THORAGUARD

SURGICAL DRAINAGE SYSTEM

RESOURCE GUIDE

IFU-2128 Ver 10
05-06-2026

Scope of Resource Guide

The Thoraguard Resource Guide is a supplement to the Thoraguard Operator's Manual and not to be used in place of the Operator's Manual. The information and figures contained within the Resource Guide are an abbreviated version of those found in the Operator's Manual. For a complete description of Thoraguard's operation or a comprehensive list of instructions, please refer to the Thoraguard Operator's Manual.

Intended Use

The Thoraguard System is intended to be used for aspiration and removal of surgical fluids, tissue, gases, bodily fluids or infectious materials. The Thoraguard System is indicated for all situations where chest drains are applied – especially for thoracic drainage in the pleural and mediastinal cavity in situations such as pneumothorax, after cardiac or thoracic surgery (post-operative), thorax injury, pleural effusion, pleural empyema or other related conditions. The Thoraguard System is intended for use on patients in appropriate care settings.

CAUTION: The Thoraguard System is only intended for use by or on the order of a physician.

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Patent: www.centese.com/patents
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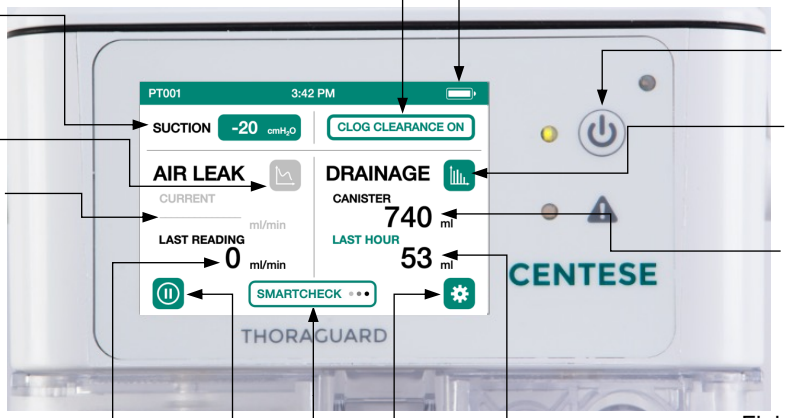
Table of Contents

4” x 6” Reference Cards

Thoraguard® with SELF-CLEARING Chest Tube and SmartValve®



Thoraguard Chest Tube Clog Clearance

Battery Power Level

Digital Suction Adjustment

Power On / Off

Air Leak Trends
(Unavailable w/Clog Clearance Active)

Fluid Trends

Current Air Leak
(Unavailable w/Clog Clearance Active)

Fluid Drained
(Current Canister)

Last Air Leak Reading

STANDBY
Menu

SETTINGS
Menu

SmartCheck
Status

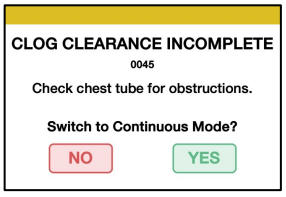
Fluid Drained
(Touch to change):

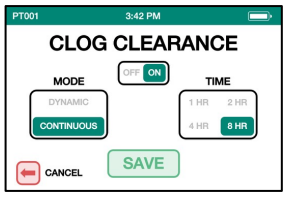
a. *Last Hour*
b. *Last 4 Hours*
c. *Last 12 Hours*
d. *Last 24 Hours*
e. *Total since start*

Clog Clearance Incomplete Guidance

Using **THORAGUARD® Self-Clearing** Chest Tube with SmartValve®?

- NO → Clog Clearance should be **OFF** CLOG CLEARANCE OFF
- YES → Clog Clearance should be **ON** CLOG CLEARANCE ON CLOG CLEARANCE ON
  - ***First*** Clog Clearance Incomplete alert → Check tubing for kinks or obstructions
    → Select “NO” and remain in ***Dynamic***
  - ***Subsequent*** Clog Clearance Incomplete alerts → Check tubing for kinks or obstructions
    → Select “YES” and switch to ***Continuous***
    - Progress through 1, 2, 4, and 8 hours in ***Continuous.*** Press **SAVE**.



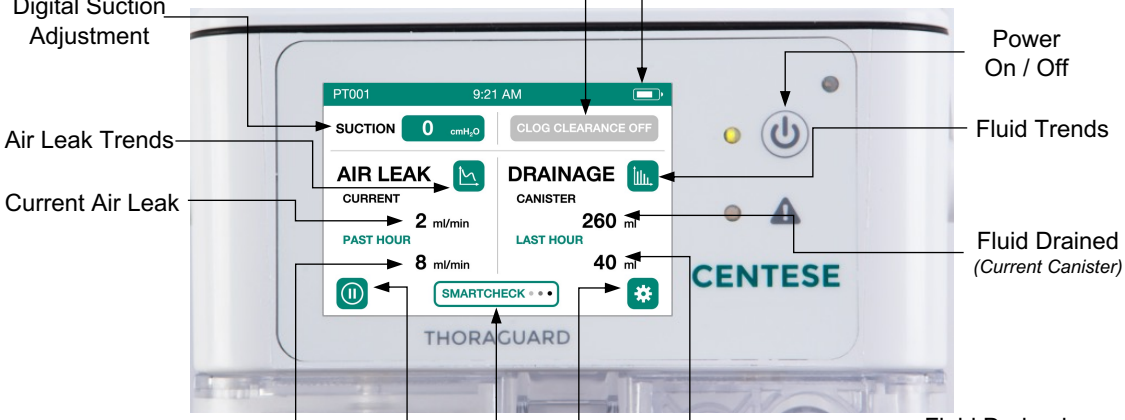


Video:
Clog Clearance Incomplete

24/7 Tech Support: 402-300-3150

Guidance is supplement. Not a replacement for the assessment and decision of a clinician.

Thoraguard® with STANDARD Chest Tube



Air Leak Average
(Touch to change):
a. Past Hour
b. Past 6 Hours
c. Past 12 Hours
d. Past 24 Hours

STANDBY
Menu

SETTINGS
Menu

SmartCheck
Status

Fluid Drained
(Touch to change):
a. Last Hour
b. Last 4 Hours
c. Last 12 Hours
d. Last 24 Hours
e. Total since start

Thoraguard® Guide Videos

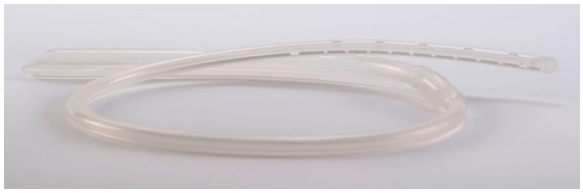
Thoraguard Training Video
Canister Replacement (2:30)

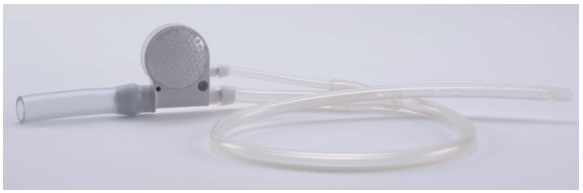
Thoraguard Training Video
System Operation (2:43)

Thoraguard Training Video
Power Down (1:31)

24/7 Tech Support: 402-300-3150

Thoraguard Chest Tube OR Tips





The Thoraguard Chest Tube is a proprietary chest tube for use only with the Thoraguard Drainage System. Due to the unique design and to ensure proper functionality of the Clog Clearance feature, the following tips may help optimize results:

Submerge Thoraguard Chest Tube in saline or sterile water for at least 10 seconds prior to use

Position drainage holes for optimal access to draining fluid

Ensure all chest tubes and connectors are free from blood / fluid build-up or other surgical materials prior to connecting to Thoraguard Drainage System

Do not cut or create additional holes in the chest tube

Surgical Sealants and Hemostatic Agents should not come in contact with chest tubes

Do not over-tighten sutures on chest tubes during securement

Do not apply direct suction to the relief (small) lumen of the chest tube

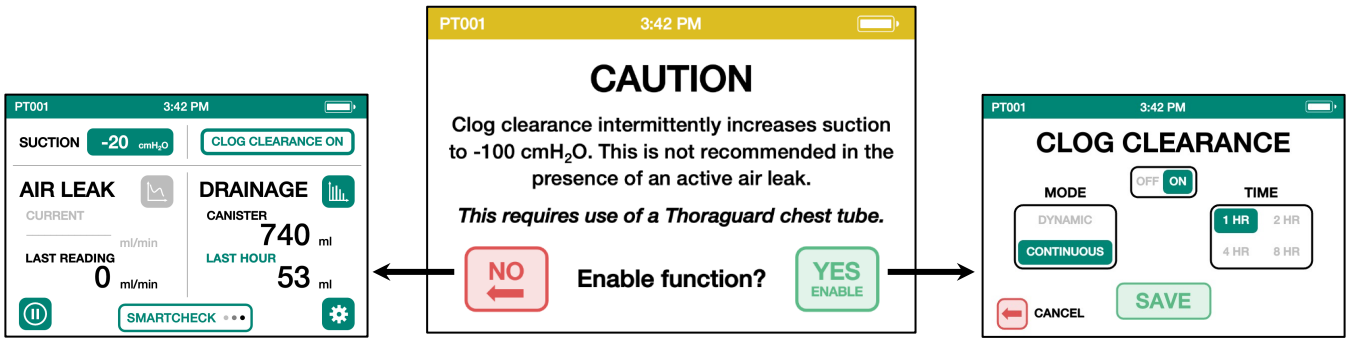
Clog Clearance Settings

[!] Clog clearance mode should only be used in combination with the Thoraguard Chest Tube Kit.

