

Grundfos MLE

Limit Exceed and Pipe Filling Functions



Possibility in every drop

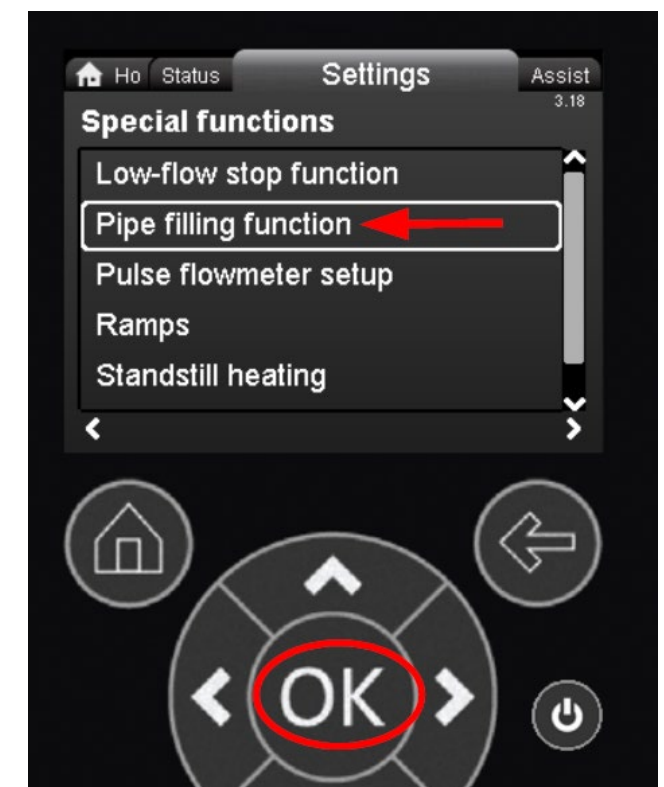
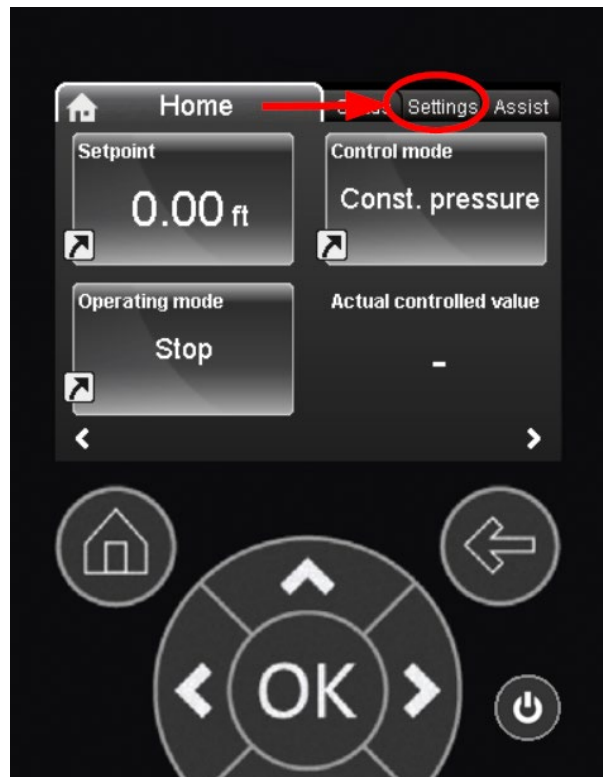
Pipe Fill – What is it used for?



- In constant pressure, when a pump is being started, we don't want to ramp the pressure up quickly...we want to slowly fill up the pipes with water/pressure
- Once the water is in the line and the pressure is at a reasonable level, we can run the system up to the setpoint
- In order to do this, we use the 'Pipe Fill' function within the MLE
- Now, we will walk through setting up this function and what the different options mean and do...



