VIESMANN

VITODENS 200-W

Type B2HA
49 to 150 kW
Wall mounted gas condensing boiler

System examples

Selected system examples

5775 664 GB 2/2016

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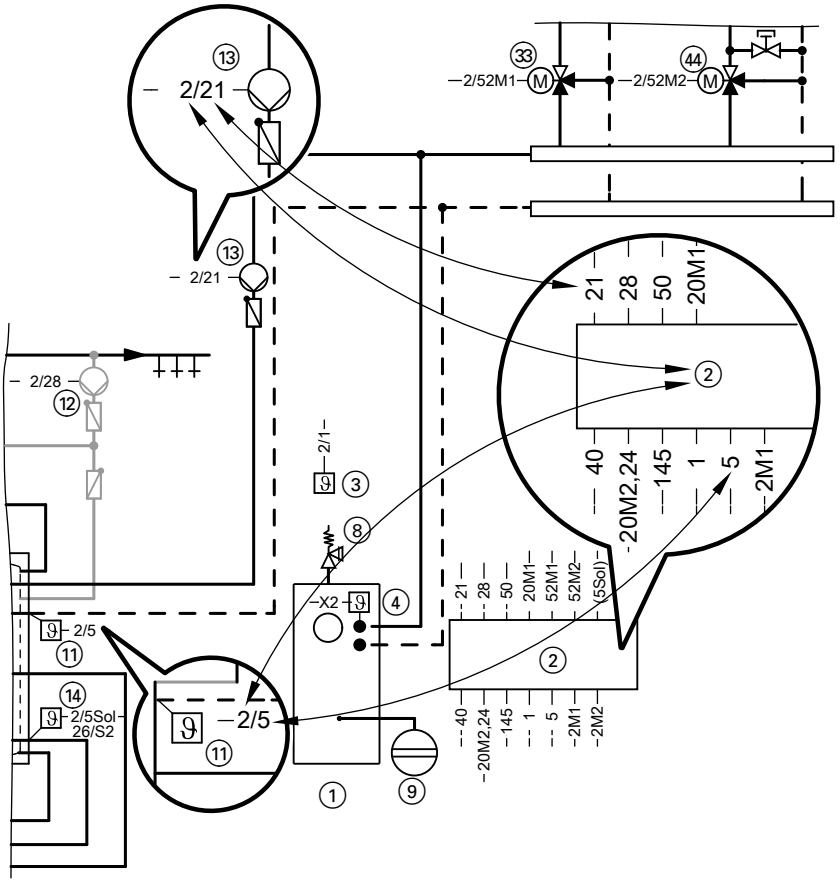
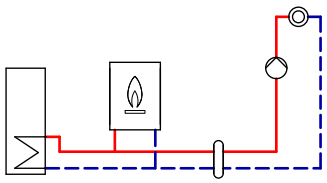
Explanatory notes on the diagrams

Numbering of the technical components and the electrical connections



1. One heating circuit without mixer, with low loss header



ID: 4605521_1604_05

Applications
Heating system with one unregulated radiator heating circuit ㉚:
- With low loss header ④
  (see "Requirements")

DHW heating by the Vitodens.

Requirements
If the total flow rate of all heating circuits exceeds the max. possible flow rate of the boiler (see table), a low loss header ④ must be installed.

Boiler	Max. flow rate l/h
Vitodens 200-W, 12 - 49 kW	3500
Vitodens 200-W, 12 - 60 kW	3500
Vitodens 200-W, 20 - 80 kW	5700
Vitodens 200-W, 20 - 99 kW	5700
Vitodens 200-W, 32 - 120 kW	7165
Vitodens 200-W, 32 - 150 kW	8600

We recommend installing a low loss header ④ if the minimum flow rates listed in the table below cannot be guaranteed.

Boiler	Minimum flow rate l/h
Vitodens 200-W, 12 - 49 kW	450
Vitodens 200-W, 12 - 60 kW	450
Vitodens 200-W, 20 - 80 kW	1300
Vitodens 200-W, 20 - 99 kW	1300
Vitodens 200-W, 32 - 120 kW	3600
Vitodens 200-W, 32 - 150 kW	3600

Main components
- Vitodens 200-W gas condensing boiler ①, 49 to 150 kW
- Vitotronic 100 (for constant temperature mode) or Vitotronic 200 (for weather-compensated mode)
- Heating circuit connection set ⑥ with circulation pump
- Low loss header ④
- DHW heating:
  – DHW cylinder connection set ⑫ with circulation pump for cylinder heating.
- Alternatively:
  – Connect the circulation pump for cylinder heating downstream of the low loss header ④.

Note:
When operating a DHW cylinder, ensure that the heating output of the boiler can be transferred to the DHW cylinder as continuously as possible. In borderline situations, we recommend operating the DHW cylinder in parallel mode between heating circuit pump and circulation pump for cylinder heating (no DHW priority). For this, we recommend installing the DHW cylinder in the secondary side of the heating system (downstream of the low loss header).

Function description
Circulation pump ⑥ supplies heating circuit ㉚ or the boiler circuit up to the low loss header. DHW cylinder ⑩ is supplied by circulation pump ⑫.
In systems with a low loss header, on-site heating circuit pump ㉝ supplies heating circuit ㉚.

Heating operation
Control unit ② of boiler ① regulates the boiler water temperature (= flow temperature of heating circuit ㉚) in weather-compensated or room temperature-dependent mode.
Heating circuit pump ㉝ of radiator heating circuit ㉚ is controlled by internal H1 extension ㊼ / H2 ㊽ or AM1 extension ㊾.

DHW heating by boiler
If the set DHW temperature selected at control unit ② is undershot, circulation pump for cylinder heating ⑫ is started.
During the periods selected at control unit ②, DHW is heated with or without priority control.
DHW circulation pump ⑬ is connected at AM1 extension ㊾, in line with system equipment.

Note
This scheme is a general system example. Please refer to the appropriate technical guides when designing specific applications.

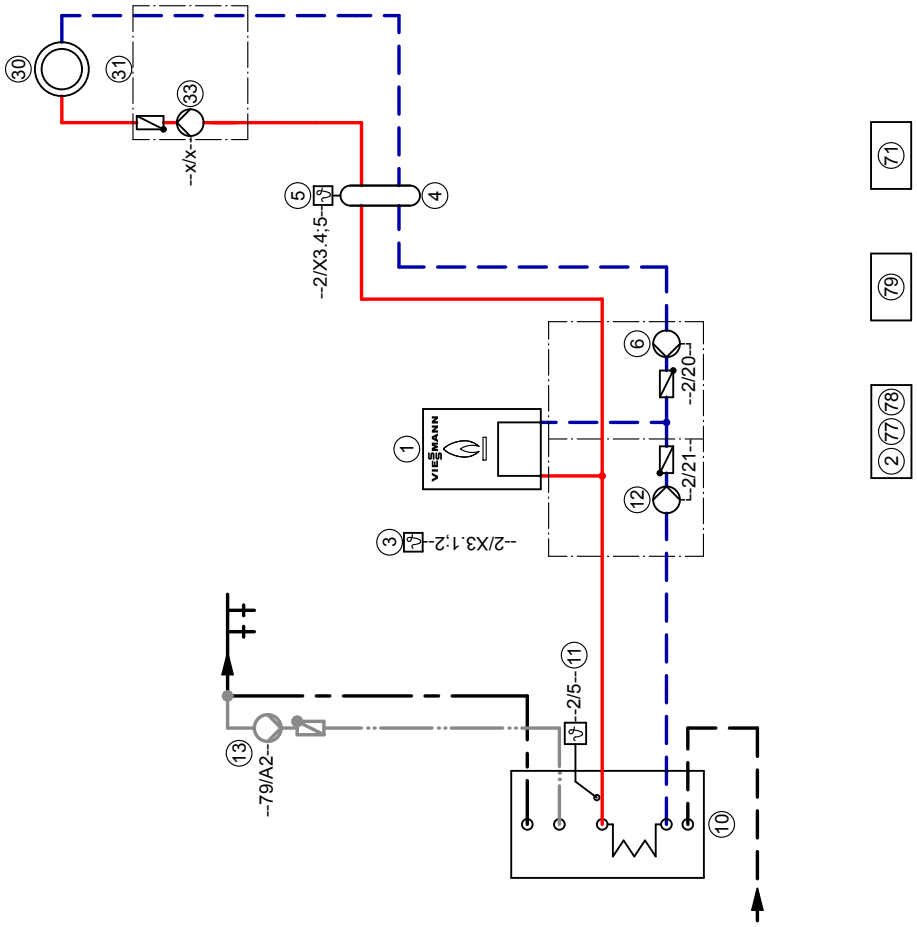
Required codes

ID: 4605521_1604_05

Group	Code	Function
"General/Group 1"	"82:1"	For operation with LPG (select code 11:9)
	System without DHW circulation pump	
	"53:2"	Heating circuit pump A1 connected at internal H1 extension
	System with DHW circulation pump	
	"33:1"	Heating circuit pump A1 connected to AM1 extension at terminal A1 (delivered condition)
	"34:0"	DHW circulation pump connected to AM1 extension at terminal A2 (delivered condition)
"DHW"	"5b:1"	DHW cylinder connected downstream of the low loss header (Only set if the DHW cylinder is connected downstream of the low loss header.)

ID: 4605521_1604_05 (cont.)

Hydraulic installation scheme ID: 4605521_1604_05



Note: This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

ID: 4605521_1604_05 (cont.)

Note

Regarding electrical connection x/x:

Subject to system equipment, heating circuit pump ㉝ is connected to the internal H1, H2 or AM1 extension, DHW circulation pump ZP ⑬ is connected to AM1 extension ㊴.

Equipment required

ID: 4605521_1604_05		
Pos.	**Description**	**Part no.**
①	**Boiler** **with**	See Viessmann pricelist
②	Constant temperature control unit **or** Weather-compensated control unit	
③	Outside temperature sensor ATS (only for weather-compensated mode)	
④	Low loss header	
	– 49 and 60 kW	See Vitoset pricelist
	– 80 and 99 kW	Z007 743
	– 120 and 150 kW	ZK00 658
⑤	Flow temperature sensor for low loss header	
	– 49 and 60 kW	7179 488
	– 80 and 99 kW	Standard delivery pos. 4
	– 120 and 150 kW	Standard delivery pos. 4
⑥	Heating circuit connection set with circulation pump	See Viessmann pricelist
	DHW heating by boiler ①	
⑩	DHW cylinder	See Viessmann pricelist
⑪	Cylinder temperature sensor STS (When using the DHW cylinder connection set, included there)	7179 114
⑫	Circulation pump for cylinder heating	See Viessmann pricelist
	– 49 to 60 kW	Standard delivery for DHW cylinder connection set / See Viessmann pricelist
	– from 80 kW	See Vitoset pricelist
⑬	DHW circulation pump ZP	See Vitoset pricelist
㉚	**Heating circuit without mixer**	
㉛	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㉝	Heating circuit pump HKP	Standard delivery pos. 31

ID: 4605521_1604_05 (cont.)

