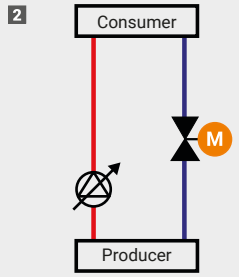
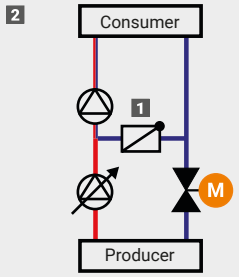
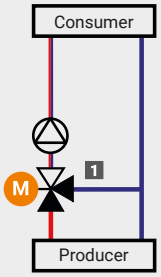
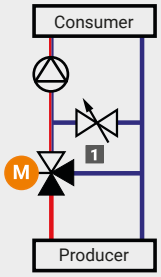
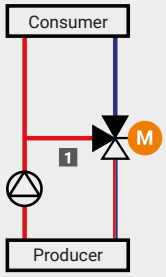
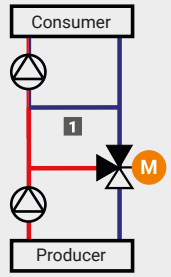
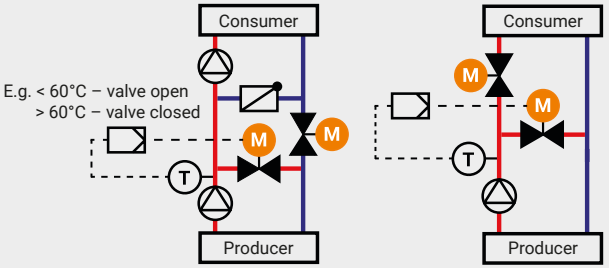
Selection table of basic hydronic circuits

	Normal circuit operations				Unusual circuit operations	
Type of circuit	**Throttling circuit**	**Injection circuit with 2-way valve**	**Mixing circuit**	**Mixing circuit with fixed pre-mixing**	**Diverting circuit**	**Injection circuit with 3-way valve**
Icon						
Distributor type	Pressurised		Non-pressurised or low-pressure		Pressurised	
Supply temp., consumers	Supply $_{Producer}$	Variable	Variable	Variable	Supply $_{Producer}$	Variable
Flow at the consumer	Variable	Constant	Constant	Constant	Variable	Constant
Pumps	Producer pump	Producer and consumer pump	Only consumer pump	Only consumer pump	Producer pump	Producer and consumer pump
Normal Applications	– Zone control – Heater – Heat exchanger – Hot-water tank – Air cooler with dehumidification – Not for pre-heaters (danger of frost)	– Weather-guided supply temperature control – Air heater – When the supply temperature at the consumer is considerably lower than the supply temperature at the producer: e.g. Surface heating (floor heating, wall heating, ceiling heating, concrete core temperature control) – Air cooler without dehumidification	– Weather-guided supply temperature control – Air heater – Air cooler without dehumidification – Only use with heat generators with low water-side pressure loss, or after a hydronic switch or after a buffer tank	– When the supply temperature at the consumer is considerably lower than the supply temperature at the producer: e.g. Surface heating (floor heating, wall heating, ceiling heating, concrete core temperature control) – Only use with heat generators with low water-side pressure loss, or after a hydronic switch or after a buffer tank	– Air cooler with dehumidification – Air heater without outdoor air component (danger of frost and air stratification possible due to strong temperature differences in the air duct during partial-load operation)	– Air heater – Air cooler without dehumidification
Pressure-independent solutions	The system is always perfectly balanced at full load and partial load when pressure-independent solutions are used.					
Pressure-dependent solutions and note on design	If there are multiple consumers, hydronic balancing with adjustment and throttle valves (control valves) is required. ➔ Plant is calibrated for full-load operation only!				If there are multiple consumers, hydronic balancing with adjustment and throttle valves (control valves) is required. ➔ Plant is calibrated for full-load operation only!	
	Δp_v100 = min. 3 kPa for supply temperature controls and Δp_v100 = min. 10 kPa for room air technical applications				Δp_v100 = Δp consumer	Δp_v100 = min. 3 kPa
Remark		Works like a mixing circuit, but with producer pump.	If more than 25% flows through gate B in the design case, then mixing circuit with fixed pre-mixing.		Is practically never used anymore; causes high return temperatures in heating applications.	

Selection table of basic hydronic circuits

BELIMO

Legend	2-way valve; Check valve, Check damper; 3-way valve; Adjusting/throttling valve; Pump; Controller; Variable-speed Pump
1 Bypass	Same DN as the main line
2 Injection circuit with 2-way valve or throttling circuit with keeping the feeder line warm	 **Valve in the bypass:** DN 15 usually sufficient for keeping the feeder line warm.
Notes on the subject of valve authority	– Recommended valve authority P_v between 0.3 ... 0.7 – Supply temperature control recommended P_v approx. 0.3 – Ventilation and air-conditioning applications recommended P_v approx. 0.6
Link to our webinars	
Contact	If you have any questions, please send us an email at: training@belimo.ch

EN – 03.2023 – Subject to technical modifications