

## Technical guide



### VITOCAL 150-A

#### Type AWO(-M)-E-AC/AWO(-M)-E-AC-AF 151.A

Air source heat pump with electric drive in monoblock design with outdoor and indoor unit

- For room heating, room cooling and DHW heating in heating systems
- Indoor unit with control unit, instantaneous heating water heater, integral buffer cylinder, expansion vessel, safety assembly and integral heating/cooling circuit

#### Type AWO(-M)-E-AC/AWO(-M)-E-AC-AF 151.A SP

Equipment as above, with central 230 V~ power supply on the indoor unit

### VITOCAL 151-A

#### Type AWOT(-M)-E-AC/AWOT(-M)-E-AC-AF 151.A

Compact air source heat pump with electric drive in monoblock design with outdoor and indoor unit

- For room heating, room cooling and DHW heating in heating systems
- Indoor unit with control unit, 190 l integral DHW cylinder, instantaneous heating water heater, integral buffer cylinder, expansion vessel, safety assembly

#### Type AWOT(-M)-E-AC/AWOT(-M)-E-AC-AF 151.A SP

Equipment as above, with central 230 V~ power supply on the indoor unit

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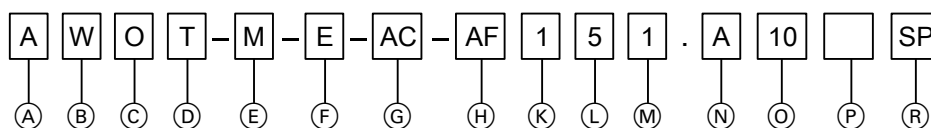
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## Product type designations

Vitocal 151-A, type



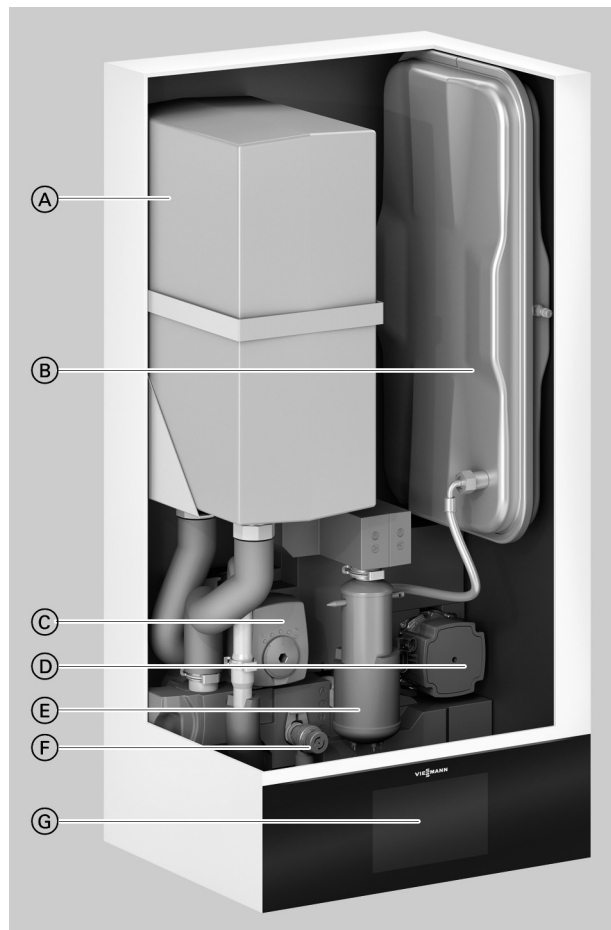
| Pos. | Value                                       | Meaning                                                                    |
|------|---------------------------------------------|----------------------------------------------------------------------------|
| (A)  | Medium, primary circuit                     |                                                                            |
|      | <b>A</b>                                    | <b>A</b> ir                                                                |
|      | <b>B</b>                                    | <b>B</b> rine                                                              |
|      | <b>HA</b>                                   | <b>H</b> ybrid <b>A</b> ir                                                 |
|      | <b>W</b>                                    | <b>W</b> ater                                                              |
| (B)  | Medium, secondary circuit                   |                                                                            |
|      | <b>W</b>                                    | <b>W</b> ater                                                              |
| (C)  | Model, part 1                               |                                                                            |
|      | <b>B</b>                                    | Refrigerant circuit in split version ( <b>Bi</b> -block)                   |
|      | <b>C</b>                                    | Circulation pumps and/or 3-way diverter valve installed ( <b>Compact</b> ) |
|      | <b>H</b>                                    | High temperature version ( <b>High</b> temperature)                        |
|      | <b>O</b>                                    | Outdoor installation ( <b>Outdoor</b> )                                    |
|      | <b>S</b>                                    | Heat pump, stage 2 without heat pump control unit ( <b>Slave</b> )         |
|      | <b>T</b>                                    | Compact heat pump ( <b>Tower</b> )                                         |
| (D)  | Model, part 2                               |                                                                            |
|      | <b>I</b>                                    | Indoor installation ( <b>Indoor</b> )                                      |
|      | <b>T</b>                                    | Compact heat pump ( <b>Tower</b> )                                         |
|      | <b>S</b>                                    | <b>S</b> lim design                                                        |
| (E)  | Outdoor unit power supply                   |                                                                            |
|      | <b>M</b>                                    | 230 V/50 Hz ( <b>Monophase</b> )                                           |
|      | Empty                                       | 400 V/50 Hz                                                                |
| (F)  | Electric instantaneous heating water heater |                                                                            |
|      | <b>E</b>                                    | <b>E</b> lectric heating built into heat pump                              |
|      | Empty                                       | Not built-in                                                               |
| (G)  | Cooling function                            |                                                                            |
|      | <b>AC</b>                                   | <b>A</b> ctive cooling                                                     |
|      | <b>NC</b>                                   | <b>N</b> atural cooling                                                    |

| Pos. | Value                                                    | Meaning                                                                              |
|------|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| (H)  | Ribbon heater for condensate pan                         |                                                                                      |
|      | <b>AF</b>                                                | Built into outdoor unit ( <b>Anti Freeze</b> )                                       |
|      | Empty                                                    | Not built-in                                                                         |
| (K)  | Viessmann product segment                                |                                                                                      |
|      | <b>1</b>                                                 | 100                                                                                  |
|      | <b>2</b>                                                 | 200                                                                                  |
|      | <b>3</b>                                                 | 300                                                                                  |
| (L)  | Flow temperature and DHW cylinder                        |                                                                                      |
|      | <b>0</b>                                                 | Normal flow temperature, separate DHW cylinder required                              |
|      | <b>1/2/3</b>                                             | Normal flow temperature, built-in DHW cylinder                                       |
|      | <b>4</b>                                                 | Normal flow temperature, built-in DHW cylinder, with solar DHW heating               |
|      | <b>5</b>                                                 | High flow temperature, with built-in DHW cylinder, or separate DHW cylinder required |
| (M)  | Heat pumps: Number of compressors in refrigerant circuit |                                                                                      |
|      | <b>1</b>                                                 | 1 compressor                                                                         |
|      | <b>2</b>                                                 | 2 compressors (connected in parallel)                                                |
|      | Hybrid appliances: Number of heat sources                |                                                                                      |
|      | <b>2</b>                                                 | 2 heat sources, e.g. 1 compressor and 1 burner                                       |
| (N)  | <b>A</b> to ...                                          | Product generation                                                                   |
| (O)  | Output class, similar to max. output in kW at A7/W35     |                                                                                      |
| (P)  | Hydraulics, indoor unit                                  |                                                                                      |
|      | <b>2C</b>                                                | 2 integral heating/cooling circuits                                                  |
|      | Empty                                                    | 1 integral heating/cooling circuit                                                   |
| (R)  | Indoor unit equipment                                    |                                                                                      |
|      | <b>SP</b>                                                | Central power supply 1/N/PE 230 V/50 Hz                                              |
|      | <b>NEV</b>                                               | No expansion vessel                                                                  |
|      | <b>I</b>                                                 | Version integrated into living space ( <b>Invisible</b> )                            |

