



Innovative, user
friendly
and reliable.

Applications Chillers and Cooling Towers

Edition 2024-05/B

BELIMO[®]

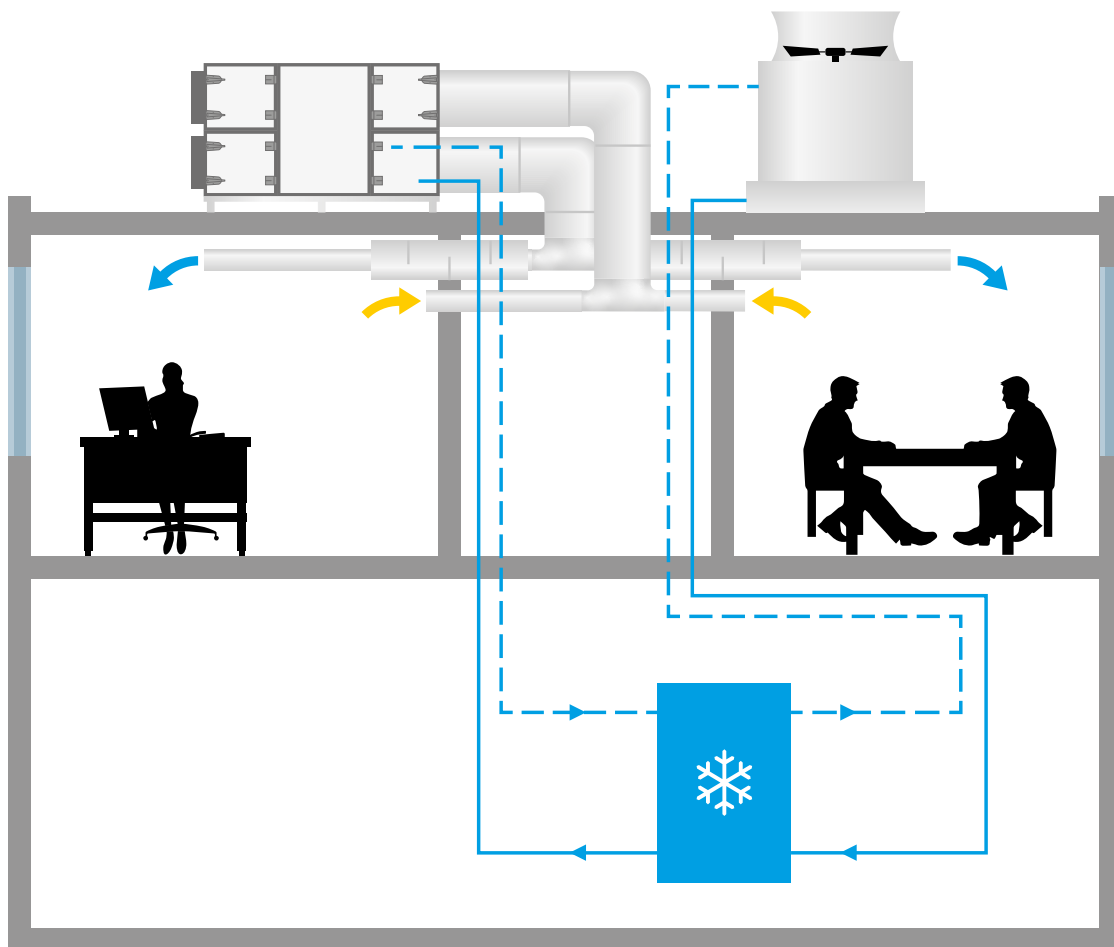
Preface

Thank you for your interest in our products. In this brochure you will find information for planning applications with chillers and cooling towers. We also describe innovative products from Belimo that you can use in your cooling applications. Our recommendations and valuable notes are not a substitute for the planning and design of individual hydronic component systems. As a rule, planning an application should always be done in coordination with the manufacturers of chillers, cooling towers and pumps.

All chapters are structured as follows:

- Hydronic diagram
- Application description
- Bill of material
- Belimo – features and advantages

You can find summarised tender texts starting from page 44.



The diagram shows an example of the interaction between a chiller and a cooling tower with a cooling coil in a ventilation and air-conditioning device (consumer).

Product overview

Belimo butterfly valves and actuators offer maximum flexibility

Butterfly valves play a decisive role in controlling, tight-closing and changeover of high-energy flows. They are used in connection with expensive systems such as chiller plants, cooling towers or heat generation systems. Despite their small size compared to the overall system, they have a major influence on the smooth and energy-efficient operation of these systems. Our butterfly valves have been specially developed for the heating, ventilation and air-conditioning market and meet the respective requirements in their entirety.



Simple and durable globe valve actuators

Globe valves are the proven and trusted solution for chiller and cooling tower applications. The globe valve actuators from Belimo with their universal actuator concept ensure optimum and robust motorisation. They are the ideal complement to our characterised control valves, even when it comes to high temperatures, pressure classes, flow rates and linear control characteristics. Simple and safe to install, reliable and maintenance-free during operation. Also available in stainless steel for special applications.



Belimo sensors – the perfect complement to actuators and valves

The sensors from Belimo meet the highest quality and reliability requirements. Innovative technology ensures easy installation and seamless compatibility with all major building automation systems. Thanks to the well-thought-out design, installation and commissioning only take a few steps. The specially designed snap-on cover enables tool-free mounting. Spring loaded terminal blocks are used in the housing for easy wiring.



Product comparison between Belimo butterfly valves and globe valves

2-way product comparison



	2-way open/close butterfly valve	2-way control butterfly valve	2-way globe valve
Solutions	DN 25...700 Fail-safe: DN 25...300	Equal-percentage characteristic curve: DN 25...700 Linear characteristic curve: DN 100...300 Fail-safe: DN 25...300	Equal-percentage characteristic curve: DN 15...150 Linear characteristic curve: DN 200/250 Fail-safe: DN 15...100
	For open and closed water circuits	For open and closed water circuits	For open water circuits: DN 15...50 For closed water circuits: DN 15...250
Flexibility	<ul style="list-style-type: none"> – Running time adjustable¹⁾ (JR: 20...120 s, PR: 30...120 s) – Universal power supply 24...230 V¹⁾ – Degree of protection IP66/67 	<ul style="list-style-type: none"> – Running time adjustable¹⁾ (JR: 20...120 s, PR: 30...120 s) – Universal power supply 24...230 V¹⁾ – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative¹⁾ – Degree of protection IP66/67 	<ul style="list-style-type: none"> – Adjustable running time, 35...150 s²⁾ – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative²⁾ – Adjustable characteristic curve²⁾
Installation	Any direction of flow and any installation in the pipeline	Any direction of flow and any installation in the pipeline	Take note of the direction of flow when installing in the pipeline
Commissioning	Clearly visible position indication Fast and simple commissioning with the Belimo Assistant ¹⁾	Clearly visible position indication Fast and simple commissioning with the Belimo Assistant ¹⁾	With position indicator
Communication	Belimo-MP-Bus DN 25...300 Modbus RTU DN 25...300 BACnet MS/TP DN 25...300	Belimo-MP-Bus DN 25...300 Modbus RTU DN 25...300 BACnet MS/TP DN 25...300	Belimo-MP-Bus DN 15...150 Modbus RTU DN 15...100 BACnet MS/TP DN 15...100
Energy efficiency	Leakage: leakage rate A, tight (EN 12266-1)	Leakage: leakage rate A, tight (EN 12266-1)	Leakage: 0.05 % of K _{vs}

¹⁾ Motorisation with JR/PR actuators DN 100...300

²⁾ Motorisation with actuators with MP-Bus DN 15...150

3-way product comparison




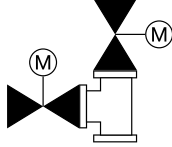



	3-way changeover butterfly valve	3-way control butterfly valve	3-way globe valve
Solutions	DN 100...300	Equal-percentage characteristic curve: DN 100...300 Linear characteristic curve: DN 100...300	Equal-percentage characteristic curve: DN 15...150 Linear characteristic curve: DN 200/250 Fail-safe: DN 15...100
	For open and closed water circuits	For open and closed water circuits	For open water circuits: DN 15...50 For closed water circuits DN 15...250
Flexibility	<ul style="list-style-type: none"> – Universal power supply 24...230 V – Running time adjustable (JR: 20...120 s, PR: 30...120 s) – Degree of protection IP66/67 	<ul style="list-style-type: none"> – Universal power supply 24...230 V – Running time adjustable (JR: 20...120 s, PR: 30...120 s) – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative – Degree of protection IP66/67 	<ul style="list-style-type: none"> – Adjustable running time, 35...150 s – Control: 0.5...10 V, 2...10 V, 4...20 mA, communicative ¹⁾ – Adjustable characteristic curve ¹⁾
Installation	Any direction of flow and any installation in the pipeline or on the optionally available T-piece	Any direction of flow and any installation in the pipeline or on the optionally available T-piece Installation permissible at the mixing and distribution point	Take note of the direction of flow when installing in the pipeline Installation usually only permissible at the mixing point
Commissioning	Clearly visible position indication Fast and simple commissioning with the Belimo Assistant	Clearly visible position indication Fast and simple commissioning with the Belimo Assistant	With position indicator
Communication	Belimo-MP-Bus DN 100...300 Modbus RTU DN 100...300 BACnet MS/TP DN 100...300	Belimo-MP-Bus DN 100...300 Modbus RTU DN 100...300 BACnet MS/TP DN 100...300	Belimo-MP-Bus DN 15...150 Modbus RTU DN 15...100 BACnet MS/TP DN 15...100
Energy efficiency	Leakage: Leakage rate A, tight (EN 12266-1)	Leakage: Leakage rate A, tight (EN 12266-1)	Leakage in control path: 0.05% of K_{Vs} Leakage in bypass: 1% of K_{Vs}



