

Technical documentation

Water heater

THISION-L EVO / R40 EVO



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Technical data

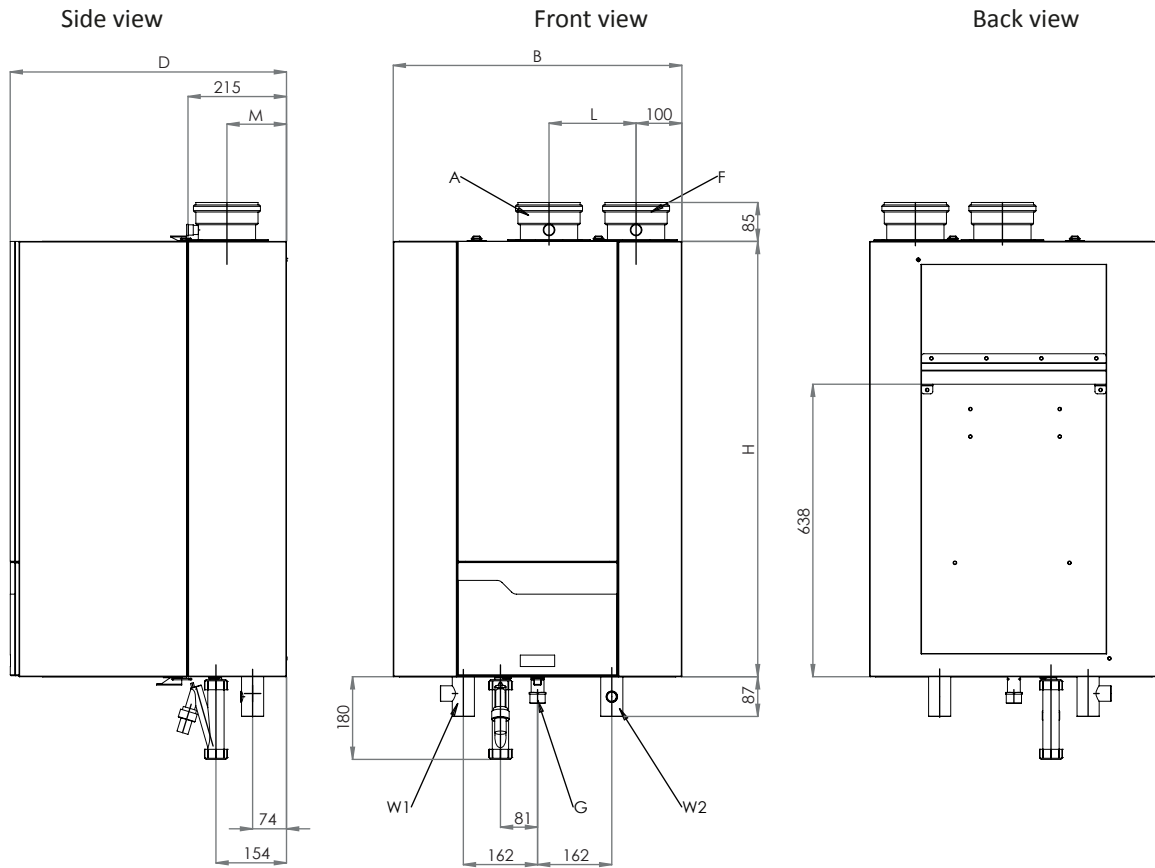
		THISION L EVO / R40 EVO						
		60	70	80	100	120	140	
Nominal heat output at 80/60°C max/min	kW	56,5/15,5	65,5/15,6	75,3/19,4	92,9/18,7	111,9/22,5	130,4/26,2	
Nominal heat output at 50/30°C max/min	kW	60,4/17,2	70,0/17,2	79,7/21,2	98,9/20,6	118,5/24,8	137,8/28,9	
Nominal heat output at 40/30°C max/min	kW	60,5/17,3	70,0/ 17,4	79,7/21,5	98,9/20,9	118,5/25,2	137,8/29,3	
Nominal heat input Hi max/min	kW	57,9/16,0	66,8/16,0	76,8/19,8	95,2/19,0	114,3/22,9	133,3/26,7	
Modulation ratio	-	3,6	4,2	3,9	5,0	5,0	5,0	
Efficiency at 80/60°C max/min	%	97,6/97,0	98,0/97,5	98,0/97,9	97,6/98,3	97,9/ 98,3	97,8/ 98,3	
Efficiency at 50/30°C max/min	%	104,4/107,4	104,8/107,3	103,8/107,2	103,9/108,5	103,7/108,4	103,4/108,3	
Efficiency at 40/30°C max/min	%	104,5/108,3	104,8/108,5	103,8/108,6	103,9/110,0	103,7/109,9	103,4/109,8	
Efficiency at 36/30°C load 30%	%	107,2	107,2	107,1	107,8	107,9	107,6	
RAL 40/30 average	%	108,7	109,1	109,4	109,4	109,1	108,7	
Heat Loss (Pstby)	W	81,0	81,0	81,0	92,7	92,7	92,7	
Max. condensate flow	l/h	3,6	4,4	4,3	5,4	6,4	7,1	
Gas consumption G20 max/min (10,9 kWh/m ³)	m ³ /h	5,3/1,5	6,1/1,5	7,0/1,8	8,7/1,7	10,5/2,1	12,2/2,4	
Gas consumption G25 max/min (8,34 kWh/m ³)	m ³ /h	6,9/1,9	8,0/1,9	9,2/2,4	11,4/2,3	13,7/2,7	16,0/3,2	
Gas consumption G31 max/min (12,8 kWh/kg)	kg/h	4,5/1,3	5,2/1,3	6,0/1,5	7,4/1,5	8,9/1,8	10,4/2,1	
Gas pressure G20	mbar	20						
Gas pressure G25	mbar	25						
Gas pressure G31	mbar	30/50						
Maximum gas pressure	mbar	50						
Max. temperature flue gas (high limit)	°C	90						
Flue gas temperature at 80/60°C max/min	°C	59/57	60/57	61/58	60/56	63/56	66/57	
Flue gas temperature at 50/30°C max/min	°C	43/35	44/34	45/33	44/33	46/33	48/33	