## 2.1 Product description

### Benefits

#### Indoor unit



- Ⓐ Integral buffer cylinder
- Ⓑ Expansion vessel
- Ⓒ 4/3-way valve
- Ⓓ Secondary pump (high efficiency circulation pump)
- Ⓔ Instantaneous heating water heater
- Ⓕ Safety valve
- Ⓖ Heat pump control unit

- Low running costs thanks to high COP (coefficient of performance) to EN 14511: Up to 5.0 at A7/W35
- Output control and DC inverter for high efficiency in partial load operation
- Maximum flow temperature of up to 70 °C at an outside temperature of –10 °C enables use in both new build and modernisation projects.
- Self-optimising control of the flow rate via Viessmann Hydro Auto-Control
- Environmentally responsible, natural refrigerant R290 with a particularly low GWP of 0.02 (GWP = Global Warming Potential)

- Convenient reversible design for heating and cooling
- Runtime-/efficiency-optimised cascade function for 2 heat pumps of equal output for heating operation
- Quiet operation thanks to Advanced Acoustic Design (AAD)
- Web-enabled through integral WiFi or service link
- Operation, optimisation, maintenance and service via ViCare app and ViGuide
- Guided commissioning
- Individual room control with components from ViCare Smart Climate

### Delivered condition

#### Indoor unit

- Integral 4/3-way valve for central heating/DHW heating/bypass
- Integral high efficiency circulation pump for the secondary circuit or heating/cooling circuit 1
- Integral instantaneous heating water heater
- Integral 16 l buffer cylinder
- Integral safety valve and digital pressure gauge
- Weather-compensated heat pump control unit with outside temperature sensor
- Flow sensor

- Wall mounting bracket, standard connection pipes
- Expansion vessel 10 l
- Types ... **SP**  
Central 230 V~ power supply with line protection

#### Outdoor unit

- Inverter-controlled compressor, 4-way diverter valve, electronic expansion valve, evaporator, condenser, EC fan
- Factory-filled with refrigerant R290
- Heating water filter upstream of condenser
- Transport aid

## Vitocal 150-A (cont.)

### ■ Type AWO(-M)-E-AC-AF:

With integral electric ribbon heater for the condensate pan

### Type overview

| Type                   |  |  | Rated voltage |               |        | Central in-door unit power supply |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|---------------|--------|-----------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| AWO-E-AC 151.A         | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 400 V~ | —                                 |  |  |
| AWO-M-E-AC 151.A       | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 230 V~ | —                                 |  |  |
| AWO-M-E-AC 151.A SP    | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 230 V~        | 230 V~ | X                                 |  |  |
| AWO-E-AC-AF 151.A      | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 400 V~ | —                                 |  |  |
| AWO-M-E-AC-AF 151.A    | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 230 V~ | —                                 |  |  |
| AWO-M-E-AC-AF 151.A SP | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 230 V~        | 230 V~ | X                                 |  |  |

|                                                                                   |                                              |
|-----------------------------------------------------------------------------------|----------------------------------------------|
|  | Integral heating/cooling circuits            |
|  | Heating/cooling circuits via buffer cylinder |
|  | Control unit/PCB, indoor unit                |
|  | Outdoor unit                                 |
|  | Instantaneous heating water heater           |
|  | Electric ribbon heater for condensate pan    |

|                                                                                   |             |
|-----------------------------------------------------------------------------------|-------------|
|  | Cascade     |
| X                                                                                 | Available   |
|  | Accessories |
|  | Integral    |
|  | Possible    |

## 2.2 Specification

### Specification

#### Heat pumps with 230 V~ outdoor unit

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                                            | 151.A             | 04         | 06         | 08         | 10          | 13          | 16          |
|----------------------------------------------------------------------------------------------------------|-------------------|------------|------------|------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>                                                     |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 2.5        | 3.1        | 4.0        | 5.8         | 6.7         | 7.6         |
| Fan speed                                                                                                | rpm               | 376        | 401        | 447        |             |             |             |
| Power consumption                                                                                        | kW                | 0.66       | 0.82       | 1.08       | 1.41        | 1.76        | 2.00        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.8        | 3.8        | 3.7        | 4.1         | 3.8         | 3.8         |
| Output control                                                                                           | kW                | 1.8 to 4.5 | 1.8 to 6.0 | 1.8 to 6.8 | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b>                                         |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 4.0        | 4.8        | 5.6        | 7.3         | 8.1         | 9.1         |
| Fan speed                                                                                                | rpm               | 412        | 443        | 482        | 430         | 440         | 450         |
| Air flow rate                                                                                            | m <sup>3</sup> /h | 1813       | 1954       | 2125       | 4045        | 4188        | 4331        |
| Power consumption                                                                                        | kW                | 0.80       | 0.98       | 1.19       | 1.46        | 1.62        | 1.86        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 5.0        | 4.9        | 4.7        | 5.0         | 5.0         | 4.9         |
| Output control                                                                                           | kW                | 2.1 to 4.0 | 2.1 to 6.0 | 2.1 to 8.0 | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A-7/W35)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.8        | 5.6        | 6.5        | 9.7         | 11.1        | 12.4        |
| Power consumption                                                                                        | kW                | 1.27       | 2.00       | 2.41       | 3.23        | 3.87        | 4.39        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.0        | 2.8        | 2.7        | 3.0         | 2.87        | 2.82        |
| <b>Heating performance data to EN 14511 (A-7/W55)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.5        | 5.2        | 6.2        | 9.2         | 10.6        | 11.83       |
| Power consumption                                                                                        | kW                | 1.63       | 2.46       | 3.06       | 4.79        | 5.12        | 5.28        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 2.2        | 2.1        | 2.0        | 1.9         | 2.1         | 2.2         |
| <b>Heating performance data to Commission Regulation (EU) No. 813/2013 (average climatic conditions)</b> |                   |            |            |            |             |             |             |
| <b>Low temperature application (W35)</b>                                                                 |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 176        | 180        | 175        | 190         | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 4.0        | 5.5        | 6.5        | 9.8         | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 4.7        | 4.6        | 4.4        | 4.825       | 4.52        | 4.525       |
| <b>Medium temperature application (W55)</b>                                                              |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 127        | 141        | 137        | 145         | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 3.8        | 5.1        | 6.2        | 9.37        | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 3.6        | 3.6        | 3.5        | 3.7         | 3.6         | 3.6         |
| <b>Energy efficiency class to Commission Regulation (EU) No 813/2013</b>                                 |                   |            |            |            |             |             |             |
| <b>Heating, average climatic conditions</b>                                                              |                   |            |            |            |             |             |             |
| – Low temperature application (W35)                                                                      |                   | A+++       | A+++       | A+++       | A+++        | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |                   | A++        | A++        | A++        | A++         | A++         | A++         |
| <b>Cooling performance data to EN 14511 (A35/W7)</b>                                                     |                   |            |            |            |             |             |             |
| Rated cooling capacity                                                                                   | kW                | 2.6        | 3.0        | 3.4        | 3.9         | 5.6         | 6.3         |
| Fan speed                                                                                                | rpm               |            |            |            | 550         | 550         | 550         |
| Power consumption                                                                                        | kW                | 0.90       | 1.03       | 1.17       | 1.18        | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |                   | 2.9        | 2.9        | 2.9        | 3.3         | 3.4         | 3.4         |
| Output control                                                                                           | kW                | 1.8 to 4.0 | 1.8 to 4.8 | 1.8 to 5.0 | 3.9 to 7.2  | 4.2 to 8.0  | 4.5 to 8.7  |
| <b>Cooling performance data average climatic conditions (A35/W7)</b>                                     |                   |            |            |            |             |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW                | 3.0        | 3.6        | 4.4        | 6.9         | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |                   | 3.8        | 3.9        | 4.0        | 3.6         | 3.8         | 4.1         |