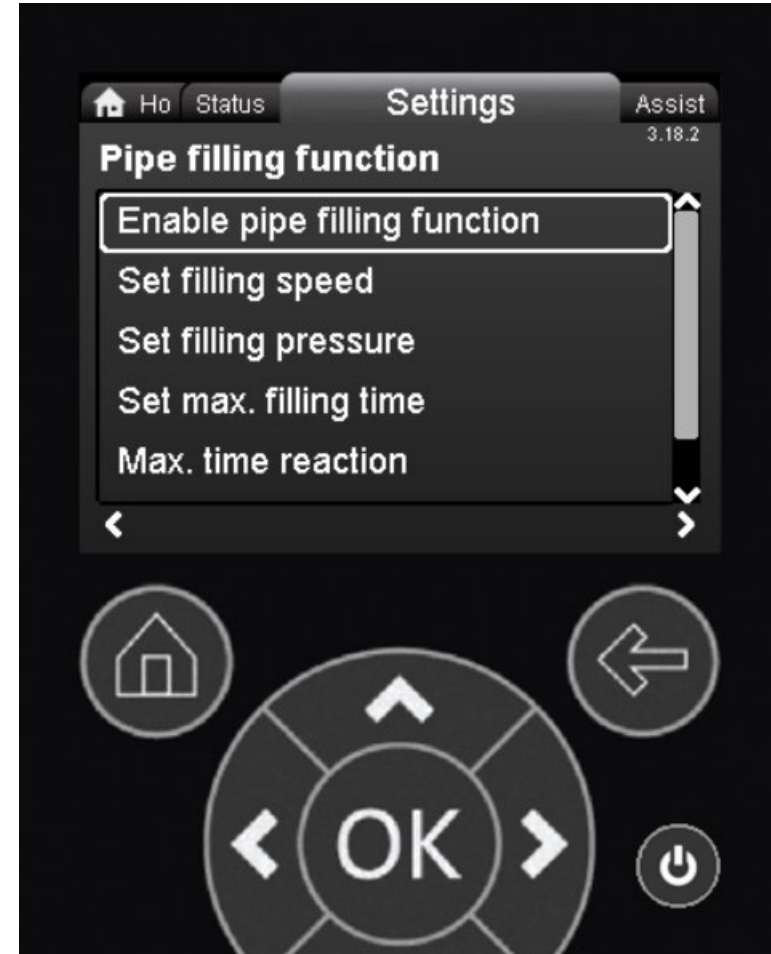
MLE function Pipe Fill



MLE Pipe Filling Function Options



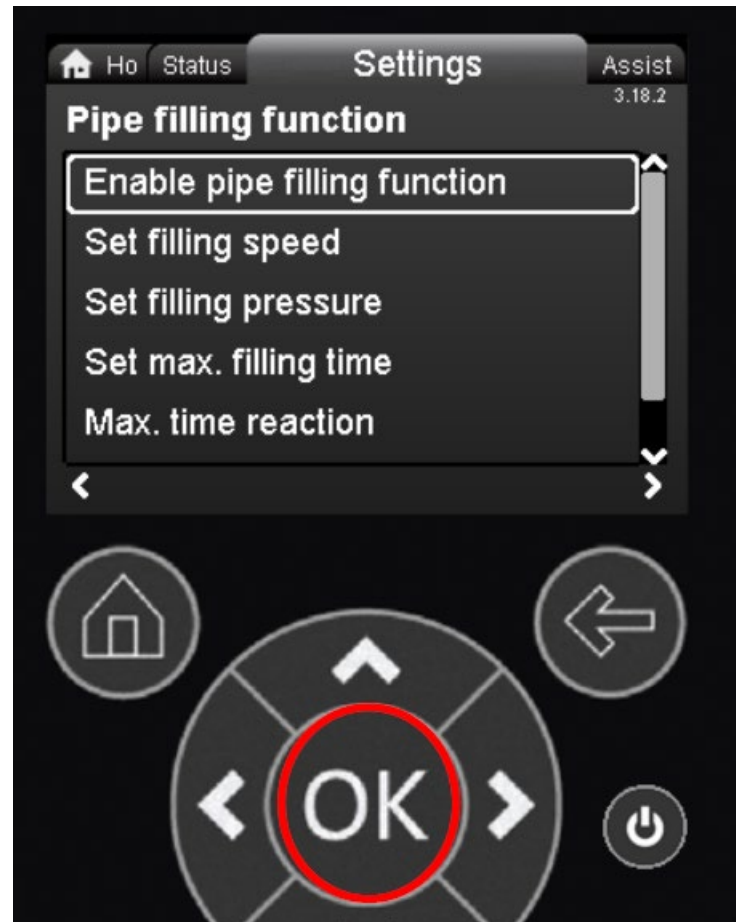
- Enable pipe filling function
- Set filling speed
- Set filling pressure
- Set max. filling time
- Max. time reaction
- Pressure build-up time



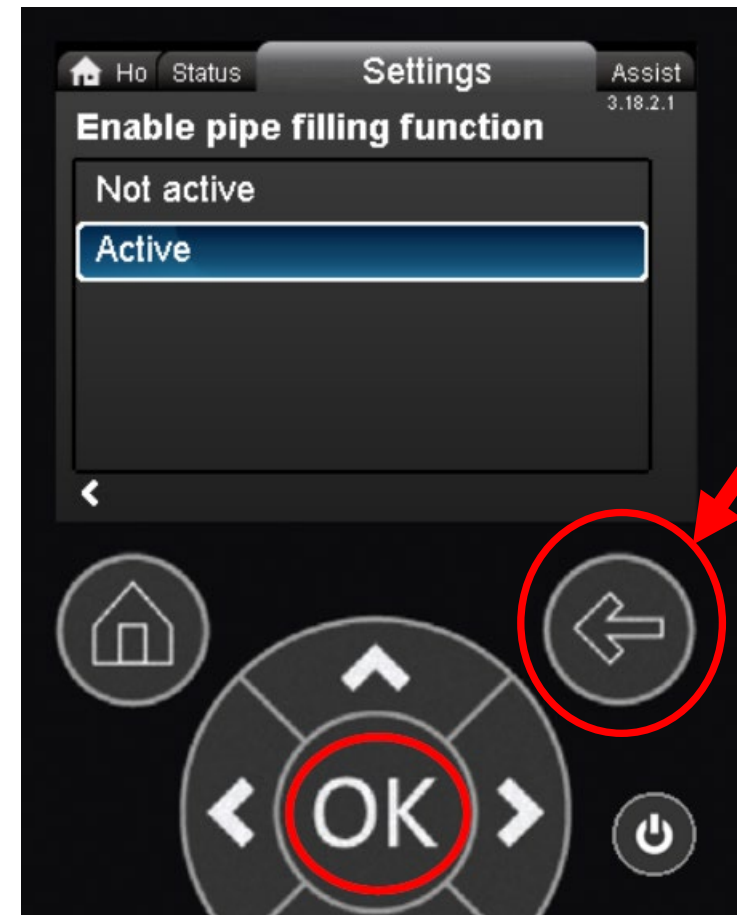
MLE Pipe Filling – Enable Pipe Filling Function



This is where you turn this function on and off



Using the down arrow, move the selection box to the 'Active' option and press 'OK'

