



stryker Altrix Precision Temperature Management System User Guide

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stryker Altrix Precision Temperature Management System



Product Information

Altrix Precision Temperature Management System

The Altrix Precision Temperature Management System is a medical device used to cool or warm a patient to a selected target temperature. It is equipped with a removable reservoir that can hold up to 5 liters of sterile distilled water. The device has a translucent reservoir to allow users to monitor the water level.

Product Usage Instructions

Setup

1. Fill the reservoir with 5 liters of sterile distilled water. Do not fill past the fill line to avoid water overflow.
2. If you remove the reservoir from the controller to fill it with sterile distilled water, replace it by gently lowering the reservoir back into position. Make sure that it is secure.
3. Plug the power cord into a wall outlet.
4. Tap the Stand-by button to start the product.

Connecting Patient Temperature Probe

The Altrix Precision Temperature Management System comes with a reusable adapter cable that connects to the patient temperature probe. Follow these steps to connect the patient temperature probe:

1. Tap the Settings button.
2. Tap Select Probe to display the Select Primary Probe (Probe A or Probe B) screen. Note: Primary probe will default to Probe A.
3. Tap Confirm.

Connecting Patient Temperature Output Cable

This feature allows the operator to view the temperature on the Altrix system and on a separate device. The output cable is located in between the Probe A and Probe B ports. Connect the output cable to view the temperature on a separate device.

Connecting Thermal Transfer Devices

The Altrix Precision Temperature Management System is compatible with Stryker's thermal transfer devices. There are two connector types for Stryker's thermal transfer devices: Clik-Tite and Colder style. Always use Stryker accessories to protect the product from cardiac defibrillation. Follow these steps to pre-fill the thermal transfer devices:

1. Open all of the clamps on the connector hose and thermal transfer device.
2. Make sure that the controller is powered.
3. Tap the Manual mode button.
4. Tap Confirm.
5. Select a water temperature that aligns with your target patient temperature. Allow the water to flow from the controller into the thermal transfer device until full.
6. Tap Confirm.

Initiation of Therapy

The Altrix Precision Temperature Management System has an automatic therapy mode that cools or warms the patient to a selected target temperature. Follow these steps to select a therapy mode:

Automatic Therapy

1. Select Automatic therapy mode and confirm.
2. Select Target Temperature: Select Max, Med, Min and confirm.

Cooling

1. Select Automatic therapy mode and confirm.
2. Select Target Temperature: Select Max, Med, Min and confirm.

Warming

1. Press Edit.
2. Select Target Temperature: Select Max, Med, Min or Custom and confirm.

Refer to the Altrix Precision Temperature Management System Operations Manual for additional information.

Setup

Fill the reservoir

Caution

- Always use sterile distilled water or distilled water that has been passed through a filter less than or equal to 0.22 microns with this product.
- Always fill the reservoir with room temperature sterile distilled water to reduce the risk of burn.
- Do not overfill the reservoir to avoid the risk of water spillage and fall.

The removable reservoir is translucent for you to see the water levels.

1. Fill the reservoir with five liters of sterile distilled water. Do not fill past the fill line to avoid water overflow.
2. If you remove the reservoir from the controller to fill it with sterile distilled water, replace it by gently lowering the reservoir back into position. Make sure that it is secure.



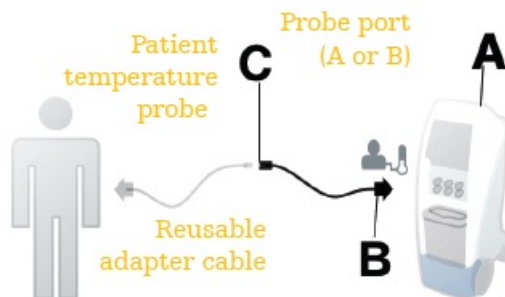
Power on

1. Plug the power cord into a wall outlet.
2. Tap the Stand-by button to start the product.



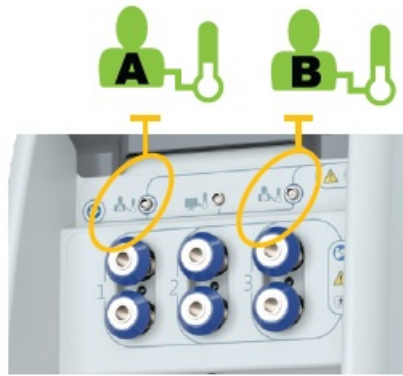
Connecting patient temperature probe

- Align the red dot on the Reusable Adapter Cable (B) to the controller (A) probe port A or B.
- Connect the plug (C) to the patient temperature probe.



