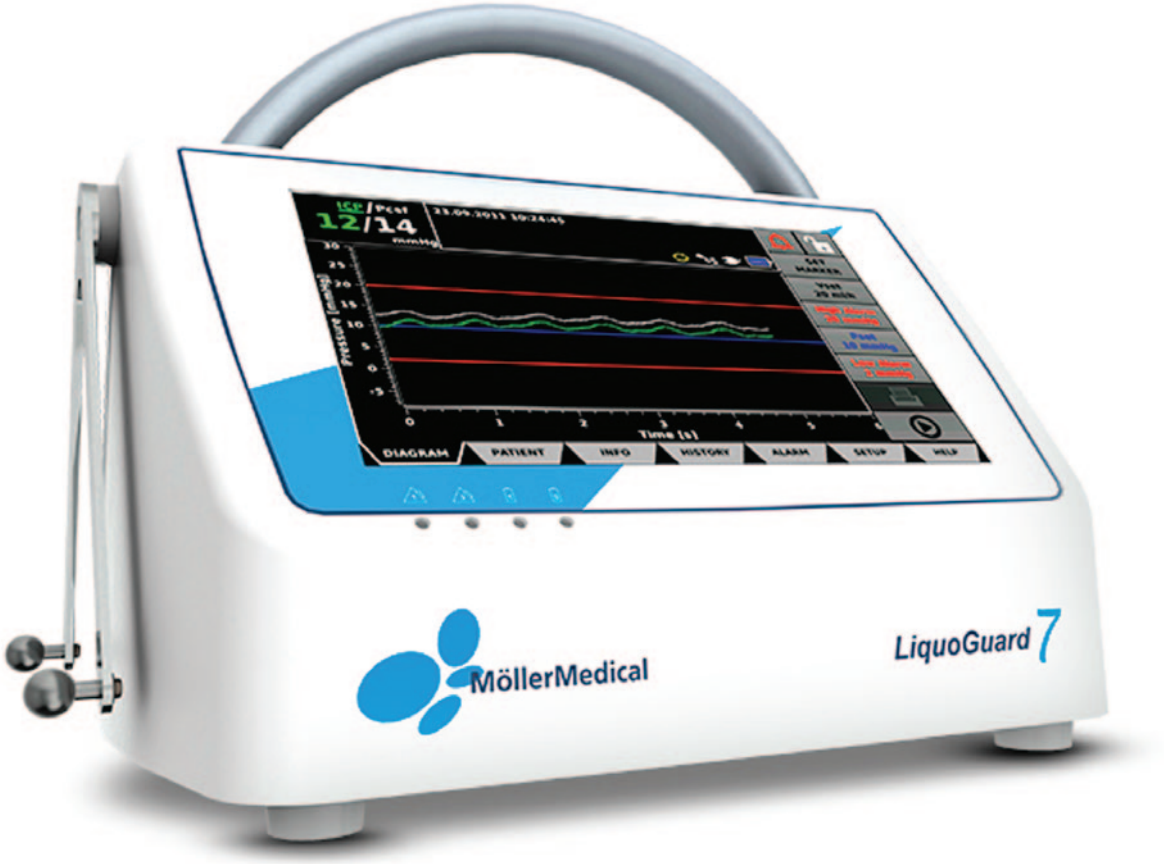
LIQUOGUARD® 7

JOINT OPERATIONS



CSF MANAGEMENT. WITH CERTAINTY

CONTENTS - LIQUOGUARD7

JOINT OPERATIONS

KEY TIPS and INFORMATION

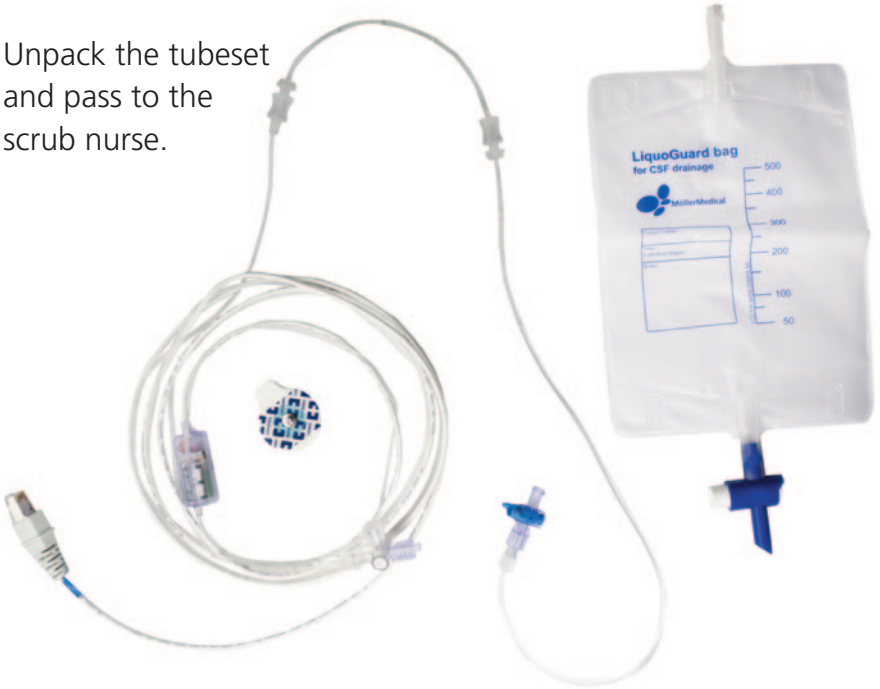
JOINT OPERATIONS

- Never turn the device off when in use
- No drainage in PAUSE mode
- PSET is the pressure that drainage will begin when exceeded
- VSET is the drainage flow rate
- Always keep the transducer at the dedicated reference point; zero
- For volume controlled drainage, ensure PCSF (white line) is constantly above PSET (blue line)