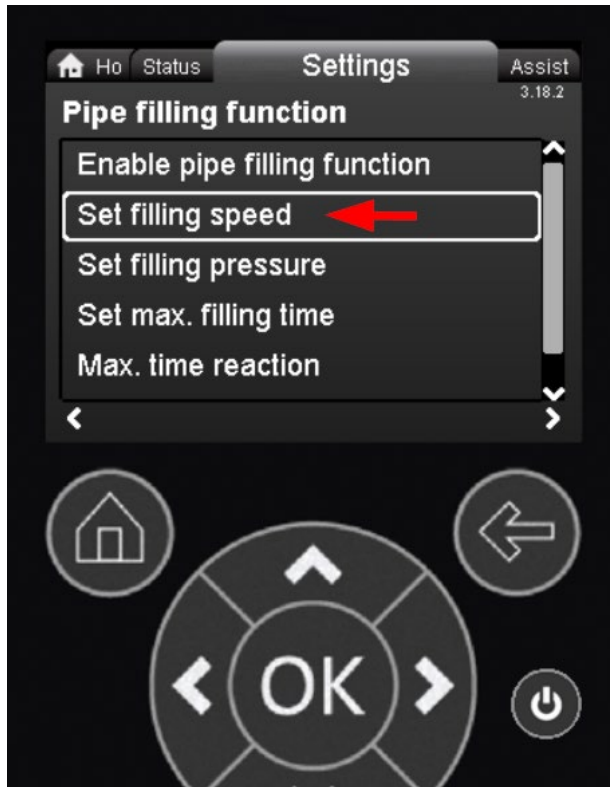


Press the 'back' button to exit to the main Pipe Filling settings screen

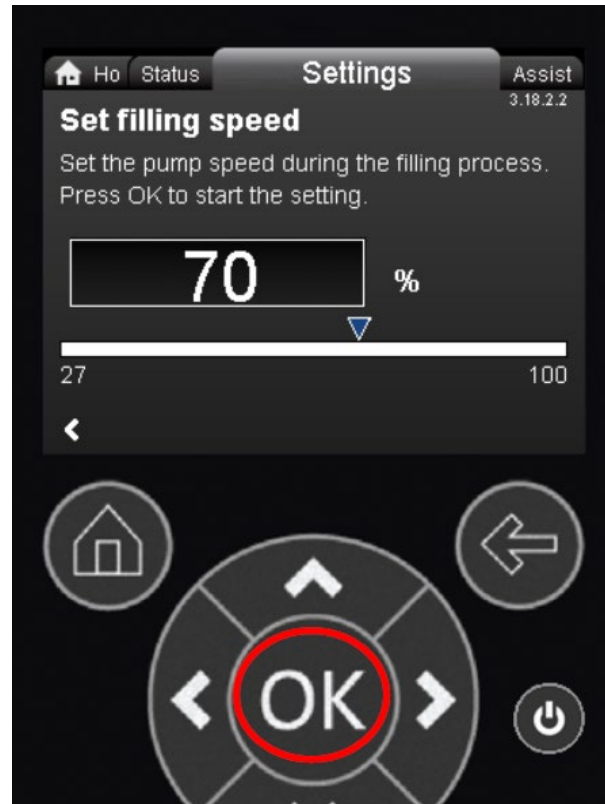
Set filling speed



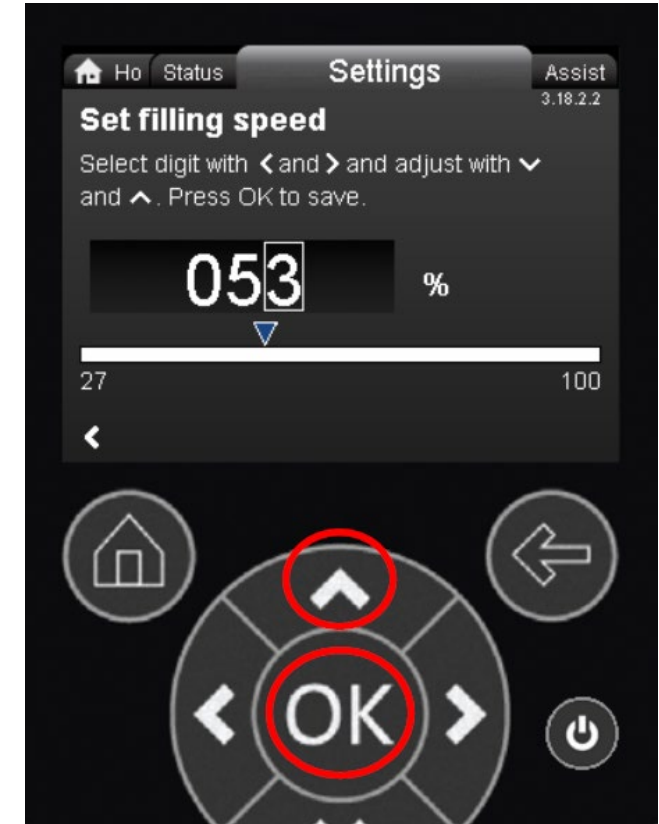
This is where the speed in which you want the pump to run during the pipe filling duration



Press 'OK' to change the value



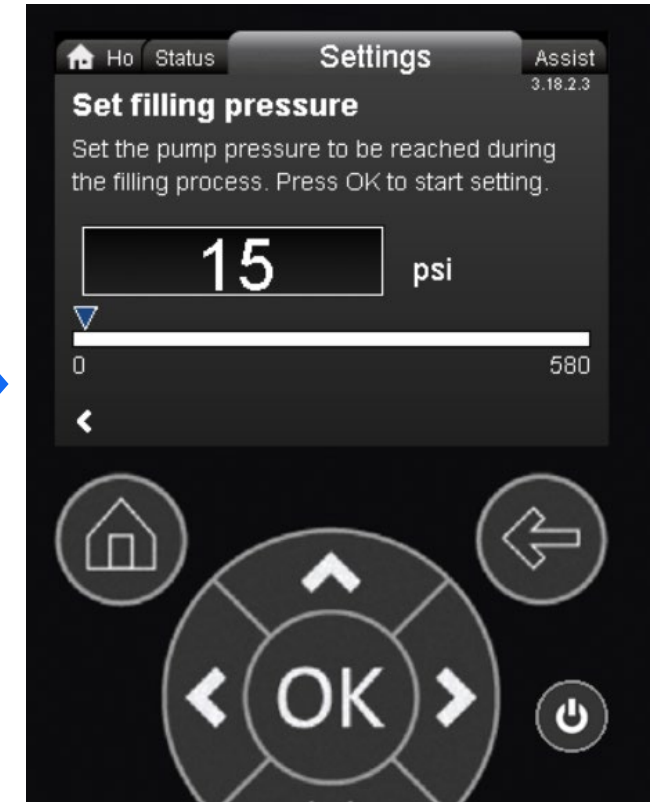
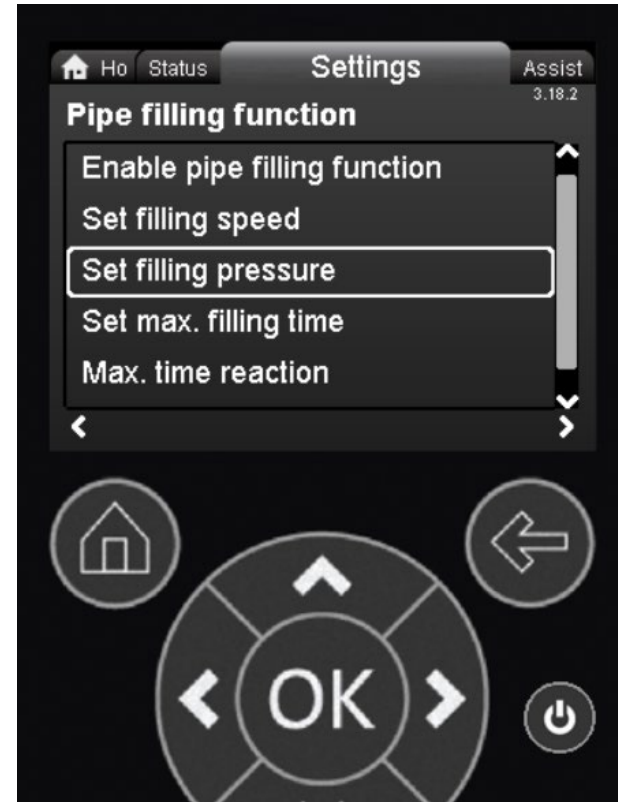
Change the values using the up/down left/right arrows. Once the value is changed to the desired setting, press 'OK' to save, then press the 'back' button