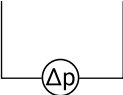
¹⁾ Motorisation with actuators with MP-Bus DN 15...150

Legend

Products

Symbol	Name	Symbol	Name
	Manual 2-way open/close valve		3-way globe valve
	2-way control butterfly valve / open/close butterfly valve / globe valve		3-way control butterfly valve / changeover butterfly valve
	2-way open/close ball valve		

Sensors

Symbol	Name	Symbol	Name
	Temperature sensor		Pressure sensor
	Differential pressure sensor		

Legend

Components




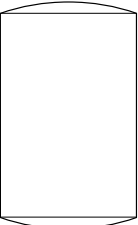
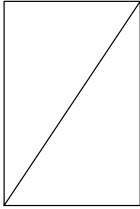
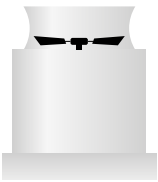




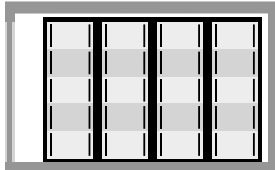
Symbol	Name	Symbol	Name
	Pump		Strainer
	Chiller		
	Buffer storage tank		Heat exchanger
	Closed cooling tower		Open cooling tower
	Dry-cooler		Ice storage tank
	Space with refrigeration requirement (consumer)		Data centre (consumer)

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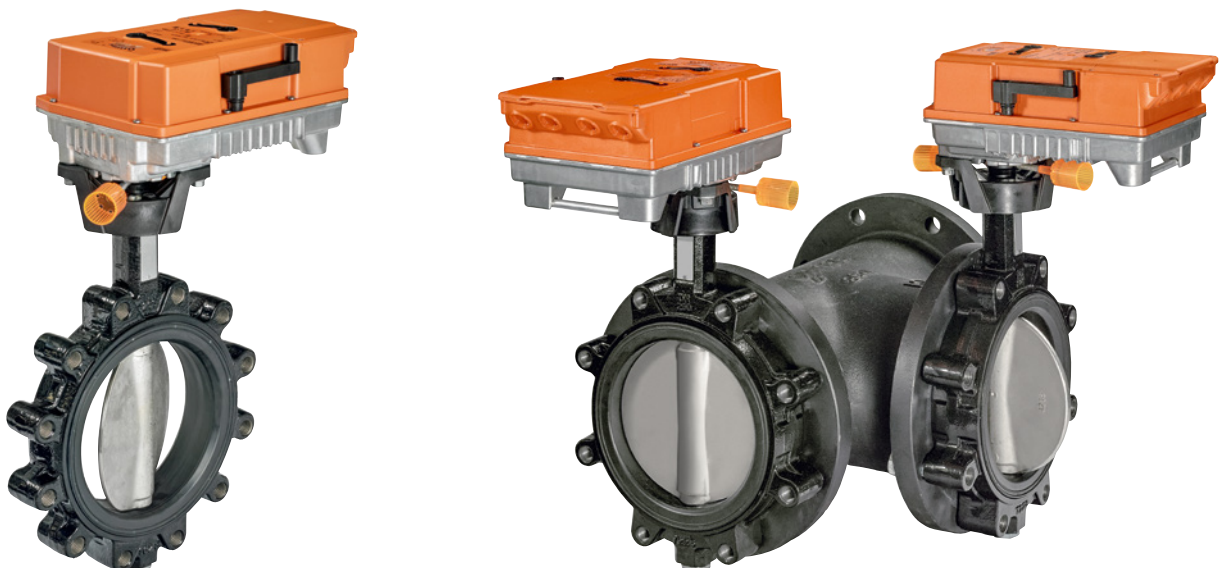
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1

Shutting off chillers and bypassing closed cooling tower Typical shut-off application with several chillers

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Shutting off chillers and bypassing closed cooling tower



Hydraulic diagram

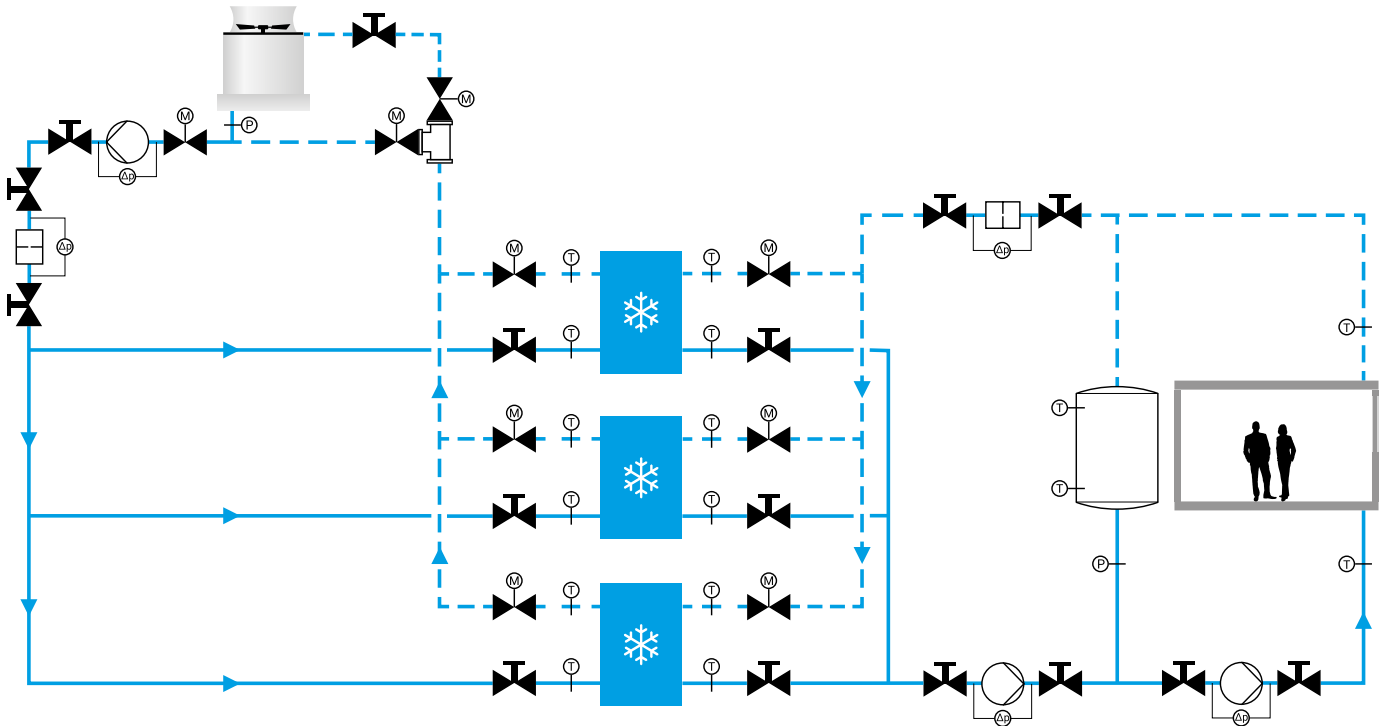


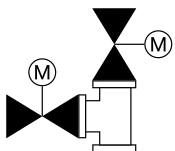


Illustration example

Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- Motorised open/close butterfly valves are responsible for shutting off the various chillers
- Depending on cooling requirements, one, two or three chillers are in operation
- Manual open/close butterfly valves with worm gears shut off the pumps, the chillers, the cooling tower and the strainers during commissioning or maintenance
- The 3-way control butterfly valve (diverting valve) performs temperature control on the cooling tower so that the downstream entry temperature on the chillers is not too low
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Differential pressure sensors monitor the strainers to detect contamination in the pipe system at an early stage
- Static pressure sensors detect leakages in the system
- In most cases, the flow rate of the generator (chiller) and of the consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation

Bill of material

	Belimo type	Description	Quantity	Costs
	D7..L/BAC	3-way control butterfly valve with lug type, DN 100...300	1	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	
	D6..W(L) D6..N(L)	Open/close butterfly valve, wafer or lug type, DN 25...700	7	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	7	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve with wafer or lug types with worm gear, DN 25...700	16	
	01DT-.. or 22DT-..	Temperature sensor	16	
	22WDP-..	Differential pressure sensor	5	
	22WP-..	Static pressure sensor	2	

Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1)	No energy loss
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

