



a) Note:

To reliably prevent boiler corrosion caused by condensation of exhaust gases, the boiler return flow temperature must not under any circumstances be below 65°C. A boiler circuit pump with a boiler mixer should be provided according to the diagram for this purpose. The boiler circuit should be designed such that the temperature difference between the forward flow and the return flow is equal to or less than 15°C.  
For integrating heat consumers, see Spec Sheet 4000.

**b) Safety-relevant equipment included in the scope of performance provided by the installing heating engineer**

M 20	Boiler pump
Y 20	Boiler mixer
TS131	Thermal run-off safety valve R ¾", homologated component; special-purpose design for opening temperature 100°C, (safety heat exchanger built into boiler). With the Pyrot-400 and Pyrot-540, two safety heat exchangers in parallel are required but only one thermal run-off safety valve. These are not required for open systems, but we advise installing these.
KW	Cold water inlet, min. 2.5 bar, max. 3.5 bar
WMS	Water level control device, homologated component; required in Germany starting from systems over 350 kW, Installation recommendation: WMS with magnetic transmission of the float movement to a switch unit
EL	Air separator (recommendation: absorbtion-type degasser)
ExO	Expansion tank open, at the highest point in the system, heat insulated; for heating system
ExS	Expansion tank closed; with design certification; for safety heat exchanger, max. 4.0 litres, 10 bar
DAZ	Pressure indication device (pressure gauge)
TAZ	Temperature indication device (thermometer)

**c) Boiler circuit with open expansion, accumulator circuit if necessary, design recommendation**

Model KPT-	Boiler circuit (VL, RL, BP)	Thermal run-off safety valve TS-130 (quantity)	Water through-put required at 2.5 bar	Accumulator volume <sup>2)</sup>	Supply line ZL	Drain pipe AL <sup>1)</sup>	Safety forward flow (SVL)	Safety return flow (SRL) <sup>1)</sup>
100	NW 40	1	620 l/h	1500l	R ¾"	R 1"	NW 32	NW 25
150	NW 50	1	915 l/h	1500 l	R ¾"	R 1"	NW 32	NW 32
220	NW 50	1	1230 l/h	2200 l	R ¾"	R 1"	NW 40	NW 32
300	NW 65	1	1500 l/h	2500 l	R ¾"	R 1"	NW 40	NW 32
400	NW 80	1	1880 l/h	3200 l	R ¾"	R 1"	NW 50	NW 40
540	NW 80	1	2266 l/h	4300 l	R ¾"	R 1"	NW 50	NW 40

<sup>1)</sup> Length of the exhaust pipe up to 4.0 m (for longer lines, see DIN 4751 Part 2)

<sup>2)</sup> On request, we will be glad to provide a project-based offer on the accumulator(s).

**d) Equipment recommendation from KÖB's delivery programme**

- Note: The equipment below will only be supplied via the installing heating engineer.

Model KPT-	Designation:	Description:	Item no:	See Spec Sheet:
	TS 131	Thermal run-off safety valve, 100°C	<b>K-TS-131</b>	4500
100	M 20	Grundfos pump UP 32-80, 400V <sup>1)</sup>	<b>ZPS-328-4</b>	4600
150	M 20	Grundfos pump UP 32-80, 400V <sup>1)</sup>	<b>ZPS-328-4</b>	4600
220	M 20	Grundfos pump UPS 40-60 4F, 400V <sup>1)</sup>	<b>ZPS-406-4</b>	4600
300	M 20	Grundfos pump UPS 50-60 4F, 400V <sup>1)</sup>	<b>ZPS-506-4</b>	4600
400	M 20	Grundfos pump UPS 50-60 4F, 400V <sup>1)</sup>	<b>ZPS-506-4</b>	4600
540	M 20	Grundfos pump UPS 65-60 4F, 400V <sup>1)</sup>	<b>ZPS-656-4</b>	4600
100	Y 20	Motor-three way valve, VXG 48.80/SQS 35.00	<b>ZV-3-40</b>	4600
150	Y 20	Motor-three way tap, VBF 21.50/SQK 33	<b>ZH-3-50</b>	4600
220	Y 20	Motor-three way tap, VBF 21.50/SQK 33	<b>ZH-3-50</b>	4600
300	Y 20	Motor-three way tap, VBF 21.65/SQK 33	<b>ZH-3-65</b>	4600
400	Y 20	Motor-three way tap, VBF 21.80/SQL 33	<b>ZH-3-80</b>	4600
540	Y 20	Motor-three way tap, VBF 21.80/SQL 33	<b>ZH-3-80</b>	4600

<sup>1)</sup> For Δt 15K as per illustration

Any additional resistors (heat meters, slide valve) require redesigning of the boiler pump!