build up in the VE Semi Mode

- After the -20 kPa basic vacuum is reached, the device waits for the extraction cup button to be depressed. During this waiting period, an alert tone can be heard, it is synchronised with the flashing of the green LED which switches on respectively off. When the extraction cup button is pressed, the alert tone stops and the automatic vacuum build up starts (Fig. 22).



Fig. 23. VE Semi Mode after having reached the final vacuum

- When the final vacuum is achieved the device gives an alert tone (long tone with one short break). The time displayed is 0 s (Fig. 23). The final vacuum is held.



Fig. 24. END button

5.1.4 Controlled venting (vacuum release)

- After completed vacuum extraction or at any other time in VE Mode (VE Auto Mode and VE Semi Mode), the extraction cup can be vented in a controlled manner over a preset period (default: 5 s) (Fig. 25 and 26) by pressing the END button (Fig. 24). The venting time can be altered in the Service 1 menu (see chapter 5.3 Adjustments, page 28).



Fig. 25. Automatic vacuum release in the VE Auto Mode



Fig. 26. Automatic vacuum release in the VE Semi Mode



Fig. 27. Display after either of the VE Modes has been exited (e.g. after venting)

- After the extraction cup has been vented completely, the unit leaves the respective VE menu (Fig. 27).
- The vacuum can be build up again automatically by pressing the extraction cup button.

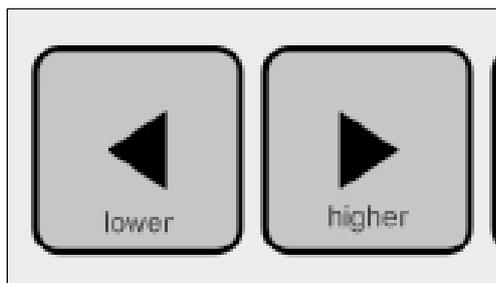


Fig. 28. Buttons for increasing / decreasing the vacuum

5.1.5 Additional functions

In the VE mode of the ATMOS® S 351 Natal it is possible at any time to intervene in the operation of the unit using the arrow buttons (Fig. 28).

The MAX-key is locked.

Using the ◀ ▶ buttons

Operation of the arrow buttons in VE mode is signalled by an alert tone. The buttons have the following functions in this mode:

Vacuum build up:

- The vacuum build up can be delayed by pressing the ◀ button during vacuum build up. The counter for the time indication is increased accordingly.
- The vacuum build up can be accelerated by pressing the ▶ button during vacuum build up. The counter for the time indication is decreased accordingly.

Adjust the vacuum

- Once the final vacuum has been reached, it can be reduced by pressing the ◀ button.
- Once the final vacuum has been reached, it can be increased by pressing the ▶ button.

Vacuum release

- The vacuum release can be accelerated by pressing the ◀ button during vacuum release. The counter for the time indication is decreased accordingly.
- The vacuum release can be delayed by pressing the ▶ button during vacuum release. The counter for the time indication is increased accordingly.



Fig. 29. E.g.: Vacuum-target vacuum: -80 kPa
 Vacuum-actual vacuum: -34 kPa

If the foot controller is moved towards the toe stop, the control of the vacuum passes to the foot controller at about -34 kPa.

5.1.6 Using the foot controller

During VE mode, it is possible to transfer the control of the vacuum to the connected foot controller. **In this case the ATMOS® S 351 Natal automatically goes into suction mode.**

The ATMOS® S 351 Natal must be switched off before the foot controller is connected. This also applies for the removal of the foot controller.

- In VE mode, set the foot controller pedal towards the position which corresponds to the currently applied vacuum (Fig. 29 and 31). This transfers control over the vacuum to the foot controller. **Now the ATMOS® S 351 Natal is in the suction mode (Fig. 30).** The automatic vacuum build up mode can be restarted by pressing the extraction cup button (Fig. 19).



Fig. 30. E.g.: Vacuum-target vacuum: -80 kPa
 Vacuum-actual vacuum: -34 kPa
 Foot controller adjustment: -34 kPa

Display after control of the vacuum has passed to the foot controller



Fig. 31. E.g.: Vacuum target value: -80 kPa
 Vacuum actual value: -52 kPa

If the foot controller is moved towards the heel stop, the control of the vacuum passes to the foot controller at about -52 kPa.



5.1.7 Vacuum build up with foot controller

- The ATMOS® S 351 Natal must be switched off before the foot controller is connected. This also applies for the removal of the foot controller.
- Completely depress the connected foot controller to the heel position.
- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.
- After the VE menu is displayed, switch over into suction mode by pressing the END button.
- Using the ► button, select the required vacuum value which is to be built up with the foot controller (see vacuum / time bar graph).
- Apply the extraction cup and build up the final vacuum required in steps using the foot controller (the foot controller remains in position if you take our foot away).

5.1.8 Starting automatic vacuum build up from a vacuum value preset in suction mode

It is possible for the ATMOS® S 351 Natal to start the automatic vacuum build up from a vacuum value preset in suction mode:

Manual presetting of vacuum

- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.
- After the VE menu is displayed, switch over into suction mode by pressing the END button.
- Apply the extraction cup and manually build up the vacuum in steps to the level required (by pressing the ► button).
- Change into VE mode by pressing the extraction cup symbol: The ATMOS® S 351 Natal starts automatic vacuum build up from the vacuum value set in suction mode. The time until final vacuum is shown at the top left of the display.

Presetting the vacuum with the foot controller

The ATMOS® S 351 Natal must be switched off before the foot controller is connected. This also applies for the removal of the foot controller. Completely depress the connected foot controller to the heel position.

- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.
- After the VE menu is displayed, switch over into suction mode by pressing the END button.
- Using the ► button, select the required vacuum value which is to be built up with the foot controller (see vacuum / time bar graph).
- Apply the extraction cup and build up the vacuum required in steps using the foot controller (the foot controller remains in position if you take our foot away).
- Change into VE mode by pressing the extraction cup symbol: The ATMOS® S 351 Natal starts automatic vacuum build up from the vacuum value set in suction mode. The time until final vacuum is shown at the top left of the display.