When clog clearance is enabled and dynamic mode is selected, Thoraguard automatically monitors for the completeness of the clog clearance cycle. If the system cannot detect the completion of the clog clearance cycle, Thoraguard will alert the user.

The clog clearance incomplete alert does not necessarily indicate an obstructed chest tube. In the event of an alert, always check the chest tube and SmartValve for potential obstructions when the alarm activates. During this time, the system will continue to provide suction at the pre-determined setting, including ongoing activation of the clog clearance functionality.

The alert also prompts the user to consider updating the clog clearance settings. Selecting “YES” takes the user to the clog clearance setting screen, where continuous clog clearance may be selected for a set period of time, after which dynamic clog clearance will resume and Thoraguard will again monitor for completeness of the clog clearance cycle. Clog clearance may also be turned off.



Dynamic Clog Clearance

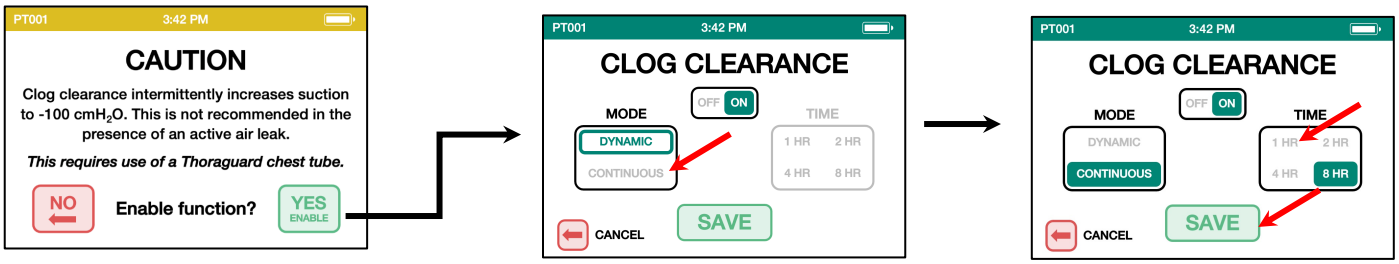
Dynamic clog clearance is the standard clog clearance mode, whereby cycles will intermittently run and last from 30 seconds to 5 minutes, with time between cycles ranging from 5 seconds to 1 minute, based on the pressure response of the system during the last cycle.

Continuous Clog Clearance

Continuous clog clearance maintains suction at -100 cmH_2O to clear the tube continuously. To enable this mode, press “CONTINUOUS” —the user must then select whether to enable this mode for 1 hour, 2 hours, 4 hours, or 8 hours. Once the selected period of time has passed, Thoraguard will automatically resume operation in dynamic mode.

[!] Continuous clog clearance maintains suction at -100 cmH_2O. Clog clearance incomplete alarms are unavailable in this mode.

Example Clog Clearance Incomplete Workflow



Timing (Post-Op)	0 - 24 hours	24 - 72 hours	72 hours +
Alert 1	**Check for chest tube kinks or visible build-up. Correct and press NO**		
2nd Alert (within 60 min of Alert 1)	Continuous Mode 1-hour	Continuous Mode 1-hour	Continuous Mode 1-hour (2x w/ each additional Alert) or Turn Clog Clearance Off if clinically appropriate
Alert 3+	Continuous Mode 2-hour (2x w/ each additional Alert)	Continuous Mode 2-hour (2x w/ each additional Alert) or Turn Clog Clearance Off if clinically appropriate	

Guidance is supplement. Not a replacement for the assessment and decision of a clinician.

Clamping Chest Tubes with Thoraguard

In certain clinician directed scenarios, it may be desirable to purposely seal off a patient's chest tube(s). To properly clamp a Thoraguard Chest Tube, the clamp should span both the drainage lumen and relief lumen as shown in Figure 1. To clamp a non-Thoraguard chest tube, the clamp should be placed on the chest tube as shown in Figure 2. The drainage tube should not be clamped (Figure 3). Thoraguard does not need to be powered down.

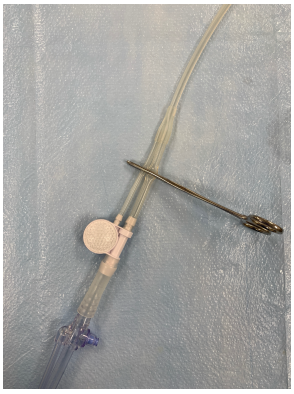


Figure 1: Clamped Thoraguard Chest Tube

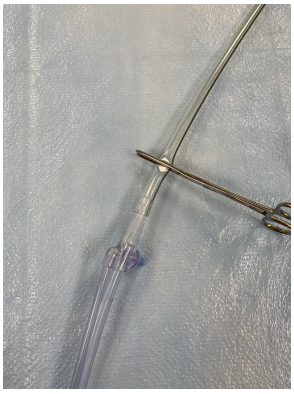


Figure 2: Clamped Traditional Chest Tube

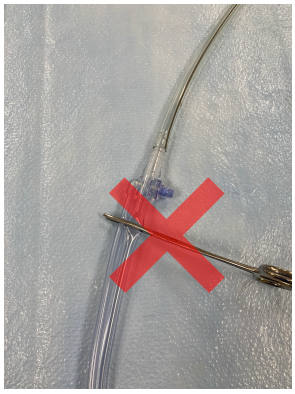


Figure 3: Incorrect Clamp location

Air Leak Assessment with Thoraguard

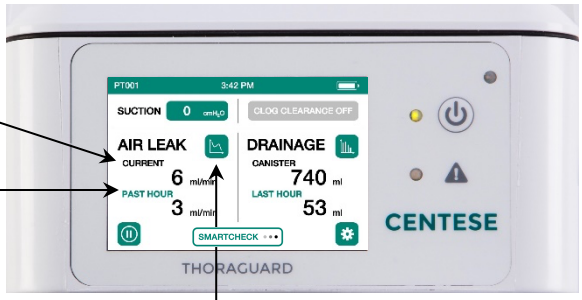
Thoraguard's digital air leak displays current and historical data to assess patient air leak and to inform clinical decisions. The information supports a comprehensive clinical assessment.

CURRENT:

A real-time measurement patient air leak.
Measured as the volume of air removed in mL/min.

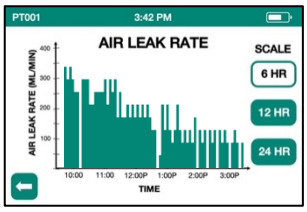
AVERAGE AIR LEAK

The average air leak measured over the specified time period. Default display is PAST HOUR (prior 60-minutes). Touch to display PAST 6 HOURS, PAST 12 HOURS, or PAST 24 HOURS.

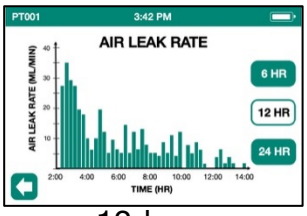


AIR LEAK TRENDS GRAPHS

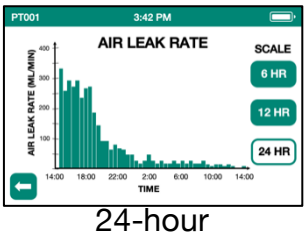
Displays patient air leak rate over 6-hour, 12-hour, and 24-hour time periods. This may be used to identify trends in a patient's air leak over time and the incidence of recent air leak fluctuations.



6-hour

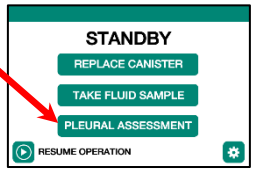


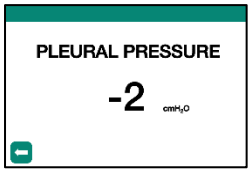
12-hour



24-hour

Air leak graphs update with incremental bars that represent the average air leak value over a 5-minute period. Note that the "Air Leak Rate" axis of the graph automatically adjusts.



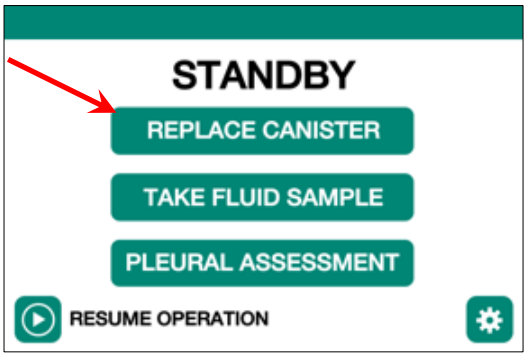


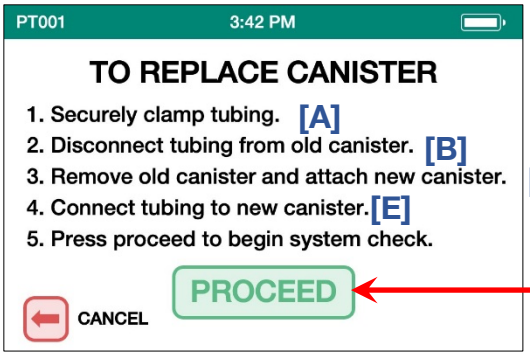
PLEURAL ASSESSMENT:

Note: this functionality only works with a chest tube in the intrapleural space.