- For pressure controlled drainage, set PSET (blue line) to desired pressure. Ensure VSET is set accordingly to achieve this. For example, if high pressure, a low drainage rate (VSET) may not be sufficient to bring the pressure down to the desired level

SETTING UP the TUBESET

JOINT OPERATIONS

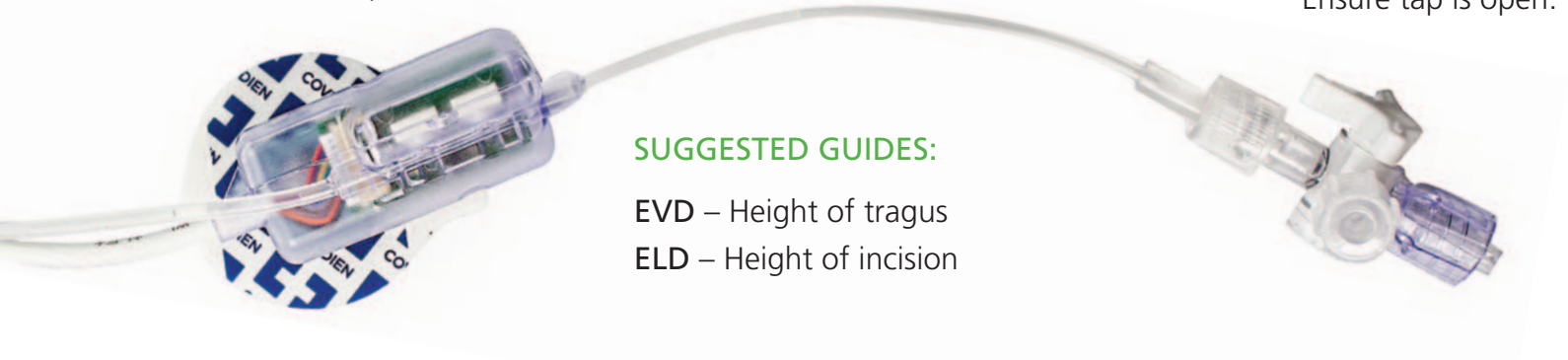
1 Unpack the tubeset and pass to the scrub nurse.



2 Attach the drainage bag to distal end of the tubeset.

Ensure tap is open.

3 Attach the ECG electrode to the transducer. Position and secure the transducer to your reference point; zero.



4 Attach the proximal end of the tubeset to the drainage catheter (EVD/ELD).

Ensure tap is open.