5.2 Warning

5.2.1 Vacuum drop during vacuum build up

If the vacuum drops during automatic vacuum build up, the unit gives a warning: fast flashing of green LED + beeping synchronised with the LED. The time display remains on the value reached until vacuum build up can be continued. The pump output is increased, if possible, to counteract the leak.

The warning signal is cleared as soon as vacuum build up can be continued or after abortion of the action by the user.

☞ The ATMOS® S 351 Natal cannot predict a loss of contact of the extraction cup. There is no warning for this.

5.2.2 Vacuum drop after final vacuum has been reached

If the vacuum falls below -60 kPa after the final vacuum has been reached, a warning is given: fast flashing of green LED + beeping synchronised with the LED.

The warning signal is cleared as soon as final vacuum is reached again or after abortion of the action by the user.

☞ The ATMOS® S 351 Natal cannot predict a loss of contact of the extraction cup. There is no warning for this.

5.2.3 Final vacuum not achieved

If the time for the vacuum build up has passed and the final vacuum has not been achieved, the unit will wait for about another 35 s and then issue a warning: fast flashing of green LED + beeping synchronised with the LED.

The warning signal indicates a leak in the system which prevents the final vacuum from being achieved. The warning signal is cleared as soon as final vacuum is reached again or after abortion of the action by the user.

Exception: If the final vacuum is not achieved, but the vacuum achieved is greater than -70 kPa, no warning is issued.

Reason: At elevated altitudes it may be possible that a high final vacuum (much above -70 kPa) cannot be reached - due to atmospheric pressure - even though there is no leak in the system.

5.2.4 Short circuit between contact terminals

If there is a short circuit between the contact terminals, a warning is shown in regular intervals (Fig. 32). An audible signal sounds simultaneously. The vacuum currently present is not affected (there is no vacuum release).

☞ To avoid malfunctions, use the supports on the unit only for original ATMOS secretion canisters.



Fig. 32. Warning of short circuit between contact terminals, indicating position of short circuit (here: '→' means at contact terminals on right)

5.2.5 Electronic filling level monitoring

see page 16.

5.2.6 Electronic filter monitoring

see page 16.

5.3 Settings in the service menu

During switching on, keep depressing the extraction cup button (Fig. 19, page 20) to reach the Service 1 menu. Here, adjustments can be made in following sub-menus (Fig. 33):



Fig. 33. Service 1 Menu

- Adjusting unities (Adjust Unity) (see chapter 5.3.5, page 28).
- Adjusting brightness of graphics display (LCD Brightness).
- Switching on and off of the alert tones for the 'start of automatic vacuum build up' and 'final vacuum is reached' (VE Tone) (Fig. 34).
- Adjusting time period for vacuum build up and vacuum release (VE Time) (Fig. 35).
- Adjusting final vacuum value (VE Vac) (Fig. 36).
- Adjusting fully automatic or semi-automatic vacuum build up (VE Automatic / VE Semi) (Fig. 37, page 28).

To reach the respective sub-menu, select with the arrow buttons and confirm with the Max button ◀▶. To leave the Service 1 menu, press the extraction cup button.



Fig. 34. VE Tone Menu.



Fig. 35. VE Time Menu.



Fig. 36. VE VAC Menu.

5.3.1 Switching on/off of alert tones

The alert tones for the 'start of automatic vacuum build up (VE Start Beep)' and 'reaching the final vacuum (VE Stop Beep)' can be switched on and off in the VE Tone sub-menu (Fig. 34).

- Select either the VE Start Beep or VE Stop Beep using the END button.
- Switch the alert tone ON or OFF using the arrow buttons.
- Via the extraction cup button you exit the menu without saving the changes.
- Accept the settings by pressing the Max button and close the sub-menu.

5.3.2 Vacuum build up / release time

The times for vacuum build up and vacuum release can be set in the VE Time sub-menu (Fig. 35).

- Select the vacuum build up time (Increase Time) or vacuum release time (Decrease Time) using the END button.
- Set the time required using the arrow buttons. The setting can be changed rapidly by keeping the button depressed.
- Accept the settings by pressing the Max button and close the sub-menu.

The vacuum build up time can be varied between 0 and 300 seconds. The default setting is 120 seconds.

The vacuum release time can be set between 0 and 60 seconds. The default setting is 5 seconds.

If the extraction cup button is pressed, the sub-menu is closed without saving the changes.

5.3.3 Final vacuum

- The level of final vacuum can be set between -70 kPa and -90 kPa in the VE VAC sub-menu (Fig. 36).
- Set the vacuum value required using the arrow buttons.
- Accept the settings by pressing the Max button and close the sub-menu.

If the extraction cup button is pressed, the sub-menu is closed without saving the changes.



Fig. 37.

5.3.4 VE Automatic

You can choose between fully automatic or semi automatic vacuum build up in the VE Automatic sub-menu (Fig. 37).

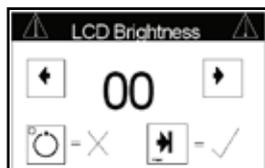
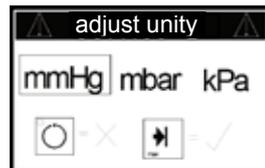
- Set the type of vacuum build up required using the arrow buttons.
- Accept the settings by pressing the Max button and close the sub-menu.

If the extraction cup button is pressed, the sub-menu is closed without saving the changes.

5.3.5 Unities

The vacuum unity displayed can be changed for the ATMOS® S 351 Natal. To do this, press and hold the extraction cup button while switching on until Service 1 is displayed on the graphics display.

- Then select Adjust unity using the arrow buttons and confirm with the Max button.
- The selection menu for the unities is displayed. You can choose between mbar, mmHg and kPa.
- Select the unity required using the arrow buttons and confirm with the Max button.



5.3.6 Brightness of display

The brightness of the graphics display of the ATMOS® S 351 can be adjusted to suit the environment. To do this, press and hold the extraction cup button while switching on until Service 1 is displayed on the graphics display.

- Then select LCD Brightness using the arrow buttons and confirm with the Max button.
- The selection menu for the display brightness is displayed. You can set the brightness of the LCD display using the arrow buttons. When you have adjusted the display confirm the setting with the Max button.