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                   | 151.A | 04                    | 06         | 08         | 10          | 13          | 16          |
|---------------------------------------------------------------------------------|-------|-----------------------|------------|------------|-------------|-------------|-------------|
| <b>Cooling performance data</b> to EN 14511 (A35/W18)                           |       |                       |            |            |             |             |             |
| Rated cooling capacity                                                          | kW    | 4.0                   | 5.0        | 6.0        | 9.6         | 11.0        | 13.2        |
| Fan speed                                                                       | rpm   | —                     | —          | —          | 550         | 550         | 550         |
| Power consumption                                                               | kW    | 0.85                  | 1.14       | 1.54       | 2.18        | 2.75        | 3.62        |
| Coefficient of performance in cooling mode (EER)                                |       | 4.7                   | 4.4        | 3.9        | 4.4         | 4.0         | 3.7         |
| Output control                                                                  | kW    | 3.2 to 4.0            | 3.2 to 5.5 | 3.2 to 6.7 | 6.3 to 14.4 | 6.6 to 15.7 | 6.9 to 17.0 |
| <b>Cooling performance data</b> average climatic conditions (A35/W18)           |       |                       |            |            |             |             |             |
| Rated cooling capacity P <sub>rated</sub>                                       | kW    | 4.6                   | 5.6        | 6.9        | 9.81        | 11.51       | 13.32       |
| Seasonal cooling energy efficiency ratio (SEER)                                 |       | 4.5                   | 4.7        | 4.9        | 7.2         | 6.7         | 6.3         |
| <b>Air intake temperature</b>                                                   |       |                       |            |            |             |             |             |
| Cooling mode                                                                    |       |                       |            |            |             |             |             |
| – Min.                                                                          | °C    | 10                    | 10         | 10         | 10          | 10          | 10          |
| – Max.                                                                          | °C    | 45                    | 45         | 45         | 45          | 45          | 45          |
| Heating mode                                                                    |       |                       |            |            |             |             |             |
| – Min.                                                                          | °C    | –20                   | –20        | –20        | –20         | –20         | –20         |
| – Max.                                                                          | °C    | 40                    | 40         | 40         | 40          | 40          | 40          |
| <b>Heating water</b> (secondary circuit)                                        |       |                       |            |            |             |             |             |
| Capacity excl. expansion vessel                                                 | l     | 18                    | 18         | 18         | 18          | 18          | 18          |
| Heat pump circuit minimum flow rate (defrosting)                                | l/h   | 1000                  | 1000       | 1000       | 1000        | 1000        | 1000        |
| Max. flow temperature                                                           | °C    | 70                    | 70         | 70         | 70          | 70          | 70          |
| <b>Outdoor unit electrical values</b>                                           |       |                       |            |            |             |             |             |
| Rated voltage                                                                   |       | 1/N/PE 230 V/50 Hz    |            |            |             |             |             |
| Max. operating current                                                          | A     | 10                    | 15.5       | 16         | 20          | 20          | 24          |
| Cos φ                                                                           |       | 0.99                  | 0.99       | 0.99       | 0.99        | 0.99        | 0.92        |
| Compressor starting current, inverter controlled                                | A     | < 10                  | < 10       | < 10       | < 10        | < 10        | < 10        |
| Starting current, compressor with stalled armature                              | A     | < 10                  | < 10       | < 10       | < 10        | < 10        | < 10        |
| Fuse protection                                                                 |       | B16A                  | B16A       | B16A       | B25A        | B25A        | B25A        |
| IP rating                                                                       |       | IP X4                 | IP X4      | IP X4      | IP X4       | IP X4       | IP X4       |
| <b>Indoor unit electrical values</b>                                            |       |                       |            |            |             |             |             |
| PCB                                                                             |       | 1/N/PE 230 V/50 Hz    |            |            |             |             |             |
| – Rated voltage                                                                 |       | 1 x B16A              |            |            |             |             |             |
| – Power supply fuse protection                                                  |       | 6.3 A H (slow)/250 V~ |            |            |             |             |             |
| – Internal fuse protection                                                      |       |                       |            |            |             |             |             |
| Instantaneous heating water heater                                              |       |                       |            |            |             |             |             |
| – Heating output                                                                |       |                       |            |            |             |             |             |
| Max.                                                                            | kW    | 8                     |            |            |             |             |             |
| Stage 1                                                                         | kW    | 2.4                   |            |            |             |             |             |
| Stage 2                                                                         | kW    | 2.4                   |            |            |             |             |             |
| Stage 3                                                                         | kW    | 3.2                   |            |            |             |             |             |
| – Fuse rating, power supply 230 V~                                              |       | 3 x B16A, 1-pole      |            |            |             |             |             |
| – Fuse rating, power supply 400 V~                                              |       | 1 x B16A, 3-pole      |            |            |             |             |             |
| – Power supply fuse protection                                                  |       | 3 x B16A              |            |            |             |             |             |
| <b>Max. power consumption</b>                                                   |       |                       |            |            |             |             |             |
| <b>Outdoor unit</b>                                                             |       |                       |            |            |             |             |             |
| – Fan                                                                           | W     | 140                   | 140        | 140        | 2 x 140     | 2 x 140     | 2 x 140     |
| – Control unit/PCB                                                              | kW    | 2.3                   | 3.6        | 3.7        | 4.8         | 5.4         | 5.4         |
| <b>Indoor unit</b>                                                              |       |                       |            |            |             |             |             |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM) | W     | 60                    | 60         | 60         | 60          | 60          | 60          |
| – Energy efficiency index EEI of the circulation pumps                          |       | ≤ 0.2                 | ≤ 0.2      | ≤ 0.2      | ≤ 0.2       | ≤ 0.2       | ≤ 0.2       |
| – Control unit/PCB                                                              | W     | 5                     | 5          | 5          | 5           | 5           | 5           |
| – Max. connected load, function components 230 V~                               | W     | 1000                  | 1000       | 1000       | 1000        | 1000        | 1000        |