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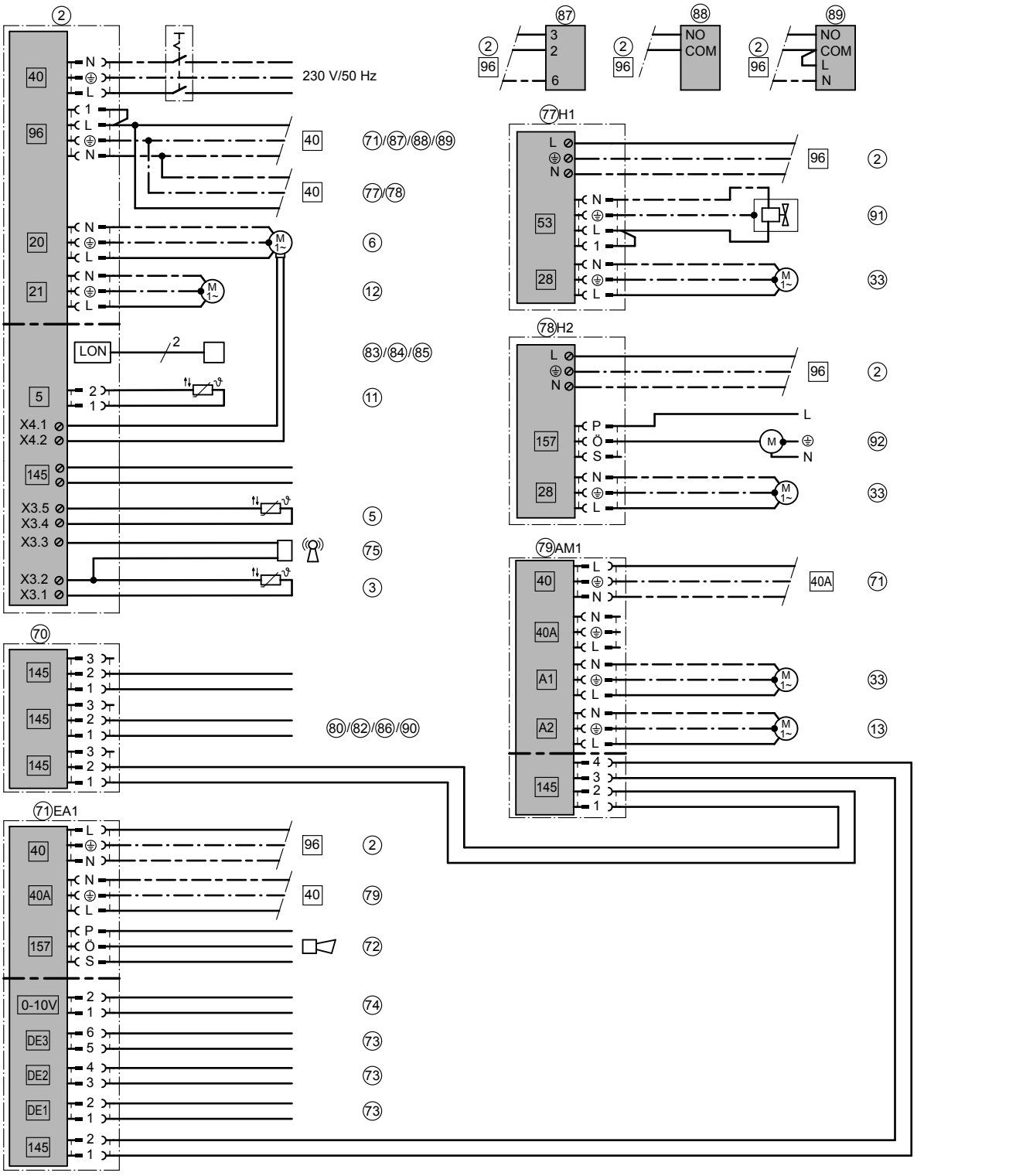
Pos.	**Description**	**Part no.**
	Accessories	
⑦⓪	KM BUS distributor	7415 028
⑦①	EA1 extension	7452 091
⑦②	Central fault messaging (requires external EA1 extension)	On site
⑦③	External hook-up: – External blocking – Blocking with central fault message – Fault messages – Short-time operation, DHW circulation pump – External demand – External operating program changeover (only weather-compensated mode)	On site
⑦④	External set value 0 to 10 V (requires EA1 extension)	On site
⑦⑤	Radio clock receiver	7450 563
⑦⑦	– Internal H1 extension or	7498 513
⑦⑧	– Internal H2 extension	7498 514
⑦⑨	– AM1 extension	7452 092
⑧⓪	Remote control units	
	– Vitotrol 200A	Z008 341
	– Vitotrol 300A	Z008 342
⑨⓪	Vitocomfort 200 (for weather-compensated mode)	See Viessmann pricelist
	As an alternative to hardwired remote control units, the following wireless accessories may be used	
⑧⑥	Wireless base station required for operation with:	Z011 413
	– Vitotrol 200 RF	Z011 219
	– Vitotrol 300 RF with table-top dock	Z011 410
	– Vitotrol 300 RF with wall mounting bracket	Z011 412
	– Vitocomfort 200 (as alternative to hardwired connection)	See Viessmann pricelist
	– Wireless repeater	7456 538
	– Wireless outside temperature sensor	7455 213
⑧①	LON communication module	7179 113
⑧②	Vitocom 100, type GSM2	Z011 396/Z011 388
⑧③	Vitocom 100, type LAN1 with communication module	Z011 224
⑧④	Vitocom 200, type LAN2 with communication module	Z011 390
⑧⑤	Vitocom 300, type LAN3 with LON communication module	Z011 399
⑧⑦	Vitotrol 100, type UTA (for constant temperature mode)	7170 149
⑧⑧	Vitotrol 100, type UTDB (for constant temperature mode)	Z007 691
⑧⑨	Vitotrol 100, type UTDB RF (for constant temperature mode)	Z007 692
⑨①	External safety solenoid valve for LPG (requires internal H1 extension)	On site
⑨②	Extractor fan interlock (requires internal H2 extension)	On site

ID: 4605521_1604_05 (cont.)

Electrical installation scheme



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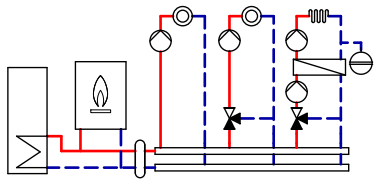
2. One heating circuit without mixer with separate heating circuit pump and two heating circuits with mixer, with low loss header



ID: 4605524_1604_05

Applications
Heating system with unregulated heating circuit ㉚ and:
- Controlled radiator heating circuit ㊵
  and
- Controlled underfloor heating circuit ㊿ with system separation ㊼

DHW heating by the Vitodens.

Requirements
The total flow rate of both heating circuits is greater than the max. possible flow rate of the boiler (see table), therefore a low loss header ④ must be installed.

Boiler	Max. flow rate l/h
Vitodens 200-W, 12 - 49 kW	3500
Vitodens 200-W, 12 - 60 kW	3500
Vitodens 200-W, 20 - 80 kW	5700
Vitodens 200-W, 20 - 99 kW	5700
Vitodens 200-W, 32 - 120 kW	7165
Vitodens 200-W, 32 - 150 kW	8600

Main components
- Vitodens 200-W gas condensing boiler ①, 49 to 150 kW
- Vitotronic 200 (for weather-compensated mode)
- Heating circuit connection set with circulation pump ⑥
- Low loss header ④
- DHW heating:
  – DHW cylinder connection set ⑫ with circulation pump for cylinder heating.
- Alternatively:
  – Connect the circulation pump for cylinder heating downstream of the low loss header ④.

Note:
When operating a DHW cylinder, ensure that the heating output of the boiler can be transferred to the DHW cylinder as continuously as possible. In borderline situations, we recommend operating the DHW cylinder in parallel mode between heating circuit pump and circulation pump for cylinder heating (no DHW priority). For this, we recommend installing the DHW cylinder in the secondary side of the heating system (downstream of the low loss header).

Function description
Heating circuit connection set ⑥ with circulation pump supplies the boiler circuit up to the low loss header. DHW cylinder ⑩ is supplied by DHW cylinder connection set ⑫ with circulation pump for cylinder heating.
Heating circuit pump ㉝ supplies radiator heating circuit ㉚.
Heating circuit pump ㊸ supplies radiator heating circuit ㊵.
Heating circuit pump ㊸ supplies underfloor heating circuit ㊿.
Circulation pump ㊽ supplies the primary circuit of plate heat exchanger (system separation) ㊼.

Heating operation

Heating circuit without mixer
Control unit ② of boiler ① regulates the boiler water temperature (= flow temperature of heating circuit without mixer ㉚) in weather-compensated mode.
Heating circuit pump ㉝ of radiator heating circuit ㉚ is controlled by internal H1 extension ㊼ or H2 extension ㊽ or AM1 extension ㊾.

Heating circuit with mixer
The extension kits for one heating circuit with mixer ㊺ / ㊺ control the flow temperature of underfloor heating circuit ㊿ or radiator heating circuit ㊵ in weather-compensated mode.
The boiler water temperature is raised by the differential temperature set at control unit ② of boiler ①.
Heating circuit pump ㊸ of the radiator heating circuit is controlled by mixer extension kit ㊺.
Heating circuit pump ㊸ and circulation pump ㊽ (only with system separation) of underfloor heating circuit ㊿ are controlled by mixer extension kit ㊺.
The maximum temperature of underfloor heating circuit ㊿ is restricted via temperature limiter ㊻.

DHW heating by boiler
If the set DHW temperature selected at control unit ② is undershot, circulation pump for cylinder heating ⑫ is started.
During the periods selected at control unit ②, DHW is heated with or without priority control.
DHW circulation pump ⑬ is connected at AM1 extension ㊾, in line with system equipment.

Note
This scheme is a general system example. Please refer to the appropriate technical guides when designing specific applications.