2

Shutting off chillers and shutting off open cooling tower with fail-safe

Typical shut-off application with fail-safe actuators

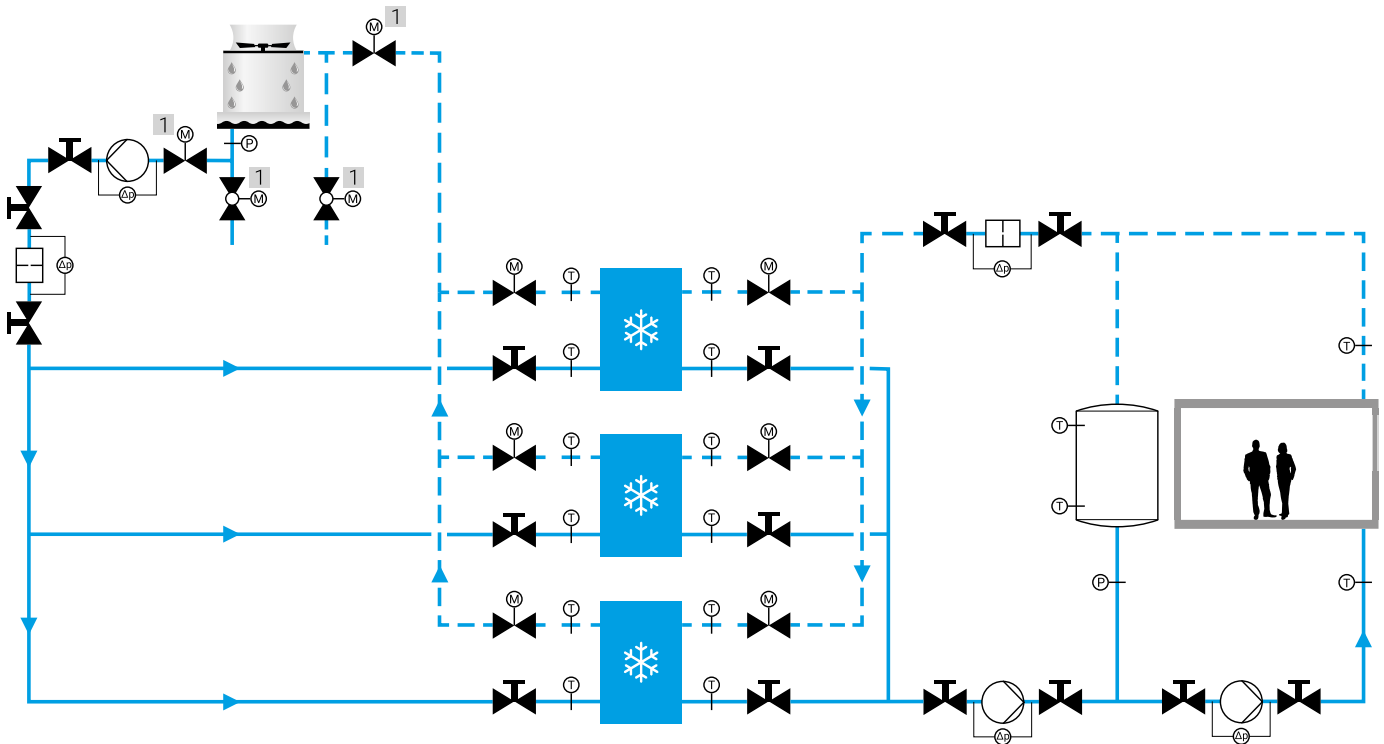
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Shutting off chiller and shutting off open cooling tower with fail-safe



Hydraulic diagram



1 fail-safe

Illustration example







Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- Shutting off the open cooling tower with fail-safe
- The open/close butterfly valves with fail-safe prevent the open cooling tower from running dry in case of voltage interruption
- Manual open/close butterfly valves with worm gears shut off the pumps, the chillers, the cooling tower and the strainers during commissioning or maintenance
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Differential pressure sensors monitor the strainers to detect contamination in the pipe system at an early stage
- Static pressure sensors detect leakages in the system
- In most cases, the flow rate of the generator (chiller) and of the consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation

- Open/close ball valves, for example with nominal diameter DN 20, ensure that the lines in open cooling tower are emptied prior to winter operation
- The open/close ball valves can optionally be motorised with a fail-safe actuator
- All valves underneath the open cooling tower are in a frost-free area

Bill of material

	Belimo type	Description	Quantity	Costs
	D6..W(L) D6..N(L)	Open/close butterfly valve, wafer or lug type, DN 25...700	8	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	6	
	PRKCA-BAC-S2-T.. 1	Multifunctional rotary actuator with fail-safe, 160 Nm, AC 24...240 V / DC 24...125 V	2	
	R20..-S.. + LR..A 1	Open/close ball valve DN 15...50 with rotary actuator 5 Nm Optional: rotary actuator with fail-safe LRF..	2	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, with wafer or lug type with worm gear, DN 25...700	15	
	01DT-.. or 22DT-..	Temperature sensor	16	
	22WDP-..	Differential pressure sensor	5	
	22WP-..	Static pressure sensor	2	

Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1)	No energy loss
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

3

Hybrid cooling

Typical changeover application between free cooling and cooling with a chiller

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Hybrid cooling



Hydraulic diagram

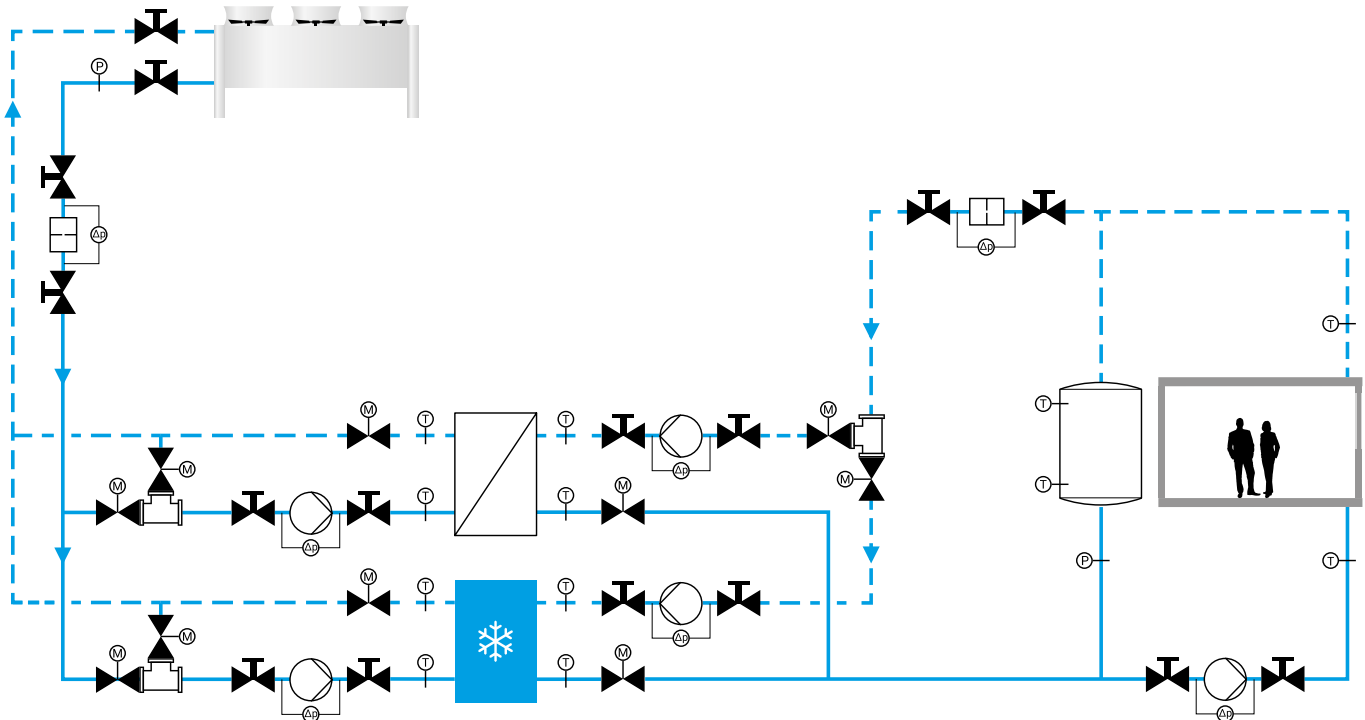


Illustration example

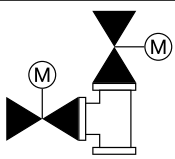




Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- A hybrid cooling is a changeover application, in which either free cooling is used in cold weather conditions or cooling with a chiller is used in warm weather conditions
- The 3-way changeover butterfly valve handles the changeover between free cooling and cooling with the chiller
- The two 3-way control butterfly valves (mixing valves) control the temperatures at the heat exchanger and/or the chiller (the required linear characteristic curves for constant flow can be parametrised with the Belimo Assistant App)
- Alternatively, to the 3-way control butterfly valves, 3-way globe valves can be used
- Manual open/close butterfly valves with worm gears shut off the pumps, chillers, dry coolers and strainers during commissioning and maintenance
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pumps are functioning and to avoid irregular operating states (cavitation, air in the system etc.)