Flue gas temperature at 40/30°C max/min	°C	42/33	44/33	44/33	43/32	45/32	47/32	
Flue gas temperature at 36/30°C load 30%	°C	34	35	35	33	34	35	
Flue gas quantity max/min	m ³ /h	83/22	98/22	113/27	139/27	168/33	202/38	
CO level at 80/60 °C max/min	ppm	75/11	92/11	87/7	67/5	82/4	62/7	
CO level at 80/60 °C max/min	mg/kWh	80/11	99/11	94/7	72/5	88/5	67/7	
CO year emission EN15502	ppm	35,79	43,76	51,73	41,53	40,76	39,99	
CO year emission EN15502	mg/kWh	38,44	47,00	55,56	44,60	43,78	42,95	
CO ₂ level G20-G25	Max. load	%	8,5 (+0 -0,2)	8,4 (+0 -0,2)	8,4 (+0 -0,2)	8,4 (+0 -0,2)	8,4 (+0 -0,2)	8,2 (+0 -0,2)
	Min. load		9,0 (+0 -0,2)	9,0 (+0 -0,2)	9,0 (+0 -0,2)	8,5 (+0 -0,2)	8,5 (+0 -0,2)	8,5 (+0 -0,2)
Restriction ΔCO ₂ max.load - min. load (G20-G25)	%	-	-	-	-	-	<0,3	
CO ₂ level G31	Max. load	%	9,6 (0 +0,2)					
	Min. load		9,6 (0 +0,2)					
Restriction ΔCO ₂ max.load - min. load (G31)	%	CO ₂ Min. load ≤ CO ₂ Max. load						
NO _x level at 80/60 °C max/min	ppm	25/10	30/11	34/16	25/11	22/15	15/15	
NO _x level at 80/60 °C max/min	mg/kWh	44/17	53/19	60/28	44/19	38/27	26/26	
NO _x emission EN15502 (ppm)	ppm	13,94	18,78	23,61	28,38	22,61	16,84	
NO _x emission Hi/Hs EN15502 (mg/kWh)	mg/kWh	24,60/22,15	32,61/29,36	40,61/36,57	46,67/42,03	38,19/34,40	29,71/26,76	
NO _x class EN15502		6						
Max. permissible flue resistance	Pa	167	200	200	173	134	200	
Water volume	l	6	6	6	9	9	9	
Water pressure max/min	bar	8/1	8/1	8/1	8/1	8/1	8/1	
Max. water temperature (High limit thermostat)	°C	100	100	100	100	100	100	
Maximum temperature setpoint	°C	70	70	70	70	70	70	
Nominal water flow at dT=17 K	m ³ /h	2,8	3,3	3,8	4,7	5,6	6,6	
Hydraulic resistance at nominal flow rate	kPa	20	25	31	10	12	15	
Electrical connection	V	230						
Frequency	Hz	50						
Mains connection fuse	A	10						
IP class with Appliance Type B23(P)	-	IP30						