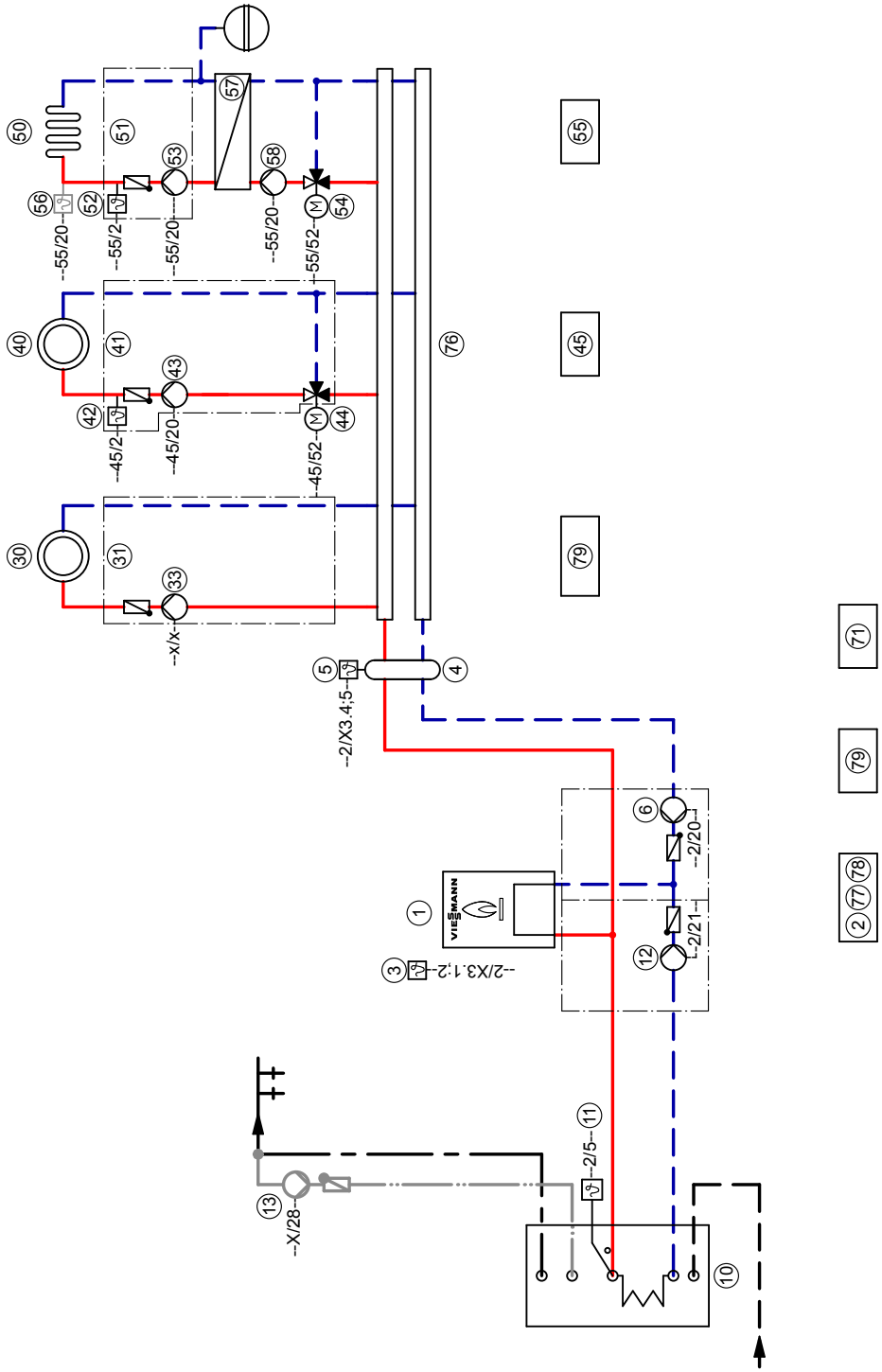
ID: 4605524_1604_05 (cont.)

Required codes

ID: 4605524_1604_05		
Group	**Code**	**Function**
"General"	"82:1"	For operation with LPG (select code 11:9)
"General/Group 1"	"00:7" "00:8"	System with only one heating circuit with mixer, **without** DHW heating, **without** unregulated heating circuit System with only one heating circuit with mixer, **with** DHW heating, **without** unregulated heating circuit
	System **without** DHW circulation pump: "53:2"	 Heating circuit pump A1 connected at internal H1 or H2 extension
	System **with** DHW circulation pump "33:1" "34:2"	 Heating circuit pump A1 connected at AM1 extension, terminal A1 (delivered condition) DHW circulation pump connected at AM1 extension, terminal A2 (delivered condition)
"DHW"	"5b:1"	DHW cylinder connected downstream of the low loss header (Only set if the DHW cylinder is connected downstream of the low loss header.)

ID: 4605524_1604_05 (cont.)

Hydraulic installation scheme ID: 4605524_1604_05



Note: This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

ID: 4605524_1604_05 (cont.)

Note

Regarding electrical connection x/x:

Subject to system equipment, heating circuit pump ㉝ is connected to the internal H1, H2 or AM1 extension, DHW circulation pump ZP ⑬ is connected to AM1 extension ㊴.

Equipment required

ID: 4605524_1604_05

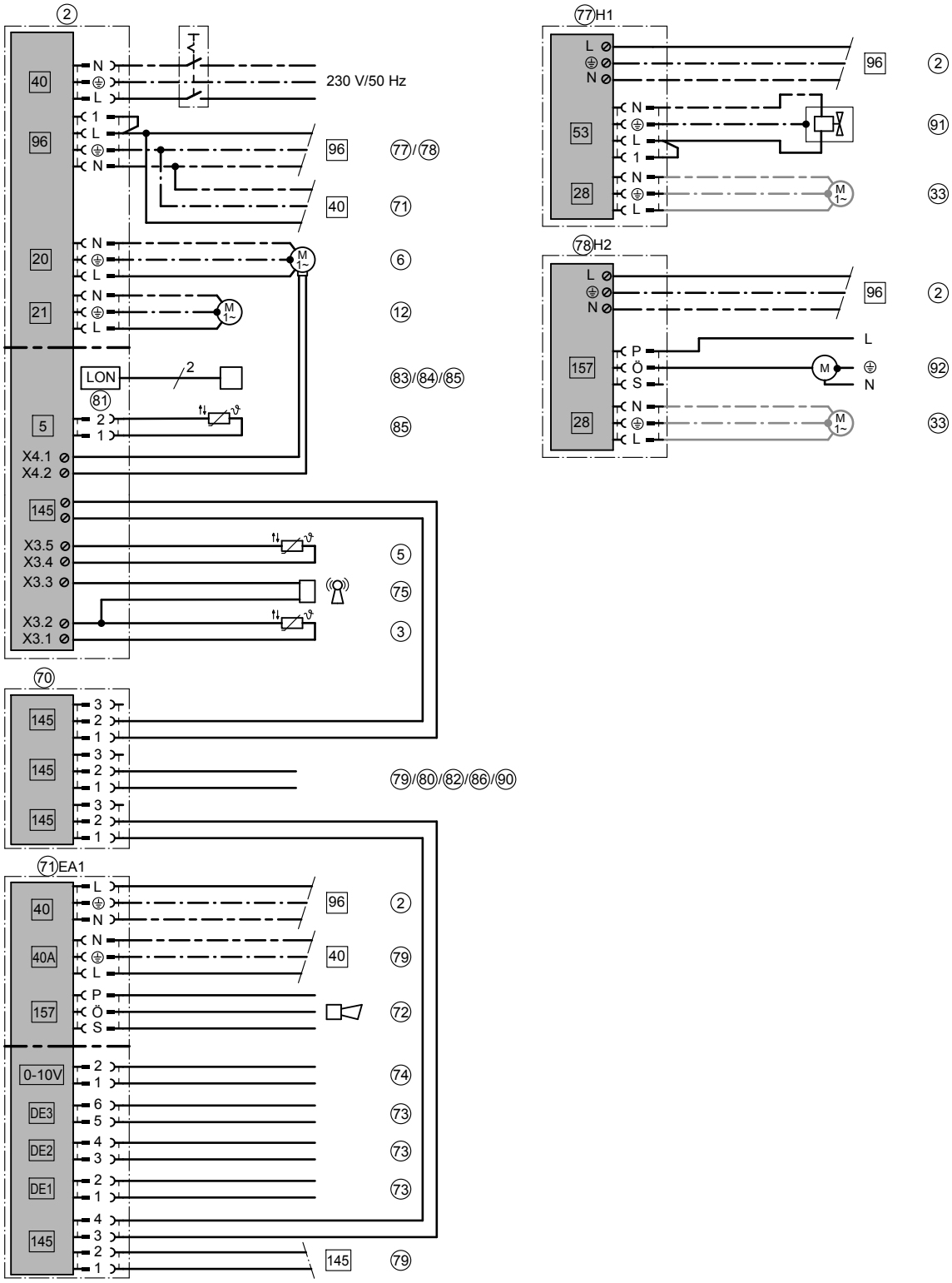
Pos.	Description	Part no.
①	**Boiler** **with**	See Viessmann pricelist
②	Weather-compensated control unit	
③	Outside temperature sensor ATS	
④	Low loss header	
	– 49 and 60 kW	See Vitoset pricelist
	– 80 and 99 kW	Z007 743
	– 120 and 150 kW	ZK00 658
⑤	Flow temperature sensor for low loss header	
	– 49 and 60 kW	7179 488
	– 80 and 99 kW	Standard delivery pos. 4
	– 120 and 150 kW	Standard delivery pos. 4
⑥	Heating circuit connection set with circulation pump	See Viessmann pricelist
	DHW heating by the boiler	
⑩	Mono mode DHW cylinder	See Viessmann pricelist
⑪	Cylinder temperature sensor STS (When using the DHW cylinder connection set, included there)	7179 114
⑫	Circulation pump for cylinder heating	See Viessmann pricelist
	– 49 to 60 kW	Standard delivery for DHW cylinder connection set / See Viessmann pricelist
	– from 80 kW	See Vitoset pricelist
⑬	DHW circulation pump ZP	See Vitoset pricelist
㉚	**Heating circuit I**	
㉝	Heating circuit pump, heating circuit A1 **or**	On site
	Divicon (without mixer, with heating circuit pump)	See Viessmann pricelist
㊵	**Heating circuit II**	On site
㊶	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㊷	Flow temperature sensor M2	Standard delivery pos. 41
㊸	Heating circuit pump HKP M2	Standard delivery pos. 41
㊹	3-way mixer and	Standard delivery pos. 41
㊺	Mixer extension kits for mixer mounting or	Standard delivery pos. 41
㊶	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㊸	Heating circuit pump HKP M2	Standard delivery pos. 41
㊹	3-way mixer with separate	Standard delivery pos. 41
㊺	Mixer extension kits for mixer mounting with	7424 959
㊷	Flow temperature sensor M2 or	Standard delivery pos. 45
	On-site assembly set, comprising:	
㊶	Mixer extension kits for mixer mounting with	7301 063
㊷	Flow temperature sensor VTS as contact temperature sensor and	Standard delivery pos. 41
㊶	Mixer extension kits for wall mounting with	7301 062
㊷	Flow temperature sensor VTS as contact temperature sensor and	Standard delivery pos. 41
㊸	Separately ordered heating circuit pump HKP	See Viessmann pricelist
㊹	3-way mixer with mixer motor	See Viessmann pricelist

ID: 4605524_1604_05 (cont.)