## Vitocal 150-A (cont.)

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                                                   | 151.A | 04          | 06          | 08          | 10                | 13          | 16          |
|-----------------------------------------------------------------------------------------------------------------|-------|-------------|-------------|-------------|-------------------|-------------|-------------|
| <b>Mobile data transfer</b>                                                                                     |       |             |             |             |                   |             |             |
| WiFi                                                                                                            |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                             |       |             |             |             | IEEE 802.11 b/g/n |             |             |
| – Frequency band                                                                                                | MHz   |             |             |             | 2400 to 2483.5    |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             |             | +15               |             |             |
| Low power radio                                                                                                 |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                             |       |             |             |             | IEEE 802.15.4     |             |             |
| – Frequency band                                                                                                | MHz   |             |             |             | 2400 to 2483.5    |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             |             | +6                |             |             |
| Service link                                                                                                    |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                             |       |             |             |             | LTE-CAT-NB1       |             |             |
| – Frequency band 3                                                                                              | MHz   |             |             |             | 1710 to 1785      |             |             |
| – Frequency band 8                                                                                              | MHz   |             |             |             | 880 to 915        |             |             |
| – Frequency band 20                                                                                             | MHz   |             |             |             | 832 to 862        |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             |             | +23               |             |             |
| <b>Refrigerant circuit</b>                                                                                      |       |             |             |             |                   |             |             |
| Refrigerant                                                                                                     |       | R290        | R290        | R290        | R290              | R290        | R290        |
| – Safety group                                                                                                  |       | A3          | A3          | A3          | A3                | A3          | A3          |
| – Charge weight                                                                                                 | kg    | 1.2         | 1.2         | 1.2         | 2                 | 2           | 2           |
| – Global warming potential (GWP)* <sup>2</sup>                                                                  |       | 0.02        | 0.02        | 0.02        | 0.02              | 0.02        | 0.02        |
| – CO <sub>2</sub> equivalent                                                                                    | t     | 0.000024    | 0.000024    | 0.000024    | 0.00004           | 0.00004     | 0.00004     |
| Compressor (hermetically sealed)                                                                                | Type  | Twin rotary |             |             |                   |             |             |
| – Oil in compressor                                                                                             | Type  | HAF68       | HAF68       | HAF68       | HAF68             | HAF68       | HAF68       |
| – Oil volume in compressor                                                                                      | l     | 0.840       | 0.840       | 0.840       | 1.150             | 1.150       | 1.150       |
|                                                                                                                 |       | ±0.020      | ±0.020      | ±0.020      | ±0.020            | ±0.020      | ±0.020      |
| Permissible operating pressure                                                                                  |       |             |             |             |                   |             |             |
| – High pressure side                                                                                            | bar   | 30.3        | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        |
|                                                                                                                 | MPa   | 3.03        | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        |
| – Low pressure side                                                                                             | bar   | 30.3        | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        |
|                                                                                                                 | MPa   | 3.03        | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        |
| <b>Outdoor unit dimensions</b>                                                                                  |       |             |             |             |                   |             |             |
| Total length                                                                                                    | mm    | 600         | 600         | 600         | 600               | 600         | 600         |
| Total width                                                                                                     | mm    | 1144        | 1144        | 1144        | 1144              | 1144        | 1144        |
| Total height                                                                                                    | mm    | 841         | 841         | 841         | 1382              | 1382        | 1382        |
| <b>Indoor unit dimensions</b>                                                                                   |       |             |             |             |                   |             |             |
| Total length                                                                                                    | mm    | 360         | 360         | 360         | 360               | 360         | 360         |
| Total width                                                                                                     | mm    | 450         | 450         | 450         | 450               | 450         | 450         |
| Total height                                                                                                    | mm    | 920         | 920         | 920         | 920               | 920         | 920         |
| <b>Total weight</b>                                                                                             |       |             |             |             |                   |             |             |
| Indoor unit                                                                                                     |       |             |             |             |                   |             |             |
| – Empty                                                                                                         | kg    | 47          | 47          | 47          | 47                | 47          | 47          |
| – Filled (max.)                                                                                                 | kg    | 75          | 75          | 75          | 75                | 75          | 75          |
| Outdoor unit                                                                                                    | kg    | 162         | 162         | 162         | 191               | 191         | 191         |
| <b>Permissible operating pressure on the secondary side</b>                                                     |       |             |             |             |                   |             |             |
|                                                                                                                 | bar   | 3           | 3           | 3           | 3                 | 3           | 3           |
|                                                                                                                 | MPa   | 0.3         | 0.3         | 0.3         | 0.3               | 0.3         | 0.3         |
| <b>Connections with connection pipes supplied</b>                                                               |       |             |             |             |                   |             |             |
| Heating water flow/return, heating/cooling circuits or external buffer cylinder                                 | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 |
| Heating water flow/return, DHW cylinder                                                                         | mm    | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0       | Cu 22 x 1.0 | Cu 22 x 1.0 |
| Outdoor unit heating water flow/return                                                                          | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 |
| <b>Length of connection line indoor unit — outdoor unit (hydraulic connection set)</b>                          |       |             |             |             |                   |             |             |
|                                                                                                                 | m     | 5 to 20     | 5 to 20     | 5 to 20     | 5 to 20           | 5 to 20     | 5 to 20     |
| <b>Sound power of the outdoor unit at rated heating output (tested with reference to EN 12102/ EN ISO 3744)</b> |       |             |             |             |                   |             |             |
| Assessed total sound power level at A7/W55                                                                      |       |             |             |             |                   |             |             |
| – ErP                                                                                                           | dB(A) | 51          | 51          | 51          | 56                | 56          | 56          |
| – Max.                                                                                                          | dB(A) | 56          | 58          | 59          | 66                | 66          | 66          |
| – Low-noise mode (stage 2)                                                                                      | dB(A) | 52          | 52          | 52          | 59                | 59          | 59          |