Technical data

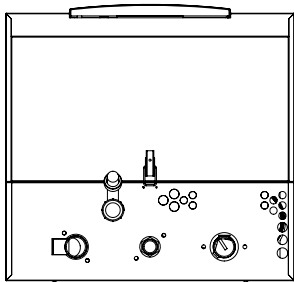
		THISION L EVO / R40 EVO					
		60	70	80	100	120	140
IP class with App. Type C13, C33, C43, C53, C63, C83,	-	IPX4D					
Weight (empty)	Kg	83	83	83	96	96	96
Weight (filled with water)	Kg	89	89	89	105	105	105
Sound Power Level (LWA)	dB	55	55	56	62	57	57
Ionisation current	µA	1,15	1,15	1,15	4,2	1,15	4,2
Rpm max / min load G20-G25	rpm	6070/1770	7260/1800	7820/2060	6710/1570	4960/1150	5730/1300
Rpm max / min load G31	rpm	5810/1770	6710/1800	7190/2060	6090/1570	4690/1150	5460/1300
Rpm pre / post purge	rpm	2800/2800					
pre / post purge time	sec	10/30					
safety time	sec	5					
pH value condensate	-	3,2					
CE certification code	-	CE-0063CM3576					
Water connections	-	R1.1/4"			R1.1/2"		
Gas connection	-	R3/4"			R1"		
Flue gas connection (DN)	-	100					130
Air intake connect. (room sealed use) (DN)	mm	100					130
Condensate connection	mm	22					

Technical data

Dimensions



Bottom view



Model		60/70/80	100/120	140
Dim/Type				
A	mm	100	100	130
B	mm	630		
D	mm	605		
H	mm	810	950	950
W1	mm	R1.¼	R1.½	R1.½
W2	mm	R1.¼	R1.½	R1.½
G	mm	R¾	R1	R1
F	mm	100	100	130
L	mm	140		190
M	mm	115		130