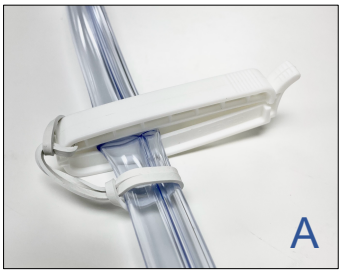
Pleural Assessment provides a real-time measurement of pressure at the drainage tubing barb as a proxy for pleural pressure. Pleural Assessment can be accessed at any point in therapy and may be useful if desires to monitor for pleural pressure fluctuations generated by patient maneuvers such as a Cough or Valsalva. This can be useful for checking if a chest tube in the pleural spaces is occluded. Pleural Assessment is not designed to be a single point assessment of air leak resolution.

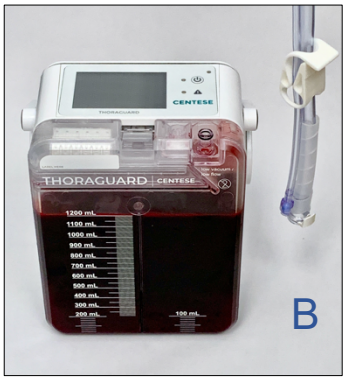
Thoraguard Canister Replacement Sequence

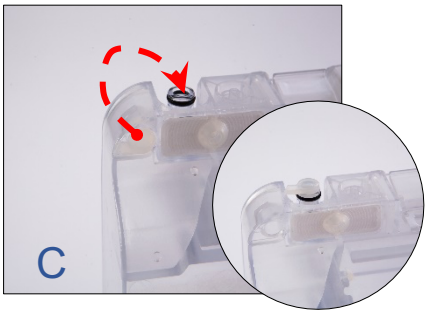




Complete A – E then press **PROCEED**





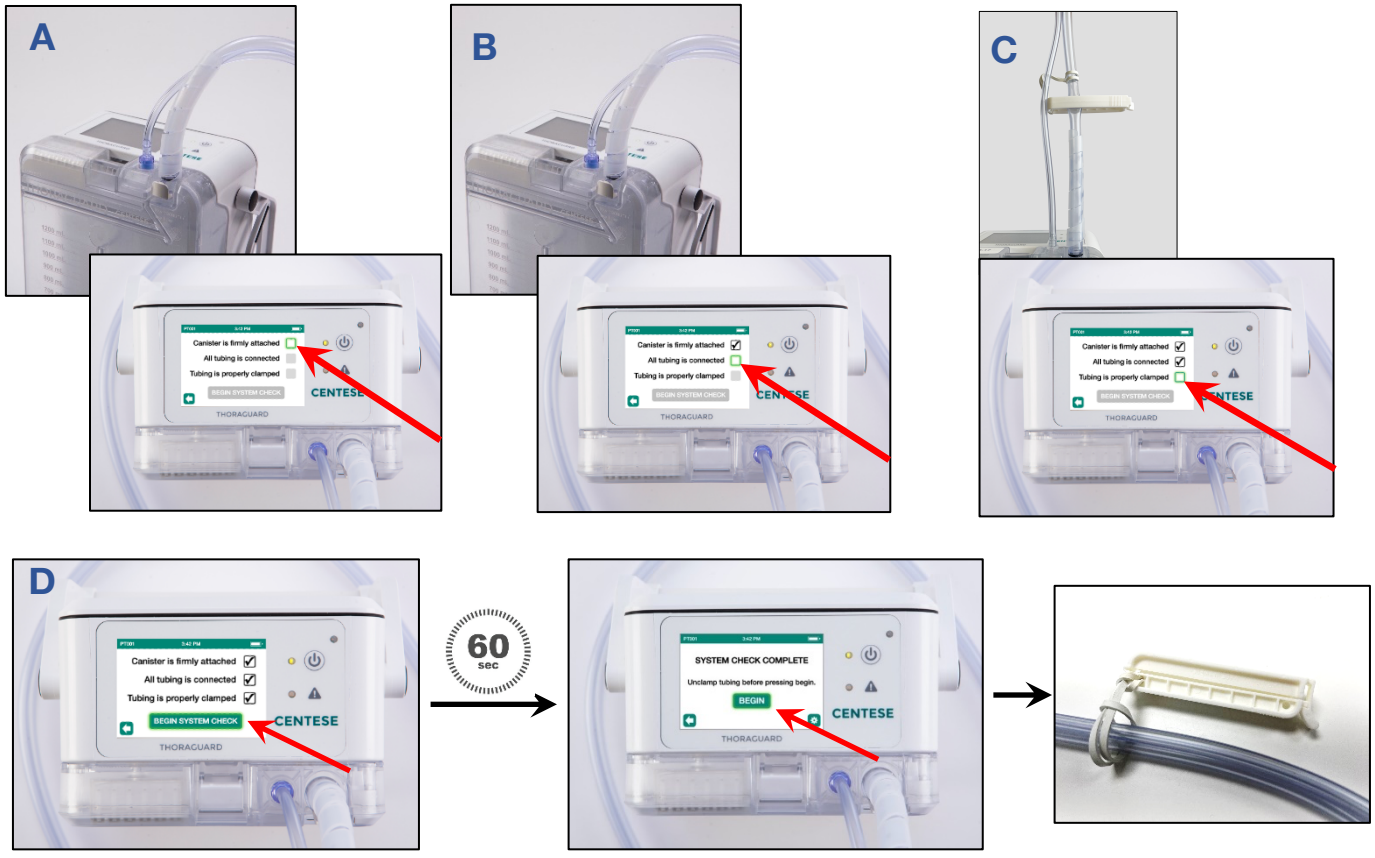


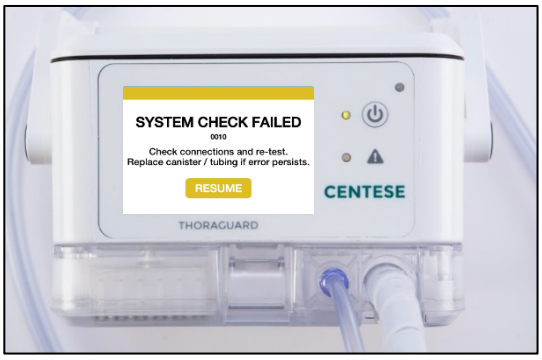
PROCEED: Complete System Check Sequence* (next page)

*Failure to complete System Check Sequence after Canister Replacement will result in inaccurate data readings

Thoraguard System Check Sequence

1. Confirm the canister is firmly attached and check off on screen. **[A]**
2. Confirm all tubing is properly connected and check off on screen. **[B]**
3. Properly clamp drainage tube and check off on screen. **[C]**
4. Press “BEGIN SYSTEM CHECK” to continue. **[D]**





SYSTEM CHECK FAILED Warning:

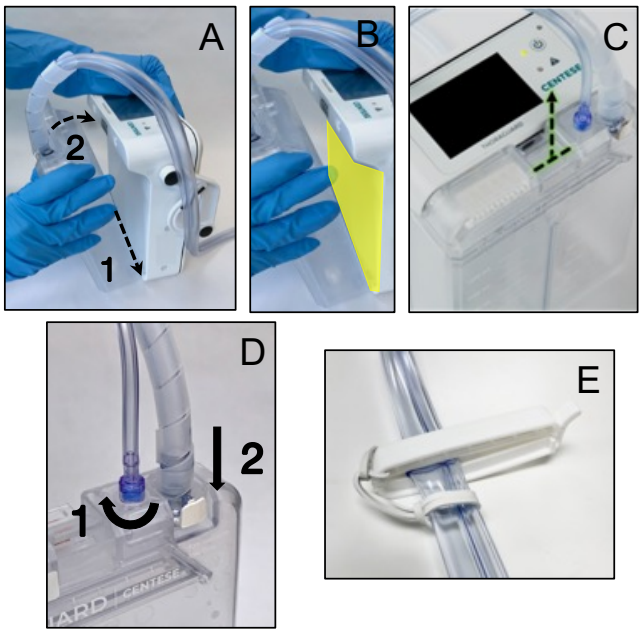
1. Check canister connection.
2. Confirm tubing connection.
3. Unclamp tubing and re-clamp – ensuring clamp is fully engaged and tubing is fully sealed.
4. Press RESUME.
5. Re-try System Check Sequence.