ID: 4605524_1604_05		
Pos.	**Description**	**Part no.**
⑤⓪	**Heating circuit with mixer III**	
⑤⑤	Extension kit for one heating circuit with mixer, with integral mixer motor	7301 063
	or	
	Extension kit for one heating circuit with mixer, for separate mixer motor	7301 062
⑤⑥	Temperature limiter to restrict the maximum temperature of underfloor heating systems	
	– As immersion thermostat	7151 728
	or	
	– As contact thermostat	7151 729
⑤②	Flow temperature sensor, heating circuit M2	Standard delivery pos. 55
⑤③	Heating circuit pump, heating circuit M2	On site
	and	
	3-way mixer	See Viessmann pricelist
	or	
	Divicon (with 3-way mixer, heating circuit pump, flow temperature sensor and mixer motor)	See Viessmann pricelist
⑤④	Separate mixer motor	See Viessmann pricelist
⑤③	Circulation pump	On site
⑤⑦	Plate heat exchanger Vitotrans 100	See Viessmann pricelist
⑤⑧	Primary pump	See Viessmann pricelist
	Accessories	
⑦⓪	KM BUS distributor	7415 028
⑦①	EA1 extension	7452 091
⑦②	Central fault message facility S (requires EA1 extension)	On site
⑦③	External hook-up:	On site
	– External blocking	
	– Blocking with central fault message	
	– Fault messages	
	– Short-time operation, DHW circulation pump	
	– External demand	
	– External operating program changeover (only weather-compensated mode)	
⑦④	External set value 0 to 10 V (requires EA1 extension)	On site
⑦⑤	Radio clock receiver	7450 563
⑦⑥	Manifold for 2 or 3 Divicon, incl. thermal insulation and separate wall mounting bracket	See Viessmann pricelist
⑦⑦	– Internal H1 extension	7498 513
	or	
⑦⑧	– Internal H2 extension	7498 514
⑦⑨	– AM1 extension	7452 092
⑧⓪	Remote control units	
	– Vitotrol 200A	Z008 341
	– Vitotrol 300A	Z008 342
⑨⓪	Vitocomfort 200 (for weather-compensated mode)	See Viessmann pricelist
⑧⑥	Wireless base station required for operation with:	Z011 413
	– Vitotrol 200 RF	Z011 219
	– Vitotrol 300 RF with table-top dock	Z011 410
	– Vitotrol 300 RF with wall mounting bracket	Z011 412
	– Vitocomfort 200 (as alternative to hardwired connection)	See Viessmann pricelist
	– Wireless outside temperature sensor	7455 213
	– Wireless repeater	7456 538
⑧①	LON communication module	7179 113
⑧②	Vitocom 100, type GSM2	Z011 396/Z011 388
⑧③	Vitocom 100, type LAN1 with communication module	Z011 224
⑧④	Vitocom 200, type LAN2 with communication module	Z011 390
⑧⑤	Vitocom 300, type LAN3 with LON communication module	Z011 399
	As an alternative to hardwired remote control units, the following wireless accessories may be used.	
⑨①	External safety solenoid valve for LPG (requires internal H1 extension)	On site
⑨②	Extractor fan interlock (requires internal H2 extension)	On site
⑨③	Contactor relay	7814 681

ID: 4605524_1604_05 (cont.)

Electrical installation scheme



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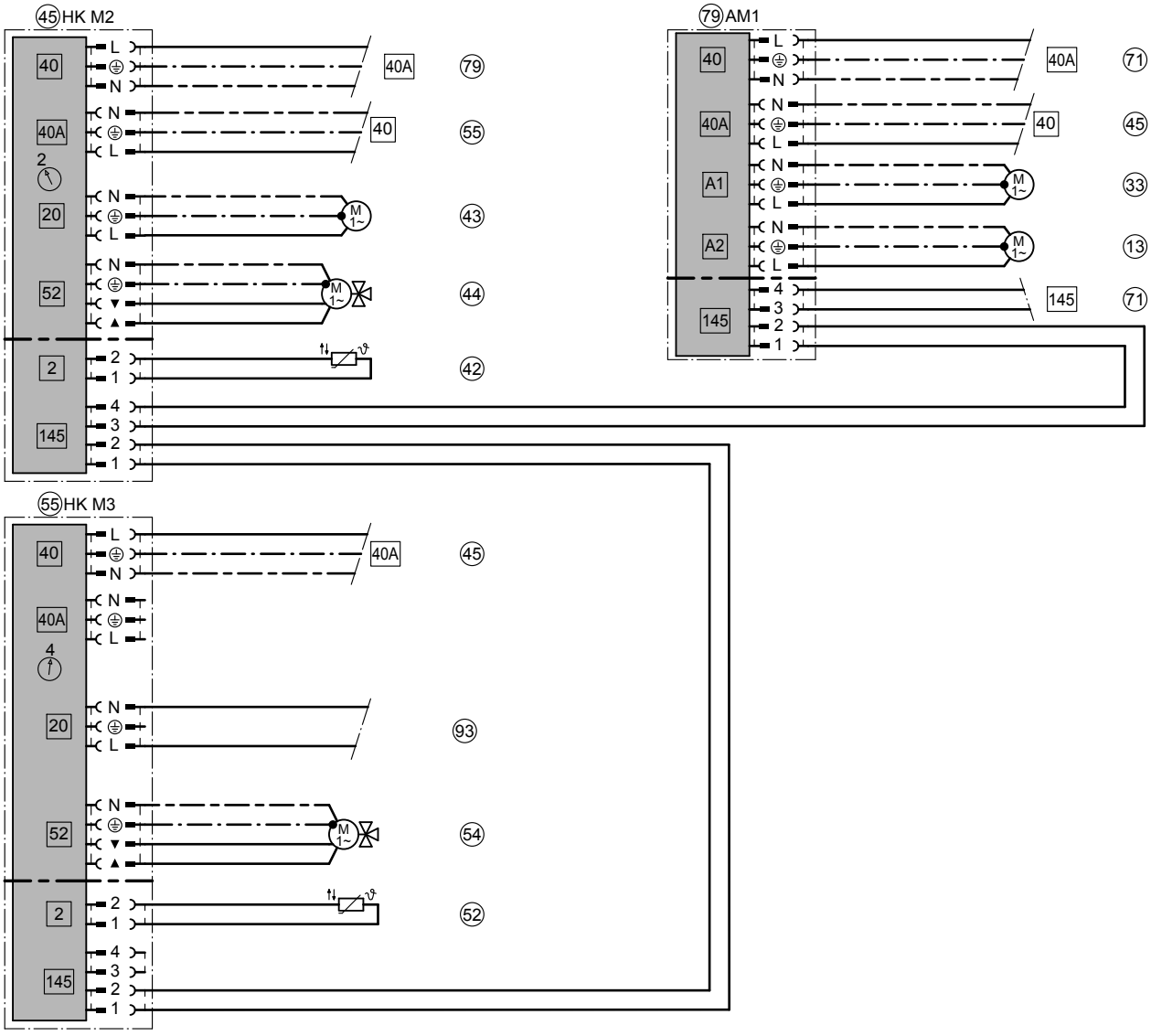
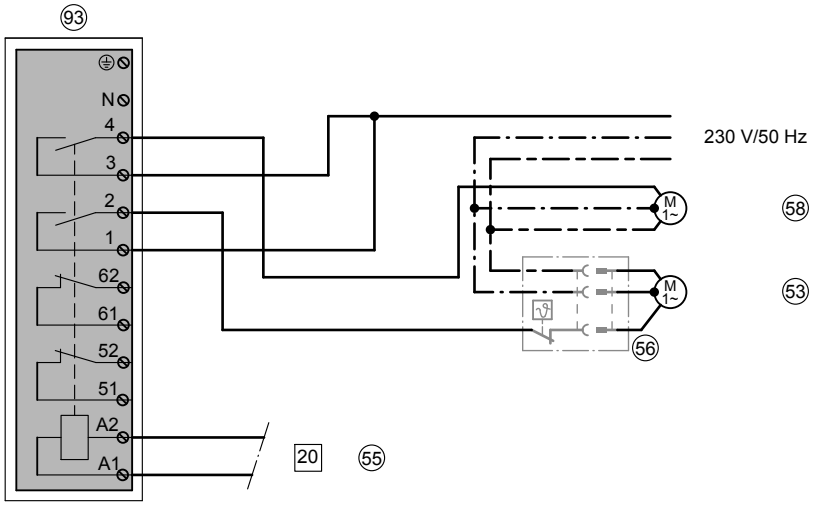
ID: 4605524_1604_05 (cont.)





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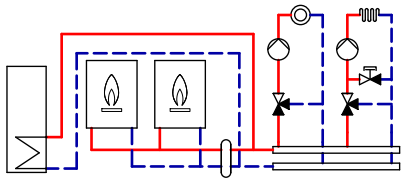
3. Multi boiler system with several heating circuits with mixer and low loss header



ID: 4605525_1604_04

Applications
Heating system with different heating circuits:
- Controlled radiator heating circuit ㉚ with 3-way mixer and
- Controlled underfloor heating circuit ㊵ with 3-way mixer

DHW heating by the Vitodens

Main components
- Vitodens 200-W multi boiler system ①, 49 to 99 kW with:
  - Hydraulic cascade
  - Low loss header
  - Vitotronic 100 for every boiler
  - Vitotronic 300-K
  - Connection accessories
- DHW cylinder ⑩

Function description
Circulation pumps ⑥ / ⑦ integrated into the connection accessories supply the boiler circuit up to the low loss header. DHW cylinder ⑩ is supplied by circulation pump ⑫.

Heating circuit pumps M2, M3 ㉝ / ㊸ supply heating circuits ㉚ / ㊵.

Heating operation

Heating circuits with mixer
Circulation pumps ⑥ / ⑦ integrated into the connection accessories are started subject to demand.
The underfloor heating circuit and radiator heating circuits are each supplied by a separate circulation pump. Each heating circuit is controlled by the Vitotronic 300-K ② via an extension kit for heating circuit with mixer.
A Vitotronic 200-H, type HK1B, is additionally required if three heating circuits with mixer are to be connected. A Vitotronic 200-H, type HK3B, is additionally required if four or more heating circuits with mixer are to be connected.
The flow rate of underfloor heating circuit ㊵ is subject to individual design criteria and is balanced by an adjustable bypass.
The maximum temperature of underfloor heating circuit ㊵ is restricted by temperature limiter ㊻.