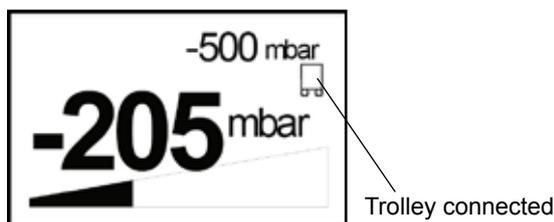


Fig. 38. Trolley connected

5.4 Operation with trolley REF 444.0020.0

When the ATMOS® S 351 Natal is mounted on a trolley, the trolley symbol appears in the display. During operation with a trolley please observe the symbol (fig. 38). If the symbol is not displayed, the liquid level in the secretion canister cannot be detected.

☞ When using old trolleys (earlier than March 2000), this symbol will not be displayed, even if the system is functioning correctly. Our service department can convert the trolley for you in this case.

5.5 Suction function

- Connect the suction catheter, suction connector or suction instruments.
- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.
- After the VE menu is displayed, switch over into suction mode by pressing the END button.
- Select the final vacuum required using one of the arrow buttons (➡ and ⬅, Fig. 39). If the button is kept depressed, the value changes more rapidly.
- The maximum vacuum is set by pressing the Max button (▶, Fig. 39). Please observe, this button must be pressed a second time to confirm the function.

The ATMOS® S 351 Natal starts up and begins to build up the vacuum. The vacuum value reached at any time is displayed. The pump switches off when the final vacuum is reached. If the vacuum value exceeds 800 mbar it is possible that the ATMOS® S 351 is automatically vented and the vacuum value is reduced to 800 mbar. A control circuit controls the unit during operation so that it runs only when the vacuum is less than the value set.

Observe the liquid level in the secretion canister during suction. Although the electronic filling level monitoring switches off the unit when the maximum liquid level is reached, you should change the secretion canister or empty it when it is about 2/3 full (including foam head).

☞ If liquid has been sucked into the unit despite the level monitoring and safety canister, the ATMOS® S 351 Natal must be returned to operation only after examination by a service engineer.

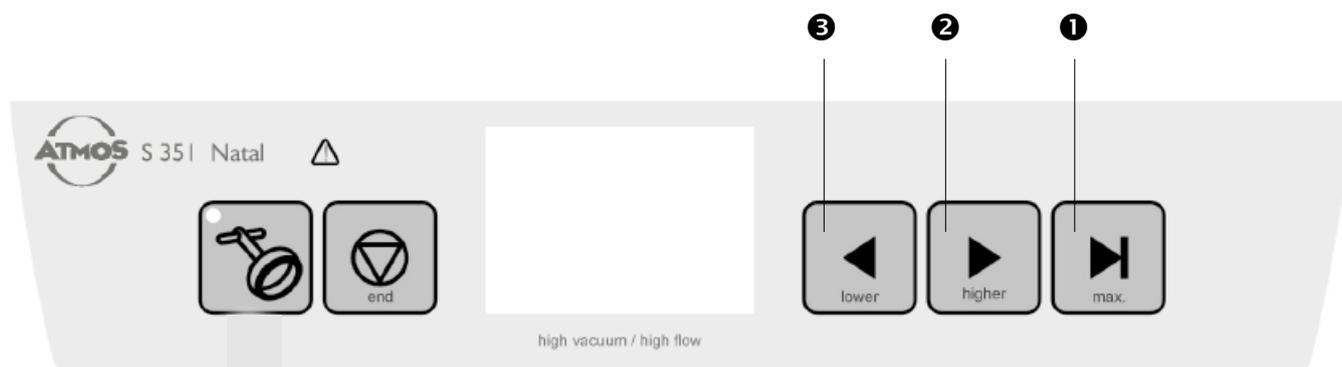


Fig. 39. Indicators and control panel



Fig. 40. Recommended maximum level

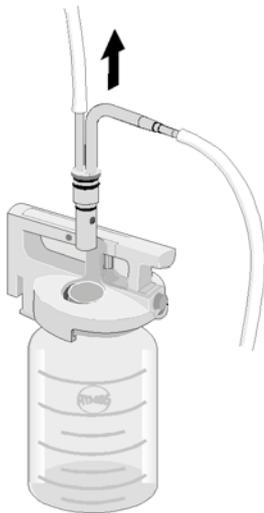


Fig. 41. Removing the double socket nipple

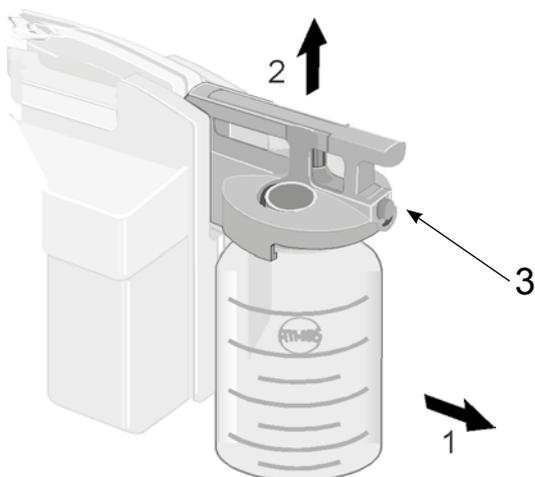


Fig. 42. Removing the secretion canister

5.5.1 Changing the secretion canister

Always wear protective clothing (gloves) when changing the secretion canister!

- Stop the suction process and switch off the pump.
- Remove the double socket nipple from the full secretion canister (Fig. 41). Place it in the second secretions canister, if attached.
- To remove the secretion canister, first tip it slightly away from the unit and then pull it upwards (Fig. 42).
- Either replace it with a new secretion canister or empty it. Press the release button (3, Fig. 42) to open the locking handle. Dispose properly of aspirated material.
- Insert the double socket nipple into the empty secretion canister and continue suction.

After application

- Switch off the ATMOS® S 351 Natal and clean unit and accessories as described in chapter 6.0.