Set Filling Pressure



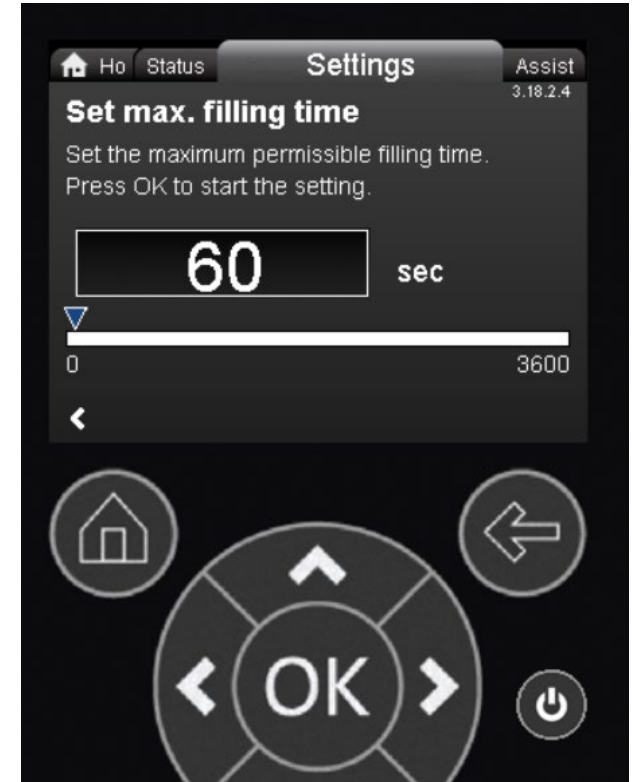
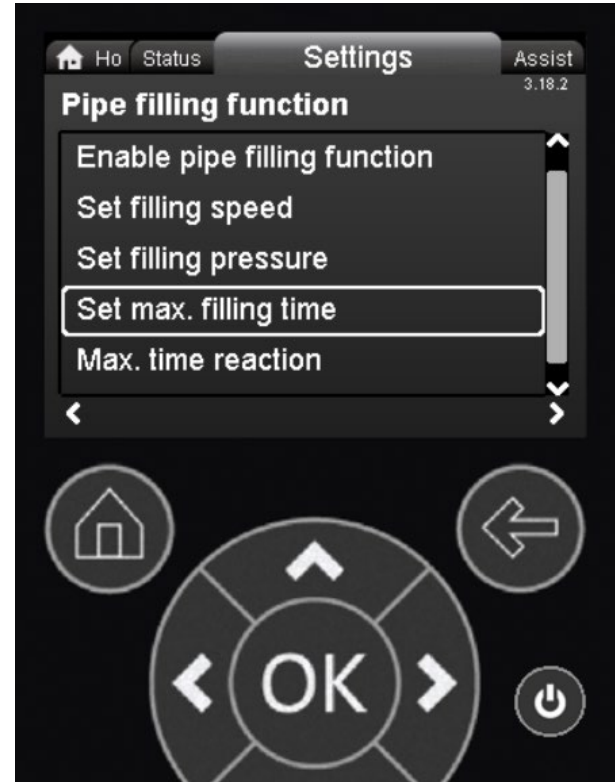
- The filling pressure setting is the pressure setpoint to be reached during the filling process.
- Once the pressure in this setting is met, the pump will continue to ramp up to meet the system pressure setpoint.
- The speed to ramp from the filling pressure to the system setpoint can be adjusted in a setting we will see later.



Set max. filling time



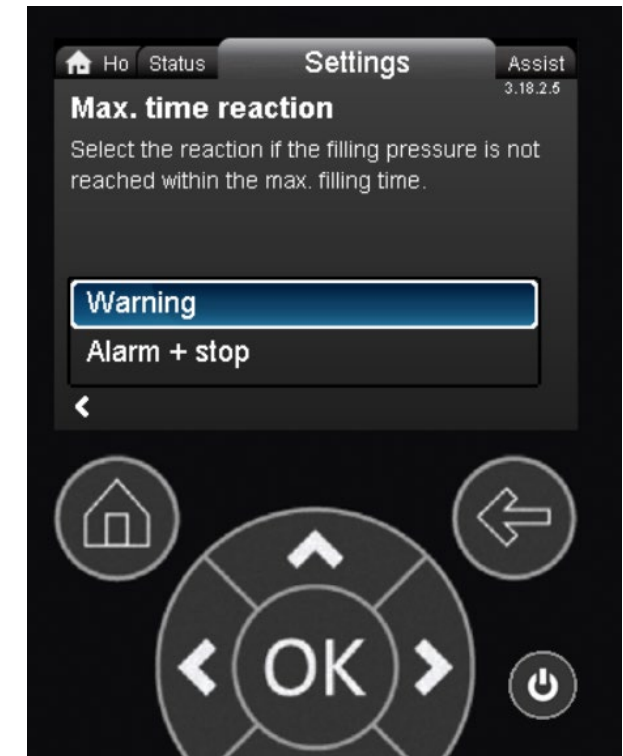
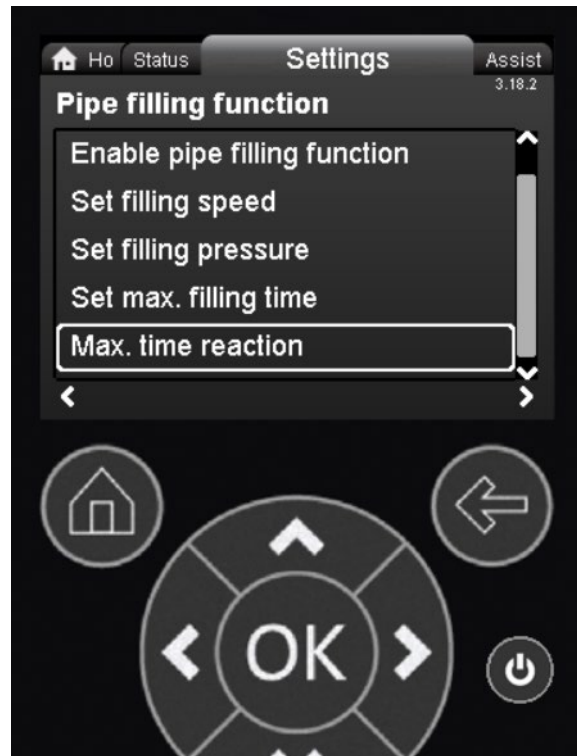
- If the pipe filling pressure is not met within the time selected in this setting, the system will alert the user and has the ability to stop the pump.
- Not reaching the filling pressure in this time frame could mean a break in the water line or other issues
- The setting allows up to 1-hour to reach the filling pressure, set in seconds
- The next setting will cover what the pump does if this time is reached.



Max. time reaction



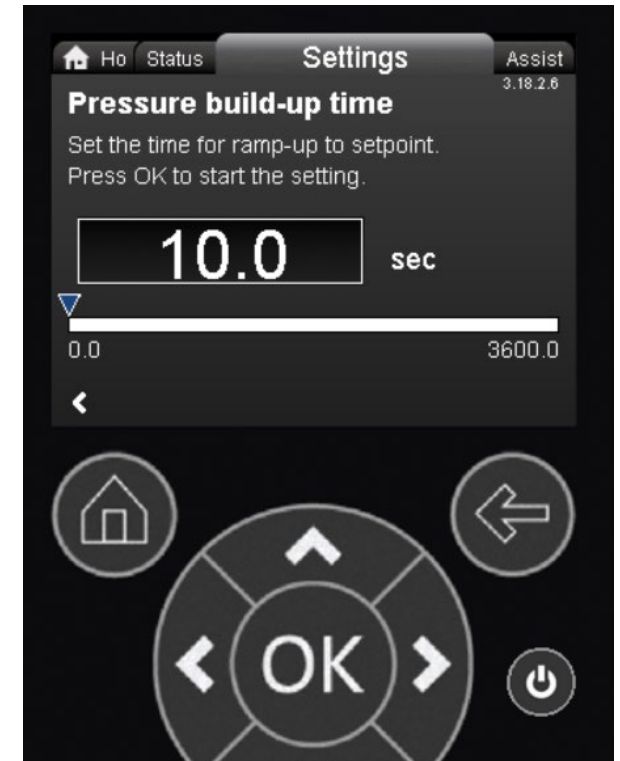
- This setting is the action the MLE motor should take if the filling pressure is not met within the max filling timeframe.
- Warning: Only a warning notification on the screen of the MLE to the operator, but no action is taken
- Alarm + Stop: Pump alarms, shuts down, and alerts the user from the screen with an alarm icon



Pressure build-up time



- After the filling pressure is met, you may not want the pump to ramp up quickly to reach the setpoint.
- After reaching the pipe filling pressure, this setting is the time in which the pump will take to ramp up to meet the constant pressure setting.



