



GRUNDFOS
ECADEMY

GRUNDFOS AUTOADAPT

WHY REGULATED CIRCULATORS?

Two sets of related issues

To understand the advantage in using regulated circulators, it's important to understand two sets of related issues:

- **Fixed versus variable** speed circulators
- **Constant versus proportional** pressure control

But first, let's review how a building's heating demands are in continual flux...

Heating demands change all the time

In any building, heating demands are in a **state of continuous change**. This is influenced by several factors, including:

- Ambient temperature
- Seasonal changes
- Human activity
- Other heating sources

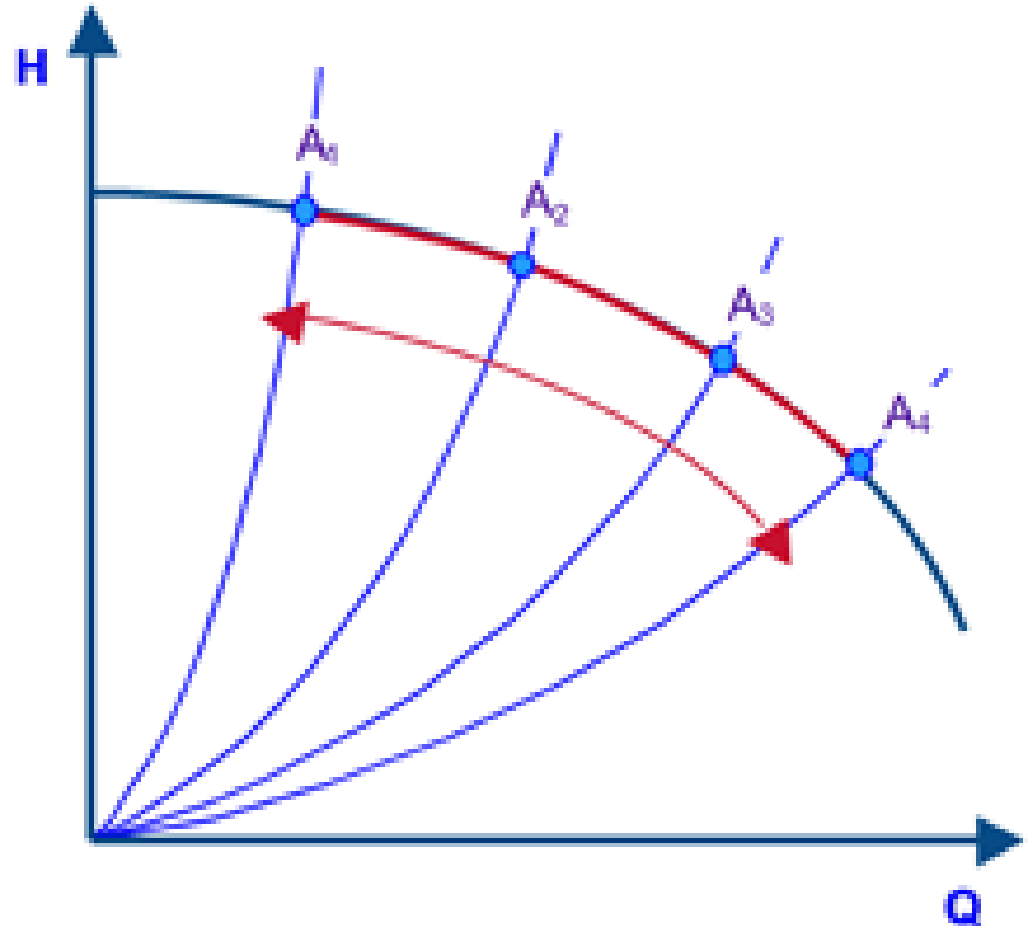


Fixed speed circulators

Both fixed and variable speed circulators can meet heating demands. But they do so in very different ways.

In systems with **fixed speed circulators**:

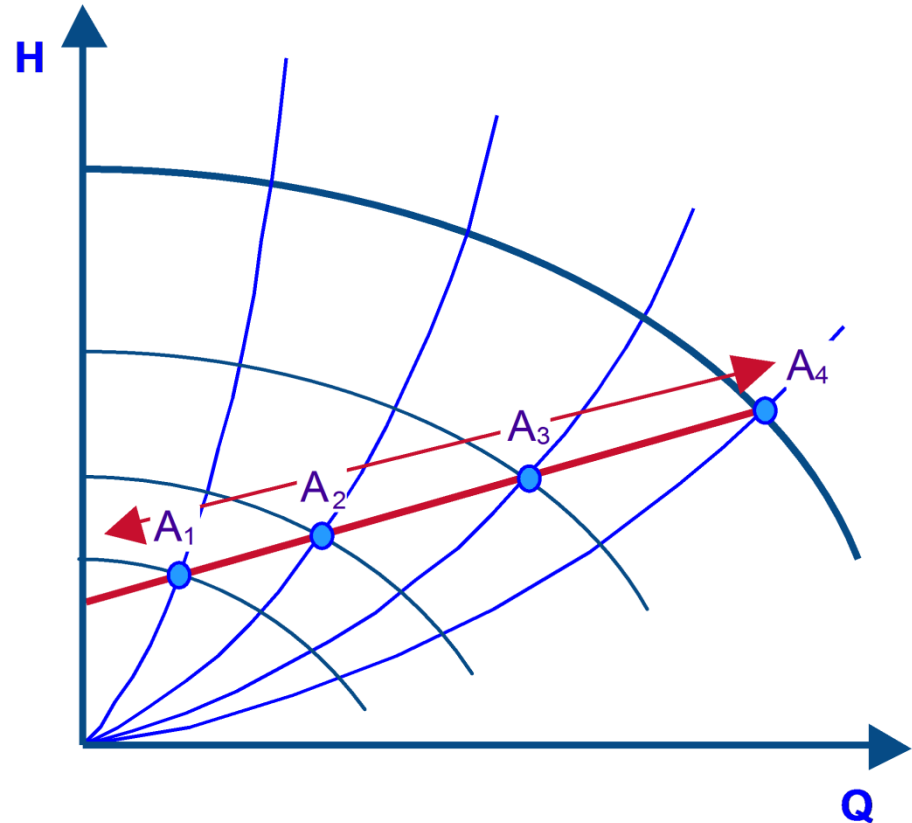
- Pressure increases with decreasing flow
- A differential pressure bypass valve is required to reduce pressure at part load