Fig. 43. Graphics display for foot controller operation

5.5.2 Suction with foot controller

The vacuum can be set with the connected foot controller:

- Connect the foot controller to the connection (④, Fig. 11, page 15).
- Connect the suction catheter, suction connector or suction instruments.
- Switch on the ATMOS® S 351 Natal. Make sure that the pilot lamp in the switch lights up.
- Select the final vacuum required using one of the arrow buttons (①, ② and ③, Fig. 39, page 29). If button ② and ③ is kept depressed, the value changes more rapidly.
- You can now vary the vacuum between 0 and the maximum value set using the foot controller.

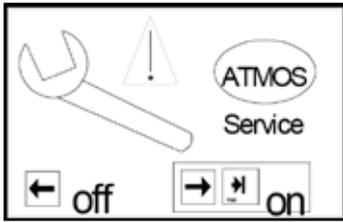


Fig. 44. Display for emergency operation

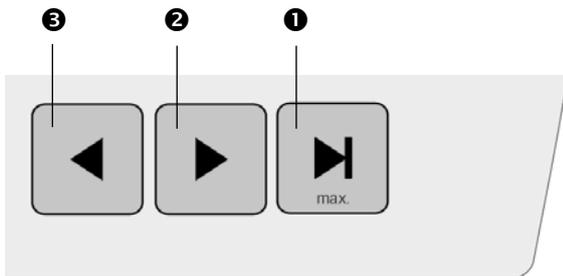


Fig. 45.

- ❶ Switch on pump
- ❷ Switch on pump
- ❸ Switch off pump

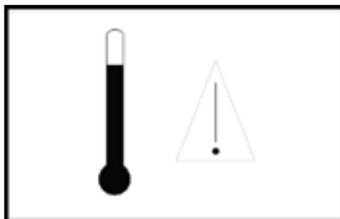


Fig. 46. Overheating

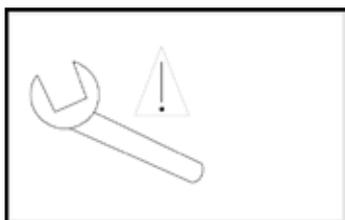


Fig. 47. Key error

Call the ATMOS® Service department

5.6 Faults

5.6.1 Emergency operation

This operating mode is automatically entered if there is a malfunction in the ATMOS® S 351 Natal. Please call the service department if this happens. The ATMOS® S 351 Natal functions are restricted in this case. Control of the vacuum is no longer possible. The following functions are still available:

5.6.2 Overheating

The ATMOS® S 351 Natal is designed for continuous operation. If the ventilation louvres at the bottom are blocked, the unit may overheat. Initially, a warning is given (graphics display blinks):

- Check the ventilation louvres of the ATMOS® S 351 Natal. If the temperature continues to rise, the ATMOS® S 351 Natal will be switched off. If this happens, the overheating display is left on the graphics display. Please call the service department if this happens.

☞ Set up the ATMOS® S 351 Natal on a clear, level surface. This will ensure free air circulation.

5.6.3 Fault

If the ATMOS® S 351 Natal detects a functional fault, this will be shown on the graphics display. Please call the service department if this happens.

☞ Please observe that the error message Key Error is also created for 7 s when a key is pressed (exception: ◀▶-keys)

6.1 Reprocessing of hoses and secretion canister

Always wear protective clothing (gloves) when carrying out cleaning work.

Those parts which come into contact with the secretion must be cleaned and disinfected after each use before a new patient is treated.

These are:

- suction hose including suction attachment, suction instruments or extraction cups
 - secretion canister including lid and double connecting nipple
 - connecting hose for safety canister (for safety canister and bacterial filter, see overleaf).
-
- Release all hose connections, remove the double connecting nipple from the closure system, empty the secretion canister and dispose properly of the aspirated material.
 - Unscrew the upper part of the safety canister. Empty the canister, if required.
 - Remove the lid from the safety canister housing, pull off the bacterial filter (if available) and dispose of the bacterial filter.
- ☞ Replace the bacterial filter with every cleaning. For hygienic reasons, the bacterial filter must be replaced at least once a day!
- Thoroughly rinse all other parts under running water. Obviously, you may use a cleaning agent.
 - You can remove the lid insert from the closure system so that it can be cleaned thoroughly. To do so, turn the knurled screw **a** counter-clockwise until the insert can be removed (Fig. 48).
 - Disinfect the parts using the disinfectants listed on page 34. Using the cleaning agent Neodisher AN (manufactured by Dr. Weigert, Hamburg) cleaning in an automatic cleaner and disinfector is also possible.
 - Thermal disinfection is carried out at 93° C.
 - Max. cycles of reprocessing:
 - Glass: 100 cycles.
 - Reassemble the parts after that (chapter 4.2 Initial startup). Use a new bacterial filter
 - Ensure that the contacts for the level monitoring are not contaminated (**b**, Fig 48).

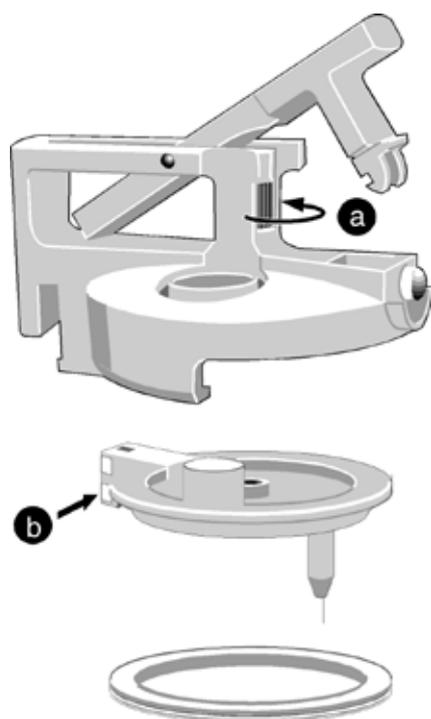


Fig. 48.

- a** Knurled screw for removing the lid insert
- b** Contacts for filling level control

☞ Do not use any cleaning agents or disinfectants other than those listed on page 34.

☞ Grease the 'O' rings with vaseline after cleaning.

6.2 Cleaning and disinfecting the surface of the unit

- You must disconnect the mains plug before cleaning and disinfecting the unit casing.
- Wipe the unit surface with a cloth moistened with a cleaning or disinfecting solution. Do not allow any liquid to get into the device. The cleaning agents and disinfectants listed on page 34 are all suitable.