DHW heating
If the set DHW temperature selected at control unit ② is undershot, loading pump for cylinder heating UPSB ⑫ is started.
Within the periods selected at the control unit, DHW is heated with or without priority. Priority control can be set separately for each heating circuit.
DHW circulation pump ⑬ is connected to control unit ②.

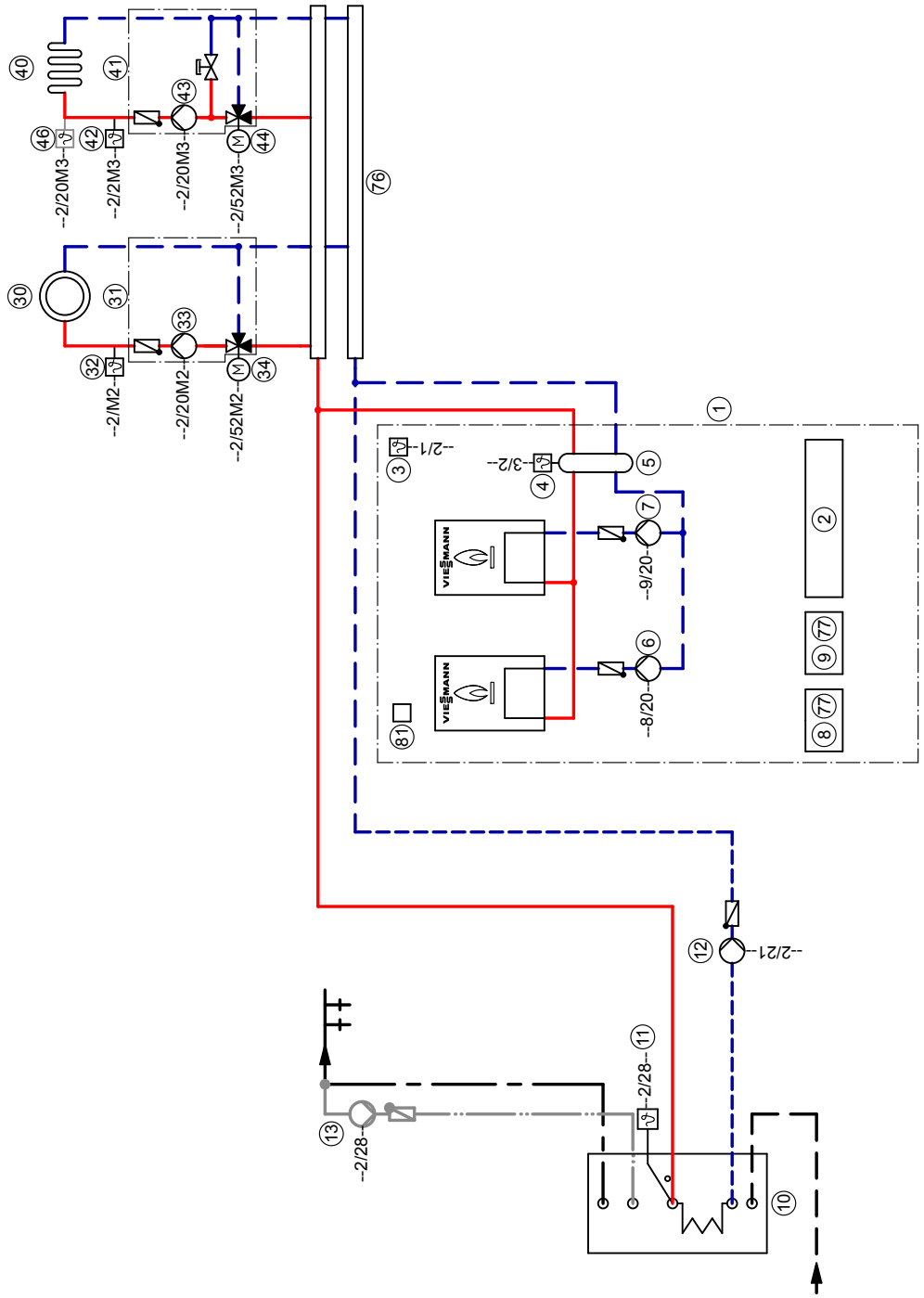
Note
This scheme is a general system example. Please refer to the appropriate technical guides when designing specific applications.

Required codes

ID: 4605525_1604_04		
Codes Vitotronic 300-K		
Group	**Code**	**Function**
"General"	"00:7" or "00:8"	System with **two** heating circuits with mixer, **without** DHW heating, **without** unregulated heating circuit. System with **two** heating circuits with mixer, **with** DHW heating, **without** unregulated heating circuit.
"Cascade"	"35:2"	**Two** boilers connected to the cascade
Codes Vitotronic 100, type HC1B		
Boiler 1		
"Group 2"	"01:2" "07:1"	Multi boiler system with Vitotronic 300-K Boiler number 1
Boiler 2		
"Group 2"	"01:2" "07:2"	Multi boiler system with Vitotronic 300-K Boiler number 2

ID: 4605525_1604_04 (cont.)

Hydraulic installation scheme ID: 4605525_1604_04



Note: This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

ID: 4605525_1604_04 (cont.)

Equipment required

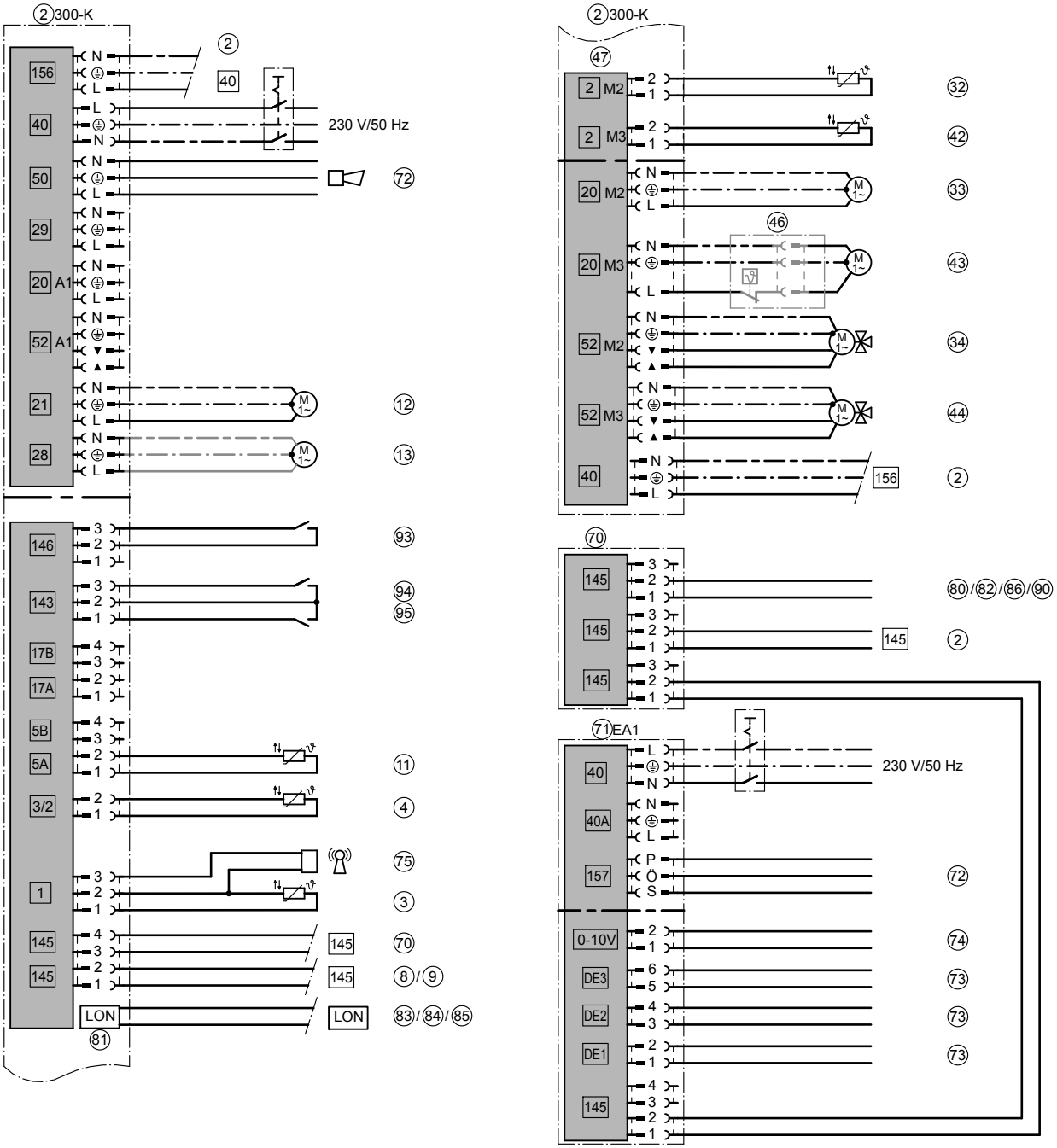
ID: 4605525_1604_04		
Pos.	**Description**	**Part no.**
①	**Multi boiler system with 2 to 6 Vitodens 200-W, hydraulic cascade with low loss header and connection accessories**	See Viessmann pricelist
	with	
②	Vitotronic 300-K	Multi boiler system standard delivery
③	Outside temperature sensor ATS	Multi boiler system standard delivery
⑤	Low loss header DN 80	ZK02 627
④	Flow temperature sensor for low loss header	Standard delivery pos. 2
⑥	Boiler circuit pump 1	Hydraulic cascade standard delivery
⑦	Boiler circuit pump 2	Hydraulic cascade standard delivery
⑧	Vitotronic	
⑨	Constant temperature control unit	
	DHW heating	
⑩	DHW cylinder	See Viessmann pricelist
⑪	Cylinder temperature sensor STS	Multi boiler system standard delivery
⑫	Circulation pump for cylinder heating UPSB	See Vitoset pricelist
⑬	DHW circulation pump ZP	See Vitoset pricelist
㉚	**Heating circuit with mixer I**	On site
㉛	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㉝	Heating circuit pump HKP M2	Standard delivery pos. 31
㉞	3-way mixer	Standard delivery pos. 31
	with separate	
㉟	Mixer extension kit for mixer mounting	7441 998
	with	
㉜	Flow temperature sensor M2	Standard delivery pos. 35
	On-site assembly set, comprising:	
㉟	Mixer extension kit for mixer mounting with	7441 998
㉜	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 35
	and	
㉝	Separately ordered heating circuit pump HKP M2	See Viessmann pricelist
㉞	3-way mixer with mixer motor	See Viessmann pricelist
㊵	**Heating circuit with mixer II**	On site
㊶	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㊸	Heating circuit pump HKP M3	Standard delivery pos. 41
㊹	3-way mixer	Standard delivery pos. 41
	with separate	
㊺	Mixer extension kit for mixer mounting	7441 998
	with	
㊷	Flow temperature sensor M3	Standard delivery pos. 45
	On-site assembly set, comprising:	
㊺	Mixer extension kit for mixer mounting with	7441 998
㊷	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 45
	and	
㊸	Separately ordered heating circuit pump HKP M3	See Viessmann pricelist
㊹	3-way mixer with mixer motor	See Viessmann pricelist
㊻	Underfloor heating system temperature controller	
	– Immersion thermostat	7151 728
	– Contact thermostat	7151 729

ID: 4605525_1604_04 (cont.)