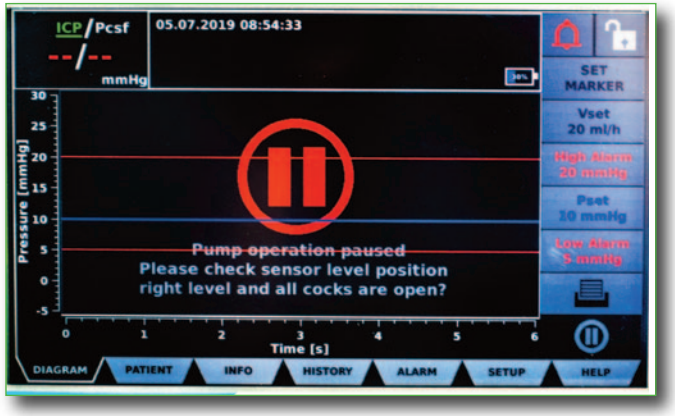
SUGGESTED GUIDES:

EVD – Height of tragus

ELD – Height of incision

SETTING UP the TUBESET

5



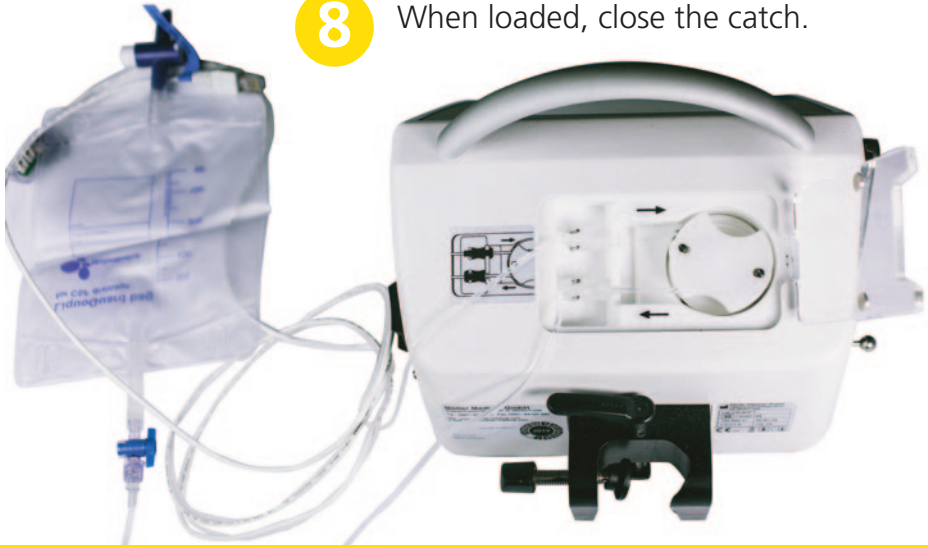
Turn ON the LiquoGuard7® device.
Device will start in PAUSE MODE.

6

Lift catch on top of the
LiquoGuard7 and the
TURN ROTOR screen will appear.

7 Load the tubing into the rotor (largest connector placed at the top first), use turn rotor function where needed.

8 When loaded, close the catch.



9

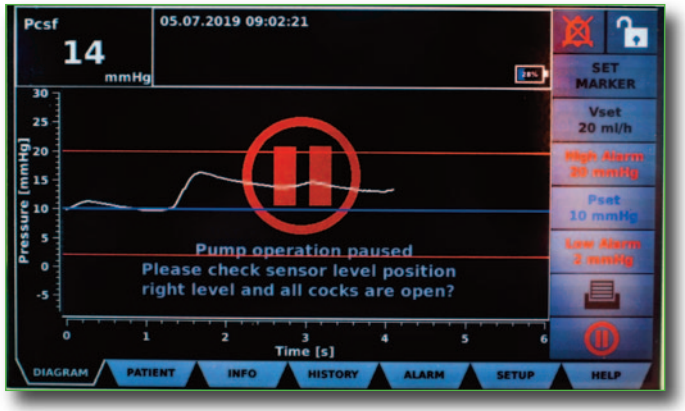
Plug the tubeset cable in
to the LiquoGuard7 device
(PCSF port).