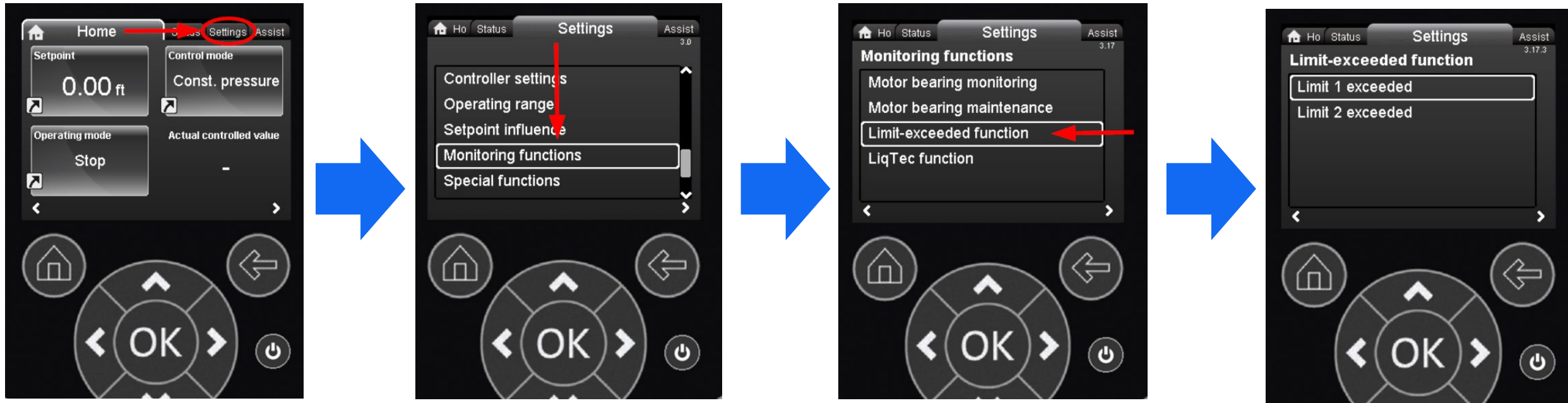
Limit Exceed Function - Purpose



- The purpose of the limit exceed function is to alert the user of a specific value going above or below a defined setpoint
- The values for limit exceed can come from internal or external sources
- There are 2 limit exceed functions available



Limit Exceed Function



Limit Exceed Function

For this example, we are going to set a limit exceed for *discharge pressure* reaching *above* a set value



Start with picking what value we want to have limit exceed monitoring



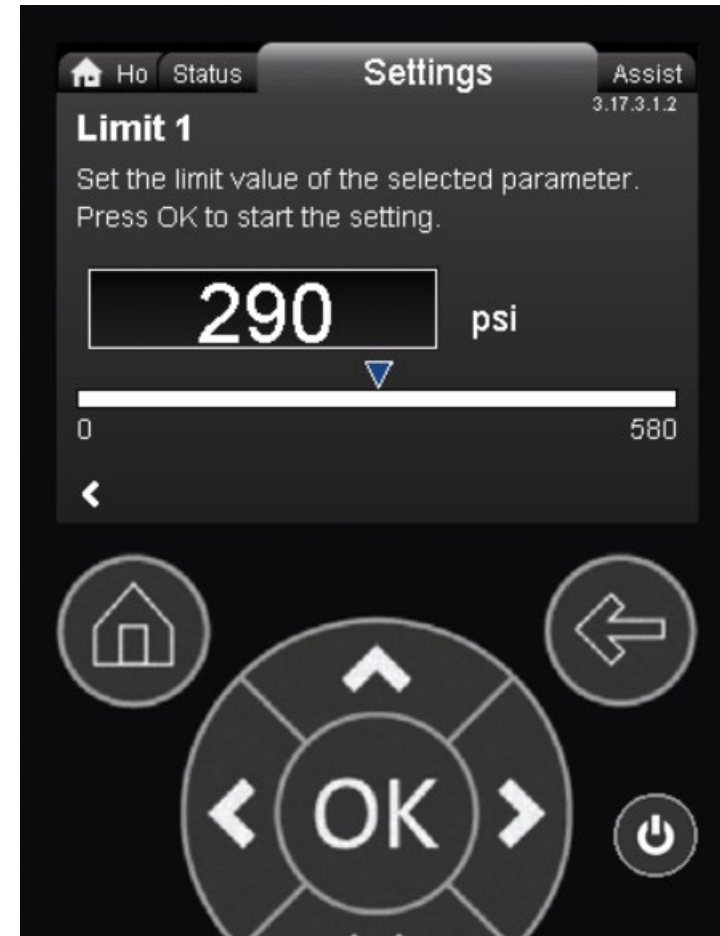
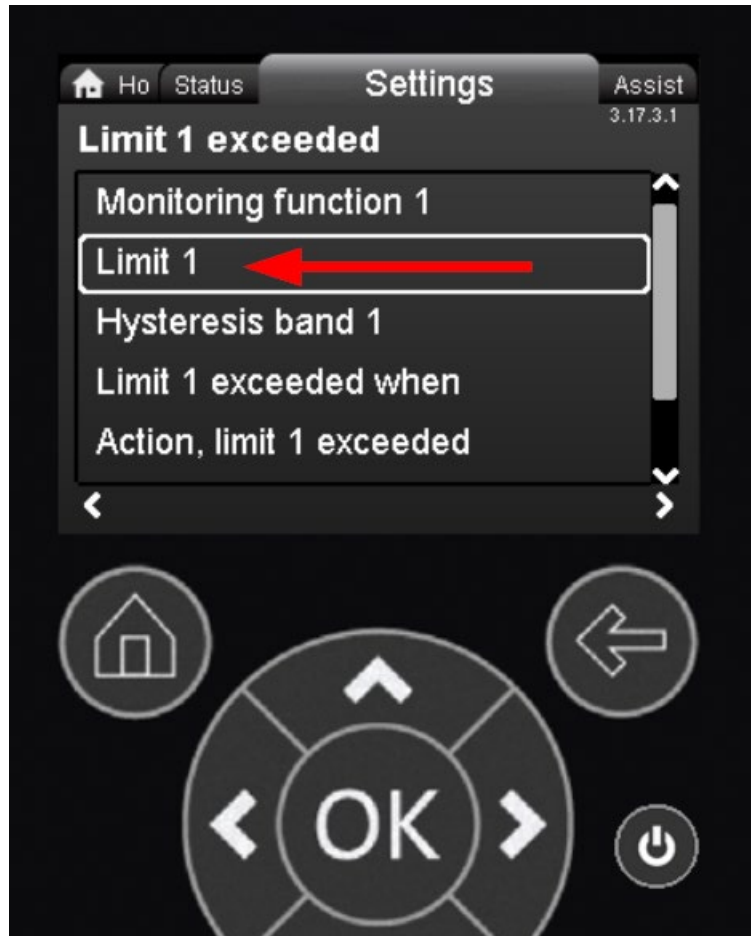
Other values for limit exceed monitoring