☞ Please note the instructions by the respective manufacturer, especially with regard to concentrations and application period.

☞ If liquid has penetrated the unit, it may not be operated again until it has been checked by the customer service centre.

6.3 Recommended instrument disinfectants

Manual disinfection of instruments

Disinfectant	Ingredients	in 100 g	Manufacturer
Gigasept® FF (new) (Application concentrate)	succinaldehyde dimethoxytetrahydrofurane anionic and non-ionic surfactants, perfumes, methylisothiazolinone	11.9 g 3.2 g	Schülke & Mayr, Norderstedt

Automatic disinfection of instruments

Disinfectant	Ingredients	in 100 g	Manufacturer
neodisher® MediClean forte (Application concentrate)	non-ionic and anionic surfactants enzymes	< 5 g	Dr. Weigert, Hamburg
neodisher® AN	phosphates non-ionic surfactants enzymes	> 30 g < 5 g	Dr. Weigert, Hamburg

6.4 Recommended surface disinfectants

Disinfectant	Ingredients	in 100 g	Manufacturer
Green & Clean SK	Di alkyl dimethyl ammonium chloride Alkyl dimethyl ethyl benzyl ammonium chloride Alkyl dimethyl benzyl ammonium chloride	< 1 g < 1 g < 1 g	Metasys, Rum (Austria)
Dismozon® pur (Granulate) End of product 12/2014	magnesium monoperoxyphthalate hexahydrate	80 g	Bode Chemie, Hamburg
Dismozon® plus (Granulate)	magnesium monoperoxyphthalate hexahydrate	95.8 g	Bode Chemie, Hamburg
Pursept-A (disinfection spray or wipes)	ethanol glyoxale quaternary ammoniumchlorides	38.9 g 0.1 g 0.05 g	Merz & Co., Frankfurt / Main

7.0 Maintenance

- Prior to every use a visual inspection of the device, secretion canister and power cable, accessories, connection cables and hoses must be performed. Damaged cables must be replaced immediately!
- For hygienic reasons, the bacterial filter must be replaced at least once a day!
- The unit does not require any further maintenance.
- Maintenance, repairs and period tests may only be carried out by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures the person must have the necessary test devices and original spare parts.
- ATMOS recommends: Work should be carried out by an authorized ATMOS service partner. This ensures that repairs and testing are carried out professionally, original spare parts are used and warranty claims remain unaffected.
- At least every 24 months a repeat test of the electrical safety should be performed according to IEC 62353. ATMOS recommends an inspection according to the manufacturer's specifications.

Reprocessing

Handling of the suction device determines to a large extent its reliability and safety. The hygiene measures described in the previous chapters are necessary measures for the protection of patients and users, and to maintain functional reliability.

Repairs

The following may require repairs from the manufacturer or an authorized service partner. Prior to sending in the device, please contact your service partner by phone.

- Liquids have penetrated the device.
- Sudden occurrence of unusual noises
- Operational and functional disorders which cannot be resolved by means of the hints describes in the chapter "Troubleshooting".

Measures to be taken prior to sending in the device:

If the device has to be sent in for repair after consultation with the manufacturer or an authorized service partner, we ask you to observe the following:

- Please send in the complete device (see scope of delivery).
- Please remove all disposable parts and consumables.
- Thorough cleaning and disinfection
- Airtight packing
- Please enclose a detailed error description

Warranty

ATMOS neither guarantees for fault-free operation nor for personal injuries and damage to property if

- no original ATMOS parts are being used,
- the advice for use in these operating instructions is not being observed,
- assembly, new settings, alterations, extensions and repairs have not been executed by ATMOS authorised personnel.

8.0 Troubleshooting

This section describes how to remove functional faults.

☞ Please clean your ATMOS® S 351 Natal before sending it for servicing.

Fault	Possible cause	Remedy
Device does not start (indicator light in switch is not illuminated)	Power plug is fitted badly	<ul style="list-style-type: none"> • Check mains plug
	No power	<ul style="list-style-type: none"> • Check mains power supply in building (fuse) • Check equipment fuses
Alarm after start up (filter monitor is displayed)	Safety canister full	<ul style="list-style-type: none"> • Check safety and secretion canister and empty, if required
	Bacterial filter blocked	<ul style="list-style-type: none"> • Replace bacterial filter
	Drainage accessories connected	<ul style="list-style-type: none"> • Remove drainage accessories
Alarm after start up (filling level monitor is displayed)	Secretion canister full	<ul style="list-style-type: none"> • Empty secretion canister
	Contact element short-circuited	<ul style="list-style-type: none"> • Remove metal connection on contact (possibly also on trolley rail!). Also check the connections for trolley fixation at the bottom of the device.
Alarm during suction (filling level monitoring is displayed)	Secretion canister full	<ul style="list-style-type: none"> • Empty secretion canister
	Heavy foaming	<ul style="list-style-type: none"> • Use anti-foaming device
	When using the trolley, contact strip may be dirty	<ul style="list-style-type: none"> • Clean contact strip
No alarm when secretion canister full	Contact fault between secretion canister and the ATMOS® S 351 Natal	<ul style="list-style-type: none"> • Check whether the secretion canister and its closure system have engaged correctly in the bracket and whether the ATMOS® S 351 Natal has been screwed correctly to the trolley
Alarm during suction (filter monitor is displayed)	Bacterial filter is clogged	<ul style="list-style-type: none"> • Replace filter
	Hose connection to pump kinked	<ul style="list-style-type: none"> • Attach hose in such way that it does not kink
Alarm during suction, device switches off	Too much foam, close the contact	<ul style="list-style-type: none"> • Place anti-foaming device on level sensor (Art. No. 444.0064.0)

