

Pump monitoring – with digital differential transmitter and switch DE39:

The DE39 in its version with a LC display offers the possibility of displaying the inlet pressure P-, the outlet pressure P+, the differential pressure dP, and the volume flow at the same time (functional scheme, illustration 1).

The volume flow Q is calculated in the unit by means of up to 30 value pairs (differential pressure and pertaining volume flow). The value pairs are entered by the user. The corresponding analog output signal is fed to the pump control enabling the volume flow to be adapted by means of speed adjustment of the pump (illustration 2).



Illustration 1:

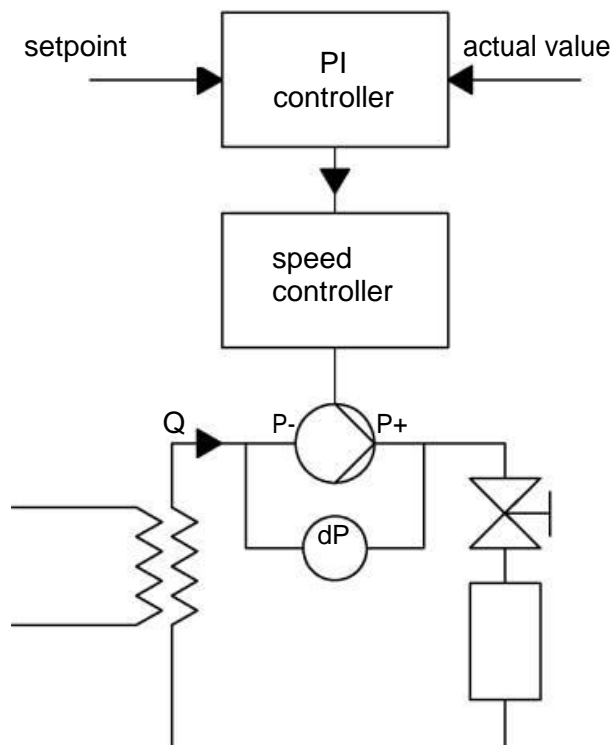
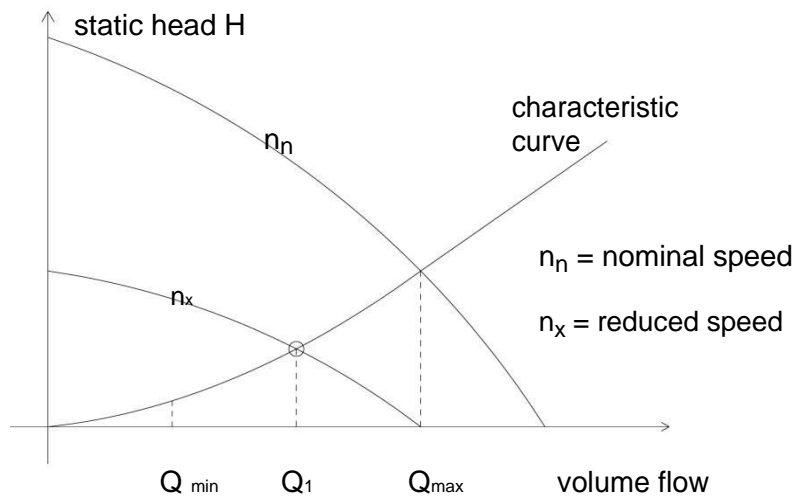
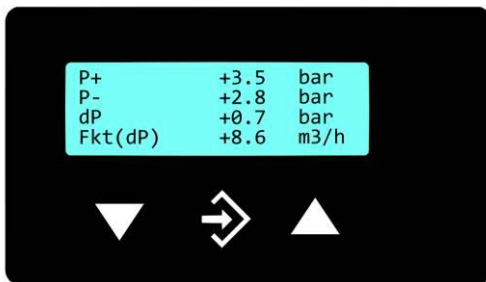


Illustration 2:



The above stated measured values serve to view the pump operating status at a glance; the example below shows trouble free operation:



Depending on displaying either differential pressure or the volume flow, different output values are available. Proportional to the display an electric signal on channel 1 as well as a signal proportional to the outlet pressure (alternatively inlet pressure P-, differential pressure dP or volume flow Q). Both potential free switch contacts can be freely assigned to either channel.

Irregular operating conditions:

Irregular operating conditions (e.g. cavitation, closed sliding valve, air in the system) will cause characteristic pressure conditions to emerge. These can be read directly from the display or assessed by use of the two analog output signals.

In case of a cavitation the outlet pressure P+ will reach inadmissibly high values, the inlet pressure will fall below 0, and the differential pressure dP will be too high.

When operating against a closed sliding valve, both inlet pressure and outlet pressure may rise to unusually high values, with the signal for the outlet pressure P+ becoming too high.

Any air in the system will cause the outlet pressure P+ and consequently the differential pressure dP to strongly fluctuate (output signals changing proportionally).