ID: 4605525_1604_04		
Pos.	**Description**	**Part no.**
	Accessories	
㊼	PCB extension for heating circuit 2 and 3 (for Vitotronic 300-K)	7164 403
㊿	KM BUS distributor	7415 028
(71)	EA1 extension	7452 091
(72)	Central fault message facility S (requires EA1 extension)	On site
(73)	External hook-up: – External blocking – Blocking with central fault message – Fault messages – Short-time operation, DHW circulation pump – External demand – External operating program changeover (only weather-compensated mode)	On site
(74)	External set value 0 to 10 V (requires EA1 extension)	On site
(75)	Radio clock receiver	7450 563
(76)	Manifold for 2 or 3 Divicon, incl. thermal insulation and separate wall mounting bracket	See Viessmann pricelist
(77)	Internal H1 extension	7498 513
(80)	Remote control units	
	– Vitotrol 200A	Z008 341
	– Vitotrol 300A	Z008 342
(90)	Vitocomfort 200 (as alternative to operation via wireless base station)	See Viessmann pricelist
	As an alternative to hardwired remote control units, the following wireless accessories may be used	
(86)	Wireless base station required for operation with:	Z011 413
	– Vitotrol 200 RF	Z011 219
	– Vitotrol 300 RF with table-top dock	Z011 410
	– Vitotrol 300 RF with wall mounting bracket	Z011 412
	– Vitocomfort 200 (as alternative to hardwired connection)	See Viessmann pricelist
	– Wireless outside temperature sensor	7455 213
	– Wireless repeater	7456 538
(81)	Cascade communication module (1x per Vitodens 200–W)	Multi boiler system standard delivery
(82)	Vitocom 100, type GSM2	Z011 396/Z011 388
(84)	Vitocom 200, type LAN2 with communication module	Z011 816
(85)	Vitocom 300, type LAN3 with LON communication module	Z011 819
(91)	External safety solenoid valve for LPG (requires internal H1 extension)	On site
	External hook-up for weather-compensated control units	
(93)	External demand	
(94)	External blocking/mixer close	
(95)	External operating program changeover / mixer open	

ID: 4605525_1604_04 (cont.)

Electrical installation scheme



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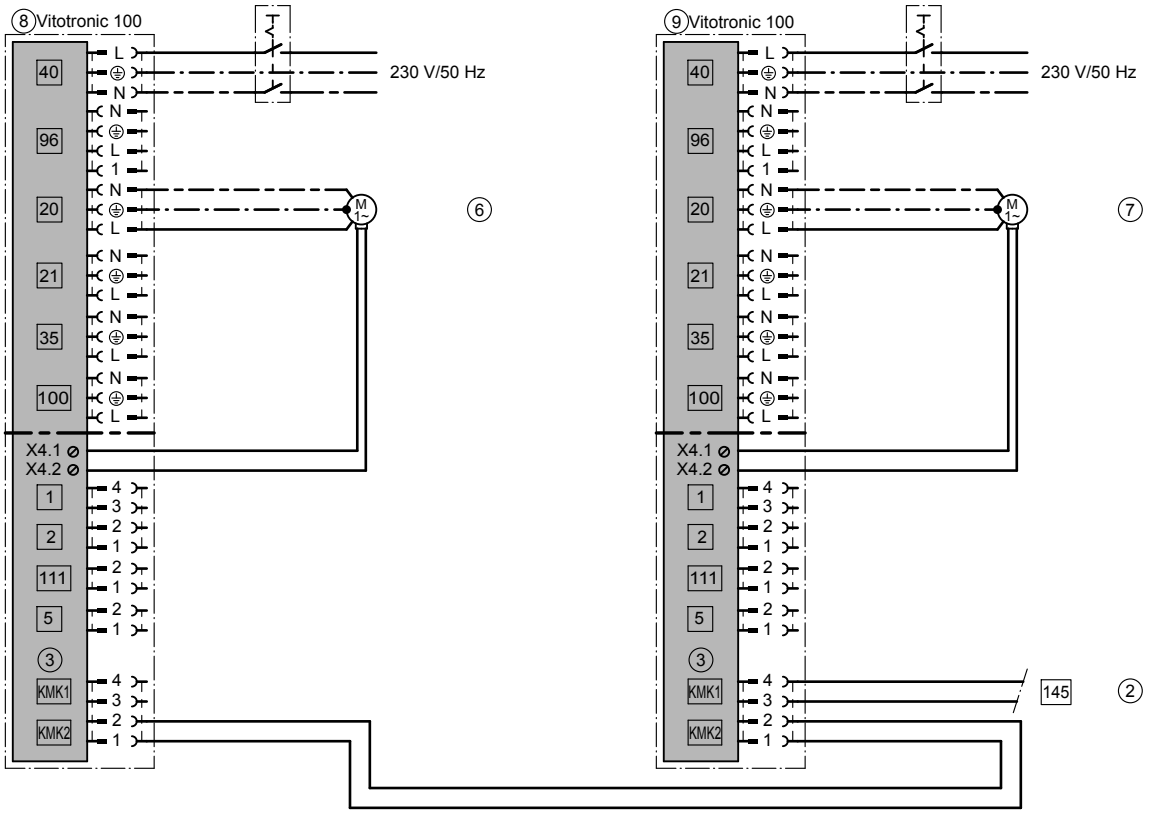
ID: 4605525_1604_04 (cont.)

Electrical installation scheme



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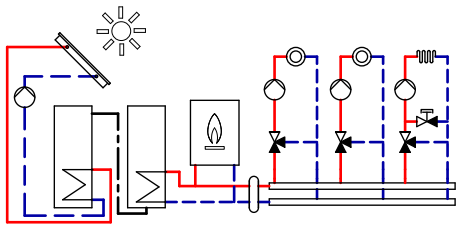
4. Three or more heating circuits with mixer, low loss header and solar DHW heating



ID: 4605527_1604_05

Applications
Heating system with different heating circuits:
- Controlled heating circuits ㉚ / ㊵
  and
- Controlled underfloor heating circuit ㊿

DHW heating by Vitodens ① and solar thermal system ⑳.

Requirements
The total flow rate of all heating circuits is greater than the max. possible flow rate of the boiler (see table), therefore a low loss header ④ must be installed.

Boiler	Max. flow rate l/h
Vitodens 200-W, 12 - 49 kW	3500
Vitodens 200-W, 12 - 60 kW	3500
Vitodens 200-W, 20 - 80 kW	5700
Vitodens 200-W, 20 - 99 kW	5700
Vitodens 200-W, 32 - 120 kW	7165
Vitodens 200-W, 32 - 150 kW	8600

Main components
- Vitodens 200-W gas condensing boiler ①, 49 to 150 kW
- Vitotronic 200 (for weather-compensated mode)
- Heating circuit connection set ⑥ with circulation pump
- Low loss header ④
- DHW heating by the Vitodens, no solar thermal system:
  – DHW cylinder connection set ⑫ with circulation pump for cylinder heating.
- Alternatively:
  – Connect the circulation pump for cylinder heating downstream of the low loss header ④.
- DHW heating by the Vitodens and a solar thermal system:
  – DHW cylinder ㉙
  – Solar thermal system ⑳

Note:
When operating a DHW cylinder, ensure that the heating output of the boiler can be transferred to the DHW cylinder as continuously as possible. In borderline situations, we recommend operating the DHW cylinder in parallel mode between heating circuit pump and circulation pump for cylinder heating (no DHW priority). For this, we recommend installing the DHW cylinder in the secondary side of the heating system (downstream of the low loss header).

Function description
Heating circuit connection set ⑥ with circulation pump supplies the boiler circuit up to the low loss header. DHW cylinder ⑩ is supplied by DHW cylinder connection set ⑫ with circulation pump for cylinder heating.
Heating circuit pumps M2 ㉝, M3 ㊸ and M1 ㊸ supply heating circuits ㉚ / ㊵ / ㊿.

Heating operation

Heating circuits with mixer
The underfloor heating circuit and radiator circuits are each supplied by a separate circulation pump ㉝ / ㊸ / ㊸. Heating circuits ㉚ / ㊵ are controlled via extension kits for mixers ㉟ / ㊺ respectively. Heating circuit ㊿ is controlled via a Vitotronic 200-H, type HK1B ㊼.
The boiler water temperature is controlled according to the highest demand (flow temperature increased by an adjustable differential temperature).
The flow rate of underfloor heating circuit ㊿ (without system separation) is subject to individual design criteria and is balanced by an adjustable bypass.
The maximum temperature of underfloor heating circuit ㊿ is restricted via temperature limiter ㊻.

DHW heating by boiler
If the set DHW temperature selected at control unit ② is undershot, circulation pump for cylinder heating UPSB ⑫ is started.
During the periods selected at control unit ②, DHW is heated with or without priority control.
DHW circulation pump ZP ⑬ is connected to internal H1 extension ㊼ or H2 extension ㊽.

DHW heating by the solar thermal system
If the temperature differential between collector temperature sensor ㉕ and cylinder temperature sensor ㉔ exceeds the start temperature differential, solar circuit pump ㉓ is started and DHW cylinder ㉙ is heated.

Solar circuit pump ㉓ is stopped according to the following criteria:
- The stop temperature differential is undershot
- The electronic temperature limit (max. 90 °C) of solar control module (type SM1) ⑳ is exceeded
- The temperature selected at high limit safety cut-out ㉘ (if installed) is reached

The requirements for the auxiliary function (see Vitosol technical guide) are met by circulation pump ⑮.
Circulation pump ⑮ starts when the start temperature differential (of the second temperature differential controller) at cylinder temperature sensor ㉗ has exceeded the temperature at cylinder temperature sensor ㉖. The water heated in DHW cylinder 1 ㉙ is routed into DHW cylinder 2 ⑩.
Circulation pump ⑮ is switched off when the stop temperature differential (of the second temperature differential controller) at cylinder temperature sensor ㉗ has fallen below the temperature at cylinder temperature sensor ㉖.