Selecting primary probe

1. Tap the Settings button.
 2. Tap Select Probe to display the Select Primary Probe (Probe A or Probe B) screen
- Note:** Primary probe will default to Probe A.
3. Tap Confirm.



Connecting patient temperature output cable

This feature allows the operator to view the temperature on the Altrix system and on a separate device.

- Insert the reusable patient temperature output cable into the patient temperature output port, located in between the Probe A and Probe B ports.



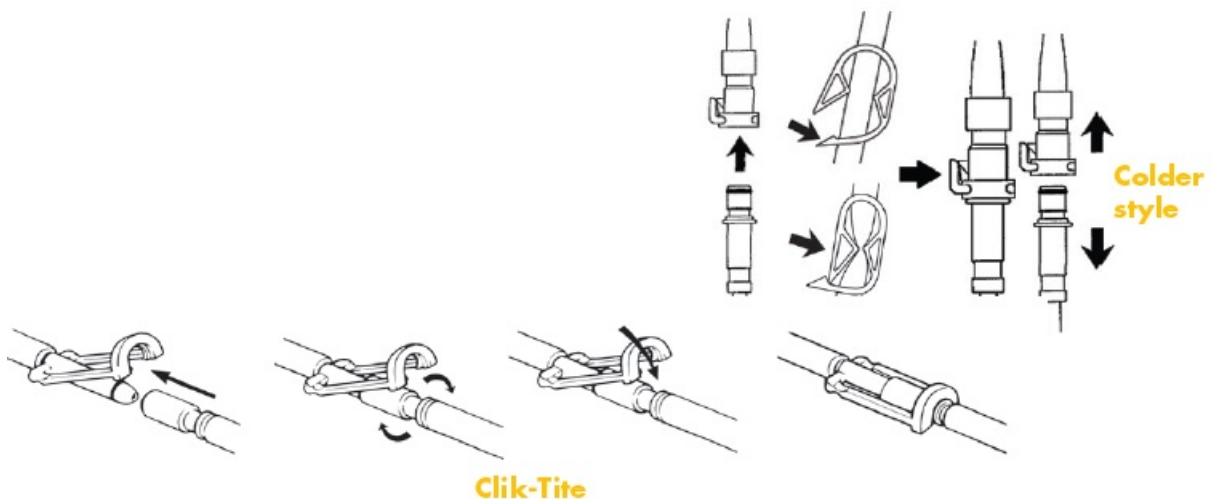
Connecting thermal transfer devices

Caution

Always use Stryker accessories. Failure to comply with these instructions may invalidate any or all warranties and may negatively affect the product's EMC performance. This also protects the product from cardiac defibrillation.

There are two connector types for Stryker's thermal transfer devices:

- Klik-Tite and Colder style.



Pre-filling the thermal transfer devices

Caution

Always pre-fill the thermal transfer device with sterile distilled water or distilled water that has been passed through a filter less than or equal to 0.22 microns before you apply it to the patient. This is to reduce the risk of pressure injuries.

1. Open all of the clamps on the connector hose and thermal transfer device.
2. Make sure that the controller is powered.
3. Tap the Manual mode button.
4. Tap Confirm.
5. Select a water temperature that aligns with your target patient temperature. Allow the water to flow from the controller into the thermal transfer device until full.
6. Tap Confirm.