System Check Fail Troubleshooting

SYSTEM CHECK FAILED
Move to **Troubleshooting Stage 1**

<u>Troubleshooting Stage 1</u>:
A. Ensure canister is properly connected.
B. Dry surface between canister and control module
C. Confirm canister latch is fully engaged
D. Confirm drainage lines are securely attached.
E. Clamp tubing prior to system check
    1. Consider using additional clamp (double clamp)
F. Re-try system check sequence 3 times

IF **SYSTEM CHECK FAILED**
Move to **Troubleshooting Stage 2**



<u>Troubleshooting Stage 2</u>:
A. Canister may be damaged
    1. Replace canister (retain drainage line)

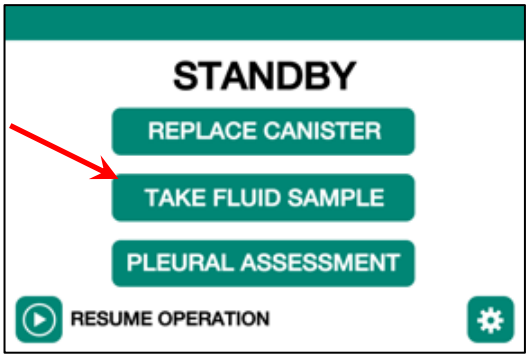
IF **SYSTEM CHECK FAILED**
Move to **Troubleshooting Stage 3**

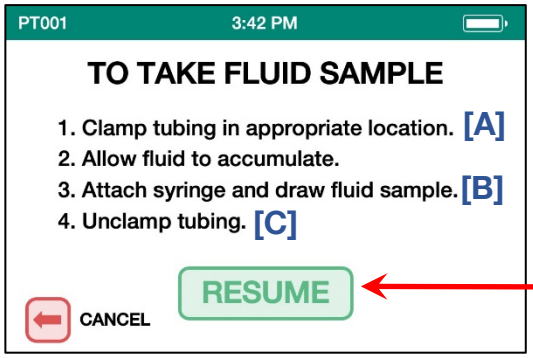
<u>Troubleshooting Stage 3</u>:
A. Drainage line may be damaged
    1. Replace drainage line

IF **SYSTEM CHECK FAILED**
Move to **Troubleshooting Stage 4**

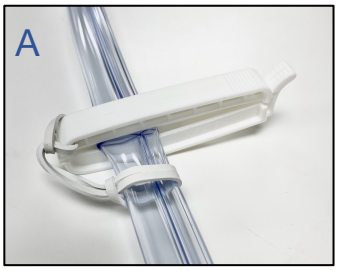
<u>Troubleshooting Stage 4</u>:
A. Control Module may be damaged
    1. Replace Control Module
    2. Tag Control Module for service inspection

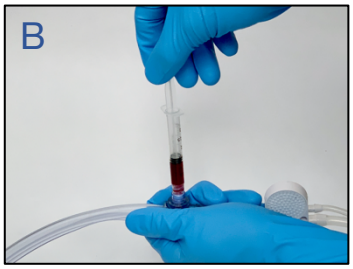
Thoraguard Fluid Sample Guide

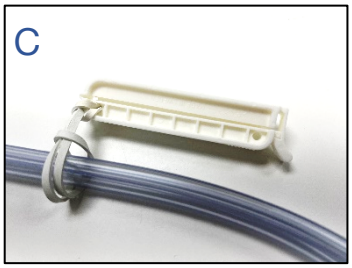




Complete A – C
then **RESUME**







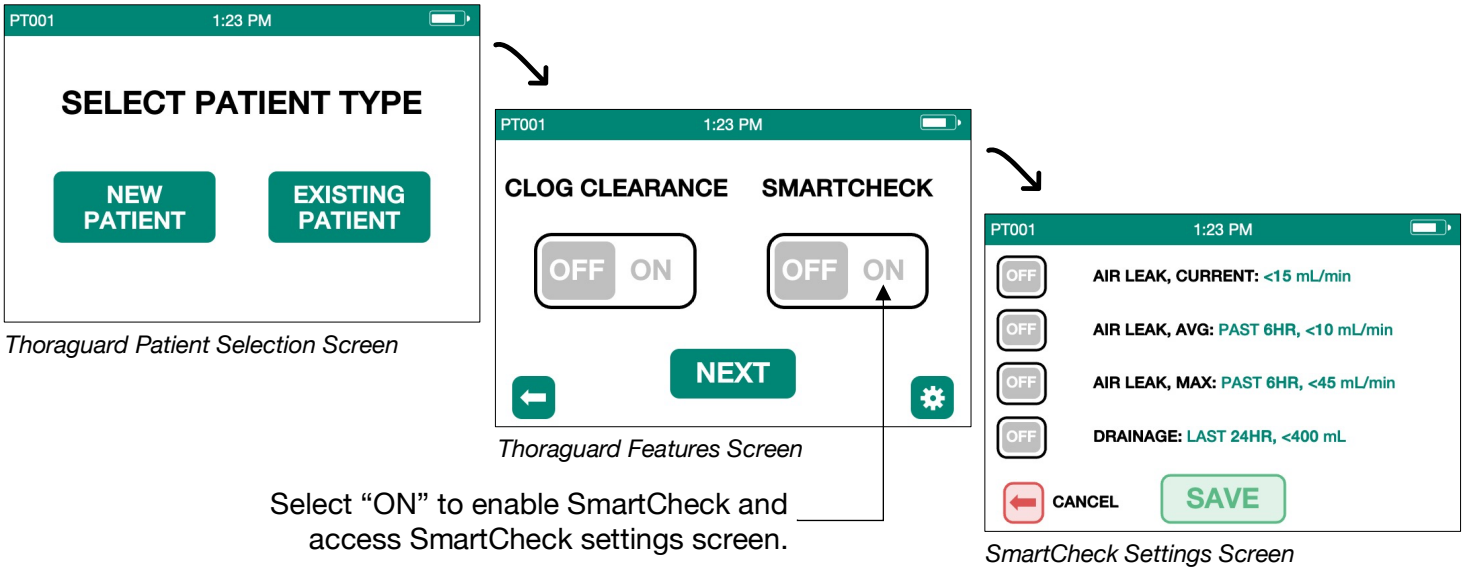
Thoraguard SmartCheck Guide

SmartCheck Functionality

SmartCheck monitors historical air leak and drainage data from the control module over the course of the patient's recovery against user-specified criteria and provides real-time status and notification on the screen. SmartCheck is capable of monitoring the following user-specified criteria:

• Current air leak	5-95mL/min	N/A
• Average air leak	5-95mL/min	Past 2HR, 4HR, 6HR, and 12HR
• Maximum air leak	5-95mL/min	Past 2HR, 4HR, 6HR, and 12HR
• Drainage output	50-500mL	Last 6HR, 8HR, 12HR, and 24HR

SmartCheck Setup



Thoraguard Patient Selection Screen

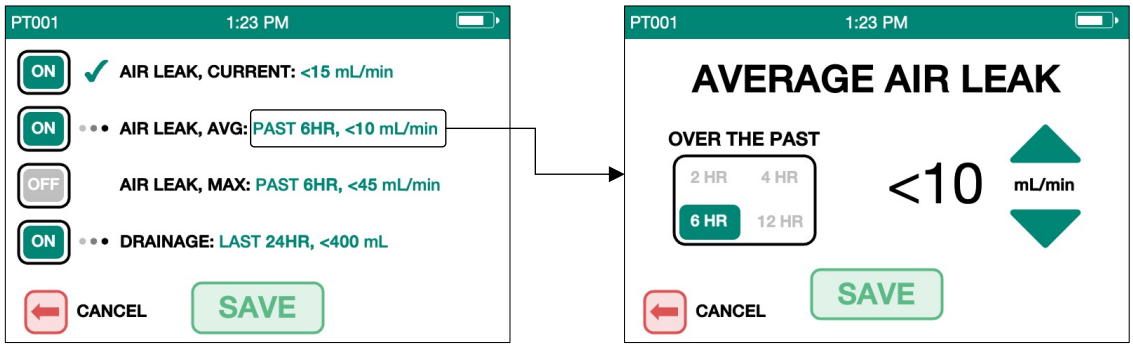
Thoraguard Features Screen

Select "ON" to enable SmartCheck and access SmartCheck settings screen.

SmartCheck Settings Screen

SmartCheck Settings

The threshold values for each SmartCheck criterion can be accessed from the SmartCheck settings screen. From this screen, each criterion can be turned ON or OFF, a status indicator for each criterion is displayed, and each criterion threshold can be viewed and adjusted as needed. Criteria may be turned ON or OFF at any time.



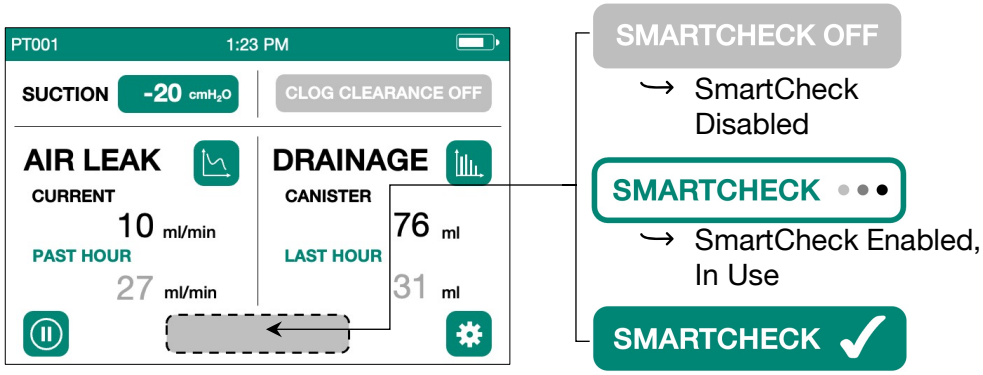
SmartCheck Settings Screen

SmartCheck Criterion #2 Settings Screen

SmartCheck In Use

On the main screen, in the bottom center area, the SmartCheck button allows access to the SmartCheck settings screen.