## Vitocal 150-A (cont.)

### Heat pumps with 230 V~ outdoor unit and indoor unit with central power supply

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                                            | 151.A | 04 SP      | 06 SP      | 08 SP      | 10 SP       | 13 SP       | 16 SP       |
|----------------------------------------------------------------------------------------------------------|-------|------------|------------|------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>                                                     |       |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW    | 2.5        | 3.1        | 4.0        | 5.8         | 6.7         | 7.6         |
| Fan speed                                                                                                | rpm   | 376        | 401        | 447        |             |             |             |
| Power consumption                                                                                        | kW    | 0.66       | 0.82       | 1.08       | 1.41        | 1.76        | 2.00        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |       | 3.8        | 3.8        | 3.7        | 4.1         | 3.8         | 3.8         |
| Output control                                                                                           | kW    | 1.8 to 4.5 | 1.8 to 6.0 | 1.8 to 6.8 | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b>                                         |       |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW    | 4.0        | 4.8        | 5.6        | 7.3         | 8.1         | 9.1         |
| Fan speed                                                                                                | rpm   | 412        | 443        | 482        | 430         | 440         | 450         |
| Air flow rate                                                                                            | m³/h  | 1813       | 1954       | 2125       | 4045        | 4188        | 4331        |
| Power consumption                                                                                        | kW    | 0.80       | 0.98       | 1.19       | 1.46        | 1.62        | 1.86        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |       | 5.0        | 4.9        | 4.7        | 5.0         | 5.0         | 4.9         |
| Output control                                                                                           | kW    | 2.1 to 4.0 | 2.1 to 6.0 | 2.1 to 8.0 | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A-7/W35)</b>                                                    |       |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW    | 3.8        | 5.6        | 6.5        | 9.7         | 11.1        | 12.4        |
| Power consumption                                                                                        | kW    | 1.27       | 2.00       | 2.41       | 3.23        | 3.87        | 4.39        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |       | 3.0        | 2.8        | 2.7        | 3.0         | 2.87        | 2.82        |
| <b>Heating performance data to EN 14511 (A-7/W55)</b>                                                    |       |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW    | 3.5        | 5.2        | 6.2        | 9.2         | 10.6        | 11.83       |
| Power consumption                                                                                        | kW    | 1.63       | 2.46       | 3.06       | 4.79        | 5.12        | 5.28        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |       | 2.2        | 2.1        | 2.0        | 1.9         | 2.1         | 2.2         |
| <b>Heating performance data to Commission Regulation (EU) No. 813/2013 (average climatic conditions)</b> |       |            |            |            |             |             |             |
| Low temperature application (W35)                                                                        |       |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %     | 176        | 180        | 175        | 190         | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW    | 4.0        | 5.5        | 6.5        | 9.8         | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |       | 4.7        | 4.6        | 4.4        | 4.825       | 4.52        | 4.525       |
| Medium temperature application (W55)                                                                     |       |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %     | 127        | 141        | 137        | 145         | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW    | 3.8        | 5.1        | 6.2        | 9.37        | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |       | 3.6        | 3.6        | 3.5        | 3.7         | 3.6         | 3.6         |
| <b>Energy efficiency class to Commission Regulation (EU) No 813/2013</b>                                 |       |            |            |            |             |             |             |
| Heating, average climatic conditions                                                                     |       |            |            |            |             |             |             |
| – Low temperature application (W35)                                                                      |       | A+++       | A+++       | A+++       | A+++        | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |       | A++        | A++        | A++        | A++         | A++         | A++         |
| <b>Cooling performance data to EN 14511 (A35/W7)</b>                                                     |       |            |            |            |             |             |             |
| Rated cooling capacity                                                                                   | kW    | 2.6        | 3.0        | 3.4        | 3.9         | 5.6         | 6.3         |
| Fan speed                                                                                                | rpm   |            |            |            | 550         | 550         | 550         |
| Power consumption                                                                                        | kW    | 0.90       | 1.03       | 1.17       | 1.18        | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |       | 2.9        | 2.9        | 2.9        | 3.3         | 3.4         | 3.4         |
| Output control                                                                                           | kW    | 1.8 to 4.0 | 1.8 to 4.8 | 1.8 to 5.0 | 3.9 to 7.2  | 4.2 to 8.0  | 4.5 to 8.7  |
| <b>Cooling performance data average climatic conditions (A35/W7)</b>                                     |       |            |            |            |             |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW    | 3.0        | 3.6        | 4.4        | 6.9         | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |       | 3.8        | 3.9        | 4.0        | 3.6         | 3.8         | 4.1         |
| <b>Cooling performance data to EN 14511 (A35/W18)</b>                                                    |       |            |            |            |             |             |             |
| Rated cooling capacity                                                                                   | kW    | 4.0        | 5.0        | 6.0        | 9.6         | 11.0        | 13.2        |
| Fan speed                                                                                                | rpm   | —          | —          | —          | 550         | 550         | 550         |
| Power consumption                                                                                        | kW    | 0.85       | 1.14       | 1.54       | 2.18        | 2.75        | 3.62        |
| Coefficient of performance in cooling mode (EER)                                                         |       | 4.7        | 4.4        | 3.9        | 4.4         | 4.0         | 3.7         |
| Output control                                                                                           | kW    | 3.2 to 4.0 | 3.2 to 5.5 | 3.2 to 6.7 | 6.3 to 14.4 | 6.6 to 15.7 | 6.9 to 17.0 |

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## Vitocal 150-A (cont.)

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                   | 151.A | 04 SP                 | 06 SP | 08 SP | 10 SP   | 13 SP   | 16 SP   |
|---------------------------------------------------------------------------------|-------|-----------------------|-------|-------|---------|---------|---------|
| <b>Cooling performance data</b> average climatic conditions (A35/W18)           |       |                       |       |       |         |         |         |
| Rated cooling capacity P <sub>rated</sub>                                       | kW    | 4.6                   | 5.6   | 6.9   | 9.81    | 11.51   | 13.32   |
| Seasonal cooling energy efficiency ratio (SEER)                                 |       | 4.5                   | 4.7   | 4.9   | 7.2     | 6.7     | 6.3     |
| <b>Air intake temperature</b>                                                   |       |                       |       |       |         |         |         |
| Cooling mode                                                                    |       |                       |       |       |         |         |         |
| – Min.                                                                          | °C    | 10                    | 10    | 10    | 10      | 10      | 10      |
| – Max.                                                                          | °C    | 45                    | 45    | 45    | 45      | 45      | 45      |
| Heating mode                                                                    |       |                       |       |       |         |         |         |
| – Min.                                                                          | °C    | –20                   | –20   | –20   | –20     | –20     | –20     |
| – Max.                                                                          | °C    | 40                    | 40    | 40    | 40      | 40      | 40      |
| <b>Heating water</b> (secondary circuit)                                        |       |                       |       |       |         |         |         |
| Capacity excl. expansion vessel                                                 | l     | 18                    | 18    | 18    | 18      | 18      | 18      |
| Heat pump circuit minimum flow rate (defrosting)                                | l/h   | 1000                  | 1000  | 1000  | 1000    | 1000    | 1000    |
| Max. flow temperature                                                           | °C    | 70                    | 70    | 70    | 70      | 70      | 70      |
| <b>Outdoor unit electrical values</b>                                           |       |                       |       |       |         |         |         |
| Rated voltage                                                                   |       | 1/N/PE 230 V/50 Hz    |       |       |         |         |         |
| Max. operating current                                                          | A     | 15                    | 15.5  | 16    | 20      | 20      | 24      |
| Cos φ                                                                           |       | 0.99                  | 0.99  | 0.99  | 0.99    | 0.99    | 0.92    |
| Compressor starting current, inverter controlled                                | A     | < 10                  | < 10  | < 10  | < 10    | < 10    | < 10    |
| Starting current, compressor with stalled armature                              | A     | < 10                  | < 10  | < 10  | < 10    | < 10    | < 10    |
| Fuse protection                                                                 |       | B16A                  | B16A  | B16A  | B25A    | B25A    | B25A    |
| IP rating                                                                       |       | IP X4                 | IP X4 | IP X4 | IP X4   | IP X4   | IP X4   |
| <b>Indoor unit electrical values</b>                                            |       |                       |       |       |         |         |         |
| PCB                                                                             |       | 1/N/PE 230 V/50 Hz    |       |       |         |         |         |
| – Rated voltage                                                                 |       | 6.3 A H (slow)/250 V~ |       |       |         |         |         |
| – Internal fuse protection                                                      |       |                       |       |       |         |         |         |
| Instantaneous heating water heater                                              |       |                       |       |       |         |         |         |
| – Heating output                                                                | kW    | 5                     |       |       |         |         |         |
| Power supply, indoor unit                                                       |       | 1/N/PE 230 V/50 Hz    |       |       |         |         |         |
| – Rated voltage                                                                 |       | 1 x B32A, 1-pole      |       |       |         |         |         |
| – Power supply fuse protection                                                  |       |                       |       |       |         |         |         |
| <b>Max. power consumption</b>                                                   |       |                       |       |       |         |         |         |
| <b>Outdoor unit</b>                                                             |       |                       |       |       |         |         |         |
| – Fan                                                                           | W     | 140                   | 140   | 140   | 2 x 140 | 2 x 140 | 2 x 140 |
| – Control unit/PCB                                                              | kW    | 2.3                   | 3.6   | 3.7   | 4.8     | 5.4     | 5.4     |
| <b>Indoor unit</b>                                                              |       |                       |       |       |         |         |         |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM) | W     | 60                    | 60    | 60    | 60      | 60      | 60      |
| – Energy efficiency index EEI of the circulation pumps                          |       | ≤ 0.2                 | ≤ 0.2 | ≤ 0.2 | ≤ 0.2   | ≤ 0.2   | ≤ 0.2   |
| – Control unit/PCB                                                              | W     | 5                     | 5     | 5     | 5       | 5       | 5       |
| – Max. connected load, function components 230 V~                               | W     | 1000                  | 1000  | 1000  | 1000    | 1000    | 1000    |
| <b>Mobile data transfer</b>                                                     |       |                       |       |       |         |         |         |
| WiFi                                                                            |       |                       |       |       |         |         |         |
| – Transfer standard                                                             |       | IEEE 802.11 b/g/n     |       |       |         |         |         |
| – Frequency band                                                                | MHz   | 2400 to 2483.5        |       |       |         |         |         |
| – Max. transmission power                                                       | dBm   | +15                   |       |       |         |         |         |
| Low power radio                                                                 |       |                       |       |       |         |         |         |
| – Transfer standard                                                             |       | IEEE 802.15.4         |       |       |         |         |         |
| – Frequency band                                                                | MHz   | 2400 to 2483.5        |       |       |         |         |         |
| – Max. transmission power                                                       | dBm   | +6                    |       |       |         |         |         |
| Service link                                                                    |       |                       |       |       |         |         |         |
| – Transfer standard                                                             |       | LTE-CAT-NB1           |       |       |         |         |         |
| – Frequency band 3                                                              | MHz   | 1710 to 1785          |       |       |         |         |         |
| – Frequency band 8                                                              | MHz   | 880 to 915            |       |       |         |         |         |
| – Frequency band 20                                                             | MHz   | 832 to 862            |       |       |         |         |         |
| – Max. transmission power                                                       | dBm   | +23                   |       |       |         |         |         |