8.0 Troubleshooting

Fault	Possible cause	Remedy
No trolley symbol on the graphics display even though the trolley is used	The connection to the trolley has been interrupted.	<ul style="list-style-type: none"> Check the contacts between the trolley and the ATMOS® S 351 Natal
	The trolley was purchased before March 2000	<ul style="list-style-type: none"> Ask the service department to convert the trolley for operation with the ATMOS® S 351 Natal
Incorrect vacuum unity is displayed (mbar / mmHg / kPa)	The vacuum unit has been set incorrectly	<ul style="list-style-type: none"> Set the unity for the vacuum as required and as described in chapter 5.1.1
The graphics display is too dark / cannot be read easily	The brightness of the graphics display is not correctly adjusted	<ul style="list-style-type: none"> Set the brightness of the graphics display as required and as described in chapter 5.3.6
Spanner displayed on graphics display	An equipment fault has occurred	<ul style="list-style-type: none"> If the display clears, the ATMOS® S 351 Natal was able to remove the fault. However, a service engineer should check the suction device Only emergency operation is possible as long as the display is shown (chapter 5.6.1). Call the service department
No vacuum or vacuum low	The foot controller is connected and in heel stop	<ul style="list-style-type: none"> Disconnect the foot controller or depress it with your toes
Flashing thermometer display in the graphics display (ATMOS® S 351 Natal has overheated)	Ventilation louvres blocked	<ul style="list-style-type: none"> Check the ventilation louvres (bottom of unit). They must not be blocked.
	Excessive ambient temperature	<ul style="list-style-type: none"> Only use the ATMOS® S 351 Natal within the temperature range stated.
	Fan faulty	<ul style="list-style-type: none"> Call the service department.
Continuous thermometer display in the graphics display (ATMOS® S 351 Natal has overheated)	See 'flashing display'	<ul style="list-style-type: none"> Leave the unit switched on so that the fan can blow the hot air out of the device. Wait until the display clears.
Only a low vacuum can be set with the foot controller	A low vacuum has been set with the buttons.	<ul style="list-style-type: none"> Set the nominal vacuum to a higher value (or to max.) using the + button to obtain a greater control range for the foot controller.
Quick flashing of the green LED and synchronously alarm signal <ul style="list-style-type: none"> During vacuum generation resp. after having reached the final vacuum value in the VE mode 	Leakages in the system lead to vacuum loss or final vacuum cannot be achieved	<ul style="list-style-type: none"> Check the connection hoses and the canister on leakages. Extraction cup may not correctly be applied.



Fig. 49.

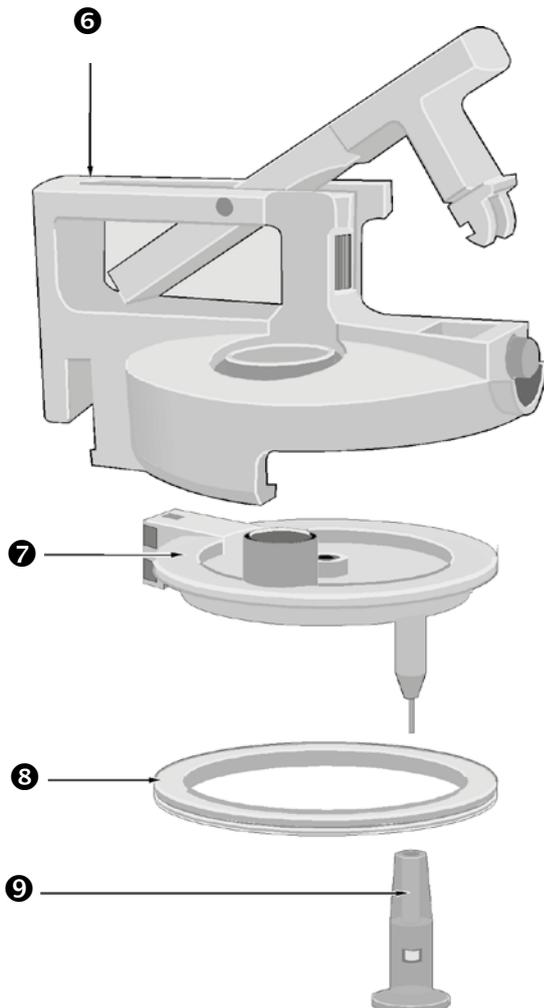


Fig. 50.

9.1 Spare parts

Description.....	REF
❶ Safety canister, standard (without filter, without lid)	000.0504.0
Safety canister + DDS filter	444.0646.1
Bacterial filter cover	444.0056.0
Bacterial filter lid	444.0058.0
DDS bacterial filter / overflow safety.....	340.0054.0
Filter adapter	340.0031.0
O-Ring	055.0055.0
❷ Silicone hose	
- for safety canister-secretion canister.....	443.0046.0
- for connecting nipple-filter	320.0044.0
- for safety canister-secretion canister (trolley)....	444.0118.0
- for filter-safety canister	999.0128.0
❸ double socket nipple.....	444.0012.0
❹ Reduction piece.....	444.0013.0
❺ Hydrophobic bacterial and viral filter, Ø 8 mm.....	443.0738.0
❻ Lid system, complete.....	444.0015.0
❼ Lid insert.....	444.0052.1
❸ Gasket	055.0070.0
❹ Foam protection	444.0064.0

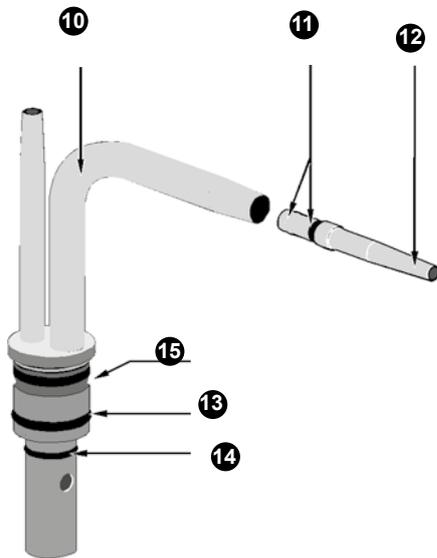


Fig. 51. Double socket nipple

Description.....REF

⑩ Double socket nipple, complete	444.0012.0
⑪ O-ring 6 mm Ø (at least 5 pcs.).....	055.0069.0
⑫ Hose reducer.....	444.0013.0
⑬ O-ring 23 mm Ø (at least 5 pcs.).....	055.0073.0
⑭ O-ring 14 mm Ø (at least 5 pcs.).....	055.0072.0
⑮ Contact spring washer	444.0079.0