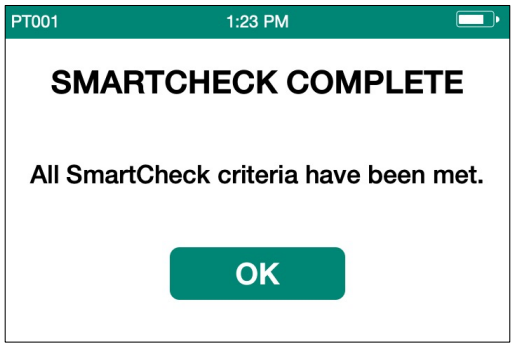
In addition, the button appearance changes to indicate the real-time status of SmartCheck.



Main Screen

SmartCheck Complete Notification

When all enabled SmartCheck criteria have met their respective threshold values for 15 minutes continuously, the Control Module will provide an on-screen notification with auditory information signal to indicate SmartCheck is complete.



SmartCheck Complete Notification Screen

Multi-Step Alarm Troubleshooting

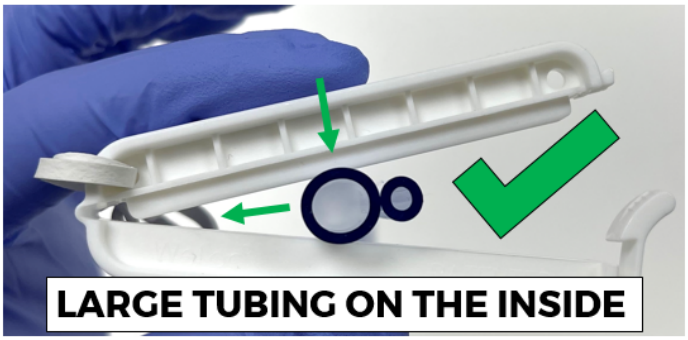
A selected list of alarms and troubleshooting steps is provided below. “What to Do” with multiple troubleshooting steps should be followed sequentially. Should a step yield a resolved alarm condition further progression is not necessary.

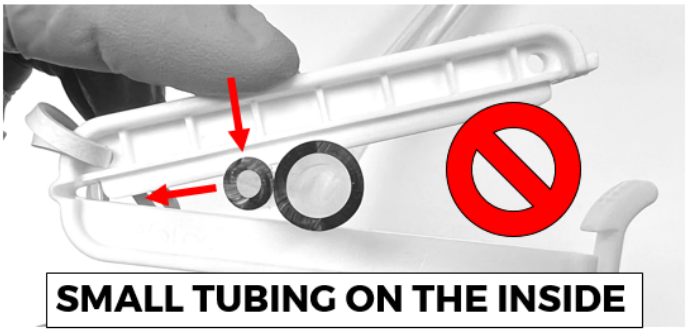
Displayed Message	Description	Alarm Level	What to Do
Use Warnings			
CANISTER DISCONNECTED 0035	The canister has become disconnected.	**High**	1) Re-connect canister. 2) Ensure canister latches properly. 3) Replace canister. 4) If alarm persists despite canister firmly attached and no visible damage, consider replacing Control Module.
DRAINAGE LINE OBSTRUCTED 0040	A clog has been detected in the drainage tubing.	**High**	1) Check tubing for clogs. 2) Confirm clamp is unclamped. 3) Inspect chest tube connector for build-up. 4) Replace drainage line.
EXCESSIVE AIR LEAK 0055	A large air leak (over 5000 ml/min) has been detected.	**High**	1) Check all connections for leaks. 2) Inspect all tubing for damage. 3) Ensure canister is securely attached to Control Module. 4) Replace canister and drainage line.
CANISTER FULL 0015	The canister is full (over 1200 ml).	**Medium**	1) If <100 ml of fluid in canister, follow CANISTER REPLACEMENT sequence with existing canister. 2) If >100 ml of fluid in canister, replace canister; follow CANISTER REPLACEMENT sequence
CLOG CLEARANCE INCOMPLETE 0045	An incomplete clearance cycle has been detected.	**Medium**	1) Ensure Thoraguard Chest Tube and SmartValve are connected. 2) Check chest tube for clogs or kinks. 3) Follow Clog Clearance Incomplete workflow
Control Module System Faults			
CONTROL MODULE FAULT 0210	Internal error with Control Module during startup.	**Medium**	1) Restart Control Module 2) Replace Control Module and return unit to Centese for repair
CONTROL MODULE FAULT 0215	Internal error with Control Module during use.	**High**	1) Restart Control Module 2) Replace Control Module and return unit to Centese for repair
FROZEN SCREEN + RED LIGHT	Internal error with Control Module during use.	**High**	1) Restart Control Module 2) Replace Control Module and return unit to Centese for repair

24/7 Tech Support: 402-300-3150

Using the Drainage Tubing Clamp

When clamping the drainage tubing, clamp perpendicularly across the tubing with the large tube facing the inside hinge. Position the tube near the inside hinge and clamp without overlapping the tubing as shown below:





Frequently Asked Questions (FAQs)

1. **Canister drainage reading displays "NOT LEVEL"**
   Thoraguard has integrated leveling sensors in the control module which improve the accuracy of digital measurements. When in use, if the control module is not held upright or placed on a level surface the words "NOT LEVEL" appear under "CANISTER" drainage measurement section of the Home Screen. To resolve this, place the control module on a level surface and wait for the system to stabilize-this may take a few moments.

   Note, if Thoraguard has less than 200 mL of drainage, the control module must be level within ±5°. If greater than 200 mL of drainage has accumulated, the control module must be level within ±10°. This notification is different than the "Device Tipped Over" Alarm.

2. **Canister drainage reading is higher than actual amount of fluid in canister**
   When Thoraguard has been calibrated properly, the accuracy of the drainage volume measurement is ±5% of the total volume of fluid in the canister. This applies to volumes greater than 100 mL. If the digital display of Canister exceeds the actual volume amount by more than approximately 5%, this may be a caused by specific scenarios:
   a) Excessive fluid sloshing or foaming during movement or ambulation – this can cause digital readings to skew high due to fluid movement in the canister. Once increased, the digital readings do not return lower. If no further sloshing occurs, normal fluid accumulation will cause the total amount of fluid to match the digital reading, at which point the measurements will once again begin to correlate accurately. Alternatively, the canister may be replaced with a new canister and completion of the Canister Replacement sequence.
   b) If the canister is tipped over this may result in the fluid measurement sensors incorrectly detecting an increase in fluid volume. This can result in a discrepancy between the digitally displayed fluid drainage levels and actual fluid levels. If this occurs, Thoraguard should be kept in a stable and upright position until normal fluid accumulation will cause the total amount of fluid to match the digital reading, at which point the measurements will once again begin to correlate accurately. Alternatively, the canister may be replaced with a new canister and completion of the Canister Replacement sequence.
   c) The canister was replaced, but system check was not completed correctly. When the Canister Replacement sequence is performed completely, the drainage reading under canister resets to -- mL. If this scenario occurred, the Canister Replacement sequence can be re-run with the existing canister if less than 50 mL of fluid is in the canister. If there is greater than 50 mL of fluid in the canister a new replacement canister should be connected and Cannister Replacement with System Check should be completed correctly.

3. **Canister Full Alarm continues despite canister being recently replaced**
   If the canister is replaced, but system check is not completed correctly, the Canister Full Alarm may continue to trigger. If the Canister Replacement sequence is performed correctly, the canister drainage reading displayed resets to -- mL. If this occurred and there is <50 mL of fluid is in the canister, the Canister Replacement sequence can be re-run with the existing canister. If there is >50 mL of fluid in the canister a new replacement canister should be connected and the full Canister Replacement sequence performed.

4. **The Control Module is not charging despite being plugged in**
   Troubleshooting steps:
   a) Confirm that the correct power supply is being used. The words "Centese Thoraguard" should be prevalent on the black power transformer.
   b) Ensure that the connection between the gray power cord and black transformer is secure and the green light on the black transformer is illuminated when the power cord is plugged.

c) The power plug is fully inserted into the power port on the side of the Control Module. In some cases, the connection may feel snug, but the system requires additional force to engage the final 1/8". Rotating the plug while pushing into the power port may help.

The charging battery icon will appear when the control module and power supply are properly connected.

5. **Can the Clog Clearance feature be used with any chest tube?**
   No. The Clog Clearance feature is for use with the Thoraguard Chest Tube Kit only. The Thoraguard Control Module and Drainage Kit can be used with any standard chest tube. However, activating the Clog Clearance feature with a chest tube other than a Thoraguard Chest Tube will not provide active clearance and may trigger a Clogged Chest Tube alarm.

6. **If a Control Module needs to be replaced while on a patient, can I use the same canister?**
   No. If a Control Module needs to be replaced while providing therapy to a patient, a new canister should be used and the New Patient set-up sequence should be followed. Re-use of an existing canister will cause errors in the drainage readings. If the drainage tubing connected to the chest tube is intact, this may be reused.