10

Place drainage bag on to
the triangular bag holder.

11 Leave the machine in PAUSE mode
and set your parameters.

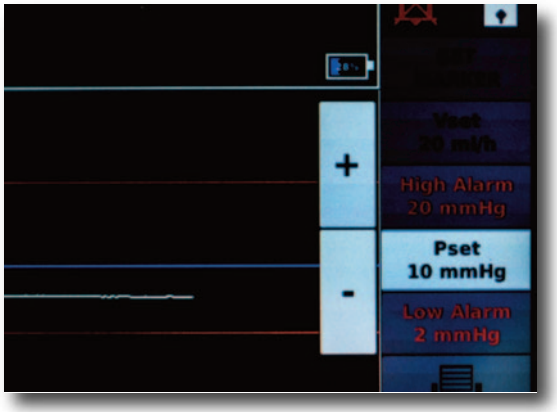
SETTING the PARAMETERS



Ensure there's an accurate pressure waveform displayed; for this, CSF needs to have passed through the transducer.

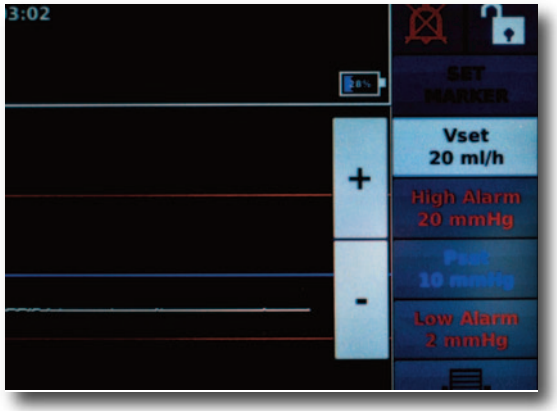
If this hasn't occurred: in PAUSE mode, lift the catch.

- Press TURN ROTOR to aspirate CSF until it passes the transducer
- Close the catch
- Confirm an accurate pressure reading



Set the PSET value; the value on which drainage will begin should the pressure PCSF exceed this value. Drainage will not occur if pressure is below PSET value.

Example: set value to 20m/l per hour and set the PCSF pressure above PSET for one hour; LiquoGuard7 will drain 20m/l. If the pressure is below PSET for the hour LiquoGuard7 will drain 0m/l.



Set the VSET value; the flow rate (not volume) the machine will drain at per hour.

Set the HIGH and LOW alarm parameters

Usually set to **High 20mmgh** and **Low 5mmgh**

Press the PAUSE button to begin the application

A yellow circle will appear and a play symbol ▶ in the bottom right corner to indicate LIVE mode

LIVE MODE:

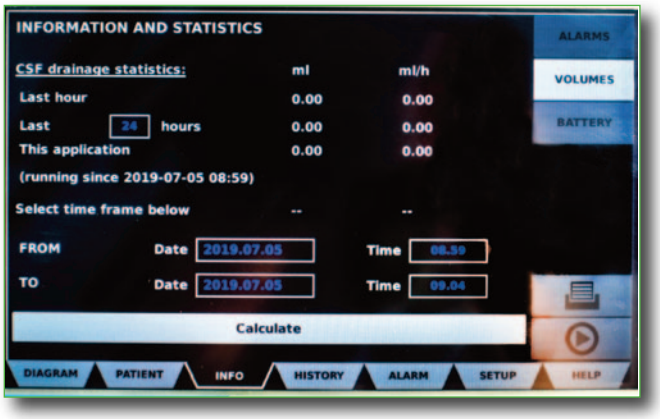
Drainage and Pressure monitoring

PAUSE MODE:

Pressure monitoring, no drainage

CHECKING the DRAINAGE DATA

Press the INFO tab on the bottom of the LiquoGuard7 screen to access the drainage data. Then VOLUMES on the right hand side.



The top line displays a rolling hourly total. For an accurate reading on the hour, every hour use the DATE and TIME Tabs in blue to select the specific range of data you would like and press CALCULATE.