Spare parts (not shown)

Fuse 230 V T 1 A/H	008.0471.0
Fuse 115 V T 2 A/H.....	008.0738.0

Power cord	008.0629.0
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Replacement bag for Receptal® Secretion canister set I

Receptal® 1.5 l suction bag without integrated overflow valve filter, 50 pcs.	310.0222.1
Receptal® 1.5 l suction bag with integrated overflow valve filter, 50 pcs.	310.0222.2

Replacement bag for Receptal® Secretion canister set II

Receptal® 2 l suction bag without integrated overflow valve filter, 50 pcs.	443.0257.0
Receptal® 2 l suction bag with integrated overflow valve filter, 50 pcs.	443.0257.2

Replacement bag for Receptal® Secretion canister set III

Receptal® 3 l suction bag without integrated overflow valve filter, 50 pcs.	444.0153.0
Receptal® 3 l suction bag with integrated overflow valve filter, 50 pcs.	444.0154.0



9.2 Accessories

9.2.1 Canisters

Description.....	REF
Secretion glass, with graduation, 1.5 l.....	444.0032.0
Canister lid.....	444.0015.0
Double socket nipple with overflow electrode.....	444.0012.0
Hydrophobic bacterial and viral filter, Ø 8 mm.....	443.0738.0

9.2.2 Accessories to simplify handling

Description.....	REF
Hose bracket, for attachment to a standard rail.....	444.0450.0
Trolley with the possibility for an electronic overflow protection	444.0020.0
Trolley (for obstetrics); self-assembly (without possibility for the electronic overflow protection)	320.0070.0
Foot control, electronic, waterproof IP X8, AP protected.....	444.0452.0

9.2.3 Filter combination

Hydrophobic bacterial and viral filter, Ø 8 mm.....	443.0738.0
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Alternative disposable version:

Recommended as an oversuction protection for surgical interventions other than the vacuum extraction.

Safety canister 250ml (with hydrophobic DDS bacterial filter).....	444.0646.1
DDS bacterial filter, PU 10.....	340.0054.0



9.2.4 Gynaecology

Description.....	REF
Suction curette with auxiliary air vent, external diameter 6 mm	401.0529.0
Suction curette with auxiliary air vent, external diameter 8 mm	401.0530.0
Suction curette with auxiliary air vent, external diameter 10 mm	401.0531.0
Suction curette with auxiliary air vent, external diameter 12 mm	401.0532.0
Suction curette for sampling, diameter 3 mm	401.0554.0
Suction curette for sampling, diameter 4.5 mm	401.0528.0
Twist connection for hose (adapter for above gynaecological currettes)	401.0553.0
Extraction hose for extraction cup Ø 6.5 diameter / L 1.5 m	404.0146.0
Tissue collector (collector for tissue samples for histopathological investigation) (disposable)	401.0555.0
Extraction cup (Malmström) diameter 40 mm with cross handle and locking pin	404.0155.0
Extraction cup (Malmström) diameter 50 mm with cross handle and locking pin	404.0156.0
Extraction cup (Malmström) diameter 60 mm with cross handle and locking pin	404.0157.0
Silk cup, silicone extraction cup, diameter 50 mm	404.0194.0
Silk cup, silicone extraction cup, diameter 60 mm	404.0193.0

All the products on this page have a 24 months guarantee.

Air flow rate	36 ± 2 l/min.
Max. vacuum at sea level	-90 kPa**
Vacuum display	digital numeric, resolution 10 mbar / 10 mmHg / 1 kPa and quasi analogue via bar graph; accuracy ± 2%
Auxiliary air control	electronically controlled magnetic valve
Secretion canister	1.5 l / 3 l / 5 l glass or 1.5 l / 2 l / 3 l Receptal® canister bracket for Medi-Vac available
Suction hose	dia. 6 mm, 1,30 m long; diameter 10 mm, 2 m long
Voltage	230 V~ 50/60 Hz
Current consumption (max.)	0.6 A / 230 V~ / 1.06 A / 127 V~
Power consumption	max. 135 W
Power supply cord	5 m
Operating time	Continuous operation
Fuse	T 1,0
Interface	Foot controller
Protective earth conductor resistance	< 0.1 Ω
Earth leakage current	< 500 µA NC
Enclosure leakage current	< 100 µA
Patient leakage current	< 10 µA
Heat release	135 J/s
Noise level	43,9 dB (A) @ 1m (as per ISO 7779)
Ambient conditions	
Transport / storage	-10...+60°C; 30...95 % humidity without condensation at an air pressure of 700...1060 hPa
Operation	+10...+40°C; 30...95 % humidity without condensation at an air pressure of 700...1060 hPa
Dimensions H x W x D	300 x 330 x 200 mm, without trolley; 840 x 490 x 520 mm, with trolley (444.0020.0)
Weight	10.2 kg, without canister, without trolley
Protection class (EN 60601-1)	I
Applied part	Type B 
Protection class	IPX 0
Classification in accordance with Annex IX to EC Directive 93/42/EEC	Ila
CE marking	CE 0124
UMDNS code	14-317

All values are quoted with a tolerance of ± 5 %, unless separately specified.

** 1 bar ≅ 750.06 mm Hg ≅ 1000 hPa / dependent on daily air pressure

* NN ≅ 1013 mbar ambient pressure

Issue of technical data: 18.07.2017



- Please observe national disposal regulations (e.g. waste incineration).
- Device and accessories must be decontaminated prior to disposal as secretion residuals could lead to danger of a third party.
- Pay attention to a careful separation of the different materials.
- The housing is recyclable.

Prior to disposal respectively before transport all secretion canisters and tubes must be removed. The device surface must be disinfected.

Disposal within the EC

The device described above is a high-quality medical product with a long service life. After its life cycle it must be disposed of professionally. According to the EC directives (WEEE and RoHS) the device may not be disposed of in domestic waste. Please observe existing national laws and rules for disposal of old devices in the respective country.