7. **The System will not pass system check, what do I do now?**
   For Thoraguard to pass system check, the Control Module must have 3 core steps in place during the entire system check process:
   A. The canister must be firmly attached to the Control Module with both feet (located at the base of the system) engaged and the canister securely latched.
   B. Both drainage lines must be securely connected. Note, over-tightening of the connectors may result in damage to the canister.
   C. The drainage line must be entirely clamped so that no airflow can occur during the entire system check sequence.

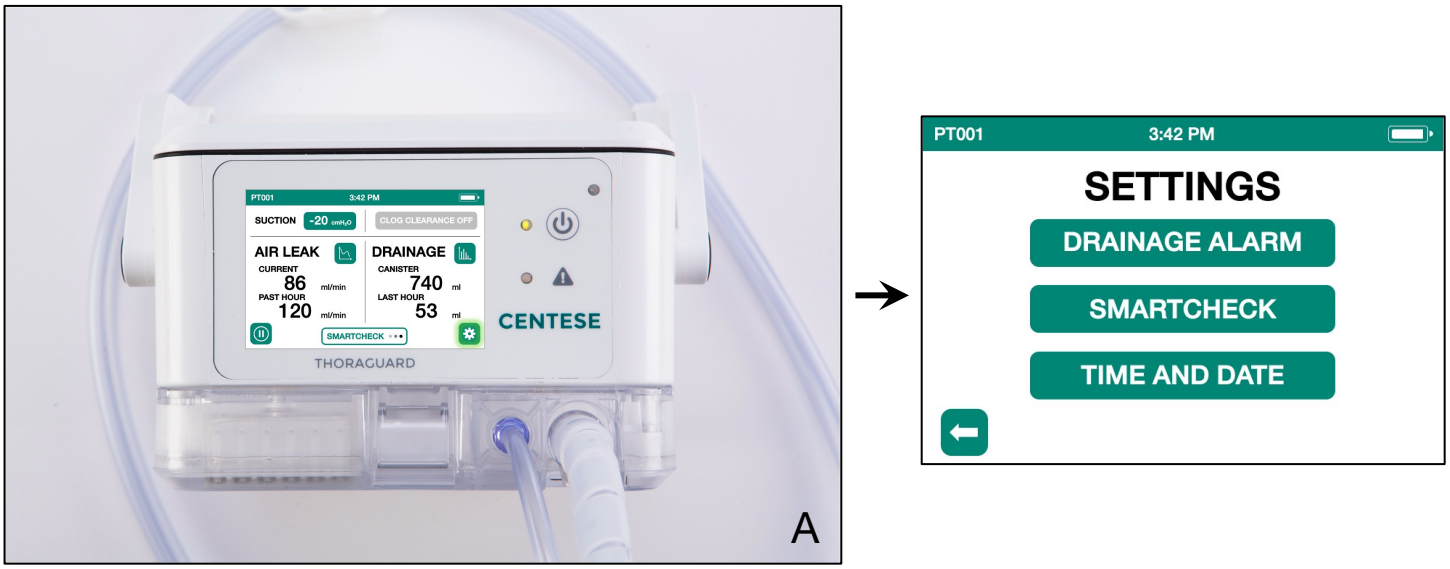
   The first step of troubleshooting should be to re-try the system check sequence confirming A–C above. Additional troubleshooting steps can be found on Page 13 of this Resource Guide.

8. **Does Centese have Technical Support?**
   Yes. Technical Support via phone is available 24/7. Call: 402-300-3150.

Thoraguard Time & Date Update

Settings

Thoraguard has certain settings that are adjustable by the user, including a drainage alarm, SmartCheck defaults, and time and date. To access the settings screen, press the button in the bottom-right of the screen [A].

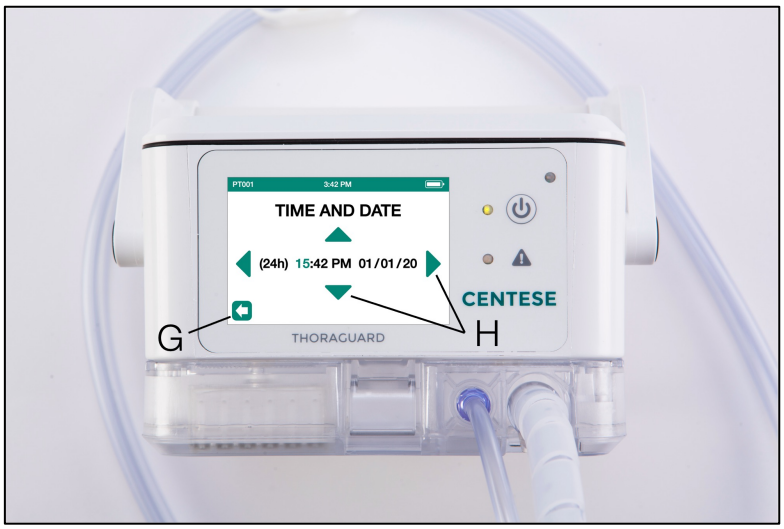


Time and Date

Thoraguard has a built-in real time clock to enable syncing of data timestamps with the rest of the patient's medical record. To adjust this clock, press "TIME AND DATE".

Once in the setting screen, press the right and left arrows to change the value being adjusted and the up and down arrows to adjust the value [H].

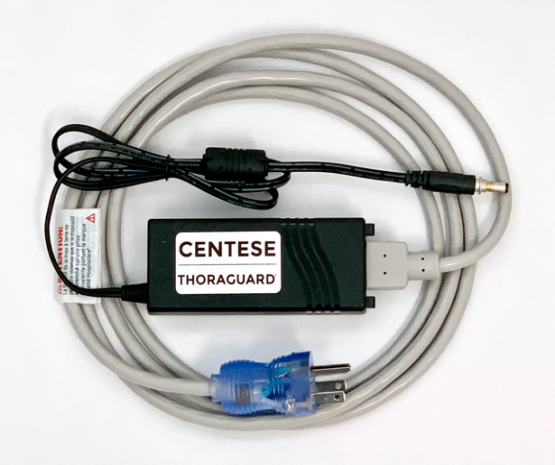
When complete, press the back button to enter the settings screen, and the back button again to resume operation [G].



Thoraguard After Use Processing

Thoraguard Control Module and Power Supply should be cleaned and reused following standard hospital wipe down protocols.

Thoraguard Control Module
TGCM1000



Thoraguard Power Supply
TGPS0100

Once usage of Thoraguard is complete:

1. Discontinue usage following appropriate Power Down protocol
2. Wipe Control Module down with appropriate cleaning wipe
3. Return Control Module and Power Cord to designated location:_____

Contact number for pick-up of discontinued units: _____

Storage location for cleaned units: _____

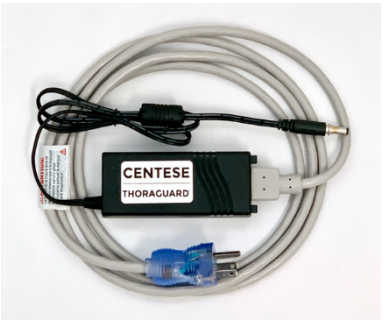
Contact for storage cleaned units: _____

Note: The Thoraguard Control Module is intended to be used and stored in a hospital environment between 50°F and 104°F (10°C to 40°C), relative humidity of 10-90%, non-condensing, altitude within 0 to 2,000 meters (6,560 feet), and pressure of 101 kPa to 81 kPa. **Do not use Thoraguard near active HF Surgical Equipment or MRI.**

Thoraguard Cleaning Instructions

Thoraguard Control Module
TGCM1000

Thoraguard Power Supply
TGPS0100



The exterior surfaces of the Control Module may be cleaned with a soft, non-abrasive cloth dampened with warm water / mild detergent, alcohol, or a non-staining chemical disinfectant. Always dilute cleaning agents according to manufacturer's instructions, or lowest possible concentration. Clean by spraying cleanser directly onto a soft lint-free cloth and then wiping surfaces dry.

Take extra care when cleaning the screen of the Control Module because it may be damaged by aggressive cleaning methods. Wipe around, not over, connector sockets when possible. Clean around the barbs where the drainage canister connects, but pay special attention not to leave dirt or lint inside the barbs.

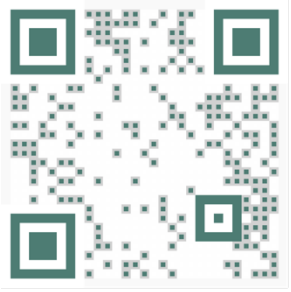
Recommended cleaning and disinfecting agents are listed below. In addition, follow your institution's guidelines for cleaning and disinfecting of devices.