Press the DIAGRAM tab on the bottom of the LiquoGuard7 screen to go back to the main display.

Please note: If your device has the latest version of software, the volumes section can be found within the HISTORY tab located at the bottom of the screen

EMERGENCY DRAINAGE

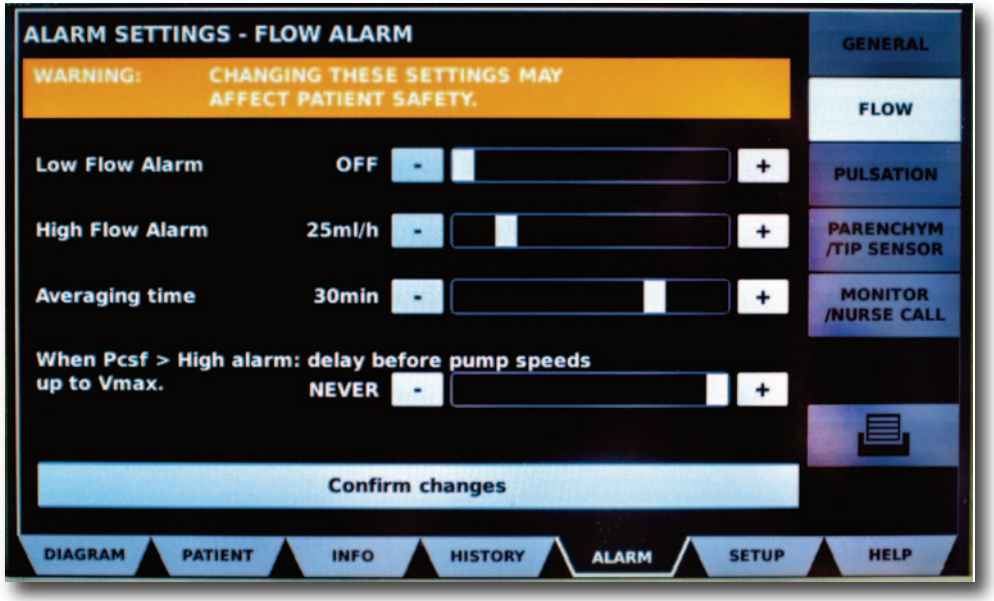
JOINT OPERATIONS

Check whether emergency drainage is active

Emergency drainage means that the drainage rate will increase should the pressure (PCSF) exceed the high alarm for a sustained period of time (default 50 seconds).

To disable, please follow these steps:

- Go to the ALARM tab at the bottom of the screen and then select the FLOW tab on the right hand side. **The emergency drainage option is at the bottom of the page (VMAX)**
- Press "+ " until it shows as inactive
- Press CONFIRM CHANGES



DISCONNECTING the TUBESET

Changing Tubeset/Sending Patient for Scan

- DO NOT TURN OFF the device
- Press PAUSE
- Close all taps

- Lift the catch at the top of the LiquoGuard7 device. The TURN ROTOR message will appear on the screen
- Release the buttons and tubing from the rotor, using the TURN ROTOR function where necessary
- Close the catch

- Disconnect the tubeset from the PCSF port on the LiquoGuard7 device
- Press INTERRUPT APPLICATION on the red pop-up message on the screen
- To re-use the tubeset, it needs to be plugged back in within three hours

HIGH PRESSURE ALARM - Checks

JOINT OPERATIONS

Is the machine in PAUSE mode? If so, turn off PAUSE as this will enable drainage and the pressure should start to decrease.

Is the patient agitated? – If patient is moving, coughing, sneezing or you are turning the patient, it will raise the pressure. Put the machine in PAUSE mode so that VMAX doesn't initiate and drainage is ceased. When the patient returns to a calm state, take the machine off PAUSE mode to allow drainage to resume.

Is VSET too low? If VSET is set to a low value, LiquoGuard7 may not be draining enough to bring the pressure back down. Consult with clinicians about raising the VSET.

Is the high alarm set too near to PSET?
If the HIGH ALARM barrier is too near to PSET then this may trigger the alarm before the drainage has a chance to bring the pressure down. Raise the HIGH ALARM barrier.