Variable speed circulators

Where fixed speed circulators run at full speed all the time...

... variable speed pumps automatically adjust their output to changing demands.



Fixed speed vs. variable speed

In practical terms, it's like the difference between a car idling at full throttle at a stoplight...

... and an intelligent car that shuts off its motor when idling.

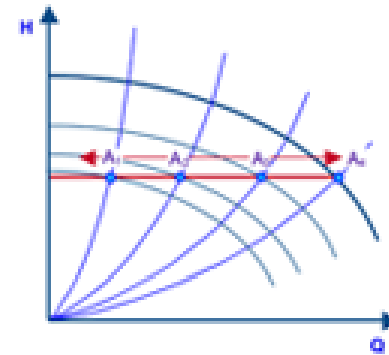
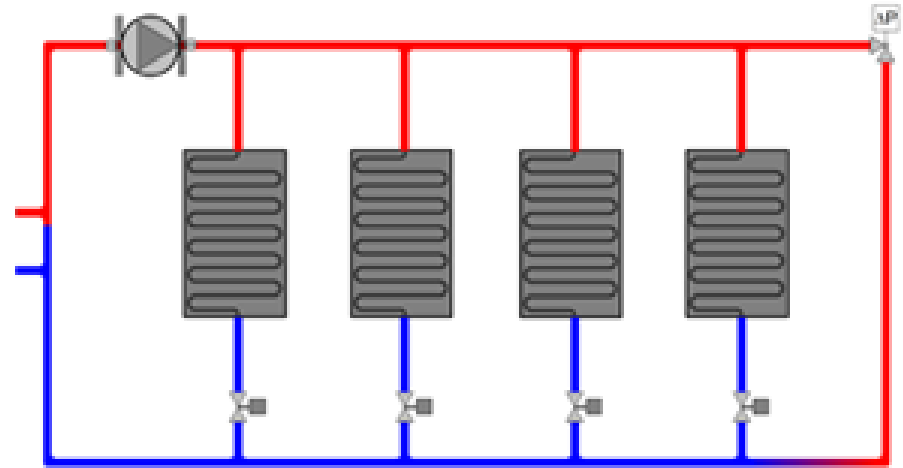


Constant pressure control

There are two ways to regulate a variable speed circulator:

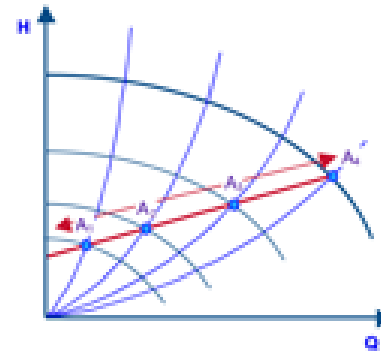
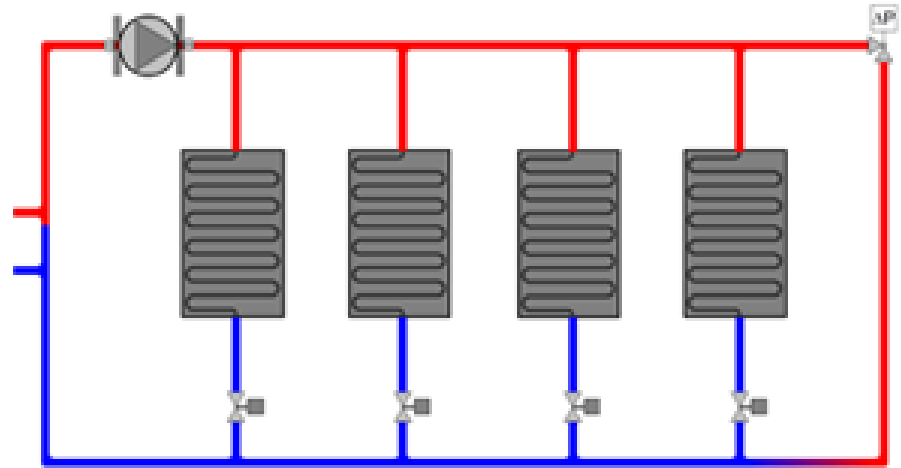
- Constant pressure control
- Proportional pressure control

With a constant pressure control system, **only flow is changed, not head.**



Proportional pressure control

With a constant pressure control system, **flow and head are adjusted to meet changing needs.**



Grundfos regulated circulators

Grundfos circulators use intelligent software such as *AUTOADAPT*, rather than sensors, to estimate differential pressure.

- With decreasing flow, pump pressure is kept constant by changing the speed
- With decreasing flow, differential pressure decreases by changing the speed

* The differential pressure bypass valve is removed



Benefits summary

Grundfos variable speed circulators with proportional pressure control offer:

- Reduced speeds whenever possible
- Lower energy consumption
- Lower energy bills
- Quieter operation





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