The following values are available to set limit exceed values:

- Inlet pressure
- Differential pressure, inlet
- Discharge pressure
- Differential pressure, outlet
- Differential pressure, pump
- Pressure 1, external
- Pressure 2, external
- Feed tank level
- Storage tank level
- Pump flow
- Flow, external
- Liquid temp.
- Temperature 1
- Temperature 2
- Differential temperature, external
- Ambient temperature
- Other parameter
- Actual value
- Speed
- Motor load
- Motor current

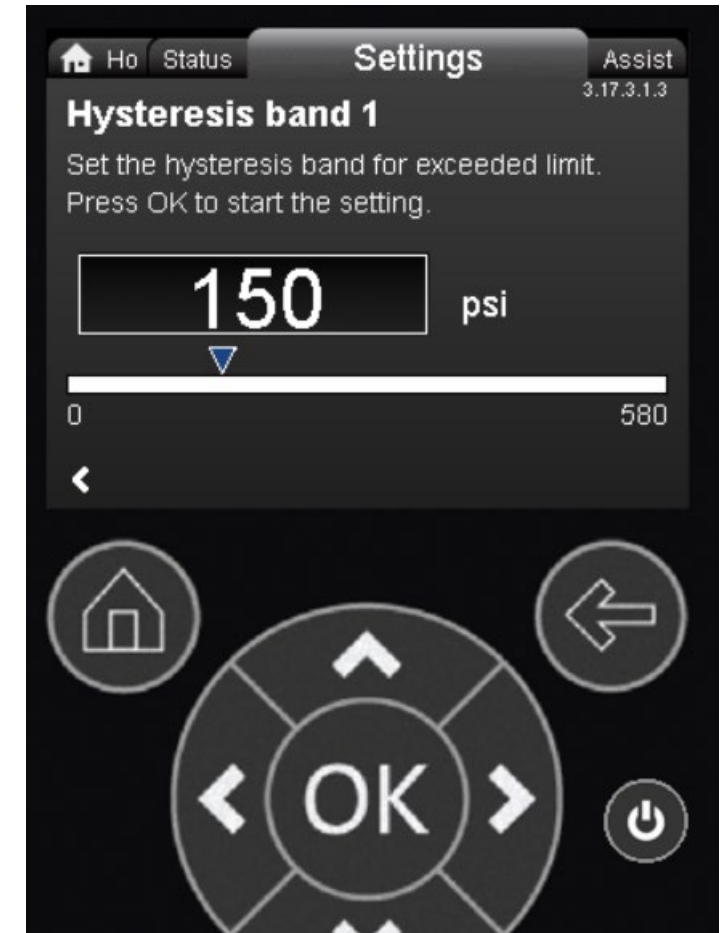
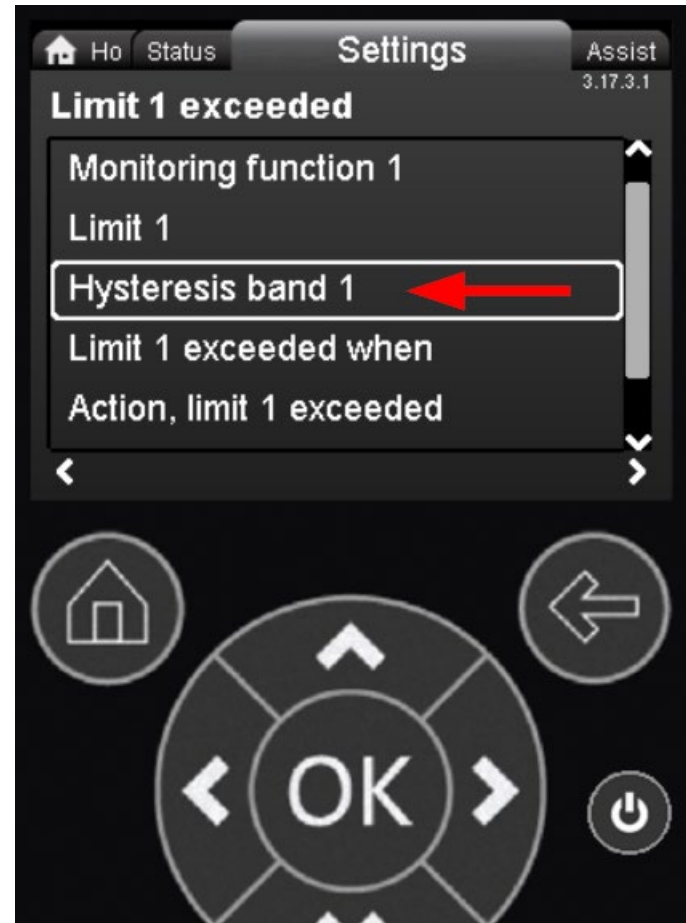
Setting the value for the limit



Setting Hysteresis band – What is it?



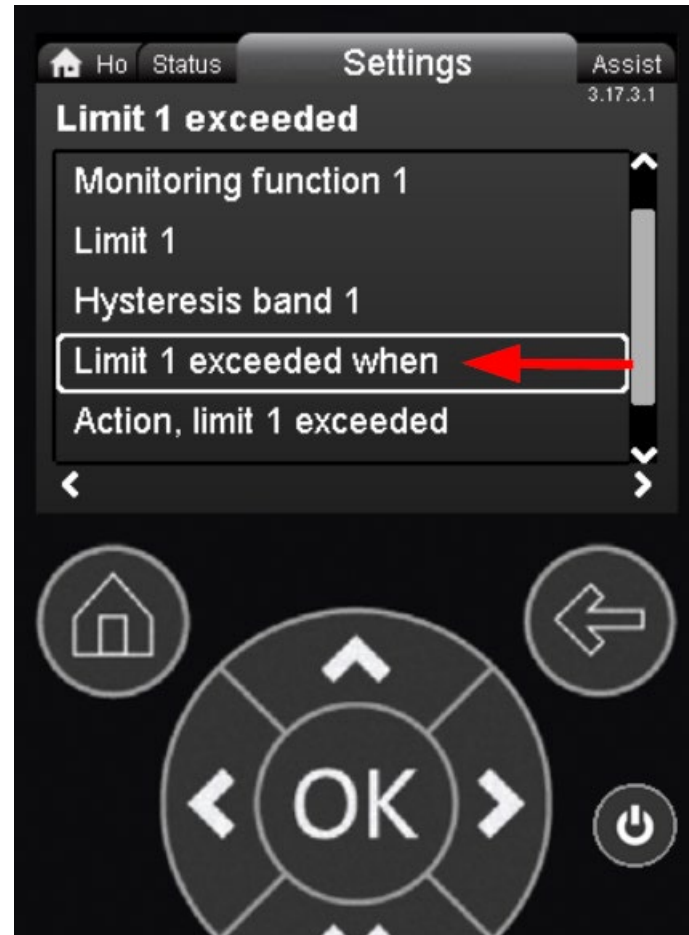
- The Hysteresis band is the value that the function resets after reaching a limit exceed.
- In this example, we will set if the constant pressure limit at 290psi, and the limit exceed trips, it will reset when the psi reaches 150psi.