General

General Information Technical Description

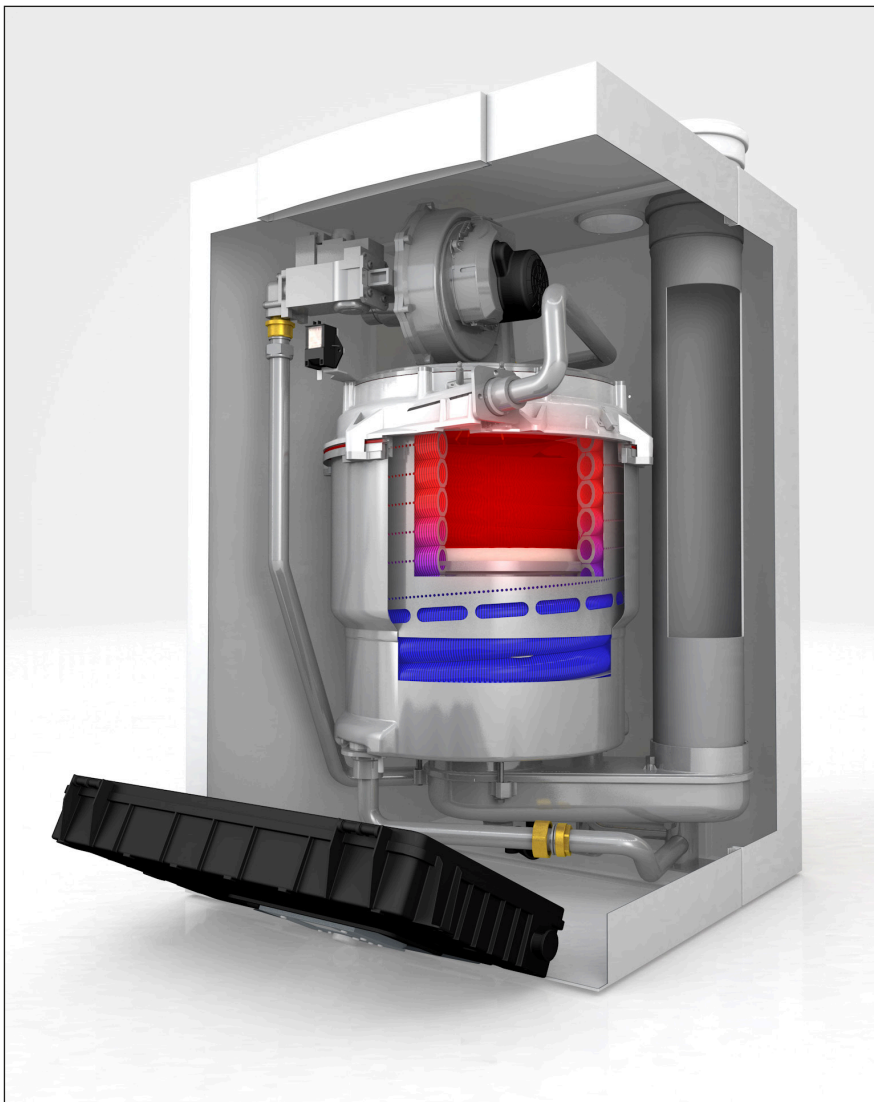
General

This document is meant to be used in addition to the THISION-L EVO / R40 EVO heating boiler documentation, in case of having a THISION-L EVO /R40 EVO IP water heater version. This document only contains the differences in construction and application to the heating boiler version. General information on the boiler (transport, commissioning, maintenance, etc.) can be found in the heating boiler documentation.

Technical description

The THISION-L EVO /R40 EVO IP water heater boiler is applicable for direct heating of sanitary hot water without using a hydraulic separation (f.e. plate heat exchanger) in the system.

This special version of the THISION-L EVO /R40 EVO boiler series is mainly identical to the heating boiler version, except for the hydraulic piping. These are made from stainless steel instead of zinc plated steel, allowing the boiler to be flushed with the sanitary hot water directly.



Installation

Water quality Hot water production

Water quality

As a water heater is constantly flushed with fresh water, there are restrictions to the maximum flow temperature related to the hardness of the water. The following table indicates the maximum flow temperatures for different water hardness values. Not respecting these values can lead to damage of the heat exchanger.

Maximum flow temperature related to water hardness				
Water hardness		Max. Setpoint (P1)	Temp. limiter setting	High Limit setting
[°dH]	[°f]	[°C]	[°C]	[°C]
2,8 - 8,4	5 - 15	75	82	85
8,4 - 11,2	15 - 20	65	72	75
> 11,2	> 20	water treatment		

Hot water production

The following table shows the sanitary hot water tapping volumes which can be achieved with a THISION-L EVO /R40 EVO water heater, based on a cold water inlet temperature of 10°C.

Hot water tap volumes (cold water = 10 °C)							
Boiler type	Output [kW]	flow 50 °C [l/min]	flow 60 °C [l/min]	flow 65 °C [l/min]	flow 70 °C [l/min]	flow 80 °C [l/min]	flow 90 °C [l/min]
TH-L EVO / R 40 EVO 60	56,5	20,3	16,3	14,8	13,5	11,6	10,2
TH-L EVO / R 40 EVO 70	65,5	23,6	18,8	17,1	15,7	13,5	11,8
TH-L EVO / R 40 EVO 80	75,3	27,1	21,7	19,7	18,1	15,5	13,5
TH-L EVO / R 40 EVO 100	92,9	33,4	26,7	24,3	22,3	19,1	16,7
TH-L EVO / R 40 EVO 120	111,9	40,2	32,2	29,3	26,8	23,0	20,1
TH-L EVO / R 40 EVO 140	130,4	46,9	37,5	34,1	31,3	26,8	23,4

Hydraulic connection

Hydraulic connection

The THISION-L EVO /R40 EVO water heater must be installed in such a way, that a minimum water flow rate of 30% of the nominal flow rate can be assured at all times when the burner is switched on. The THISION-L EVO /R40 EVO water heater can increase the water temperature by maximum 17K at once. This means that the water has to cycle through the boiler several times when f.e. cold water of 10°C has to be heated up to 60°C (3 times).