- Differential pressure sensors monitor the strainers to detect contamination in the pipe system at an early stage
- Static pressure sensors detect leakages in the system
- In most cases, the flow rate of the generator (chiller) and of the consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation

Bill of material

	Belimo type	Description	Quantity	Costs
	D7..L/BAC	3-way changeover or control butterfly valve with Belimo lug types, DN 100...300	3	
	ZD7..	T-piece for 3-way changeover or control butterfly valve, DN 100...300	3	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, with wafer or lug type with worm gear, DN 25...700	16	
	01DT-.. or 22DT-..	Temperature sensor	12	
	22WDP-..	Differential pressure sensor	7	
	22WP-..	Static pressure sensor	2	

Belimo – features and advantages

Properties

Valves and actuators

Tight-closing valve with leakage rate A, tight (EN 12266-1)

Low height and weight of actuator

Universal power supply, high degree of protection (IP66/IP67), high close-off pressure

Equal-percentage or linear characteristic curve (parametrisable with the Belimo Assistant App)

MP-Bus, Modbus RTU, BACnet MS/TP or conventional control

Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)

Maintenance-free and 5-year warranty

Sensors

Robust housing with IP65 degree of protection

Snap-on cover

Spring loaded terminal blocks

Mounting plate can be used as drilling template

Benefits

No energy loss

Quick and easy installation

Simple and flexible design, full flexibility for shutting off chillers in indoor and outdoor applications

Cost-efficient and reliable control valve

Precise control characteristics for mixing and diverting

Flexible and transparent communication

Quick refrigeration supply

Reliable product with full Belimo support

Easy selection and full flexibility for indoor and outdoor applications

Quick, easy and tool-free assembly

Quick installation and commissioning thanks to tool-free wiring and simple data point test

Easy and faster installation

4

Emergency cooling with fail-safe Typical changeover application with fail-safe actuators

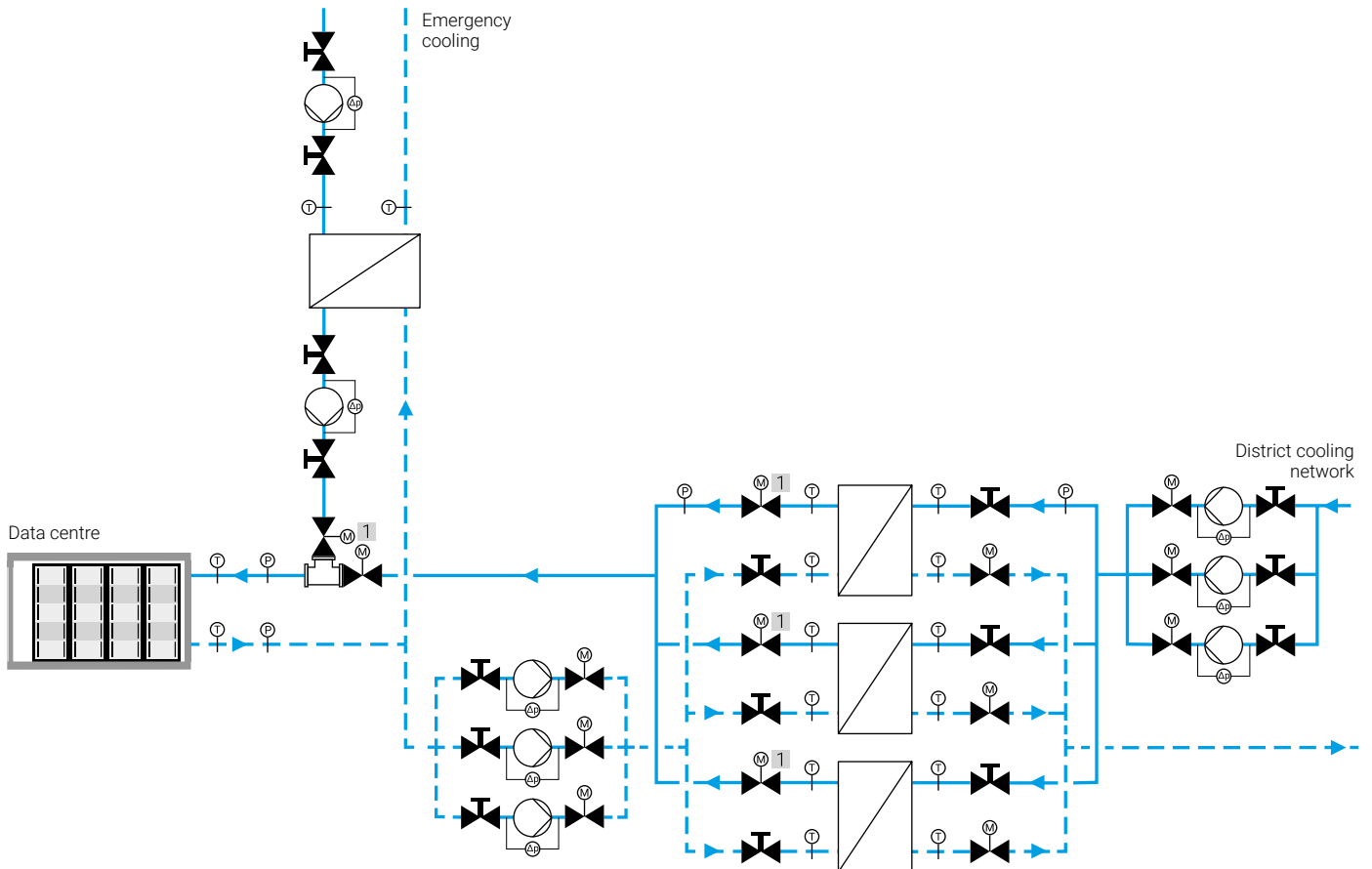
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Emergency cooling with fail-safe



Hydraulic diagram



1 fail-safe

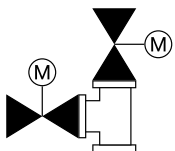





Illustration example

Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- The 3-way changeover butterfly valve with fail-safe switches between normal cooling (district cooling in this example) and emergency cooling in case of a voltage interruption
- Manual open/close butterfly valves with worm gears shut off the pumps and transfer stations during commissioning or maintenance
- Differential pressure sensors monitor the differential pressure of the pump to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Static pressure sensors detect leakages in the system
- To guarantee emergency cooling, the pumps must be supplied with emergency power for emergency cooling

Bill of material

	Belimo type	Description	Quantity	Costs
	ZD7..	T-piece for 3-way control or changeover butterfly valve, DN 100...300	1	
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	9	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	12	
	PRKCA-BAC-S2-T.. 1	Multifunctional rotary actuator with fail-safe, 160 Nm, AC 24...240 V / DC 24...125 V	5	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, with wafer or lug type with worm gear, DN 25...700	16	
	01DT-.. or 22DT-..	Temperature sensor	16	
	22WDP-..	Differential pressure sensor	8	
	22WP-..	Static pressure sensor	4	

Belimo – features and advantages

Properties	Benefits
Valves and actuators	
Tight-closing valve with leakage rate A, tight (EN 12266-1)	No energy loss
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
Flexible installation at T-piece	Flexible planning
MP-Bus, Modbus RTU, BACnet MS/TP or conventional control	Flexible and transparent communication
Electrical fail-safe(adjustable 0 - 100%)	High operating safety
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

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Bypassing chillers with 2-way control valve

Typical control application when bypassing a chiller

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Bypassing chillers with 2-way control valve