Is the transducer set at the correct height?
If the transducer has fallen off the patient, it will give an incorrect pressure reading. Reposition the transducer to the correct height; zero.

In a lumbar drain scenario, has the patients posture changed? If the patient has stood or sat up, the CSF pressure in the lumbar region will increase. Either lay the patient back down or adjust the PSET and HIGH ALARM accordingly, to stop the alarm. **Note, with VSET function active, the patient will not overdrain despite the rise in pressure, as the machine will still only drain at the desired flow rate**.

Patient has a clinical issue? Possible bleed or other reason for raised ICP such as swelling.

LOW PRESSURE ALARM - Checks

JOINT OPERATIONS

Disconnection?
Check the tubeset is connected to the drainage catheter.

Blockage / occlusion?
Check there are no kinks along the tubeset.
If pressure is still low there may be a blockage in the line.
Put the machine in PAUSE mode and press TURN ROTOR to aspirate CSF to dislodge the blockage.
If the problem still persists, you may need to change the tubeset for a new one.

Taps are closed?
Check all the taps are open.

CSF sampling?
Reduction in CSF will result in a lower pressure.

VSET too high and PSET too near to LOW ALARM?
This will mean when the patient drains it will alter the pressure enough to go below the LOW ALARM.
Either raise PSET or reduce VSET.

Patient has a CSF leak?
Speak to clinical team.

PULSATION ALARM - Checks

JOINT OPERATIONS

Kinked tubeset

Has the tubeset become kinked at some point?
If so, straighten out the kink and continue as normal.

What drainage catheter did you use?

If a catheter with an inner diameter of less than 0.7mm has been used, this may affect the pulsation trace detected by the device. Silence the alarms and continue as normal, checking the DRAINAGE/PRESSURE data appears normal.

Blockage / occlusion?

Check there are no kinks along the tubeset.
If pressure is still low there may be a blockage in the line.
Put the machine in to PAUSE mode and press TURN ROTOR to aspirate CSF and dislodge the blockage.
If the problem still persists, you may need to change the tubeset for a new one.

Taps are closed?

Check all the taps are open.

CSF sampling?

Reduction in CSF will result in a lower pressure.

The PULSATION alarm may be turned off by going into the ALARM tab at the bottom and then selecting the option to INACTIVATE the alarm for pulsation.

HIGH FLOW ALARM - Checks

This alarm will sound if the transducer is detecting a higher flow rate pressure than the VSET value.
This can occur in the instances of:

- Intracranial bleeding
- Swelling
- Pathologic high CSF production rate
- Infusion

Seek guidance from the clinical team should you have any concerns with your patient.

PRESSURE TOO CONSTANT - Checks

JOINT OPERATIONS

Kinked tubeset / disconnection

Has the tubeset become kinked at some point? If so, straighten out the kink and continue as normal.

Blockage / occlusion?

Check there are no kinks along the tubeset. If pressure is still low there may be a blockage in the line.
Put the machine in PAUSE mode and press TURN ROTOR to try and aspirate CSF to dislodge the blockage.
If problem permits, you may increase the VSET function to allow for higher aspiration. If the problem still persists, you may need to change the tubeset for a new one.

Has the tubeset been primed?

If there is air in the tubeset and the transducer hasn't been primed, this will show an inaccurate / potentially constant pressure reading.

Potential slit ventricles?

Check to see if CSF is still being drained.
If not, the patient may have slit ventricles and clinical guidance is required.

USEFUL LINKS

JOINT OPERATIONS

LiquoGuard 7 - Connection of drainage tube set lumbar or ventricular drainage

https://www.youtube.com/watch?v=8CWUYehvslU

LiquoGuard 7 - Pressure controlled drainage vs volume controlled drainage

https://www.youtube.com/watch?v=FSPrQgB3TBA

LiquoGuard 7 - Menu and device settings

https://www.youtube.com/watch?v=rz371-ykQjA

LiquoGuard 7 - Loading the pump and priming the tube

https://www.youtube.com/watch?v=HhTay_HKy1I

LiquoGuard 7 - Alarms

https://www.youtube.com/watch?v=wdsc7itTE4A\

JOINT
OPERATIONS

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