This is normally done by installing the THISION-L EVO /R40 EVO water heater in combination with a buffer tank. The flow rate from the tank to the water heater and back can then be secured by the (primary) water heater pump.

The table below shows the nominal water flow data at a ΔT of 17K, plus the pump data of the (optional) pump kit for each type of water heater.

Water flow data								
Boiler Type	ΔT	Nominal flow	Boiler resistance	Pump Type	Voltage	Curve setting	Pump head	Residual pump head
	[K]	[m ³ /h]	[kPa]	[-]	[V]	[-]	[kPa]	[kPa]
TH-L EVO / R40 EVO 60	17	2,8	20	Top-Z 30/7 EM	230	2	38	18
TH-L EVO / R40 EVO 70		3,3	25	Top-Z 30/7 EM	230	2	33	8
TH-L EVO / R40 EVO 80		3,8	31	Top-Z 30/7 EM	230	3	37	6
TH-L EVO / R40 EVO 100		4,7	10	Top-Z 30/7 EM	230	2	22	12
TH-L EVO / R40 EVO 120		5,6	12	Top-Z 30/7 EM	230	3	22	10
TH-L EVO / R40 EVO 140		6,6	15	Top-Z 30/10 EM	230	2	41	26

Installation

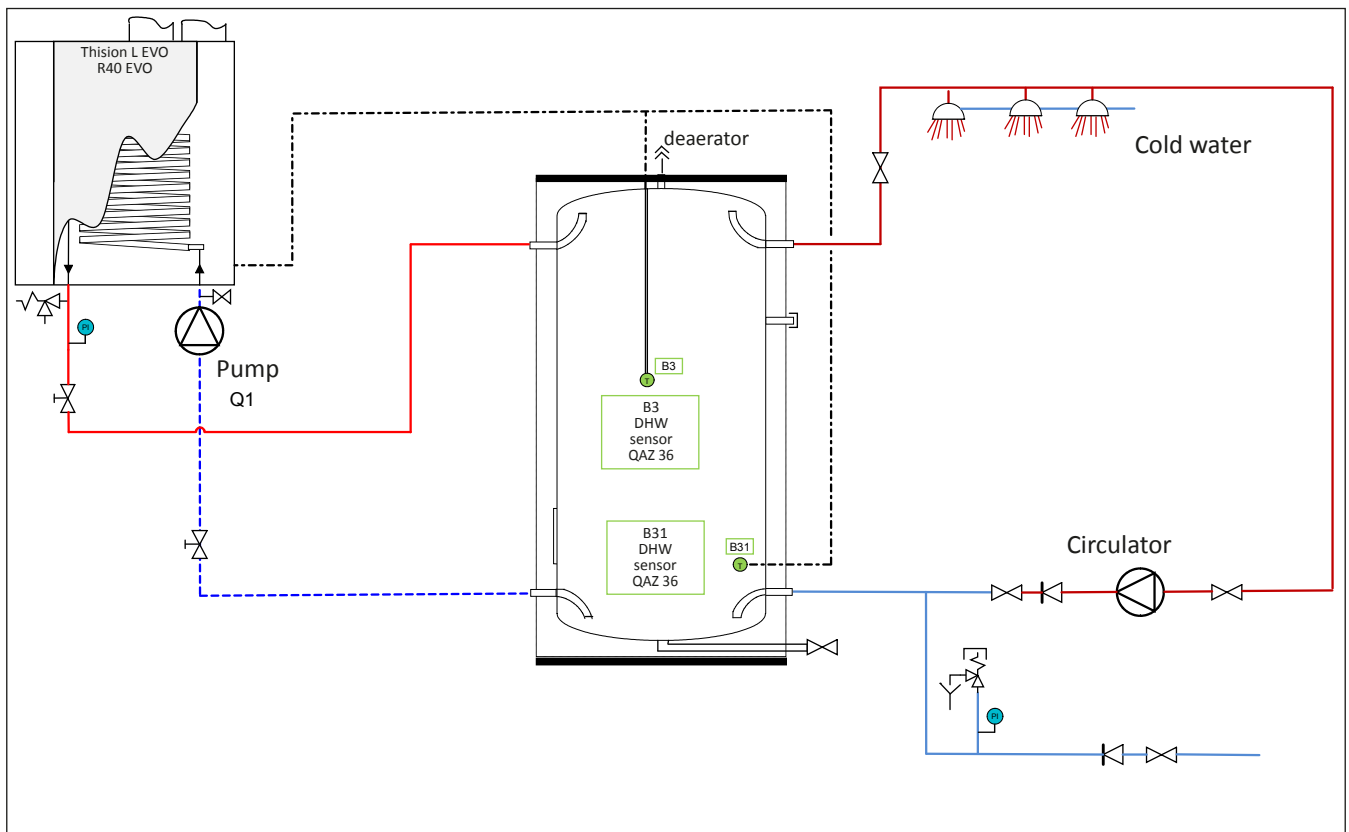
System examples

System examples

The following examples are only meant to give an indication of the possibilities available with the THISION-L EVO / R40 EVO water heater. These examples can not be used in a project without any further analysis of the project situation by an authorized company.

System 1: water heater with buffer tank

Water heater connected to a buffer tank, with the cold water feed connected to the return connection of the buffer tank. This is the most common way to connect a water heater. Having the cold water feed on the return connection of the tank results in less start/stop sequences of the water heater and creates a stable temperature control in a normal hot water installation.

