

Bypass commissioning Alpha2 or 2L

For variable speed pumps, a manual fixed bypass arrangement is recommended.

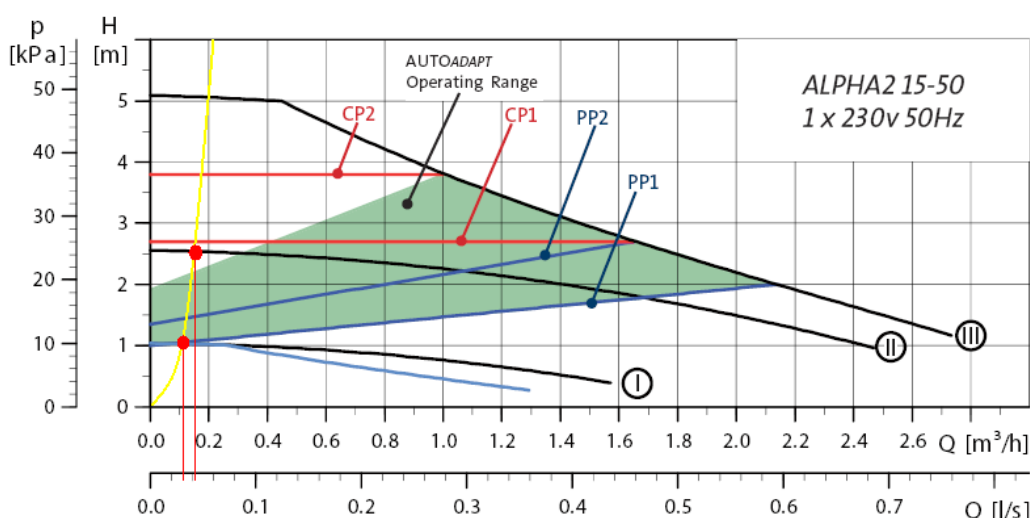
An automatic bypass valve should not be used with the Alpha2 pump in proportional pressure control. For condensing boiler, the operation of an automatic bypass with proportional pressure control is counter productive to maintaining condensing boiler efficiency at high load conditions. As the pump pressure increases, the bypass flow will also increase which raises the boiler return water temperature and reduces boiler efficiency.

In constant pressure operation a fixed manual bypass for will maintain a constant bypass flow.

Where the required bypass flow rate is small, a manual fixed bypass is more beneficial to efficient boiler operation than an automatic bypass. As the pump pressure increases, the higher system resistance of a fixed manual bypass gives a smaller increase in return flow than with an automatic bypass.

Fixed Manual Bypass

A fixed bypass is a manually adjusted valve which is set to give the required bypass flow. It could be a simple valve, but Grundfos recommends the use of the Taco Nova Setter valve with flow gauge.



The system characteristic curve for a fixed bypass with a small flow is shown in the above chart by the yellow curve. The bypass is set for a small bypass flow 0.04 l/s (2.4 l/m).

In order to speed up the bypass commissioning process, adjust the bypass with the pump on a fixed speed setting. This avoids pressure changes due to variable speed operation affecting the bypass flow. The fixed speed required for setting the bypass depends on the final operating mode of the pump.

- Final Operation - AutoAdapt or Proportional Pressure PP1 or PP2

Adjust and set the bypass using pump set to fixed speed I.

In AutoAdapt or Proportional Pressure PP1 or PP2 settings the lowest pump pressure is between 10-14 kPa. By using fixed speed setting I to adjust the bypass, the minimum flow will be ensured. It can be seen above, that if the fixed bypass is set to 0.025 l/s on speed I, the bypass flow will only increase to 0.041 l/s with a pump pressure of 37 kPa.

The highest pump pressure when using AutoAdapt or PP1 or PP2 control is 37 kPa.