Hydraulic diagram

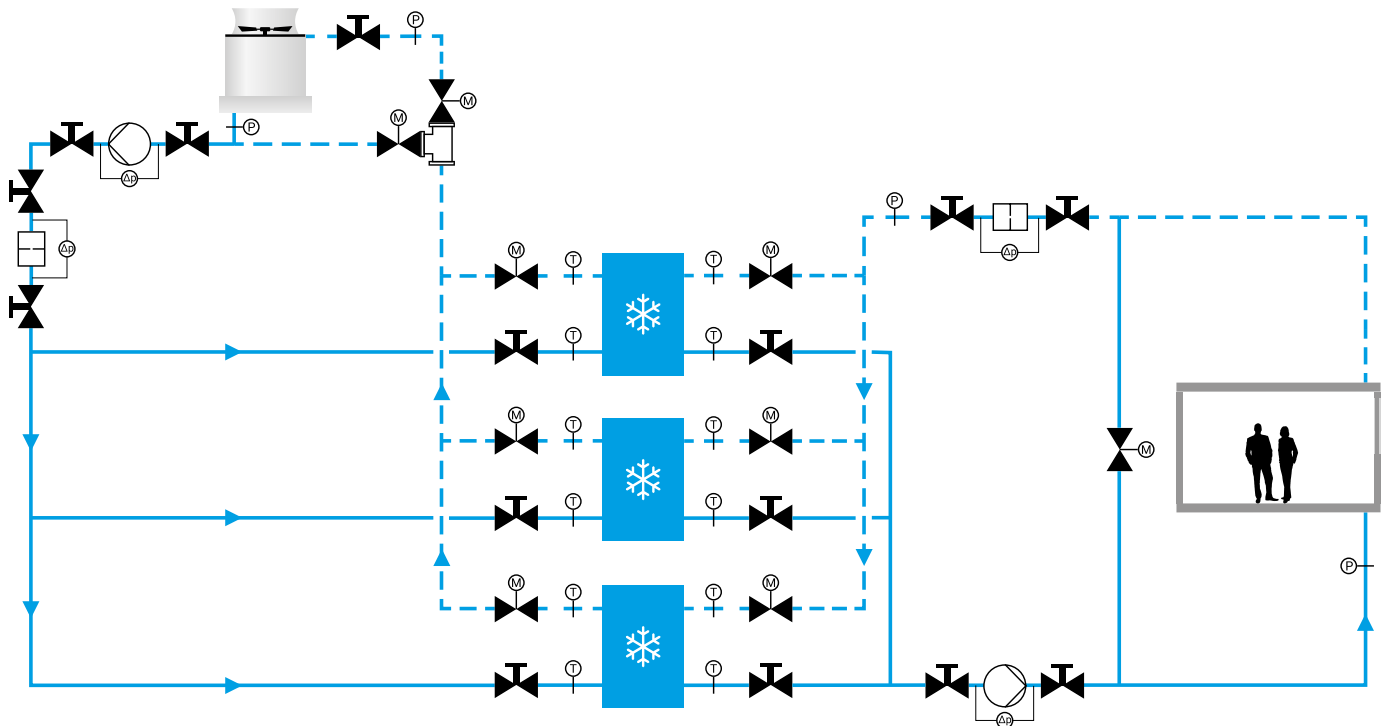




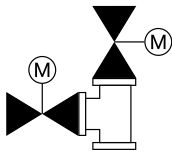





Illustration example

Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- In the case of partial-load operation on the refrigerating consumer, the remaining quantity of water is guided through the control valve (2-way control butterfly valve or 2-way globe valve) as a bypass
- In the case of full-load operation on the refrigerating consumer, the bypass valve is closed
- The 3-way control butterfly valve (diverting valve) performs temperature control on the cooling tower so that the downstream entry temperature on the chillers is not too low
- Manual open/close butterfly valves with worm gears shut off the pumps, the chillers, the cooling tower and the strainers during commissioning or maintenance
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Differential pressure sensors monitor the strainers to detect contamination in the pipe system at an early stage
- Static pressure sensors detect leakages in the system

Bill of material

	Belimo type	Description	Quantity	Costs
Alternative 1				
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	1	
	SR..A-MP-5 GR..A-MP-5 JRCA-BAC-S2-T PRCA-BAC-S2-T..	Modulating/multifunctional rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	1	
Alternative 2				
	H6..W..-S7	2-way globe valve for control applications, DN 200/250	1	
	GV12-...-T	Large stroke actuator 0...10 V with 12 kN actuating force, AC/DC 24 V or AC 230 V	1	
Same in alternative 1 and 2				
	D7..L/BAC	3-way control butterfly valve with lug type, DN 100...300	1	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	1	
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	6	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	6	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve with wafer or lug types With worm gear, DN 25...700	15	
	01DT-..	Temperature sensor	12	
	22WDP-..	Differential pressure sensor	4	
	22WP-..	Static pressure sensor	4	

Belimo – features and advantages

Properties	Benefits
Valves and actuators – Alternative 1	
High closing and differential pressures	Full flexibility during the planning phase
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
PR actuator with NFC (Near Field Communication)	Fast and simple commissioning, parametrisation directly via smartphone
Equal-percentage or linear characteristic curve (parametrisable with the Belimo Assistant App)	Cost-efficient and reliable control valve Precise control characteristics for mixing and diverting
MP-Bus, Modbus RTU, BACnet MS/TP or conventional control	Flexible and transparent communication
Electrical fail-safe (adjustable 0 - 100%)	High operating safety
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Valves and actuators – Alternative 2	
Linear characteristic curve over the entire stroke range of the valve	Constant mixing characteristic curve
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

6

Bypassing the open cooling tower with 2-way control valve **Typical temperature control when entering the chillers**

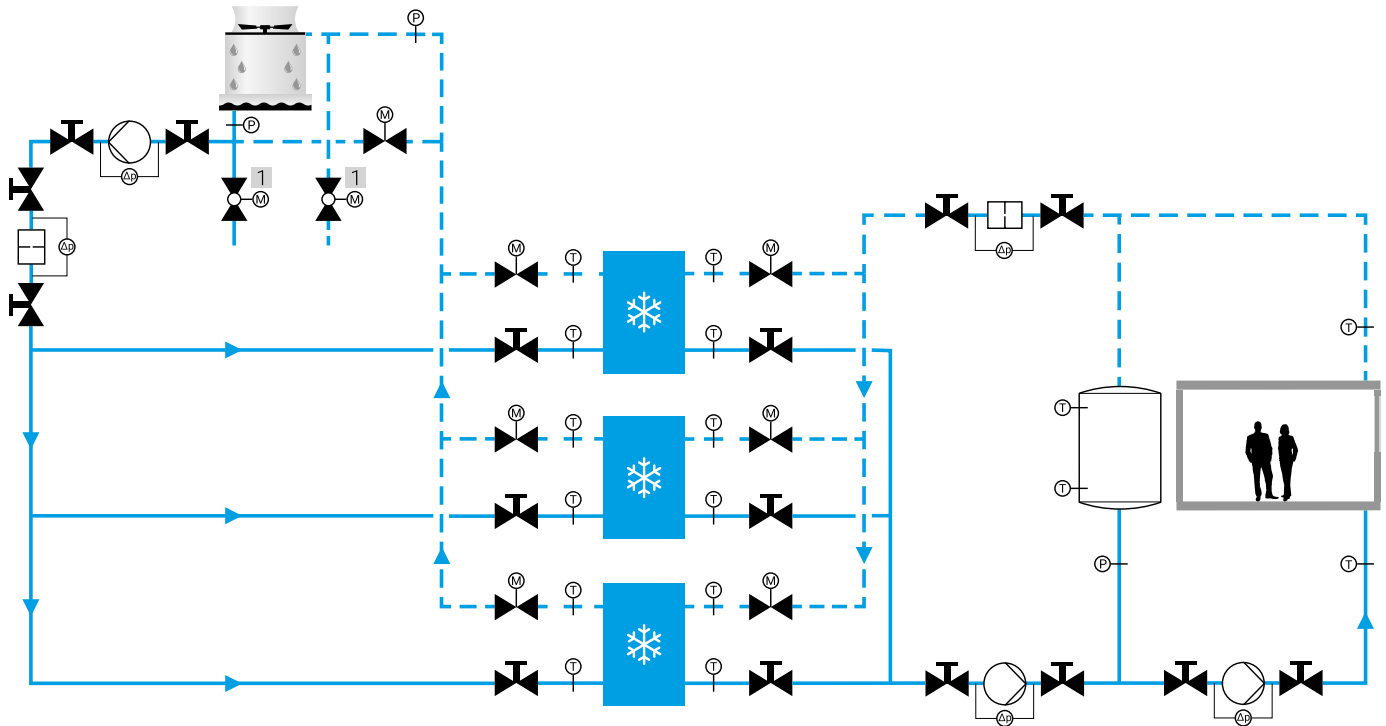
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Bypassing the open cooling tower with 2-way control valve



Hydraulic diagram



1 fail-safe

Illustration example









Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- Using a bypass on an open cooling tower, is a usual functionality used in areas with colder climates to avoid cold media with large flow rates at the entrance of the chillers
- The 2-way control valve (2-way control butterfly valve or 2-way globe valve) controls the load of the cooling tower, depending on refrigeration requirements
- This leads to cost savings as the load on the pump after the cooling tower is reduced
- Manual open/close butterfly valves with worm gears shut off the pumps, the chillers, the cooling tower and the strainers during commissioning or maintenance
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Differential pressure sensors monitor the strainers to detect contamination in the pipe system at an early stage
- Static pressure sensors detect leakages in the system

- In most cases, the volumetric flows of the generator (chiller) and consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation
- Open/close ball valves, for example with nominal diameter DN 20, ensure that the lines in open cooling tower are emptied prior to winter operation
- The open/close ball valves can optionally be motorised with an actuator with fail-safe
- All valves underneath the open cooling tower are in a frost-free area

Bill of material

	Belimo type	Description	Quantity	Costs
Alternative 1				
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	1	
	SR..A-MP-5 GR..A-MP-5 JRCA-BAC-S2-T.. PRCA-BAC-S2-T..	Modulating/multifunctional rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	1	
Alternative 2				
	H6..W..-S7	2-way globe valve for control applications, DN 200/250	1	
	GV12-...-T	Large stroke actuator 0...10 V with 12 kN actuating force, AC/DC 24 V or AC 230 V	1	
Same in alternative 1 and 2				
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	6	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	6	
	R20..-S.. + LR..A 1	Open/close ball valve DN 15...50 with rotary actuator 5 Nm Optional: rotary actuator with fail-safe LRF..	2	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve, with wafer or lug type with worm gear, DN 25...700	16	
	01DT-..	Temperature sensor	16	
	22WDP-..	Differential pressure sensor	5	
	22WP-..	Static pressure sensor	3	

Belimo – features and advantages

Properties	Benefits
Valves and actuators – Alternative 1	
High closing and differential pressures	Full flexibility during the planning phase
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
PR actuator with NFC (Near Field Communication)	Fast and simple commissioning, parametrisation directly via smartphone
Equal-percentage or linear characteristic curve (parametrisable with the Belimo Assistant App)	Cost-efficient and reliable control valve Precise control characteristics for mixing and diverting
MP-Bus, Modbus RTU, BACnet MS/TP or conventional control	Flexible and transparent communication
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Valves and actuators – Alternative 2	
Linear characteristic curve over the entire stroke range of the valve	Constant mixing characteristic curve
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