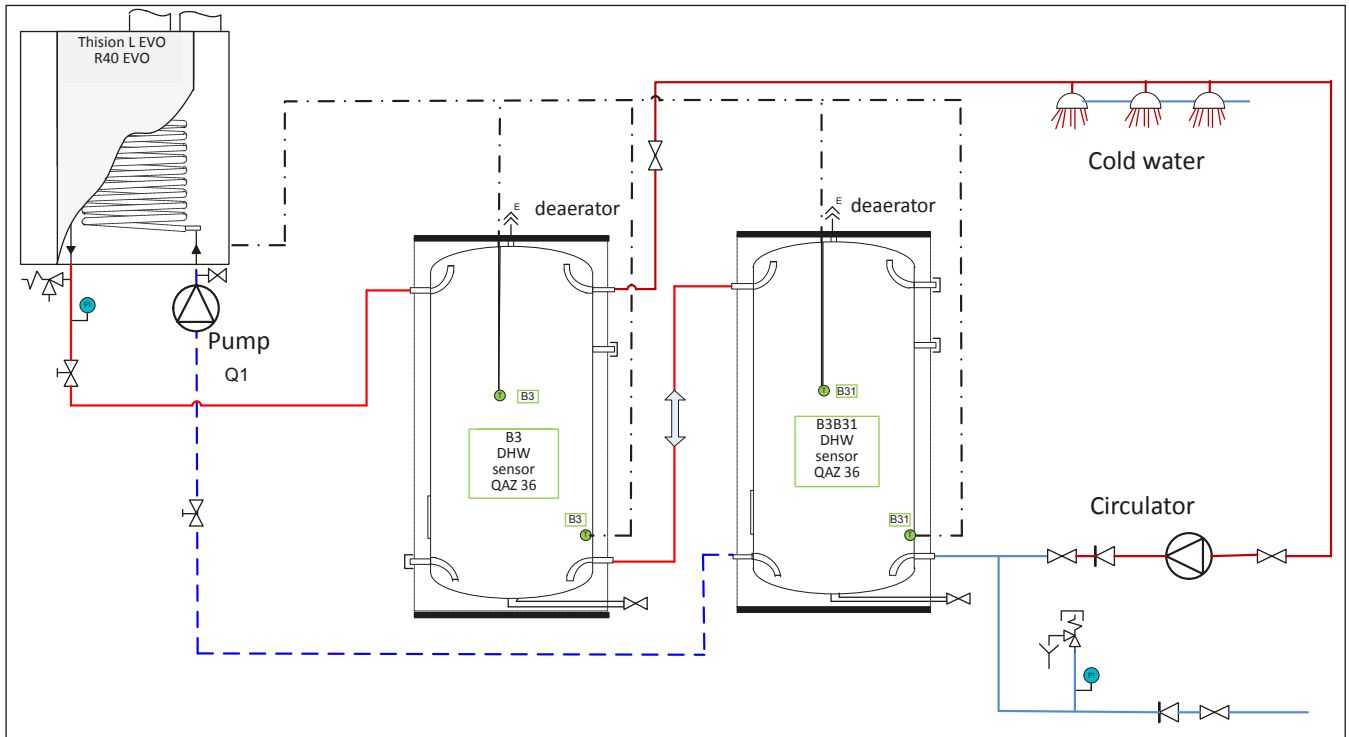


Installation

System examples

System2: water heater with big buffer tank

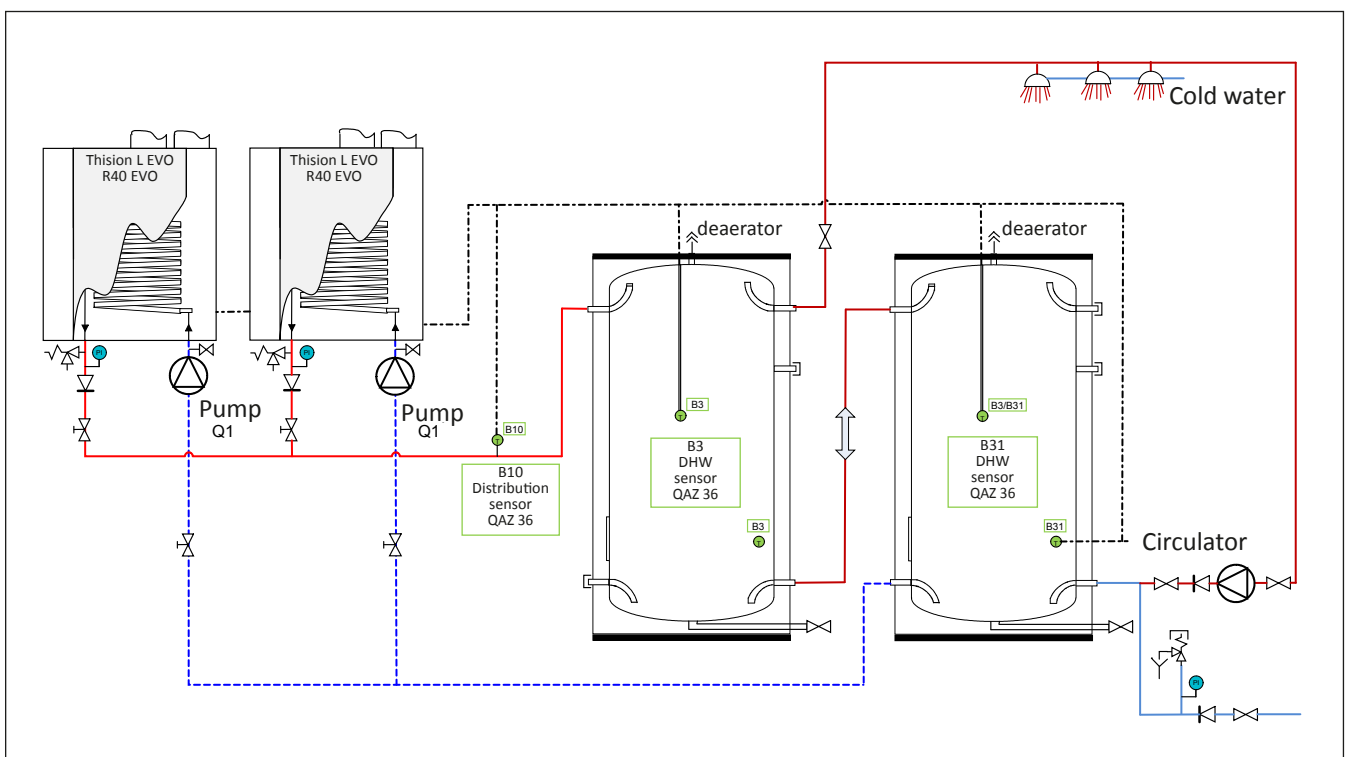
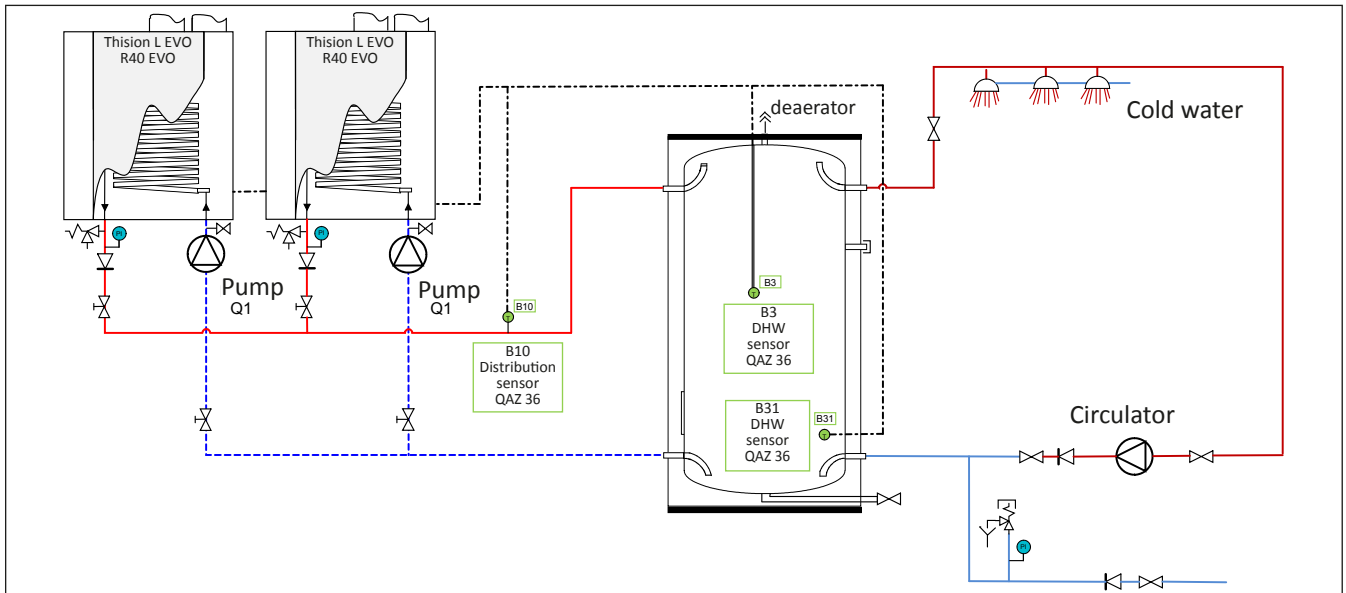
When having temporary peak demand, it's useful to have a big buffer tank (or multiple smaller tanks in series) in combination with a small water heater capacity. The capacity of the water heater is determined by the maximum loading time of the buffer tank.