Recommended Cleaning Agents	Mild soaps
	Common bleach 10% solution diluted with water
	Mild detergent mixed with water
	Isopropyl alcohol 70% solution[1]
Recommended Disinfecting Agents	Alcohol based (E.g. Ethanol 70%[1], Isopropyl 70%[1], Cutasept®, Hospisept®, Kodan® Tinktur Forte, Sagrosept®, Spitacid®, Sterilium®)
	Aldehyde based (E.g. Dilution of formaldehyde (3-5%), Cidex®, Gigasept®)
	Bleach (E.g. Dilution of sodium hypochlorite (laundry bleach): concentration ranging from 500 ppm (1:100 dilution of household bleach), Hydrogen peroxide 3%[1], Clorox (1:10 dilution), Dakin's Solution)
	Phenol based (E.g. Wofasept®, Sporicidin®)

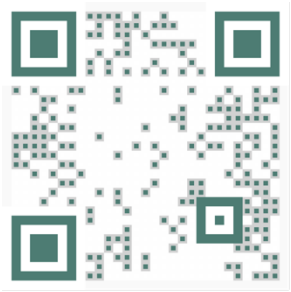
Acceptable Common Cleaning Wipes:

Thoraguard

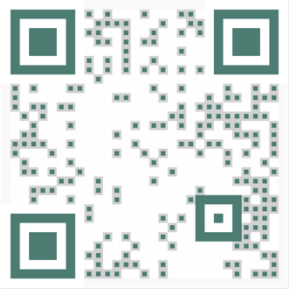
Instructional Videos



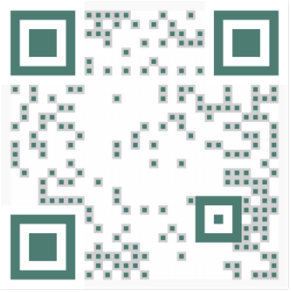
Thoraguard
Full Length Instructional Video
(26:59)



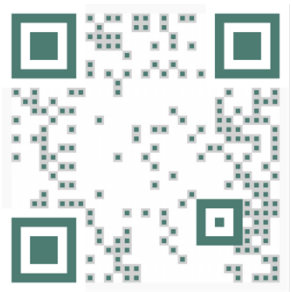
Thoraguard
Canister Replacement
(02:30)



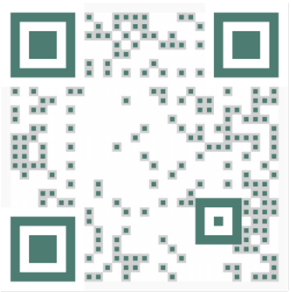
Thoraguard
Power Down & Disconnection
(01:31)



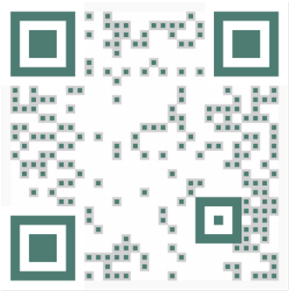
Thoraguard
Set-up in the OR
(04:57)



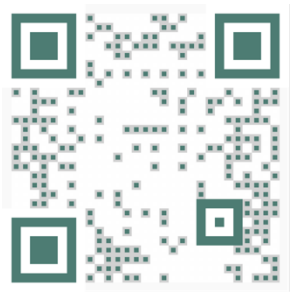
Thoraguard
Taking a Fluid Sample
(01:03)



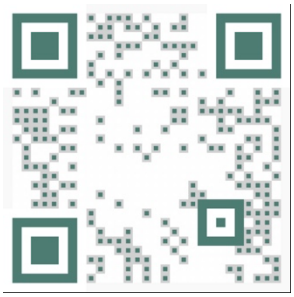
Thoraguard
Chest Tube Set-up
(02:54)



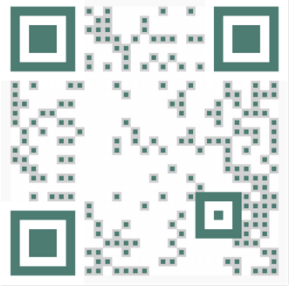
Thoraguard
System Operation Overview
(02:43)



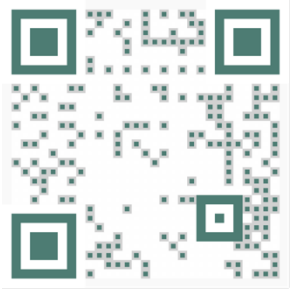
Thoraguard
Pleural Assessment Overview
(00:46)



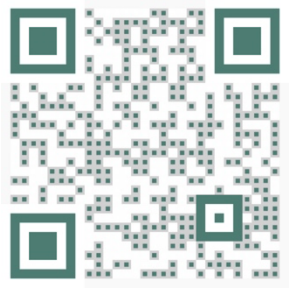
Thoraguard
Set-up Outside of the OR
(02:39)



Thoraguard
Data Trends Overview
(02:00)



Thoraguard
Settings Menu Overview
(01:34)



Thoraguard
Clog Clearance Incomplete
(01:16)

THORAGUARD DIGITAL CHEST DRAINAGE SYSTEM: CLINICAL COMPETENCY CHECKLIST WITH STANDARD CHEST TUBE – OPERATING ROOM

Name: _____ Date: _____ Unit: _____

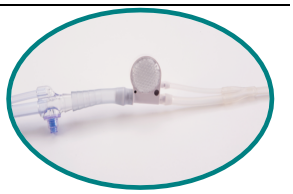
The Thoraguard System is a digital chest drainage system that quantifies air leak levels, measures fluid drainage, and includes patient safety alarms. The Control Module is battery-powered with an integrated pump for built-in suction, eliminating the need for connection to wall suction or independent portable suction.

	Completed	Not Completed
Battery and Transport		
Identify the power cord and connection, battery life, and the battery charging icon.	☐	☐
Demonstrate appropriate transport/ambulation positioning, retractable hooks and/or handle, maintain upright position.		
Ensure power cord is sent with Thoraguard during transfer.		
Scrub Set Up		
Demonstrate connecting tubing to canister, proper clamping of tubing, and hand off to circulator.	☐	☐
Identify Y-connectors and functions.		
Circulator Set Up		
Understand when to select NEW PATIENT vs EXISTING PATIENT.	☐	☐
Explain and demonstrate when to use Clog Clearance: OFF (gray) if using standard chest tube. Only ON (green) when connected to a Thoraguard Chest Tube.		
Demonstrate how to enable SmartCheck criteria.		
Adjust suction settings accurately: SmartSeal (Zero Suction) 0 cmH2O to -100 cmH2O.		
Complete System Check steps successfully and explain the purpose of each step.		
Demonstrate touchscreen navigation and screen unlock sequence after inactivity.		
Air leak Monitoring		
Explain air leak reading CURRENT and frequency of display updates.	☐	☐
Drainage Monitoring		
Differentiate between CANISTER and LAST HOUR drainage values.	☐	☐
Explain how drained fluid flows into the canister between the right and left columns.		
Understand the limitations of the digital drainage readings under 50 ml and describe the manual tracking technique.		
Time Change Settings		
Access the Settings menu and adjust time and date accurately.	☐	☐
Troubleshooting: Recognize Alert Types and Describe Appropriate Actions		
Identify Low Battery Alert (<30%) and Battery Depleted Alert (<15%) and describe correct response.	☐	☐

Device Tipped Over Alert: demonstrate corrective actions and describe impact to canister volume readings.		
Managing Fluid Drainage reading discrepancy: 1) Manual tracking or replace canister. 2) Awareness that all other Control Module functions are unchanged.		
Excessive Air Leak: Continuous air leak reading >5000 ml/min and describe the appropriate response.		
Failed System Check troubleshooting workflow: 1) Retry System Check following displayed instructions. 2) Ensure canister is dry, disconnect and reconnect canister, clamp large drainage tube, and retry with existing Drainage Kit. 3) If System Check continues to fail, contact Centese Customer Service – Control Module may require servicing.		
Identify the Centese 24/7 technical support phone number.		

This checklist is provided as a sample for reference purposes only and should not be used as a substitute for established hospital policies, procedures, or protocols.

THORAGUARD DIGITAL CHEST DRAINAGE SYSTEM: CLINICAL COMPETENCY CHECKLIST WITH SELF-CLEARING CHEST TUBE – OPERATING ROOM



Name: _____ Date: _____ Unit: _____

The Thoraguard Chest Tube offers automatic self-clearing feature. The Thoraguard System is a digital chest drainage system that quantifies air leak levels, measures fluid drainage, and includes patient safety alarms. The Control Module is battery-powered with an integrated pump for built-in suction, eliminating the need for connection to wall suction or independent portable suction.

	Completed	Not Completed
Battery and Transport		
Identify the power cord and connection, battery life, and the battery charging icon.	☐	☐
Demonstrate appropriate transport/ambulation positioning, retractable hooks and/or handle, maintain upright position.		
Ensure power cord is sent with Thoraguard during transfer.		
Scrub Set Up		
Demonstrate connecting tubing to canister, proper clamping of tubing, and hand off to circulator	☐	☐
Identify Y-connectors and functions.		
Identify the Thoraguard Chest Tube, sizes available, SmartValve, and unique features of the chest tube.		
Explain the steps to soak the chest tube in sterile water or saline		
Describe proper insertion technique, orientation, and suturing location		
Demonstrate process of cutting the chest tube and explain how to flush the chest tube prior to connecting the Smart Valve, if needed.		
Circulator Set Up		
Understanding when to choose NEW Patient vs EXISTING Patient	☐	☐
Explain and demonstrate when and how to activate Clog Clearance: ON (green) when connected to a Thoraguard Chest Tube. OFF (gray) if using standard chest tube.		
Demonstrate how to enable SmartCheck criteria.		
Adjust suction settings accurately: SmartSeal (Zero Suction) 0 cmH2O to -100 cmH2O.		
Complete System Check steps successfully and explain the purpose of each step.		
Demonstrate touchscreen navigation and screen unlock sequence after inactivity.		
Drainage Monitoring		
Differentiate between CANISTER and LAST HOUR drainage values.	☐	☐
Explain how drained fluid flows into the canister between the right and left columns.		
Understand the limitations of the digital drainage readings under 50 ml and describe the manual tracking technique.		
Air leak Monitoring		
Explain air leak reading frequency.	☐	☐

Time Change Settings		
Access the Settings menu and adjust time and date accurately.	☐	☐
Troubleshooting: Recognize Alert Types and Describe Appropriate Actions		
Identify Low Battery Alert (<30%) and Battery Depleted Alert (<15%) and describe correct response.	☐	☐
Device Tipped Over Alert: demonstrate corrective actions and describe impact to canister volume readings.		
Managing Fluid Drainage reading discrepancy: 3) Manual tracking or replace canister. 4) Awareness that all other Control Module functions are unchanged.		
Excessive Air Leak: Continuous air leak reading >5000 ml/min and describe the appropriate response.		
Troubleshoot Clog Clearance Incomplete Alarm in the OR		
Failed System Check troubleshooting workflow: 4) Retry System Check following displayed instructions. 5) Ensure canister is dry, disconnect and reconnect canister, clamp large drainage tube, and retry with existing Drainage Kit. 6) If System Check continues to fail, contact Centese Customer Service – Control Module may require servicing.		
Identify the Centese 24/7 technical support phone number.		