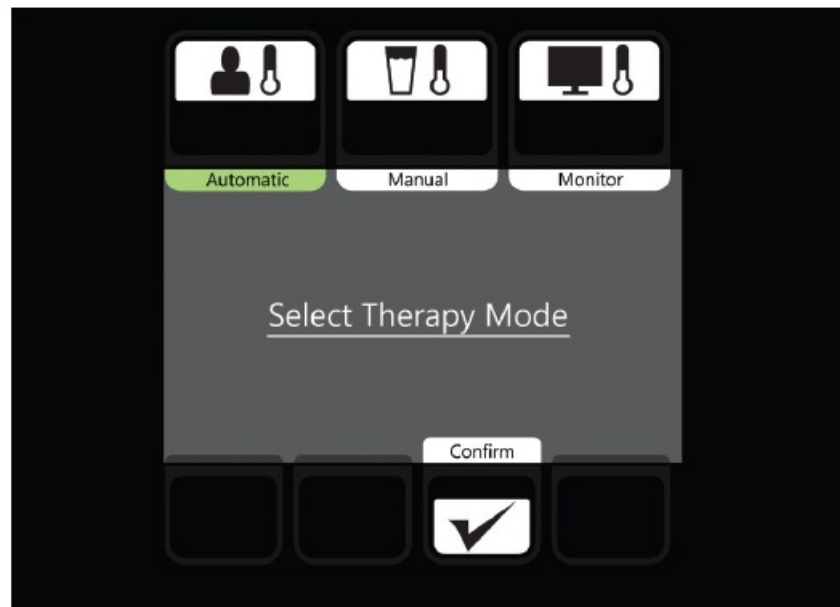


Initiation of therapy

Selecting a therapy mode

You can select from one of these three modes:

- Automatic (therapy)
- Manual (therapy)
- Monitor (non-therapy)



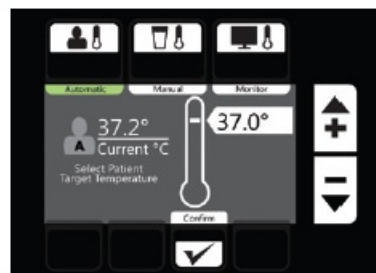
Automatic therapy

In Automatic mode, the therapy cools or warms the patient to a selected patient target temperature. The product continually measures the patient temperature and automatically adjusts the water temperature until the selected patient target temperature is achieved.

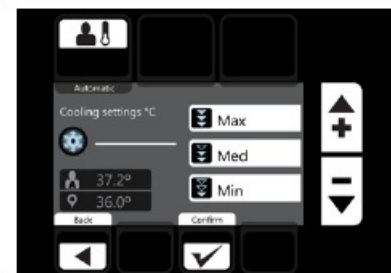
Cooling



Select Automatic therapy mode and confirm



Select Target Temperature and confirm



Select Max, Med, Min and confirm

Warming



Press Edit ↶



Select Target Temperature and confirm



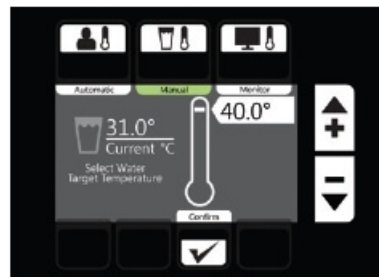
Select Max, Med, Min or Custom and confirm

Manual therapy

In Manual mode, the product controls the water temperature only. A temperature probe is not required when operating in manual mode.



Select Manual therapy mode and confirm

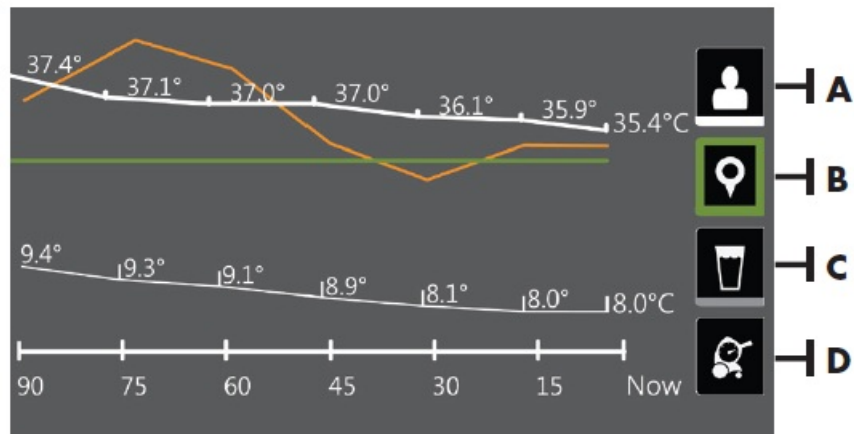


Select desired water temperature

Display the patient data graph

To display the patient data graph, tap the graph icon. The patient data graph stores the following variables:

- Primary patient temperature reading (A)
- Intermediate target temperature (B)
- Water temperature (C)
- Power level (D)



Pause therapy

- To pause therapy, press and hold the Pause Therapy button for two seconds.
- To resume therapy, press and hold the Pause Therapy button for two seconds.



Stop therapy









- Press and hold the Stand-by button for two seconds.
- Unplug the product from the wall outlet.
- Open the clamps for approximately 10 minutes to allow the water to drain back into the controller.
- Close clamps to stop the water flow and detach wraps from hoses.