## Vitocal 150-A (cont.)

| Type AWO-M-E-AC/AWO-M-E-AC-AF                                                                                         | 151.A | 04 SP       | 06 SP       | 08 SP       | 10 SP       | 13 SP       | 16 SP       |
|-----------------------------------------------------------------------------------------------------------------------|-------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Refrigerant circuit</b>                                                                                            |       |             |             |             |             |             |             |
| Refrigerant                                                                                                           |       | R290        | R290        | R290        | R290        | R290        | R290        |
| – Safety group                                                                                                        |       | A3          | A3          | A3          | A3          | A3          | A3          |
| – Charge weight                                                                                                       | kg    | 1.2         | 1.2         | 1.2         | 2           | 2           | 2           |
| – Global warming potential (GWP)*2                                                                                    |       | 0.02        | 0.02        | 0.02        | 0.02        | 0.02        | 0.02        |
| – CO <sub>2</sub> equivalent                                                                                          | t     | 0.000024    | 0.000024    | 0.000024    | 0.00004     | 0.00004     | 0.00004     |
| Compressor (hermetically sealed)                                                                                      | Type  | Twin rotary |             |             |             |             |             |
| – Oil in compressor                                                                                                   | Type  | HAF68       | HAF68       | HAF68       | HAF68       | HAF68       | HAF68       |
| – Oil volume in compressor                                                                                            | l     | 0.840       | 0.840       | 0.840       | 1.150       | 1.150       | 1.150       |
|                                                                                                                       |       | ±0.020      | ±0.020      | ±0.020      | ±0.020      | ±0.020      | ±0.020      |
| Permissible operating pressure                                                                                        |       |             |             |             |             |             |             |
| – High pressure side                                                                                                  | bar   | 30.3        | 30.3        | 30.3        | 30.3        | 30.3        | 30.3        |
|                                                                                                                       | MPa   | 3.03        | 3.03        | 3.03        | 3.03        | 3.03        | 3.03        |
| – Low pressure side                                                                                                   | bar   | 30.3        | 30.3        | 30.3        | 30.3        | 30.3        | 30.3        |
|                                                                                                                       | MPa   | 3.03        | 3.03        | 3.03        | 3.03        | 3.03        | 3.03        |
| <b>Outdoor unit dimensions</b>                                                                                        |       |             |             |             |             |             |             |
| Total length                                                                                                          | mm    | 600         | 600         | 600         | 600         | 600         | 600         |
| Total width                                                                                                           | mm    | 1144        | 1144        | 1144        | 1144        | 1144        | 1144        |
| Total height                                                                                                          | mm    | 841         | 841         | 841         | 1382        | 1382        | 1382        |
| <b>Indoor unit dimensions</b>                                                                                         |       |             |             |             |             |             |             |
| Total length                                                                                                          | mm    | 360         | 360         | 360         | 360         | 360         | 360         |
| Total width                                                                                                           | mm    | 450         | 450         | 450         | 450         | 450         | 450         |
| Total height                                                                                                          | mm    | 920         | 920         | 920         | 920         | 920         | 920         |
| <b>Total weight</b>                                                                                                   |       |             |             |             |             |             |             |
| Indoor unit                                                                                                           |       |             |             |             |             |             |             |
| – Empty                                                                                                               | kg    | 47          | 47          | 47          | 47          | 47          | 47          |
| – Filled (max.)                                                                                                       | kg    | 75          | 75          | 75          | 74          | 74          | 74          |
| Outdoor unit                                                                                                          | kg    | 162         | 162         | 162         | 191         | 191         | 191         |
| <b>Permissible operating pressure on the secondary side</b>                                                           | bar   | 3           | 3           | 3           | 3           | 3           | 3           |
|                                                                                                                       | MPa   | 0.3         | 0.3         | 0.3         | 0.3         | 0.3         | 0.3         |
| <b>Connections with connection pipes supplied</b>                                                                     |       |             |             |             |             |             |             |
| Heating water flow/return, heating/cooling circuits or external buffer cylinder                                       | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| Heating water flow/return, DHW cylinder                                                                               | mm    | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 |
| Outdoor unit heating water flow/return                                                                                | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| <b>Length of connection line indoor unit — outdoor unit (hydraulic connection set)</b>                                | m     | 5 to 20     | 5 to 20     | 5 to 20     | 5 to 20     | 5 to 20     | 5 to 20     |
| <b>Sound power of the outdoor unit at rated heating output</b><br>(tested with reference to EN 12102/<br>EN ISO 3744) |       |             |             |             |             |             |             |
| Assessed total sound power level at A7/W55                                                                            |       |             |             |             |             |             |             |
| – ErP                                                                                                                 | dB(A) | 51          | 51          | 51          | 56          | 56          | 56          |
| – Max.                                                                                                                | dB(A) | 56          | 58          | 59          | 66          | 66          | 66          |
| – Low-noise mode (stage 2)                                                                                            | dB(A) | 52          | 52          | 52          | 59          | 59          | 59          |

### Heat pumps with 400 V~ outdoor unit

| Type AWO-E-AC/AWO-E-AC-AF                                        | 151.A             | 10          | 13          | 16          |
|------------------------------------------------------------------|-------------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>             |                   |             |             |             |
| Rated heating output                                             | kW                | 5.8         | 6.7         | 7.6         |
| Power consumption                                                | kW                | 1.41        | 1.76        | 2.00        |
| Coefficient of performance ε in heating mode (COP)               |                   | 4.1         | 3.8         | 3.8         |
| Output control                                                   | kW                | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b> |                   |             |             |             |
| Rated heating output                                             | kW                | 7.3         | 8.1         | 9.1         |
| Fan speed                                                        | rpm               | 430         | 440         | 567         |
| Air flow rate                                                    | m <sup>3</sup> /h | 4045        | 4188        | 5393        |
| Power consumption                                                | kW                | 1.46        | 1.65        | 1.86        |
| Coefficient of performance ε in heating mode (COP)               |                   | 5.0         | 4.9         | 4.9         |
| Output control                                                   | kW                | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A–7/W35)</b>            |                   |             |             |             |
| Rated heating output                                             | kW                | 9.7         | 11.1        | 12.4        |
| Power consumption                                                | kW                | 3.23        | 3.96        | 4.4         |
| Coefficient of performance ε in heating mode (COP)               |                   | 3.0         | 2.8         | 2.8         |
| <b>Heating performance data to EN 14511 (A–7/W55)</b>            |                   |             |             |             |
| Rated heating output                                             | kW                | 6.75        | 7.56        | 11.8        |
| Power consumption                                                | kW                | 2.27        | 2.33        | 5.28        |
| Coefficient of performance ε in heating mode (COP)               |                   | 2.97        | 3.4         | 2.2         |