7

Chiller start-up circuit

Typical temperature control (mixture application) with 3-way control butterfly valve or 3-way globe valve

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Chiller start-up circuit



Hydraulic diagram

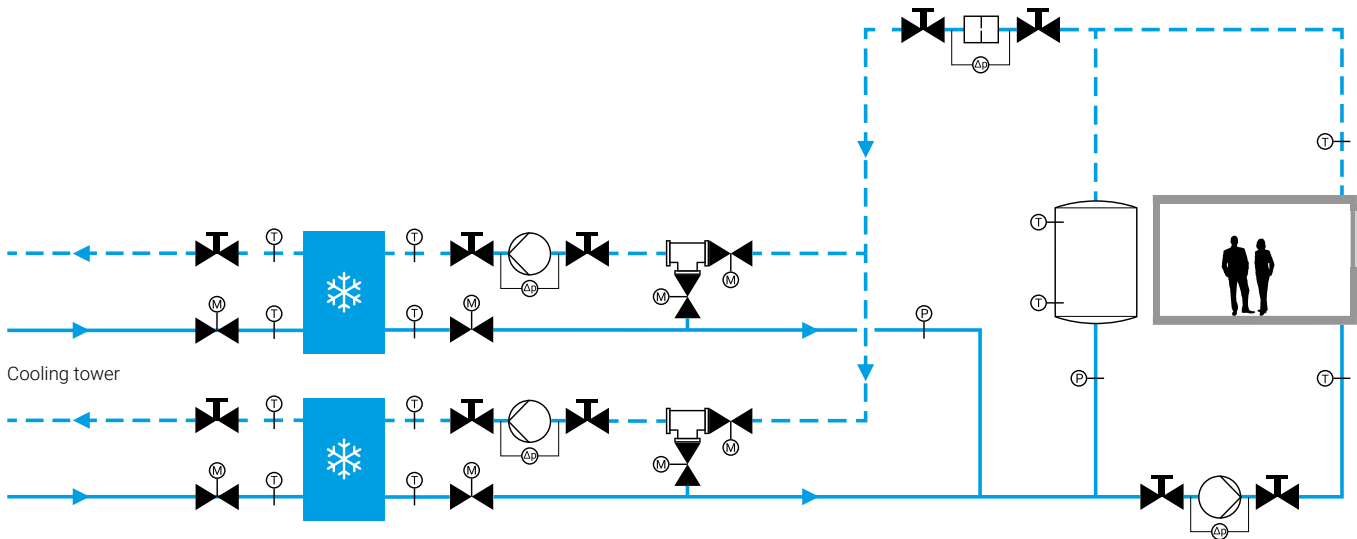


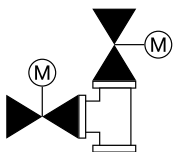
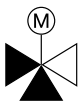



Illustration example

Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- Mixture application with a 3-way control butterfly valve (the required linear characteristic curve to achieve a constant quantity of water can be parametrised using the Belimo Assistant App)
- A 3-way globe valve can be used in the application as an alternative to the 3-way control butterfly valve shown
- The inlet temperature of the chiller is controlled. If the temperature increases at the entrance to the chiller, then cold water is mixed in via the bypass
- Manual open/close butterfly valves with worm gears shut off the pumps during commissioning or maintenance
- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Static pressure sensors detect leakages in the system
- In most cases, the volumetric flows of the generator (chiller) and consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation

Bill of material

	Belimo type	Description	Quantity	Costs
Alternative 1				
	D7..L/BAC	3-way control butterfly valve with lug type, DN 100...300	2	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	2	
Alternative 2				
	H7..W..-S7	3-way globe valve for control applications, DN 200/250	2	
	GV12-...-T	Large stroke actuator 0...10 V with 12 kN actuating force, AC/DC 24 V or AC 230 V	2	
Same in alternative 1 and 2				
	D6..W(L) D6..N(L)	Open/close butterfly valve or control butterfly valve, wafer or lug types, DN 25...700	2	
	SR..A-5 GR..A-5 JRCA-S2-T PRCA-S2-T..	Open/close rotary actuator, AC 24...240 V / DC 24...125 V, SR with 20 Nm, DN 25...65 GR with 40 Nm, DN 80 JR with 90 Nm, DN 100...150 PR with 160 Nm, DN 200...300	2	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve with wafer or lug types With worm gear, DN 25...700	10	
	01DT-..	Temperature sensor	12	
	22WDP-..	Differential pressure sensor	4	
	22WP-..	Static pressure sensor	2	

Belimo – features and advantages

Properties	Benefits
Valves and actuators – Alternative 1	
High closing and differential pressures	Full flexibility during the planning phase
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
PR actuator with NFC (Near Field Communication)	Fast and simple commissioning, parametrisation directly via smartphone
Equal-percentage or linear characteristic curve (parametrisable with the Belimo Assistant App)	Cost-efficient and reliable control valve Precise control characteristics for mixing and diverting
MP-Bus, Modbus RTU, BACnet MS/TP or conventional control	Flexible and transparent communication
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Valves and actuators – Alternative 2	
Linear characteristic curve over the entire stroke range of the valve	Constant mixing characteristic curve
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

8

Cooling with ice storage

Typical combined 3-way mixing or distribution application

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Cooling with ice storage



Hydraulic diagram

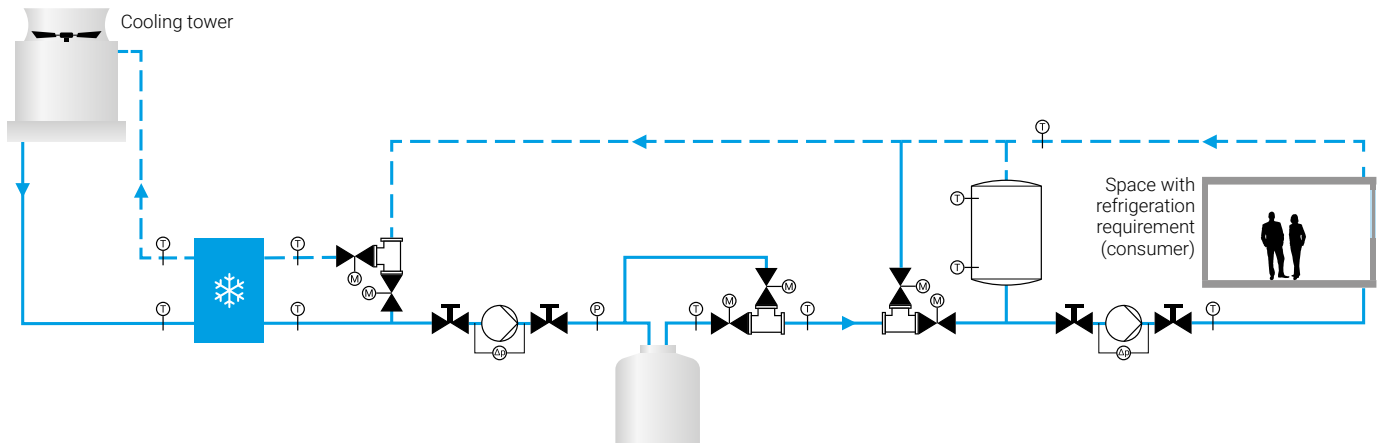


Illustration example

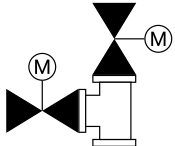




Other possibly required components, such as expansion vessels, check valves or safety valves, etc. are not shown.

Application description

- This application consists of three operating modes: a charging mode, a discharging mode and a bypass mode
- Charging mode: Electrical energy is cheaper at night, which is why ice is made and stored at night
- Discharging mode: there is a refrigeration requirement at the consumer during the day. Here, the 3-way valve mixes chilled water from the chiller with cold water from the ice storage
- Bypass mode: on days with fluid temperatures, the mixing valve bypass (3-way control butterfly valve or alternatively 3-way globe valve) is fully open, and only chilled water from the chiller is used for cooling
- The diverting valve (3-way control butterfly valve) in the bypass is either fully open during the charging mode or fully open in the control path during the discharging or bypass mode
- If the communication protocol Modbus RTU or BACnet MS/TP is used, then the signals of analogue temperature sensors can be processed via the JR/PR actuator (possible only when using a 3-way control butterfly valve)
- Manual open/close butterfly valves with worm gears shut off the pumps, the chiller and the strainer during commissioning or maintenance

- Differential pressure sensors monitor the differential pressure of the pumps to ensure the pump is functioning and to avoid irregular operating states (cavitation, air in the system etc.)
- Static pressure sensors detect leakages in the system
- In most cases, the volumetric flows of the generator (chiller) and consumer (usually partial load) will vary, meaning that a hydronic switch or storage is used for the required load equalisation