Product functions



The graphical user interface shown is for reference only. The image shows where you will see the icons and buttons illuminate when they are active. At no time will you see all of these icons at the same time.

Icon	Name	Function
	Stand-by	Press and hold the button for two seconds to stop therapy or power off
	Therapy paused	Press and hold the button for two seconds to pause or resume therapy
	View temperature	Select temperature degree in Celsius or Fahrenheit
	Lock / unlock screen	Press and hold the button for two seconds to lock or unlock the graphical user interface
	Audio paused	Pause or resume the audible indicator when an alarm is active. Silences each alarm for five, ten or thirty minutes depending on the alarm condition. This button breathes ¹ to indicate that it is in a paused state.
	Automatic therapy mode	Cools or warms the patient to a selected patient target temperature
	Manual therapy mode	Cools or warms the water to a selected water target temperature
	Monitor only mode	Displays the current patient temperature (no therapy)














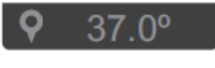


Icon	Name	Function
	Increase	Increases the water or patient temperature by 0.1° for cooling or warming temperature Note: Press and hold the increase button to move the temperature up faster
	Decrease	Decreases the water or patient temperature by 0.1° for cooling or warming temperature Note: Press and hold the decrease button to move the temperature down
	Back	Returns to the previous screen or cancel an operation
	Edit settings, Exit, or Cancel	Edit current settings, exit, or cancel
	Confirm selection	Accepts the selected settings
	Next or More	Changes to the next screen, option, or setting
	Page indicators (may also appear vertical)	Indicates that there is more than one page associated with the screen topic for the page that is currently displayed
	Settings	Displays the summary of the current, visual / audible, language, or primary probe settings
	Graph	Graphical display of the selected items such as patient temperature, target temperature, water temperature, and power level
	Help	Displays contextual help screens for therapies, navigation, buttons, and alarm screens

Breathe:



The brightness of the button or icon will go to low light and then increase to bright light. This cycle repeats.







Icon	Function	Icon	Function
	Water temperature on target, solid green when active, does not breathe		Water flow detected, ports 1, 2, or 3 are active, solid green when active, does not breathe
	Patient temperature on target		Cooling therapy
	Patient probe A port, stabilized		Warming therapy
	Patient probe B port, stabilized		Current therapy duration
	External device, patient probe A		Total duration
	External device, patient probe B		Visual and audible tests
	Stand-by		Target patient or water temperature

Alarms

If any of the alarm conditions persist, call maintenance. If the page indicators appear on the alarm screen, there are multiple active alarms. Only the highest alarm is displayed.

Icon	Name	Alarm priority	Message	Therapy interrupted	Check
 	Water temperature deviation	Medium, 5 minute delay	Water temperature is $\pm 0.8^{\circ}\text{C}$ (1.4°F) outside of target temperature	No	Temporary condition upon startup, addition of thermal transfer device, or addition of water
	No water	Medium, 60 second delay	No water	Yes	Check for leaks Add a minimum of 2 liters of sterile distilled water or distilled water that has been passed through a filter less than or equal to 0.22 microns
	No water flow	Medium, 20 second delay	No flow detected	Yes	Check for leaks and obstructions at connections, hoses, and thermal transfer devices

	Check water flow	Medium, 10 minute delay	Reduced flow detected	No	Tap Confirm, if the water port was removed intentionally. Check for leaks and obstructions at connections, hoses, and thermal transfer devices.
	Check patient probe (A or B)	Medium	Abnormal change in patient temperature	Yes	Check probe condition, location, and connections.
	Probe or adapter malfunction (A or B)	Medium, 30 second delay	No temperature signal detected	Yes	Check probe or adapter cable condition, location, and connections.
	Adapter cable disconnected (A or B)	Medium, 30 second delay	Adapter cable not detected	Yes	Reinsert the adapter cable. If damaged, replace the adapter cable.
	Patient temperature deviation	Medium	Patient temperature is $\geq \pm 1.0^{\circ}\text{C}$ (0.9°F) outside of target temperature	No	Check patient condition, placement of thermal transfer devices, and all connections.
	Patient temperature deviation	Low	Patient temperature is $\geq \pm 0.5^{\circ}\text{C}$ (0.9°F) outside of target temperature	No	Check patient condition, placement of thermal transfer devices, and all connections.
	Normothermia deviation	Low	Patient temperature is outside of 36.0°C (96.8°F) to 38.0°C (100.4°F)	No	Check patient condition, placement of thermal transfer devices, and all connections.
	Therapy pause	Medium	Therapy is currently paused	Yes	To resume, press and hold the play/pause for 2 seconds.
	Battery low	Low	Battery is low	No	Maintenance is recommended. If battery is not replaced, the product may not function on the next startup.
	Patient temperature output (A or B)	Low	Patient temperature output is inaccurate on the external device, or outside supported range	No	Check output adapter cable connection. Tap Confirm to reactivate the output port.
	Remove from use (RFU)	Medium	The system has powered off due to a malfunction	Yes	Remove the product from use immediately. Notify the appropriate personnel.
	Power Loss	Medium	Not applicable	Yes	Check power cord connection.