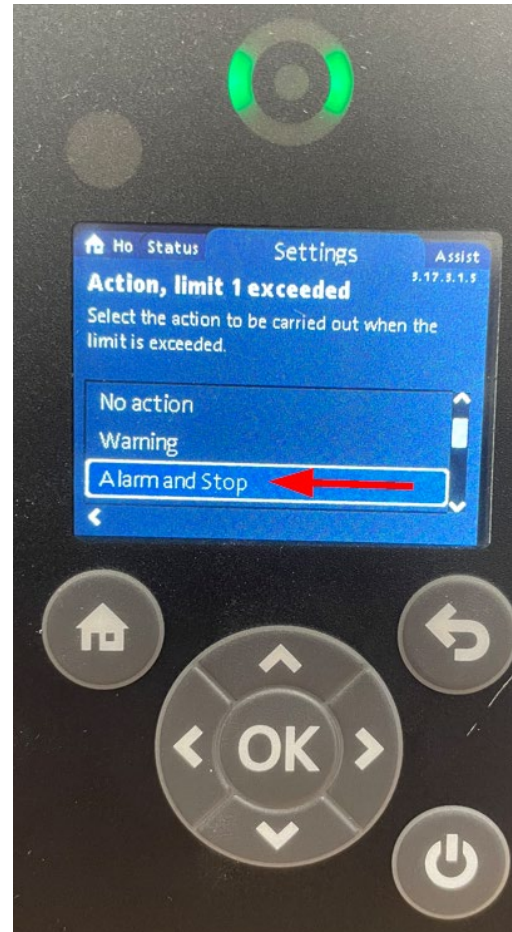
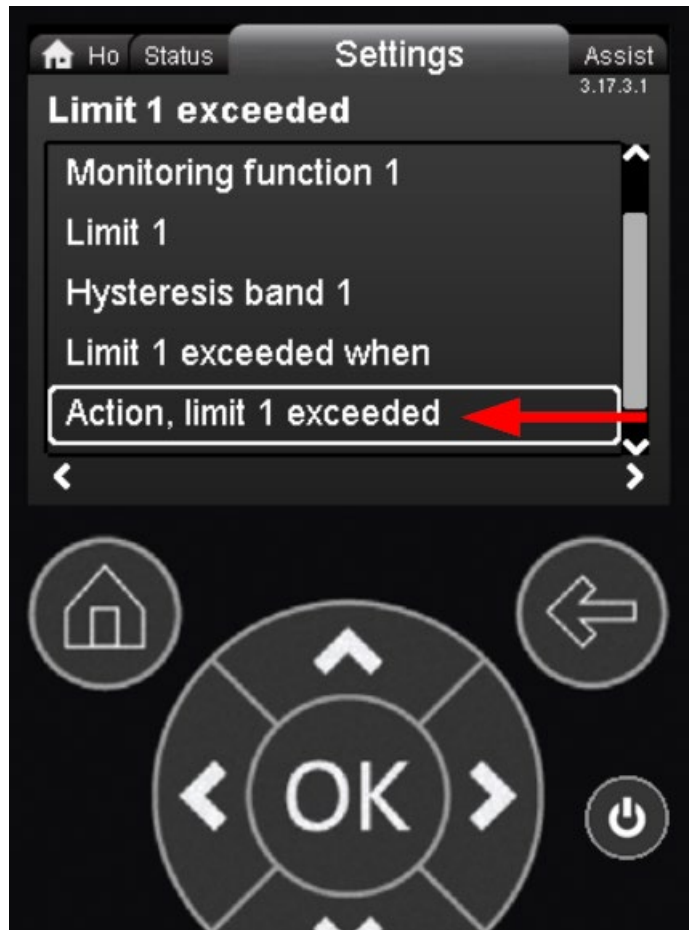
When the limit is above or below?



- This setting allows you to choose whether the value entered for the limit value is if the actual value goes above or below.



What action do you want the pump to take?



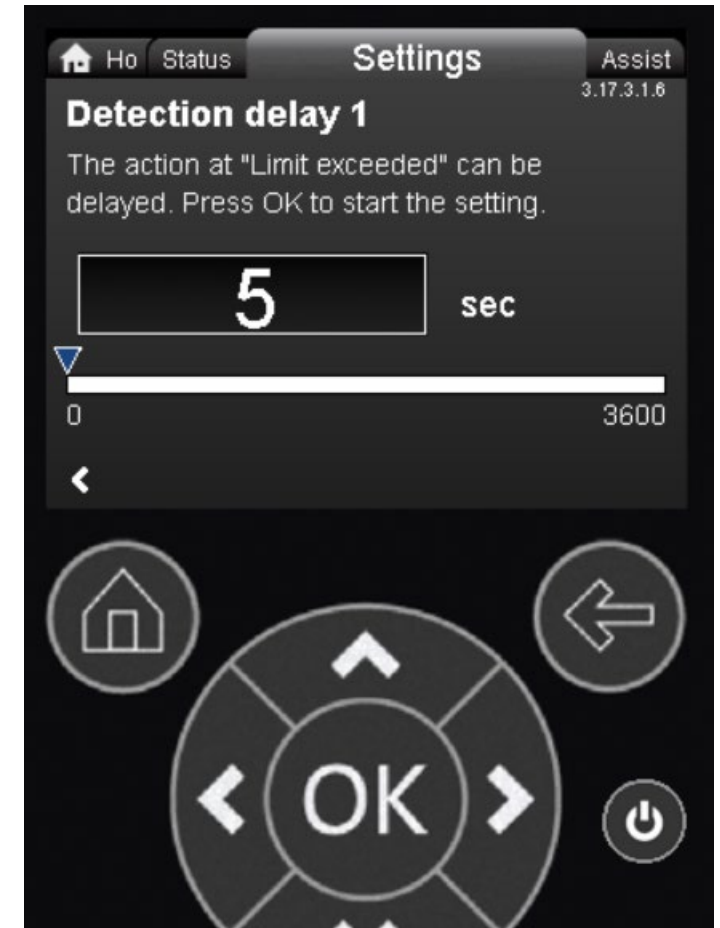
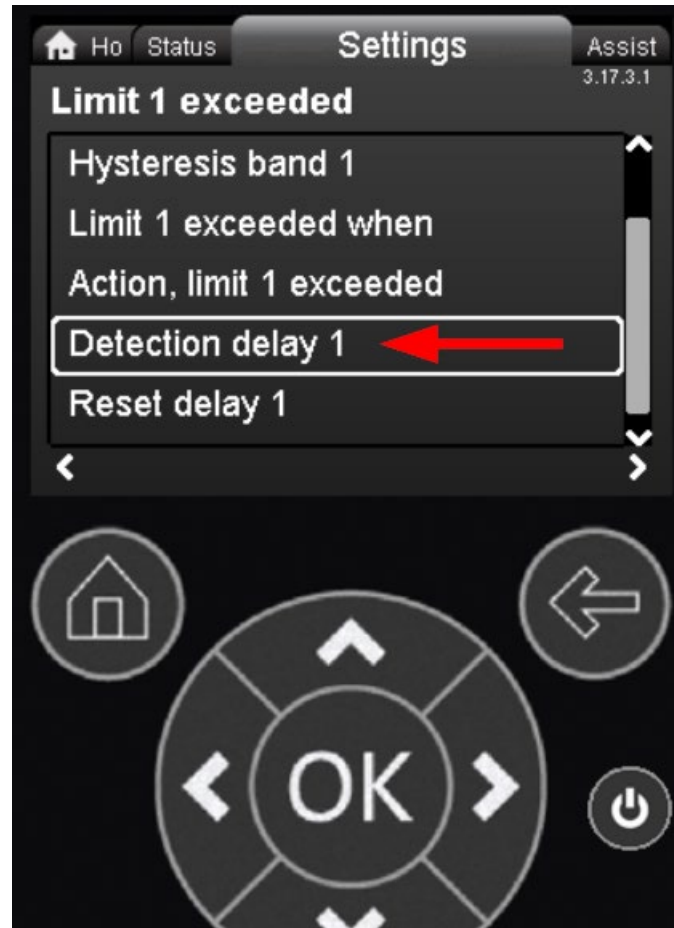
All actions:

- Warning
- Alarm and stop
- Alarm and minimum speed
- Alarm and maximum speed
- Alarm and user-defined speed
- Stop
- Minimum speed
- Maximum speed
- User-defined speed

Limit Exceed - Detection Delay



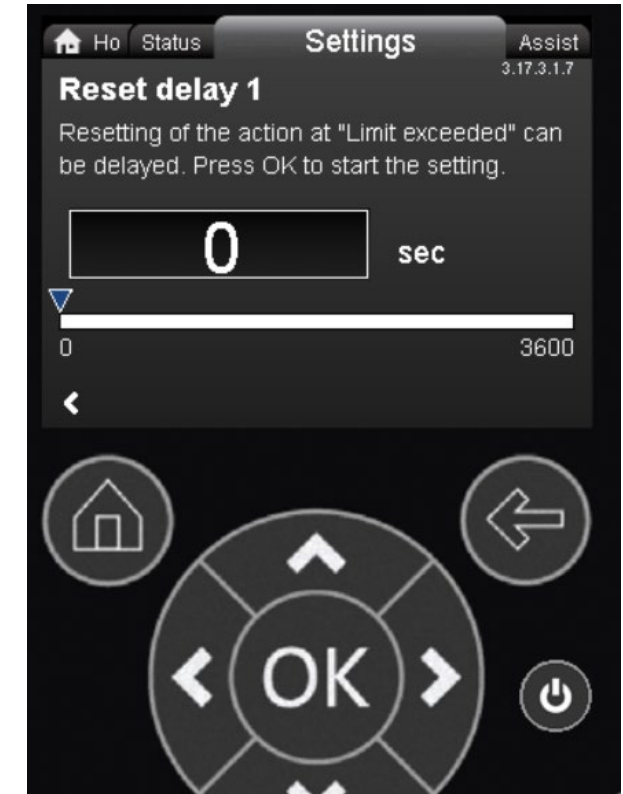
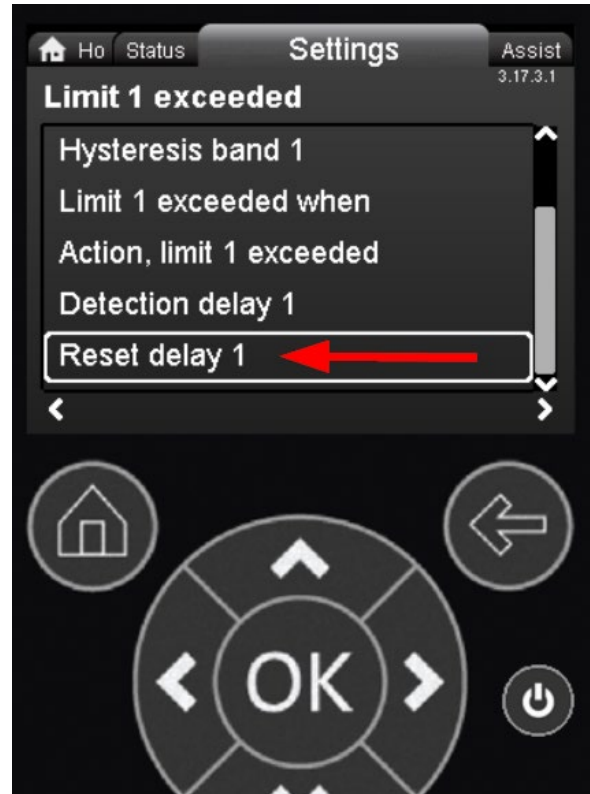
- When we want to make sure the limit is exceeded for a period of time before taking the defined action



Limit Exceed – Reset Delay



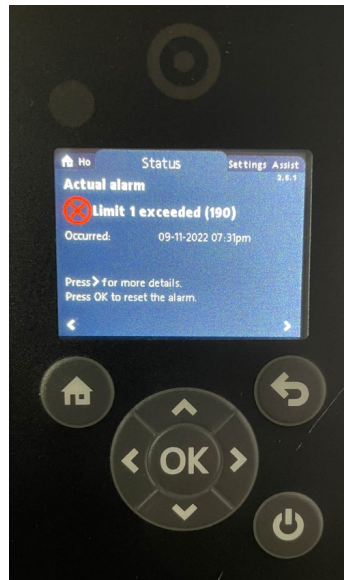
- When the limit set is exceeded then reached the hysteresis to allow the pump to reset, but we want to wait a period of time before restarting to make sure the event is truly cleared.
- Saves short cycling of limit exceed actions



Limit Exceed Function – Need to know



- Outside of monitoring liquid tank levels, running an under-limit exceed alarm can cause issues with the operation.
 - For example, if a pump has a BELOW limit exceed function for discharge pressure, and the pump is turned off but still powered and the pressure in the system drops, the alarm will go off when the pressure drops below the limit exceed value.
 - If the action is to “alarm+stop,” the pump will stop, and the pump will not reset until the pressure increases above the hysteresis setting.
 - This is a known inherit issue with this function and will be addressed in future revisions of software
- When a limit exceed condition is met, the display will show a general alarm called, “Limit Exceed,” as seen in the photo below, but it does not show what is exceeded



Thank You!

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