System examples

System 3: water heater cascade

When having a constant high demand of hot water, it's useful to install a high capacity water heater (or even a cascade of multiple water heaters) in combination with a small buffer tank. The buffer tank is only covering the starting delay of the boilers, after that the boilers completely cover the hot water demand constantly.



Installation

Accessories

Accessories

For the THISION-L EVO / R40 EVO water heater the following accessories are available:

ACCESSORY KIT WITH PUMP					
Connection size components					
	THISION-L EVO R40 EVO 60-70	THISION-L EVO R40 EVO 80	THISION-L EVO R40 EVO 100	THISION-L EVO R40 EVO 120	THISION-L EVO R40 EVO 140
Pump type	Top-Z 30/7 EM	Top-Z 30/7 EM	Top-Z 30/7 EM	Top-Z 30/7 EM	Top-Z 30/10 EM
Pump size	G2"	G2"	G2"	G2"	G2"
Connection set	G2" X 1 ¼"	G2" X 1 ¼"	G2" X 1 ½"	G2" X 1 ½"	G2" X 1 ½"

ACCESSORY KIT WITH SAFETY VALVE AND MANOMETER					
Connection size components					
	THISION-L EVO R40 EVO 60-70	THISION-L EVO R40 EVO 80	THISION-L EVO R40 EVO 100	THISION-L EVO R40 EVO 120	THISION-L EVO R40 EVO 140
Safety valve	Rp ¾"	Rp ¾"	Rp 1"	Rp 1"	Rp 1"
Manometer	R ¼"	R ¼"	R ¼"	R ¼"	R ¼"

Consult your supplier for more information on the available accessories