Disinfecting

Disinfecting the internal water circuit and hoses every 14 days

Use the Klorkleen® Medical disinfectant tablets by Meditech (EPA registration number 71847-2-106) before first use, at least every 14 days, and before storage. Klorkleen Medical has been validated for internal water circuit disinfection. Make sure that you follow the disinfectant manufacturer's guidelines to avoid the risk of injury. Failure to follow the disinfectant's instructions may void your warranty.

Caution

Note:

Disinfection of the Altrix internal water system was validated using *M.mucogenicum*.

- Always use sterile distilled water or water that has been passed through a filter less than or equal to 0.22 microns with this product.
- Do not disinfect the internal water system with a thermal transfer device attached as this may cause a leak.
- Do not use bleach or any other cleaning or disinfectant agents for internal circuits. This could result in damage to the product. Only use approved disinfectant tablets.
- Always drain the product before disinfecting the internal water circuit. Failure to drain the product may reduce the effectiveness of the disinfection process.

Tools required:

- 2 gallons (7.6 L) of sterile distilled water that has been passed through a filter less than or equal to 0.22 microns
- Personal protection equipment (PPE) as recommended by the disinfectant manufacturer's instructions
- Soft, lint free cloth (2 or more)
- 2 Klorkleen Medical tablets (active ingredient is sodium dichloroisocyanurate (NaDCC); 1874 ppm disinfectant solution when dissolved in one gallon of water)
- Service tool adapter hose (8001-999-017) for Colder style connector hoses
- Floor drain or drain pan

See Product illustration on page 10 of the manual for clarification of product component names and locations.

Draining the internal water circuit and hoses for disinfection

1. Unplug the power cord from the wall outlet.
2. Place the controller over a floor drain or drain pan.

Note: For best results, the floor drain should be within reach of a wall outlet to power on the controller.

3. To drain the controller, pull up on the controller drain plug (A) to open the drain (Figure 24). Leave the drain open.

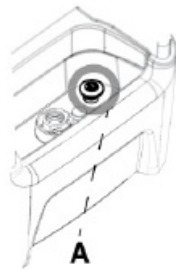


Figure 24

4. Connect a hose to each port (Figure 25).
5. Close the connector ends of all three hoses:
 - If you have Colder style connector hoses, attach the service tool adapter hose (8001-999-017) (Figure 26). Complete this for all three hoses.
 - If you have Clik-Tite hoses, make sure that the connector ends are connected and closed (A), and clamps are open (B). Complete this for all three hoses (Figure 27).
6. To fully drain the hoses, raise all the hoses (Figure 28) above the connection ports on the controller.

Note: For best performance, hang the hoses to keep them raised. Do not lower the hoses until you have completed the disinfection and rinsing process.
7. Allow the controller and hoses to drain for a minimum of two minutes.
8. Push down on the drain plug to close the drain.

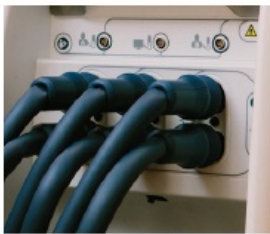


Figure 25



Figure 26

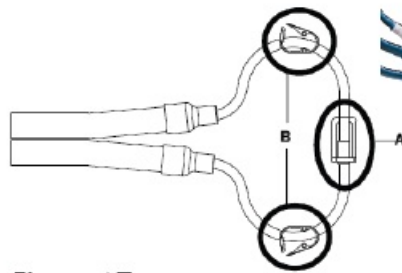


Figure 27



Figure 28

Disinfecting the internal water circuit and hoses

1. Use personal protection equipment as recommended by the Klorkleen Medical disinfectant manufacturer's instructions for use.
2. Put 2 Klorkleen Medical tablets into the reservoir.
3. Using appropriate measuring equipment, fill the empty reservoir with 1 gallon (3.8 L) of sterile distilled water or distilled water that has been passed through a filter less than or equal to 0.22 microns.