Suppression of DHW cylinder reheating by the boiler in conjunction with the solar control module (type SM1)
Reheating is suppressed in two stages.
Reheating of DHW cylinder 2 ⑩ by boiler ① is suppressed as soon as DHW cylinder 1 ㉗ is heated by collectors ㉑. For this, the set cylinder temperature for reheating by boiler ① is reduced. Suppression remains active for a certain time after solar circuit pump ㉓ has stopped.
In the case of uninterrupted heating by collectors ㉑ (> 2 h), boiler ① will only reheat if the set cylinder temperature (coding address "67") selected at boiler control unit ② is undershot.
Coding address "67" in control unit ② is used to specify a 3rd set DHW temperature (setting range 10 to 95 °C). This value must be below the 1st set DHW temperature.
DHW cylinder 2 is only heated by boiler ① if this set value cannot be achieved by the solar thermal system.

5775 664 GB

ID: 4605527_1604_05 (cont.)

Note
This scheme is a general system example. Please refer to the appropriate technical guides when designing specific applications.

Required codes

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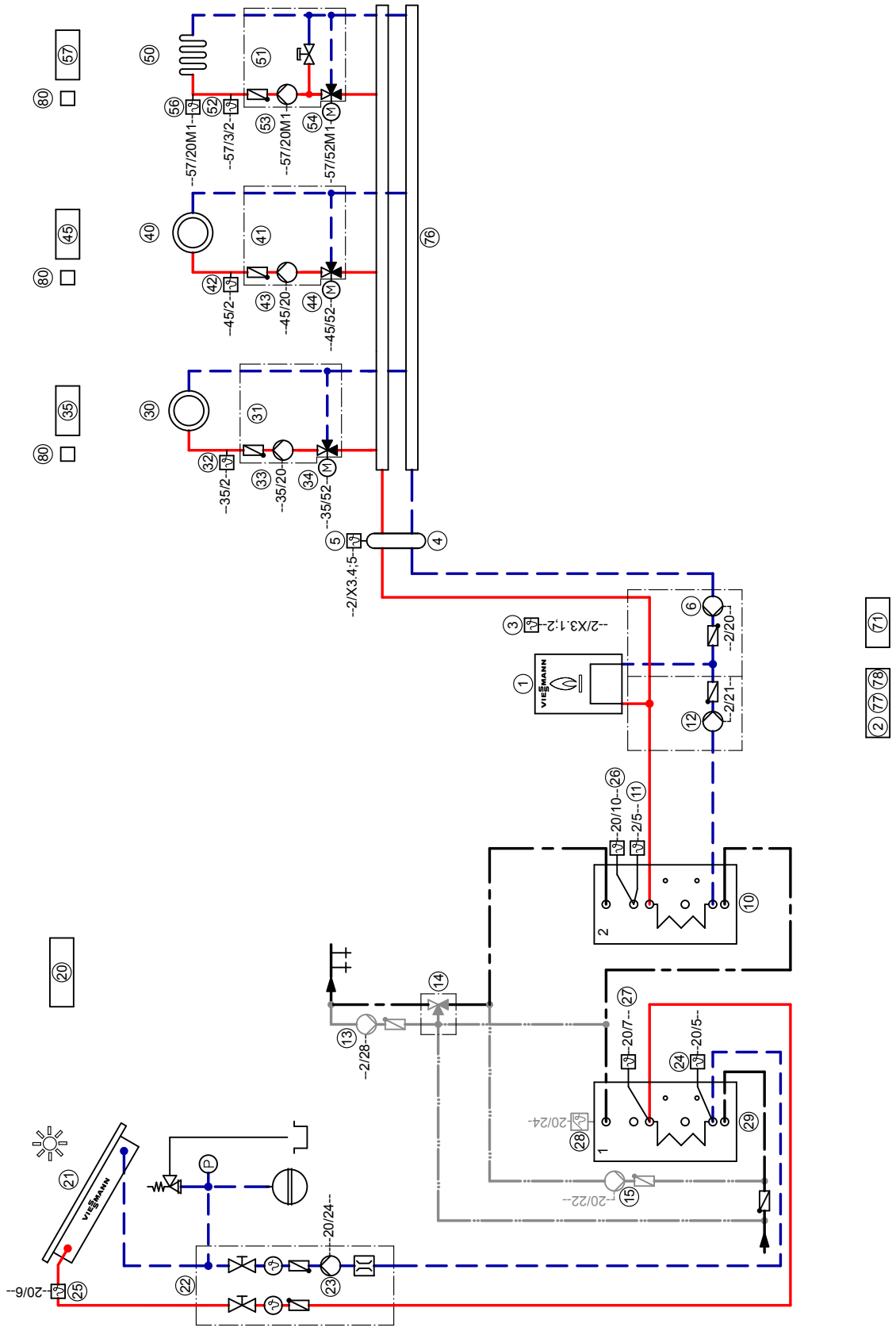
Group	**Code**	**Function**
"General/Group 1"	"82:1"	For operation with LPG (select code 11:9)
"General"	"00:7" or "00:8"	System with **only one** heating circuit with mixer, **without** DHW heating, **without** unregulated heating circuit. System with **only one** heating circuit with mixer, **with** DHW heating, **without** unregulated heating circuit.
	"77:1"	Subscriber no.
	"79:1"	Control unit is fault manager
	"7b:1"	Control unit transmits time via LON
	"97:2"	Control unit transmits outside temperature via LON
"Boiler"	"30:?"	Observe the settings for the heating circuit / boiler circuit pump (see installation and service instructions).
"DHW"	"5b:1"	DHW cylinder connected downstream of the low loss header (Only set if the DHW cylinder is connected downstream of the low loss header.)
"Solar"	"02:0" or "02:1" or "02:2"	Solar circuit pump not speed-controlled Solar circuit pump is speed-controlled with wave packet control Solar circuit pump is speed-controlled with PWM control
	"20:3"	2nd differential control and auxiliary function for DHW heating
Codes Vitotronic 200-H, type HK1B		
"General"	"77:10"	Subscriber no.
	"79:0"	Control unit is not fault manager.
	"7b:0"	Control unit does not transmit time via LON.
	"97:1"	Control unit does not transmit outside temperature via LON.

ID: 4605527_1604_05 (cont.)

Hydraulic installation scheme ID: 4605527_1604_05



Note: This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

ID: 4605527_1604_05 (cont.)

Equipment required

ID: 4605527_1604_05		
Pos.	**Description**	**Part no.**
①	**Boiler**	See Viessmann pricelist
	with	
②	Weather-compensated control unit	
③	Outside temperature sensor ATS	Standard delivery pos. 2
④	Low loss header	
	– 49 and 60 kW	See Vitoset pricelist
	– 80 and 99 kW	Z007 743
	– 120 and 150 kW	ZK00 658
⑤	Flow temperature sensor for low loss header	
	– 49 and 60 kW	7179 488
	– 80 and 99 kW	Standard delivery pos. 50
	– 120 and 150 kW	Standard delivery pos. 50
⑥	Heating circuit connection set with circulation pump	See Viessmann pricelist
⑦	LON communication module	7179 113
	DHW heating by boiler ①	
⑩	DHW cylinder	See Viessmann pricelist
⑪	Cylinder temperature sensor STS (When using the DHW cylinder connection set, included there)	7179 114
⑫	DHW cylinder connection set with circulation pump for cylinder heating UPSB	See Viessmann pricelist
	– 49 to 60 kW	Standard delivery for DHW cylinder connection set / See Viessmann pricelist
	– from 80 kW	See Vitoset pricelist
⑬	DHW circulation pump ZP	See Vitoset pricelist
⑭	Thermostatic DHW circulation set (for DHW supply with DHW circulation)	ZK01 284
	alternatively	
	Automatic thermostatic mixing valve (for DHW supply without DHW circulation)	7438 940
⑮	Circulation pump for transfer of heat	See Vitoset pricelist
	DHW heating by solar thermal system ⑳	
⑳	Solar control module, type SM1 (alternatively incl. in Solar-Divicon standard delivery)	Z014 470
㉑	Solar collectors	See Viessmann pricelist
㉒	Solar Divicon, type PS10 with integral solar control module, type SM1 ⑳, with a pump rate of up to 1000 l/h at 6.0 m head	Z012 016
	or	
	Solar Divicon, type PS20 without control unit, with pump rate up to 1500 l/h at 6.5 m head	Z012 027
㉓	Solar circuit pump	Standard delivery pos. 22
㉔	Cylinder temperature sensor SOL	Standard delivery pos. 20
㉕	Collector temperature sensor KOL	Standard delivery pos. 20
㉖	Cylinder temperature sensor STS (2nd differential temperature)	7438 702
㉗	Cylinder temperature sensor STS (2nd differential temperature)	7438 702
㉘	High limit safety cut-out STB	Z001 889
㉙	DHW cylinder (solar preheating)	See Viessmann pricelist

ID: 4605527_1604_05 (cont.)

ID: 4605527_1604_05

Pos.	Description	Part no.
㉚	**Heating circuit I**	On site
㉛	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㉜	Flow temperature sensor M2	Standard delivery pos. 31
㉝	Heating circuit pump HKP M2	Standard delivery pos. 31
㉞	3-way mixer	Standard delivery pos. 31
	and	
㉟	Mixer extension kit for mixer mounting	Standard delivery pos. 31
	or	
㉛	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㉝	Heating circuit pump HKP M2	Standard delivery pos. 31
㉞	3-way mixer	Standard delivery pos. 31
	with separate	
㉟	Mixer extension kit for mixer mounting	7424 958
	with	
㉜	Flow temperature sensor M2	Standard delivery pos. 35
	or	
	On-site assembly set, comprising:	
㉟	Mixer extension kit for mixer mounting with	7301 063
㉜	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 31
	or	
㉟	Mixer extension kit for wall mounting with	7301 062
㉜	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 31
	and	
㉝	Separately ordered heating circuit pump HKP	See Viessmann pricelist
㉞	3-way mixer with mixer motor	See Viessmann pricelist
㊵	**Heating circuit II**	On site
㊶	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㊷	Flow temperature sensor M3	Standard delivery pos. 41
㊸	Heating circuit pump HKP M3	Standard delivery pos. 41
㊹	3-way mixer	Standard delivery pos. 41
	and	
㊺	Mixer extension kit for mixer mounting	Standard delivery pos. 41
	or	
㊶	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
㊸	Heating circuit pump HKP M3	Standard delivery pos. 41
㊹	3-way mixer	Standard delivery pos. 41
	with separate	
㊺	Mixer extension kit for mixer mounting	7424 959
	with	
㊷	Flow temperature sensor M3	Standard delivery pos. 45
	or	
	On-site assembly set, comprising:	
㊶	Mixer extension kit for mixer mounting with	7301 063
㊷	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 41
	and	
㊶	Mixer extension kit for wall mounting with	7301 062
㊷	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 41
	and	
㊸	Separately ordered heating circuit pump HKP	See Viessmann pricelist
㊹	3-way mixer with mixer motor	See Viessmann pricelist