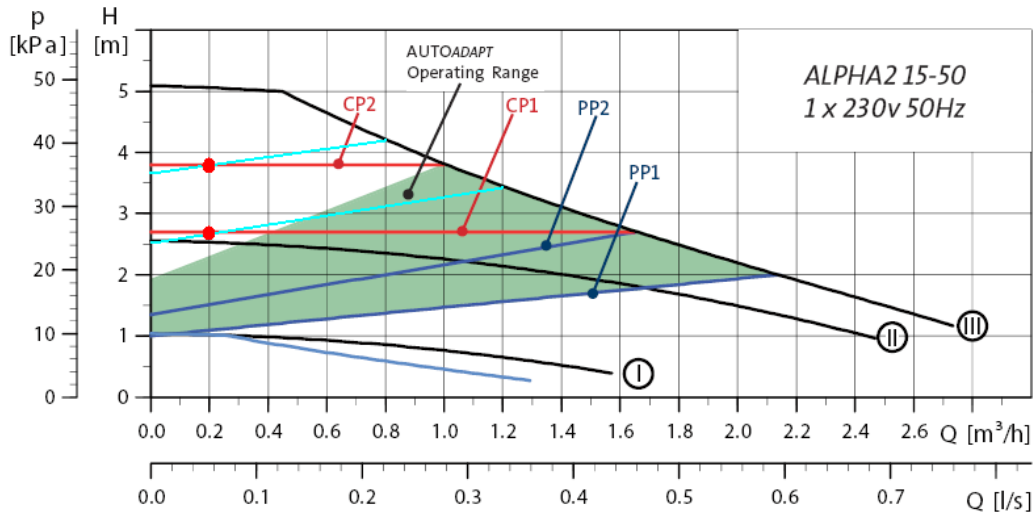
- Final Operation - Constant Pressure, CP1, CP2

Adjust and set bypass using pump set to fixed speed 2.

Automatic Bypass Valve

An automatic bypass may only be used with a variable speed pump, if the pump is set to constant pressure control CP1 or CP2. In this case as the pump pressure remains constant, and the bypass flow will also remain constant.

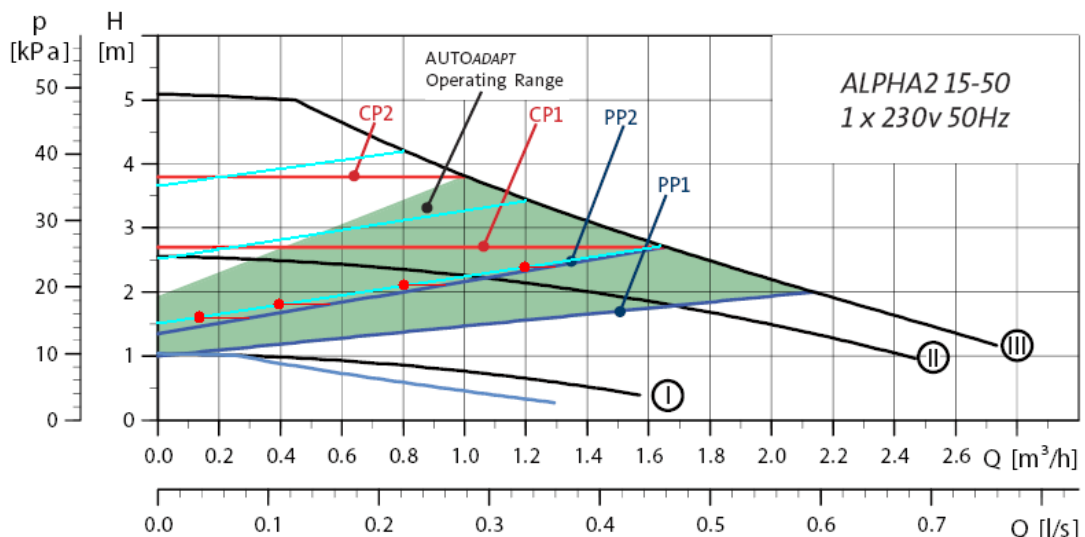
For an automatic bypass valve, the flow bypassed depends on the valve pressure setting and the differential pressure across the valve itself. If an automatic bypass valve must be used with the Alpha2, it should only be used with the pump set to constant pressure control CP1 or CP2.



● Final Operation - Constant Pressure, CP1, CP2

An automatic bypass should be set with the pump operation set to Constant Pressure, CP1 or CP2 according to the system duty required.

An automatic bypass valve should not be used with the Alpha2 pump in proportional pressure control. As the heating load increases, the pump pressure increases, the increasing pump pressure then causes the automatic bypass valve to open further increasing the bypass flow. The flow through an automatic bypass valve will increase more than it would for a fixed bypass in this situation.



If an automatic bypass valve must be used, then a manual fixed bypass valve should be installed in series with the automatic bypass valve. The fixed manual bypass will restrict the flow as the automatic bypass valve opens.