Bill of material

	Belimo type	Description	Quantity	Costs
	D7..L/BAC	3-way control butterfly valve with lug type, DN 100...300	3	
	ZD7..	T-piece for 3-way control butterfly valve, DN 100...300	3	
	D6..W(L) D6..N(L) + ZD6N-S..	Manual open/close butterfly valve with wafer or lug types with worm gear, DN 25...700	4	
	01DT-..	Temperature sensor	10	
	22WDP-..	Differential pressure sensor	2	
	22WP-..	Static pressure sensor	2	

Belimo – features and advantages

Properties	Benefits
Valves and actuators – Alternative 1	
High closing and differential pressures	Full flexibility during the planning phase
Low height and weight of actuator	Quick and easy installation
Universal power supply, high degree of protection (IP66 + IP67), high close-off pressure	Simple and flexible design, full flexibility for shutting of chillers in indoor and outdoor applications
PR actuator with NFC (Near Field Communication)	Fast and simple commissioning, parametrisation directly via smartphone
Equal-percentage or linear characteristic curve (parametrisable with the Belimo Assistant App)	Cost-efficient and reliable control valve Precise control characteristics for mixing and diverting
MP-Bus, Modbus RTU, BACnet MS/TP or conventional control	Flexible and transparent communication
Fast running time with 35 s (JR: 20...120 s, PR: 30...120 s)	Quick refrigeration supply
Maintenance-free and 5-year warranty	Reliable product with full Belimo support
Sensors	
Robust housing with IP65 degree of protection	Easy selection and full flexibility for indoor and outdoor applications
Snap-on cover	Quick, easy and tool-free assembly
Spring loaded terminal blocks	Quick installation and commissioning thanks to tool-free wiring and simple data point test
Mounting plate can be used as drilling template	Easy and faster installation

Further documentations

- Applications, Heat Generation
- Notes for project planning: Butterfly valves for control, shut-off, and changeover applications
- Notes for project planning: 2-way and 3-way globe valves
- Notes for project planning: 2-way and 3-way characterised control valves
- Notes for project planning: Electronic pressure-independent valve with energy monitoring Belimo Energy Valve™ 4

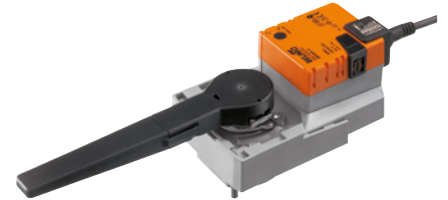
Tender texts

Note: You will find the latest tender texts on our website.

SR..A-5 / SR..A-MP-5

Rotary actuator for adjusting 2-way characterised control valves DN 65...80 or butterfly valves DN 25...65. Overload protected and without limit switch, current reduction in rest position.

Torque:	20 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating
Power consumption:	
– Operation:	2.5 W
– Rest position:	0.4 W
Connection:	Cable 1 m, 3x 0.75 mm ²
Manual override:	with push-button
Running time:	90 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	SR..A-5 / SR..A-MP-5



SR..A-5

GR..A-5 / GR..A-MP-5

Rotary actuator for adjusting 2-way characterised control valves DN 100...150 or butterfly valves DN 80. Overload protected and without limit switch, current reduction in rest position.

Torque:	40 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, modulating
Power consumption:	
– Operation:	2.5 W
– Rest position:	0.4 W
Connection:	Cable 1 m, 3x 0.75 mm ²
Manual override:	with push-button
Running time:	150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	GR..A-5 / GR..A-MP-5



GR..A-5

D6..W(L)/D6..N(L)

2-way butterfly valves with wafer type or lug type for shut-off or control applications.
For open and closed cold and hot water systems.

Fluid:	Water with max. 50% volume of glycol
Nominal diameter:	DN 25...700
K_{vmax} :	50...42800 m ³ /h (for open/close applications)
K_{vs} :	24...11760 m ³ /h (for control applications)
Fluid temperature:	-10...120°C
Permissible operating pressure p_S :	1600 kPa
Direction of flow:	Equal-percentage or linear characteristic curve (parametrisable on the JR-/PR actuator with Belimo Assistant)
Leakage rate:	A, tight (EN 12266-1)
Angle of rotation:	90°
Valve body:	DN 25...80 EN-JS1030 (GGG 40) DN 100...150 EN-JS1025 (GGG 40.3) DN 200...700 EN-JS1030 (GGG 40) Epoxy powder coating
Closing element:	DIN/EN 1.4301 (stainless steel)
Seat:	EPDM
Spindle:	DIN/EN 1.4005 (stainless steel)
Spindle seal:	EPDM O-ring
Spindle bearing:	RPTFE
Make:	Belimo
Type:	D6..W(L); D6..N(L)

**D6..W****ZD6N-S..**

Worm gear for mounting on Belimo butterfly valves D6...
Self-locking, maintenance free. Infinitely adjustable.

Position indication:	0° / 22.5° / 45° / 77.5° / 90°
Rangeability:	24:1
For nominal diameters:	DN 25...700
Make:	Belimo
Type:	ZD6N-S..

**ZD6N-S..**

D7..L/BAC

3-way butterfly valve lug type for mixing and distributing applications and water-side changeover and control applications. Control (incl. actuators) open/close, modulating, communicative. Communication via MP-Bus Modbus RTU, BACnet MS/TP or conventional control. For open and closed cold and warm water systems.

Fluid:	Water with max. 50% volume of glycol
Nominal diameter:	DN 100...300
Pipe connection:	PN 16
K_{Vmax} :	690...4700 m ³ /h (for changeover applications)
K_{Vs} :	220...1700 m ³ /h (for control applications)
Fluid temperature:	-10...120°C
Permissible pressure p_s :	1600 kPa
Differential pressure dp_{max} :	300 kPa
Flow characteristic:	Equal-percentage or linear characteristic curve (parametrisable on the JR/PR actuator with Belimo Assistant)
Leakage rate:	A, tight (EN 12266-1)
Torque:	JR: Max. 90 Nm @ nominal voltage PR: Max. 160 Nm @ nominal voltage
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control communicative:	MP-Bus, Modbus RTU, BACnet MS/TP
Control signal Y:	0...10 V
Control signal Y note:	Input impedance 100 kΩ
Operating range Y:	2...10 V
Operating range Y variable:	0.5...10 V, 4...20 mA
Position feedback U:	2...10 V
Position feedback U note:	Max. 0.5 mA
Position feedback U	0.5...10 V
Variable:	
Power consumption:	
– Operation:	20 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 20 VA At 230 V 55 VA
Connection supply:	Terminals 2.5 mm ²
Connection control:	Terminals 1.5 mm ²
Connection auxiliary switch:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (JR: 20...120 s, PR: 30...120 s adjustable)
Protection class:	II reinforced insulation
Degree of protection	IP66/IP67
EMC:	CE according to 2014/30/EU
Suitable T-piece:	ZD7..
Make:	Belimo
Type:	D7..L/BAC

**D7..L/BAC**

ZD7..

T-piece for 3-way butterfly valve.

Fluid:	Water with max. 50% volume of glycol
Nominal diameter:	DN 100...300
Pipe connection:	PN 16
Material:	EN-GJS400-15 (GGG 40), black
Make:	Belimo
Type:	ZD7..

**ZD7..****JRCA-S2-T..**

Rotary actuator 90 Nm. Overload protected, current reduction in rest position and smart heating. The PR actuator with Near Field Communication (NFC) allows easy commissioning, parametrisation and maintenance directly from a smartphone.

Torque:	90 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control:	Open/close or 3-point
Power consumption:	
– Operation:	20 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 20 VA At 230 V 55 VA
Connection:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (20...120 s adjustable)
Degree of protection:	IP66/IP67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	JRCA-S2-T..

**JRCA-S2-T..**

PRCA-S2-T..

Rotary actuator for adjusting butterfly valves DN 100...300. Overload protected, current reduction in rest position and smart heating. NFC (Near Field Communication) allows easy commissioning, parametrisation and maintenance directly from a smartphone.

Torque:	160 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control:	Open/close or 3-point
Power consumption:	
– Operation:	20 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 20 VA At 230 V 55 VA
Connection:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (30...120 s adjustable)
Degree of protection:	IP66/IP67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	PRCA-S2-T..

**PRCA-S2-T..**

JRCA-BAC-S2-T.

Communicative rotary actuator 90 Nm. Overload protected, current reduction in rest position and smart heating. Communication via MP-Bus, Modbus RTU, BACnet MS/TP, or conventional control. Conversion of sensor signals. The PR actuator with NFC (Near Field Communication) allows easy commissioning, parametrisation and maintenance directly from a smartphone.

Torque:	90 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control communicative:	MP-Bus, Modbus RTU, BACnet MS/TP
Control signal Y:	0...10 V
Control signal Y note:	Input impedance 100 k Ω
Operating range Y:	2...10 V
Operating range Y variable:	0.5...10 V, 4...20 mA
Position feedback U:	2...10 V
Position feedback U note:	Max. 0.5 mA (2...10 V), 500 Ω (4...20 mA)
Position feedback U	4...20 mA
Variable:	
Power consumption:	
– Operation:	20 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 20 VA At 230 V 55 VA
Connection supply:	Terminals 2.5 mm ²
Connection control:	Terminals 1.5 mm ²
Connection auxiliary switch:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (20...120 s adjustable)
Protection class:	II reinforced insulation
Degree of protection	IP66/IP67
EMC:	CE according to 2014/35/EU
Make:	Belimo
Type:	JRCA-BAC-S2-T..