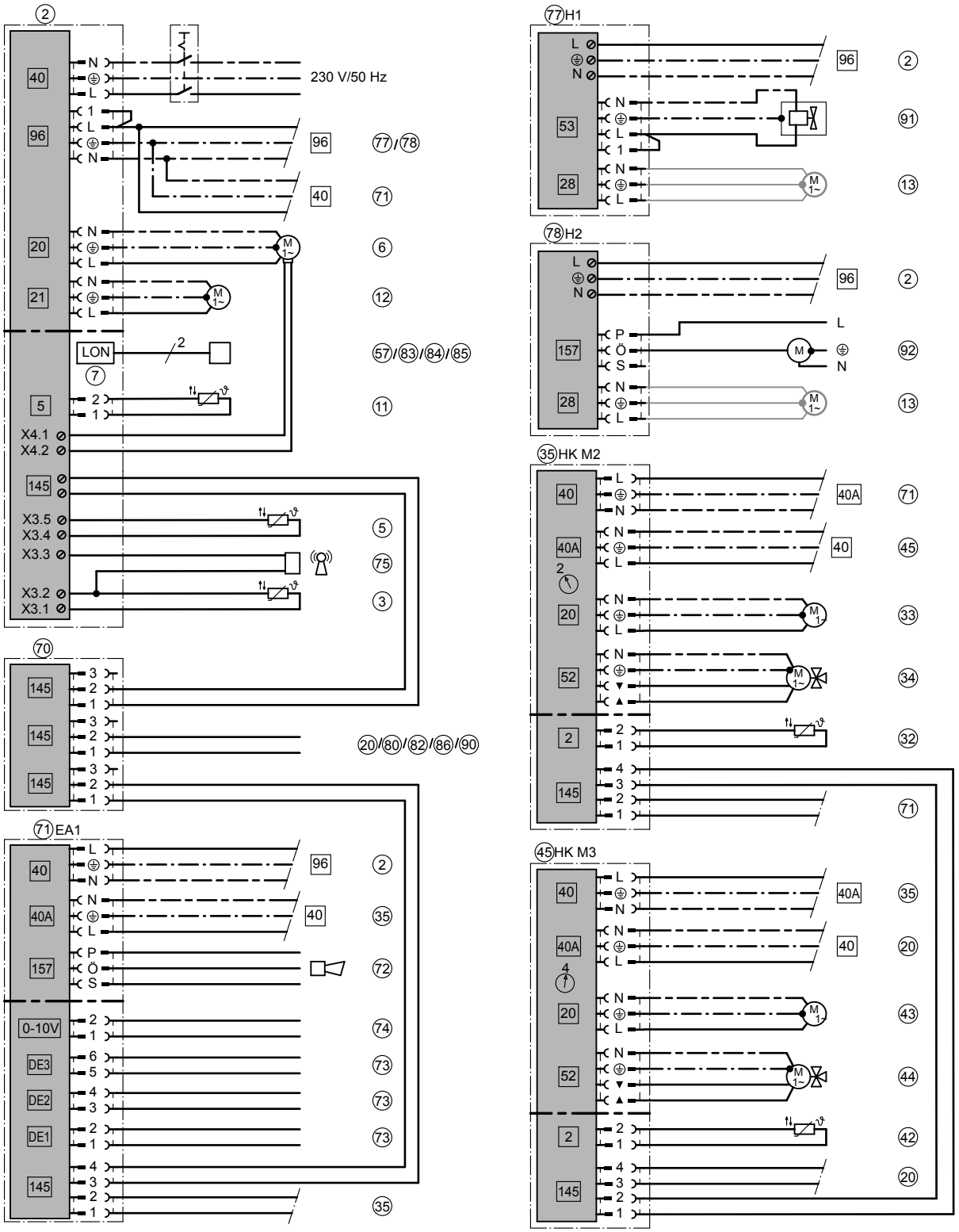
ID: 4605527_1604_05 (cont.)

ID: 4605527_1604_05

Pos.	Description	Part no.
(50)	**Heating circuit III**	On site
(51)	Divicon heating circuit distributor assembly, comprising:	See Viessmann pricelist
(53)	Heating circuit pump HKP M1	Standard delivery pos. 51
(54)	3-way mixer	Standard delivery pos. 51
	with separate	
(55)	Mixer extension kit for mixer mounting	7441 998
	with	
(52)	Flow temperature sensor M1	Standard delivery pos. 55
	On-site assembly set, comprising:	
(55)	Mixer extension kit for mixer mounting with	7441 998
(52)	Flow temperature sensor VTS as contact temperature sensor	Standard delivery pos. 55
	and	
(53)	Separately ordered heating circuit pump HKP M1	See Viessmann pricelist
(54)	3-way mixer with mixer motor	See Viessmann pricelist
(56)	Underfloor heating system temperature controller	
	– Immersion thermostat	7151 728
	– Contact thermostat	7151 729
(57)	Vitotronic 200-H, type HK1B with	Z009 462
(58)	LON communication module	7172 173
	Accessories	
(70)	KM BUS distributor	7415 028
(71)	EA1 extension	7452 091
(72)	Central fault message facility S (requires EA1 extension)	On site
(73)	External hook-up:	On site
	– External blocking	
	– Blocking with central fault message	
	– Fault messages	
	– Short-time operation, DHW circulation pump	
	– External demand	
	– External operating program changeover (only weather-compensated mode)	
(74)	External set value 0 to 10 V (requires EA1 extension)	On site
(75)	Radio clock receiver	7450 563
(76)	Manifold for 2 or 3 Divicon, incl. thermal insulation and separate wall mounting bracket	See Viessmann pricelist
(77)	– Internal H1 extension	7498 513
	or	
(78)	– Internal H2 extension	7498 514
(80)	Remote control units	
	– Vitotrol 200A	Z008 341
	– Vitotrol 300A	Z008 342
(90)	Vitocomfort 200 (as alternative to operation via wireless base station)	See Viessmann pricelist
	As an alternative to hardwired remote control units, the following wireless accessories may be used	
(86)	Wireless base station required for operation with:	Z011 413
	– Vitotrol 200 RF	Z011 219
	– Vitotrol 300 RF with table-top dock	Z011 410
	– Vitotrol 300 RF with wall mounting bracket	Z011 412
	– Vitocomfort 200 (as alternative to hardwired connection)	See Viessmann pricelist
	– Wireless outside temperature sensor	7455 213
	– Wireless repeater	7456 538
(82)	Vitocom 100, type GSM2	Z011 396/Z011 388
(83)	Vitocom 100, type LAN1 with communication module	Z011 224
(84)	Vitocom 200, type LAN2 with communication module	Z011 390
(85)	Vitocom 300, type LAN3 with LON communication module	Z011 399
(91)	External safety solenoid valve for LPG (requires internal H1 extension)	On site
(92)	Extractor fan interlock (requires internal H2 extension)	On site

ID: 4605527_1604_05 (cont.)

Electrical installation scheme



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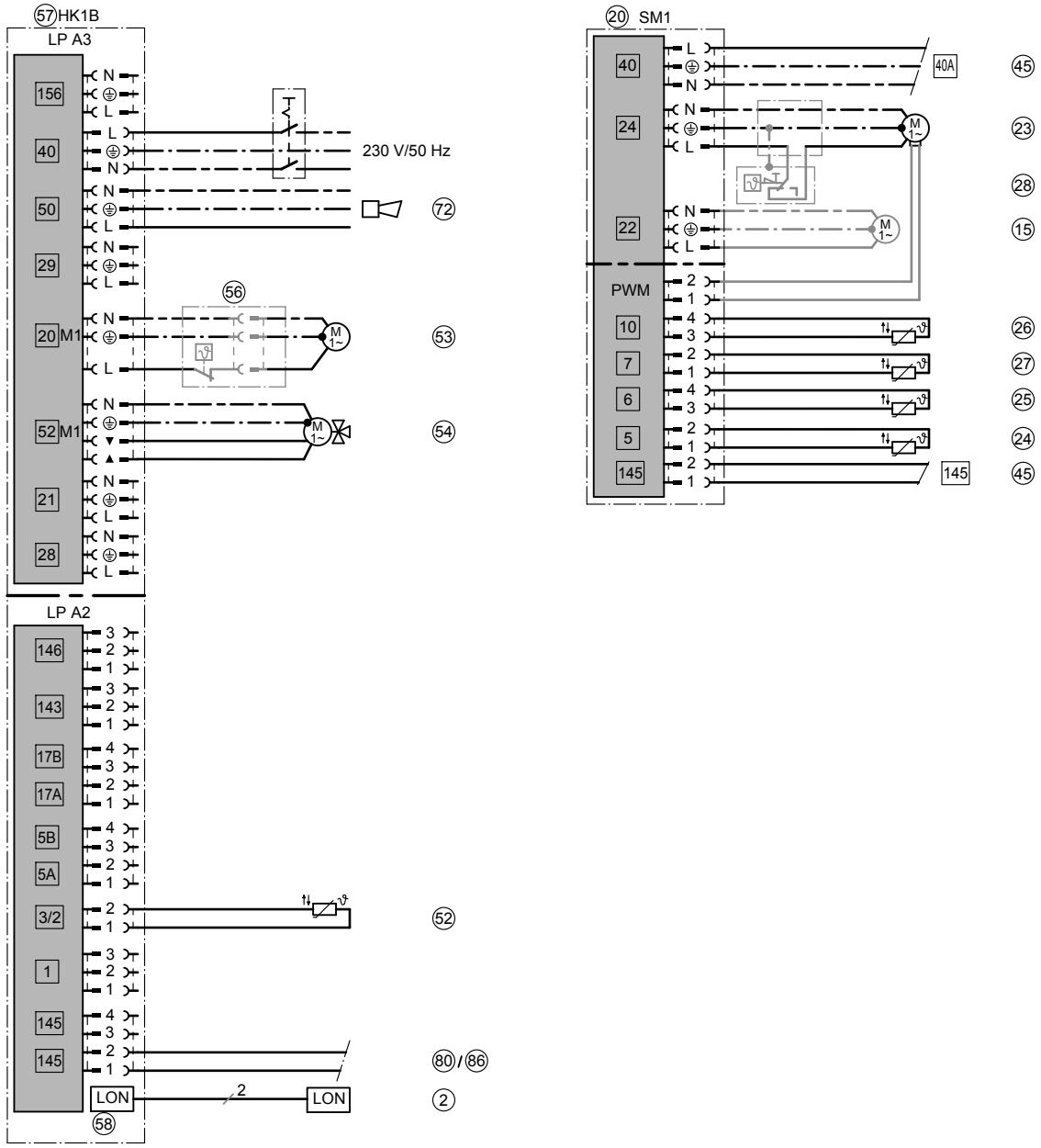

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Subject to technical modifications.

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