Note: Always allow the disinfectant tablets to completely dissolve before starting the 20 minute disinfection cycle.
4. Place the reservoir into the controller.
5. Disconnect the bottom hose from the bottom right port (Figure 29).







6. Connect the bottom hose end to the hydraulic connector in the lid of the reservoir (Figure 30).
7. Plug the power cord into a wall outlet.



Figure 29



Figure 30

8. Press  and hold the Stand-by button.
9. Tap the Manual mode icon. 
10. Tap Confirm. 
11. Set the water target temperature to 25.0° C (77.0° F).
12. Tap Confirm. 
13. Allow the controller to run for 2 minutes to purge air from the system.
14. Run the controller for 20 minutes.  00:22:00
15. After 22 minutes, turn the controller off by pressing and holding the Stand-by button for two seconds. 
16. Unplug the power cord from the wall outlet.
17. Place the controller over a floor drain or drain pan.
18. Remove the reservoir. Pull forward at an angle, and lift out the reservoir.
19. Remove the bottom hose end from the hydraulic connector adapter in the reservoir lid by pushing down on the collar.
20. Empty water from the reservoir, dispose of the water per hospital protocol.
21. Pull up on the controller drain plug (Figure 31) to open the drain.

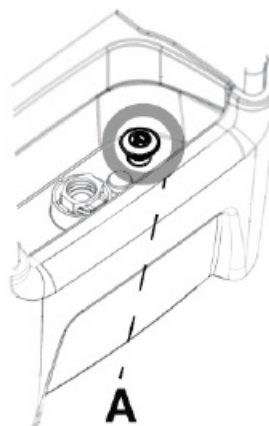


Figure 31

22. Make sure that all 3 hoses remain raised above the connection ports for draining.
23. Allow the controller and hoses to drain for a minimum of two minutes.
24. Push down on the controller drain plug to close the drain.
25. When the controller and hoses are drained, continue to Rinsing the internal water circuit and hoses.

Rinsing the internal water circuit and hoses







1. Using appropriate measuring equipment, fill the empty reservoir with 1 gallon (3.8 L) of sterile distilled water or distilled water that has been passed through a filter less than or equal to 0.22 microns.
2. Place the reservoir into the controller.
3. Connect the bottom hose end to the hydraulic connector in the lid of the reservoir (Figure 32).
4. Plug the power cord into a wall outlet.
5. Press and hold the Stand-by button. 
6. Tap the Manual mode icon. 
7. Tap Confirm. 
8. Select the water target temperature of 25.0° C (77.0° F).
9. Tap Confirm. 
10. Allow the controller to run for 2 minutes  00:07:00 to purge air from the system.
11. Allow the controller to run for 5 minutes.
Note: The timer will run on the main display, follow the current therapy duration timer.
12. Tap Confirm.
13. After 7 minutes, turn the controller off by pressing and holding the Stand-by button for two seconds.
14. Unplug the power cord from the wall outlet.
15. Place the controller over a floor drain or drain pan.
16. Remove the reservoir. Pull forward at an angle, and lift out the reservoir.
17. Remove the bottom hose end from the hydraulic connector adapter in the reservoir lid by pushing down on the collar.
18. Empty water from the reservoir, dispose of the water per hospital protocol.
19. Pull up on the controller drain plug to open the drain.
20. Make sure that all 3 hoses remain raised above the connection ports for draining.
21. Allow the controller and hoses to drain for a minimum of two minutes.
22. Push down on the controller drain plug to close the drain.
23. Wipe the inside and outside of the reservoir and reservoir lid, with a dry, soft, lint free cloth.
24. Place the reservoir into the controller.
25. Disconnect and store the service tool adapter hoses from all three of the hoses. (If applicable, when used with Colder style hoses.)
26. Store the power cord, cables, and hoses.



Figure 32

Documents / Resources

	stryker Altrix Precision Temperature Management System [pdf] User Guide Altrix Precision Temperature Management System, Altrix, Precision Temperature Management System, Temperature Management System, Management System
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Manuals+.