**JRCA-BAC-S2-T..**

PRCA-BAC-S2-T.

Communicative rotary actuator 160 Nm. Overload protected, current reduction in rest position and smart heating. Communication via MP-Bus, Modbus RTU, BACnet MS/TP, or conventional control. Conversion of sensor signals. The PR actuator with NFC (Near Field Communication) allows easy commissioning, parametrisation and maintenance directly from a smartphone.

Torque:	160 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control communicative:	MP-Bus, Modbus RTU, BACnet MS/TP
Control signal Y:	0...10 V
Control signal Y note:	Input impedance 100 kΩ
Operating range Y:	2...10 V
Operating range Y variable:	0.5...10 V, 4...20 mA
Position feedback U:	2...10 V
Position feedback U note:	Max. 0.5 mA
Position feedback U	0.5...10 V
Variable:	
Power consumption:	
– Operation:	20 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 20 VA At 230 V 55 VA
Connection supply:	Terminals 2.5 mm ²
Connection control:	Terminals 1.5 mm ²
Connection auxiliary switch:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (30...120 s adjustable)
Protection class:	II reinforced insulation
Degree of protection	IP66/IP67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	PRCA-BAC-S2-T..

**PRCA-BAC-S2-T..**

PRKCA-BAC-S2-T..

Communicative rotary actuator with electrical fail-safe. Overload protected, current reduction in rest position and smart heating. Design life fail-safe actuators 15 years. Communication via MP-Bus, Modbus RTU, BACnet MS/TP or conventional control. conversion of sensor signals. The PR actuator with NFC (Near Field Communication) allows easy commissioning, parametrisation and maintenance directly from a smartphone.

Torque:	160 Nm
Nominal voltage:	AC 24...240 V, DC 24...125 V
Control communicative:	MP-Bus, Modbus RTU, BACnet MS/TP
Control signal Y:	0...10 V
Control signal Y note:	Input impedance 100 kΩ
Operating range Y:	2...10 V
Operating range Y variable:	0.5...10 V, 4...20 mA
Position feedback U:	2...10 V
Position feedback U note:	Max. 0.5 mA
Position feedback U	0.5...10 V
Variable:	
Power consumption:	
– Operation:	52 W @ nominal torque
– Rest position:	7 W
– For wire sizing:	At 24 V 54 VA At 230 V 68 VA
Connection supply:	Terminals 2.5 mm ²
Connection control:	Terminals 1.5 mm ²
Connection auxiliary switch:	Terminals 2.5 mm ²
Auxiliary switch:	2x SPDT, 1x 10° fixed / 1x 85° (0...90° adjustable)
Manual override:	With hand crank, can be fixed in any position
Running time:	35 s (30...120 s adjustable)
Running time fail-safe:	30 s
Setting fail-safe position:	0...100%, adjustable (at the factory: 0%)
Bridging time (PF):	1...10 s (at the factory: 2 s)
Protection class:	IP66/IP67
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	PRKCA-BAC-S2-T..

**PRKCA-BAC-S2-T..**

H6..W..-S7

Large actuator valves, 2-way, with flange PN 16, for closed cold and warm water systems, for modulating water-side control of refrigerating and heat-generation systems.

Connection:	Flange in accordance with ISO 7005-2 (PN 16)
Nominal diameter:	DN 200/250
K_{VS} value:	630...1000 m ³ /h
Fluid temperature:	5...120°C
Permissible pressure p_S :	1600 kPa
Leakage rate:	Control path A – AB: Leakage Class III (DIN EN 1349 and DIN EN 60534-4)
Characteristic curve:	Control path A – AB equal percentage (VDI/VDE 2173)
Stroke:	65 mm
Valve body:	GG25
Closing element:	Stainless steel
Seat:	Stainless steel
Valve stem:	Stainless steel
Stem seal:	EPDM ring
Make:	Belimo
Type:	H6..W..-S7

**H6..W..-S7****H7..W..-S7**

Large actuator valves, 3-way, with flange PN 16, for closed cold and warm water systems, for modulating water-side control of refrigerating and heat-generation systems.

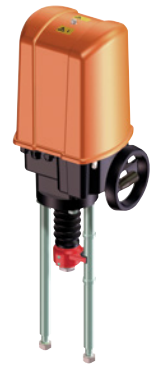
Connection:	Flange in accordance with ISO 7005-2 (PN 16)
Nominal diameter:	DN 200/250
K_{VS} value:	630...1000 m ³ /h
Fluid temperature:	5...120°C (–10°C with stem heater)
Permissible pressure p_S :	1600 kPa
Leakage rate:	Control path A – AB: Leakage Class III (DIN EN 1349 and DIN EN 60534-4)
Bypass B – AB:	Max. 1% of the K_{VS} value
Characteristic curve:	Control path B – AB: Linear (VDI/VDE 2173)
Bypass B – AB:	Linear (VDI/VDE 2173)
Stroke:	65 mm
Valve body:	GG25
Closing element:	Stainless steel
Seat:	Stainless steel
Valve stem:	Stainless steel
Stem seal:	EPDM ring
Make:	Belimo
Type:	H7..W..-S7

**H7..W..-S7**

GV12-..-T

Large stroke actuator for 2-way and 3-way large actuator valves DN 200/250.

Closing force:	12000 N
Nominal voltage:	AC/DC 24 V or AC 230 V
Control:	0...10 V
Work Area	2...10 V
Position feedback:	2...10 V
Power consumption:	65 VA
Connection:	Terminals 1.5 mm ²
Nominal stroke:	65 mm
Running time:	82 s
Actuating time:	0.79 mm/s
Position indication:	Mechanical
Manual override:	Handwheel, temporary
Degree of protection:	IP65
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	GV12-..-T



GV12-..-T

01DT-..

Temperature sensor, passive

Sensor types:	Pt100, Pt1000, NTC10k
Probe length:	50...450 mm
Probe diameter:	6 mm
Degree of protection:	IP65 / NEMA 4X
Spring loaded terminal blocks:	Plug-in, 2.5 mm ² incl. mounting clip
Thermowell:	A-22P-A.. (optional)
Make:	Belimo
Type:	01DT-..



01DT-..

22WDP-..

Differential pressure sensor liquids 0...6 bar

Nominal voltage: AC/DC 24 V
 Output: 0...10 V
 Degree of protection: IP65 / NEMA 4X
 Connection: G 1/4" (internal thread)

Make: Belimo
 Type: 22WDP-..

**22WDP-..****22WP-..**

Pressure sensor liquids 0...16 bar

Nominal voltage: AC/DC 24 V
 Output: 0...10 V
 Degree of protection: IP65 / NEMA 4X
 Connection: G 1/4" (external thread)

Make: Belimo
 Type: 22WP-..

**22WP-..****R20..-S..**

2-way open/close ball valve

Media: Water with max. 50% volume of glycol
 Connection: Internal thread Rp 1/2" ...2"
 K_{vs} value: 4...32 m³/h
 Fluid temperature: -10...120°C
 Close-off pressure: 1400 kPa
 Leakage rate: A, air-bubble tight (EN 12266-1)
 Valve body: Nickel-plated brass
 Closing element: Stainless steel
 Seal: PTFE
 Spindle: Stainless steel
 Spindle seal: EPDM
 Characterised disc: TEFZEL

Make: Belimo
 Type: R20..-S..

**R20..-S..**

LR..A

Rotary actuator to adjust 2- and 3-way ball valves with nominal diameters DN 15...25. Direct mounting on ball valve with a central screw. The assembly tool is integrated in the add-on position indication. Installation orientation in relation to the ball valve can be selected in 90° steps. Overload protected and without end switch, current reduction in rest position.

Torque:	4...5 Nm
Nominal voltage:	AC/DC 24 V, AC 230 V
Control:	Open/close, 3-point, modulating, MP-Bus, Modbus, BACnet, KNX
Power consumption:	
– Operation:	1.5...2.5 W
– Rest position:	0.2...1.3 W
Connection:	Cable or terminals
Manual override:	with push-button
Running time:	2.5...150 s
Degree of protection	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	LR..A



LR..A

LRF..

Open/close rotary actuator with fail-safe to adjust 2- and 3-way ball valves DN 15...25. Direct mounting on ball valve with a screw, installation orientation in relation to the ball valve selectable in 90° steps. The actuator is overload protected and automatically stops when the end stop is reached.

Torque:	
– Motor:	4 Nm
– Spring-return:	4 Nm
Nominal voltage:	AC/DC 24 V or AC 230 V
Control:	Open/close
Power consumption:	
– Spring winding:	5 W
– Holding position:	3 W
Connection:	Cable 1 m, 2x 0.75 mm ²
Fail-safe:	NC (de-energised NC, (A – AB = 0%))
Angle of rotation:	Max. 95°
Running time:	Motor: 40...75 s
Spring-return:	Approx. 20 s
Lifetime:	Min. 60000 fail-safe positions
Protection class:	II reinforced insulation
Degree of protection:	IP54
EMC:	CE according to 2014/30/EU
Make:	Belimo
Type:	LRF..



LRF..

All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support



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