\*2 Based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)

## Vitocal 150-A (cont.)

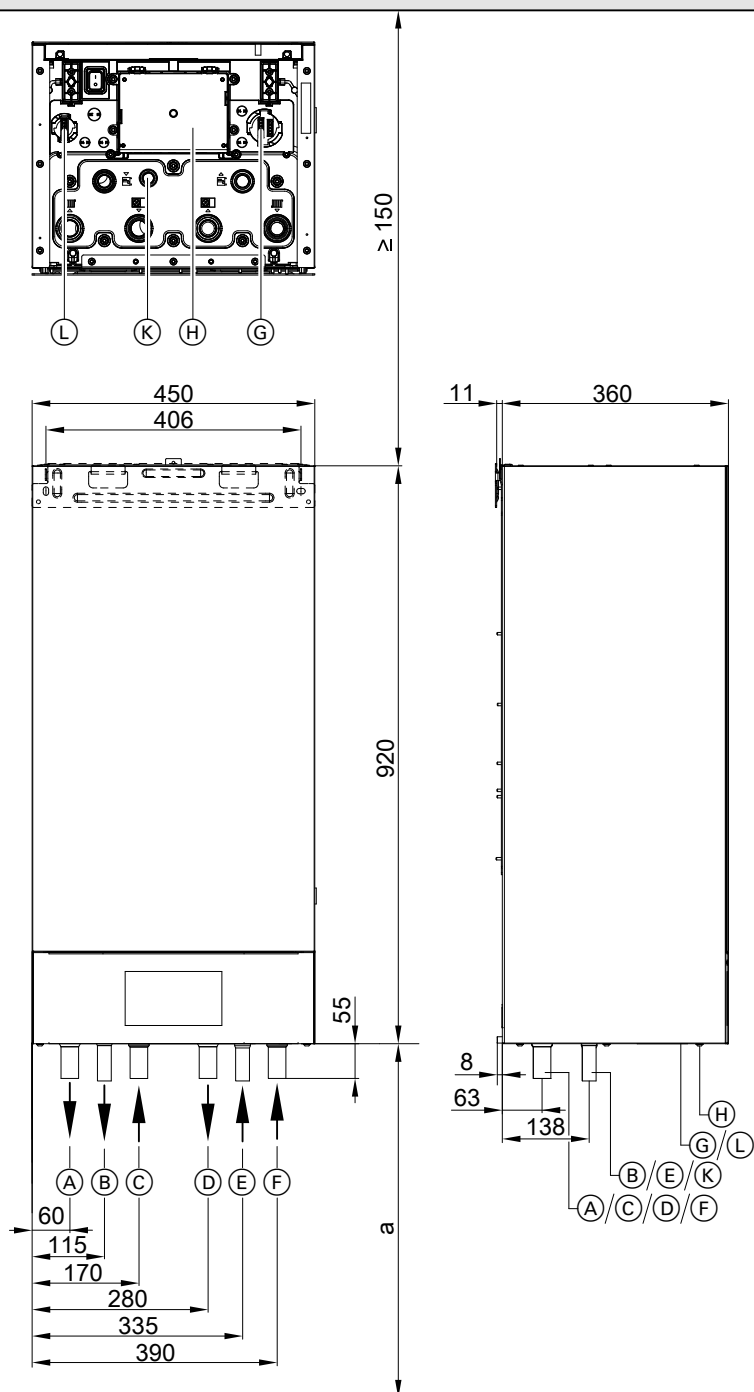
| Type AWO-E-AC/AWO-E-AC-AF                                                                                | 151.A | 10                    | 13          | 16          |
|----------------------------------------------------------------------------------------------------------|-------|-----------------------|-------------|-------------|
| <b>Heating performance data</b> to Commission Regulation (EU) No. 813/2013 (average climatic conditions) |       |                       |             |             |
| Low temperature application (W35)                                                                        |       |                       |             |             |
| – Energy efficiency $\eta_s$                                                                             | %     | 190                   | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW    | 9.8                   | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |       | 4.825                 | 4.52        | 4.525       |
| Medium temperature application (W55)                                                                     |       |                       |             |             |
| – Energy efficiency $\eta_s$                                                                             | %     | 145                   | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW    | 9.37                  | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |       | 3.7                   | 3.6         | 3.6         |
| <b>Energy efficiency class</b> to Commission Regulation (EU) No 813/2013                                 |       |                       |             |             |
| Heating, average climatic conditions                                                                     |       |                       |             |             |
| – Low temperature application (W35)                                                                      |       | A+++                  | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |       | A++                   | A++         | A++         |
| <b>Cooling performance data</b> to EN 14511 (A35/W7)                                                     |       |                       |             |             |
| Rated cooling capacity                                                                                   | kW    | 3.90                  | 5.60        | 6.3         |
| Fan speed                                                                                                | rpm   | 550                   | 550         | 550         |
| Power consumption                                                                                        | kW    | 1.18                  | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |       | 3.30                  | 3.40        | 3.40        |
| Output control                                                                                           | kW    | 3.9 to 7.2            | 4.2 to 8.0  | 4.5 to 8.7  |
| <b>Cooling performance data</b> average climatic conditions (A35/W7)                                     |       |                       |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW    | 6.90                  | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |       | 3.60                  | 3.80        | 4.10        |
| <b>Cooling performance data</b> to EN 14511 (A35/W18)                                                    |       |                       |             |             |
| Rated cooling capacity                                                                                   | kW    | 9.50                  | 11.20       | 13.30       |
| Power consumption                                                                                        | kW    | 2.10                  | 2.70        | 3.60        |
| Coefficient of performance in cooling mode (EER)                                                         |       | 4.50                  | 4.10        | 3.70        |
| Output control                                                                                           | kW    | 6.5 to 13.4           | 6.8 to 14.7 | 7.1 to 16.0 |
| <b>Cooling performance data</b> average climatic conditions (A35/W18)                                    |       |                       |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW    | 9.81                  | 11.51       | 13.32       |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |       | 7.20                  | 6.70        | 6.30        |
| <b>Air intake temperature</b>                                                                            |       |                       |             |             |
| Cooling mode                                                                                             |       |                       |             |             |
| – Min.                                                                                                   | °C    | 10                    | 10          | 10          |
| – Max.                                                                                                   | °C    | 45                    | 45          | 45          |
| Heating mode                                                                                             |       |                       |             |             |
| – Min.                                                                                                   | °C    | –20                   | –20         | –20         |
| – Max.                                                                                                   | °C    | 40                    | 40          | 40          |
| <b>Heating water</b> (secondary circuit)                                                                 |       |                       |             |             |
| Capacity excl. expansion vessel                                                                          | l     | 18                    | 18          | 18          |
| Heat pump circuit minimum flow rate (defrosting)                                                         | l/h   | 1000                  | 1000        | 1000        |
| Max. flow temperature                                                                                    | °C    | 70                    | 70          | 70          |
| <b>Outdoor unit electrical values</b>                                                                    |       |                       |             |             |
| Rated voltage                                                                                            |       | 3/N/PE 400 V/50 Hz    |             |             |
| Max. operating current                                                                                   | A     | 11.5                  | 11.5        | 11.5        |
| Cos $\varphi$                                                                                            |       | 0.92                  | 0.92        | 0.92        |
| Compressor starting current, inverter controlled                                                         | A     | < 10                  | < 10        | < 10        |
| Starting current, compressor with stalled armature                                                       | A     | < 10                  | < 10        | < 10        |
| Fuse protection                                                                                          |       | B16A                  | B16A        | B16A        |
| IP rating                                                                                                |       | IP X4                 | IP X4       | IP X4       |
| <b>Indoor unit electrical values</b>                                                                     |       |                       |             |             |
| PCB                                                                                                      |       |                       |             |             |
| – Rated voltage                                                                                          |       | 1/N/PE 230 V/50 Hz    |             |             |
| – Power supply fuse protection                                                                           |       | 1 x B16A              | 1 x B16A    | 1 x B16A    |
| – Internal fuse protection                                                                               |       | 6.3 A H (slow)/250 V~ |             |             |
| Instantaneous heating water heater                                                                       |       |                       |             |             |
| – Rated voltage                                                                                          |       | 3/N/PE 400 V/50 Hz    |             |             |
| – Heating output                                                                                         |       |                       |             |             |
| Max.                                                                                                     | kW    | 8                     | 8           | 8           |
| Stage 1                                                                                                  | kW    | 2.4                   | 2.4         | 2.4         |
| Stage 2                                                                                                  | kW    | 2.4                   | 2.4         | 2.4         |
| Stage 3                                                                                                  | kW    | 3.2                   | 3.2         | 3.2         |
| – Power supply fuse protection                                                                           |       | 3 x B16A              | 3 x B16A    | 3 x B16A    |