Disposal within the Federal Republic of Germany

In the Federal Republic of Germany the law for electrical devices (ElektroG) regulates the disposal of electrical devices. It must be assumed that such suction devices can be contaminated. Therefore, according to the regulations of the EAR foundation (Used Electrical Appliances Register) is this type of device excluded from the ElektroG regulations. In order to guarantee a proper disposal of your old device, please either pass on your old device to your specialised dealer or send it directly to ATMOS MedizinTechnik GmbH & Co. KG for a professional disposal.



- Medical electrical equipment is subject to special precautions with regard to EMC and must be installed acc. to following EMC notes.
- Portable and mobile HF communication facilities can influence medical electrical equipment.
- The use of other accessories, other converters and cables than stated may lead to an increased emission or a reduced interference immunity of the equipment or system.

12.1 Guidelines and Manufacturer's Declaration - Emissions

The ATMOS® S 351 Natal is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 351 Natal should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF Emissions acc.to CISPR 11	Group 1	The ATMOS® S 351 Natal uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions according to CISPR 11	Class B	The ATMOS® S 351 Natal is suitable for use in all establishments, including domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions according to IEC 61000-3-2	Class B	
Voltage fluctuations/flicker according to IEC 61000-3-3	Corresponds	

- The device may not be used directly next to other devices or piled up with other devices. If operation next to or piled with other devices is necessary, please watch the device to check its intended operation in this arrangement.

Guidelines and Manufacturer's Declaration - Immunity

The ATMOS® S 351 Natal is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 351 Natal should ensure that it is used in such an environment.

Immunity Test	IEC 60601- Test Level	Compliance Level	Electromagnetic Environment - Guidance
ESD IEC 61000-4-2	± 6 kV Contact ± 8 kV Air	± 6 kV Contact ± 8 kV Air	Floors should be wood, concrete, or ceramics tile. If floors are synthetic, the relative humidity should be at least 30 %.
EFT IEC 61000-4-4	± 2 kV Mains ± 1 kV I/Os	± 2 kV Mains Inapplicable	Mains power quality should be that of a typical commercial or hospital environment.
Surges IEC 61000-4-5	1 kV Differential 1 kV Common	2 kV Differential 1 kV Common	Mains power quality should be that of a typical commercial or hospital environment.
Magnetic field at power frequency 50/60 Hz acc. to IEC 61000-4-8	3 A/m	Inapplicable	Power frequency magnetic fields should be that of a typical commercial or hospital environment.



Immunity Test	IEC 60601- Test Level	Compliance Level	Electromagnetic Environment - Guidance
Voltage Dips / Dropout IEC 61000-4-11	<p>< 5 % U_T (> 95 % Dip of the U_T) for 0.5 Cycles</p> <p>40 % U_T 60% Dip of the U_T) for 5 Cycles</p> <p>70% U_T 30 % Dip of the U_T) for 25 Cycles</p> <p>< 5 % U_T (>95 % Dip of the U_T) for 5 s</p>	<p>< 5 % U_T (> 95 % Dip of the U_T) for 0.5 Cycles</p> <p>40 % U_T (60 % Dip of the U_T) for 5 Cycles</p> <p>70 % U_T (30 % Dip of the U_T) for 25 Cycles</p> <p>< 5 % U_T (>95 % Dip of the U_T) for 5 s</p>	Mains power quality should be that of a typical commercial or hospital environment. If the user of the ATMOS® S 351 Natal demands continued function even in case of interruptions of the energy supply, it is recommended to supply the ATMOS® S 351 Natal from an uninterruptible current supply or a battery.
NOTE U _T is the mains alternating current prior to application of the test levels.			

12.3 Guidelines and Manufacturer's Declaration - Immunity

The ATMOS® S 351 Natal is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 351 Natal should ensure that it is used in such an environment.

Immunity Test	IEC 60601- Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 V _{eff} 150 kHz to 80 MHz	3 V	Portable and mobile communications equipment should be separated from the ATMOS® S 351 Natal incl. the cables by no less than the distances calculated/listed below. Recommended distances: $d = (3.5 / \sqrt{P}) * \sqrt{(P)}$ $d = (3.5 / E1) * \sqrt{(P)}$ 80-800 MHz $d = (7 / E1) * \sqrt{(P)}$ 0.8-2.5 GHz where „P“ is the max. power in watts (W) and D is the recommended separation distance in meters (m). Field strengths from fixed transmitters, as determined by an electromagnetic site (a) survey, should be less than the compliance level (b). Interference may occur in the vicinity of equipment containing following symbol:
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	



NOTE 1 By 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in every case. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.

a

The field strength of stationary transmitters, such as base stations of cellular phones and mobile terrain radio equipment, amateur radio transmitters, cbm broadcast and TV stations cannot be predestined exactly. To determine the electromagnetic environment in regard to stationary transmitters, a study of the location is to be considered. If the measured field strength at the location where the ATMOS® S 351 Natal is used exceeds the above compliance level, the ATMOS® S 351 Natal is to be observed to verify the intended use. If abnormal performance characteristics are noted, additional measures might be necessary, e. g. a changed arrangement or another location for the device.

b

Within the frequency range of 150 kHz to 80 MHz the field strength should be below 3 V/m.

12.4 Recommended safety distance between portable and mobile RF Communications equipment and the ATMOS® S 351 Natal

The ATMOS® S 351 Natal is intended for use in electromagnetic environment in which radiated disturbances are controlled. The customer or user of the ATMOS® S 351 Natal can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications equipment and the ATMOS® S 351 Natal as recommended below, according to the maximum output power of the communications equipment.

Nominal output of the transmitter W	Safety distance, depending on transmit-frequency m		
	150 kHz to 80 MHz $d = [3.5 / 3] \sqrt{P}$	80 MHz to 800 MHz $d = [3.5 / 3] \sqrt{P}$	800 MHz to 2.5 GHz $d = [7.0 / 3] \sqrt{P}$
0.01	0.12	0.12	0.24
0.1	0.37	0.37	0.74
1	1.2	1.2	2.4
10	3.69	3.69	7.38
100	11.66	11.66	23.32

For transmitters for which the maximum nominal output is not indicated in the above table, the recommended safety distance d in meters (m) can be determined using the equation belonging to the respective column whereas P is the maximum nominal output of the transmitter in watts (W) acc. to manufacturer's specification.

NOTE 1 By 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in every case. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.



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