This checklist is provided as a sample for reference purposes only and should not be used as a substitute for established hospital policies, procedures, or protocols.

THORAGUARD DIGITAL CHEST DRAINAGE SYSTEM: CLINICAL COMPETENCY CHECKLIST WITH STANDARD CHEST TUBE – POST-OP

Name: _____ Date: _____ Unit: _____

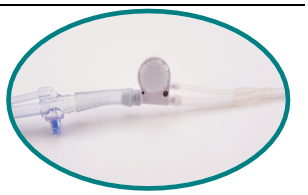
The Thoraguard System is a digital chest drainage system that quantifies air leak levels, measures fluid drainage, and includes patient safety alarms. The Control Module is battery-powered with an integrated pump for built-in suction, eliminating the need for connection to wall suction or independent portable suction.

	Completed	Not Completed
Battery and Transport		
Identify the power cord and connection, battery life, and the battery charging icon.	☐	☐
Demonstrate appropriate transport/ambulation positioning, retractable hooks and/or handle, maintain upright position.		
Ensure power cord is received with Thoraguard during transfer.		
Home Screen Navigation		
Demonstrate touchscreen navigation and screen unlock sequence after inactivity.	☐	☐
Adjust suction settings accurately: SmartSeal (Zero Suction) 0 cmH2O to -100 cmH2O.		
Explain and demonstrate when to use Clog Clearance: OFF (gray) if using standard chest tube. Only ON (green) when connected to a Thoraguard Chest Tube.		
Identify STANDBY button and SETTINGS button.		
Air leak Monitoring		
Differentiate between CURRENT and PAST HOUR air leak values.	☐	☐
Identify thresholds for clinical significance and when to notify provider.		
Access air leak trends.		
Drainage Monitoring		
Differentiate between CANISTER and LAST HOUR drainage values.	☐	☐
Explain how drained fluid flows into the canister between the right and left columns.		
Understand the limitations of the digital drainage readings under 50 ml and describe the manual tracking technique.		
Access drainage trends.		
Smart Check		
Understanding of SmartCheck and its ability to provide clinical decision assistance.	☐	☐
Identify different stages of SmartCheck: OFF, IN PROGRESS, COMPLETE.		
Describe process when Smart Check status is achieved.		
Canister Replacement		
Demonstrate placing Control Module in STANDBY, selecting REPLACE CANISTER, and clamping Drainage Tube.	☐	☐
Demonstrate completion of System Check and explain the purpose of each step.		
Taking a Fluid Sample		
Identify and demonstrate use of fluid sample port.	☐	☐

Time Change Settings		
Access the Settings menu and adjust time and date accurately.	☐	☐
Discontinuation of Chest Tube		
Demonstrate powering off the Control Module while keeping canister connected. Clamp and remove the chest tube per hospital procedure.	☐	☐
Disconnect Canister from Control Module. Discard canister, tubing, and chest tube appropriately.		
Explain the Control Module and power cord cleaning and recirculation process.		
Troubleshooting: Recognize Alert Types and Describe Appropriate Actions		
Identify Low Battery Alert (<30%) and Battery Depleted Alert (<15%) and describe correct response.	☐	☐
Device Tipped Over Alert: demonstrate corrective actions and describe impact to canister volume readings.		
Managing Fluid Drainage reading discrepancy: 5) Manual tracking or replace canister. 6) Awareness that all other Control Module functions are unchanged.		
Excessive Air Leak: Continuous air leak reading >5000 ml/min and describe the appropriate response.		
Failed System Check troubleshooting workflow: 7) Retry System Check following displayed instructions. 8) Ensure canister is dry, disconnect and reconnect canister, clamp large drainage tube, and retry with existing Drainage Kit 9) If System Check continues to fail, contact Centese Customer Service – Control Module may require servicing.		
Identify the Centese 24/7 technical support phone number.		

This checklist is provided as a sample for reference purposes only and should not be used as a substitute for established hospital policies, procedures, or protocols.

THORAGUARD DIGITAL CHEST DRAINAGE SYSTEM: CLINICAL COMPETENCY CHECKLIST WITH SELF-CLEARING CHEST TUBE – POST-OP



Name: _____ Date: _____ Unit: _____

The Thoraguard Chest Tube offers automatic self-clearing feature. The Thoraguard System is a digital chest drainage system that quantifies air leak levels, measures fluid drainage, and includes patient safety alarms. The Control Module is battery-powered with an integrated pump for built-in suction, eliminating the need for connection to wall suction or independent portable suction.

	Completed	Not Completed
Battery and Transport		
Identify the power cord and connection, battery life, and the battery charging icon.	☐	☐
Demonstrate appropriate transport/ambulation positioning, retractable hooks and/or handle, maintain upright position.		
Ensure power cord is sent with Thoraguard during transfer.		
Home Screen Navigation		
Demonstrate touchscreen navigation and screen unlock sequence after inactivity.	☐	☐
Adjust suction settings accurately: SmartSeal (Zero Suction) 0 cmH2O to -100 cmH2O.		
Identify STANDBY button and SETTINGS button.		
Use of Thoraguard Self-Clearing Chest Tube		
Identify and explain the differences between standard chest tube and Thoraguard Self-Clearing chest tube.	☐	☐
Explain and demonstrate when to use Clog Clearance: OFF (gray) if using standard chest tube. Only ON (green) when connected to a Thoraguard Chest Tube.		
Understand function of Clog Clearance and differentiate between CONTINUOUS and DYNAMIC.		
Clog Clearance Incomplete Function		
Understand causes of Clog Clearance Incomplete alert and appropriate actions.	☐	☐
Explain Clog Clearance Incomplete workflow.		
Air leak Monitoring		
Explain air leak reading frequency.	☐	☐
Drainage Monitoring		
Differentiate between CANISTER and LAST HOUR drainage values.	☐	☐
Explain how drained fluid flows into the canister between the right and left columns.		
Understand the limitations of the digital drainage readings under 50 ml and describe the manual tracking technique.		
Access drainage trends.		
Smart Check		
Understanding of SmartCheck and its ability to provide clinical decision assistance.	☐	☐

Identify different stages of SmartCheck: OFF, IN PROGRESS, COMPLETE.		
Describe process when Smart Check status is achieved.		
Canister Replacement		
Demonstrate placing Control Module in STANDBY, selecting REPLACE CANISTER, and clamping Drainage Tube.	☐	☐
Demonstrate completion of System Check and explain the purpose of each step.		
Taking a Fluid Sample		
Identify and demonstrate use of fluid sample port.	☐	☐
Time Change Settings		
Access the Settings menu and adjust time and date accurately.	☐	☐
Discontinuation of Chest Tube		
Demonstrate powering off the Control Module while keeping canister connected. Clamp the Thoraguard chest tube between insertion site and bifurcation of the SmartValve tubing and remove the chest tube per hospital procedure.	☐	☐
Disconnect Canister from Control Module. Discard canister, tubing, and chest tube appropriately.		
Explain the Control Module and power cord cleaning and recirculation process.		
Troubleshooting: Recognize Alert Types and Describe Appropriate Actions		
Identify Low Battery Alert (<30%) and Battery Depleted Alert (<15%) and describe correct response.	☐	☐
Device Tipped Over Alert: demonstrate corrective actions and describe impact to canister volume readings.		
Managing Fluid Drainage reading discrepancy: 7) Manual tracking or replace canister. 8) Awareness that all other Control Module functions are unchanged.		
Excessive Air Leak: Continuous air leak reading >5000 ml/min and describe the appropriate response.		
Failed System Check troubleshooting workflow: 10) Retry System Check following displayed instructions. 11) Ensure canister is dry, disconnect and reconnect canister, clamp large drainage tube, and retry with existing Drainage Kit 12) If System Check continues to fail, contact Centese Customer Service – Control Module may require servicing.		
Identify the Centese 24/7 technical support phone number.		

This checklist is provided as a sample for reference purposes only and should not be used as a substitute for established hospital policies, procedures, or protocols.