## Vitocal 150-A (cont.)

| Type AWO-E-AC/AWO-E-AC-AF                                                                                      | 151.A | 10                | 13                | 16                |
|----------------------------------------------------------------------------------------------------------------|-------|-------------------|-------------------|-------------------|
| <b>Max. power consumption</b>                                                                                  |       |                   |                   |                   |
| <b>Outdoor unit</b>                                                                                            |       |                   |                   |                   |
| – Fan                                                                                                          | W     | 2 x 140           | 2 x 140           | 2 x 140           |
| – Control unit/PCB                                                                                             | kW    | 4.8               | 5.4               | 5.4               |
| <b>Indoor unit</b>                                                                                             |       |                   |                   |                   |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM)                                | W     | 60                | 60                | 60                |
| – Energy efficiency index EEI of the circulation pumps                                                         |       | ≤ 0.2             | ≤ 0.2             | ≤ 0.2             |
| – Control unit/PCB                                                                                             | W     | 5                 | 5                 | 5                 |
| – Max. connected load, function components 230 V~                                                              | W     | 1000              | 1000              | 1000              |
| <b>Mobile data transfer</b>                                                                                    |       |                   |                   |                   |
| WiFi                                                                                                           |       |                   |                   |                   |
| – Transfer standard                                                                                            |       | IEEE 802.11 b/g/n | IEEE 802.11 b/g/n | IEEE 802.11 b/g/n |
| – Frequency band                                                                                               | MHz   | 2400 to 2483.5    | 2400 to 2483.5    | 2400 to 2483.5    |
| – Max. transmission power                                                                                      | dBm   | +15               | +15               | +15               |
| Low power radio                                                                                                |       |                   |                   |                   |
| – Transfer standard                                                                                            |       | IEEE 802.15.4     | IEEE 802.15.4     | IEEE 802.15.4     |
| – Frequency band                                                                                               | MHz   | 2400 to 2483.5    | 2400 to 2483.5    | 2400 to 2483.5    |
| – Max. transmission power                                                                                      | dBm   | +6                | +6                | +6                |
| Service link                                                                                                   |       |                   |                   |                   |
| – Transfer standard                                                                                            |       | LTE-CAT-NB1       | LTE-CAT-NB1       | LTE-CAT-NB1       |
| – Frequency band 3                                                                                             | MHz   | 1710 to 1785      | 1710 to 1785      | 1710 to 1785      |
| – Frequency band 8                                                                                             | MHz   | 880 to 915        | 880 to 915        | 880 to 915        |
| – Frequency band 20                                                                                            | MHz   | 832 to 862        | 832 to 862        | 832 to 862        |
| – Max. transmission power                                                                                      | dBm   | +23               | +23               | +23               |
| <b>Refrigerant circuit</b>                                                                                     |       |                   |                   |                   |
| Refrigerant                                                                                                    |       | R290              | R290              | R290              |
| – Safety group                                                                                                 |       | A3                | A3                | A3                |
| – Charge weight                                                                                                | kg    | 2                 | 2                 | 2                 |
| – Global warming potential (GWP)* <sup>3</sup>                                                                 |       | 0.02              | 0.02              | 0.02              |
| – CO <sub>2</sub> equivalent                                                                                   | t     | 0.00004           | 0.00004           | 0.00004           |
| Compressor (hermetically sealed)                                                                               | Type  | Twin rotary       | Twin rotary       | Twin rotary       |
| – Oil in compressor                                                                                            | Type  | HAF68             | HAF68             | HAF68             |
| – Oil volume in compressor                                                                                     | l     | 1.150 ±0.020      | 1.150 ±0.020      | 1.150 ±0.020      |
| Permissible operating pressure                                                                                 |       |                   |                   |                   |
| – High pressure side                                                                                           | bar   | 30.3              | 30.3              | 30.3              |
|                                                                                                                | MPa   | 3.03              | 3.03              | 3.03              |
| – Low pressure side                                                                                            | bar   | 30.3              | 30.3              | 30.3              |
|                                                                                                                | MPa   | 3.03              | 3.03              | 3.03              |
| <b>Outdoor unit dimensions</b>                                                                                 |       |                   |                   |                   |
| Total length                                                                                                   | mm    | 600               | 600               | 600               |
| Total width                                                                                                    | mm    | 1144              | 1144              | 1144              |
| Total height                                                                                                   | mm    | 1382              | 1382              | 1382              |
| <b>Indoor unit dimensions</b>                                                                                  |       |                   |                   |                   |
| Total length                                                                                                   | mm    | 360               | 360               | 360               |
| Total width                                                                                                    | mm    | 450               | 450               | 450               |
| Total height                                                                                                   | mm    | 920               | 920               | 920               |
| <b>Total weight</b>                                                                                            |       |                   |                   |                   |
| Indoor unit                                                                                                    |       |                   |                   |                   |
| – Empty                                                                                                        | kg    | 47                | 47                | 47                |
| – Filled (max.)                                                                                                | kg    | 74                | 74                | 74                |
| Outdoor unit                                                                                                   | kg    | 197               | 197               | 197               |
| <b>Permissible operating pressure on the secondary side</b>                                                    | bar   | 3                 | 3                 | 3                 |
|                                                                                                                | MPa   | 0.3               | 0.3               | 0.3               |
| <b>Connections</b> with connection pipes supplied                                                              |       |                   |                   |                   |
| Heating water flow/return, heating/cooling circuits or external buffer cylinder                                | mm    | Cu 28 x 1.0       | Cu 28 x 1.0       | Cu 28 x 1.0       |
| Heating water flow/return, DHW cylinder                                                                        | mm    | Cu 22 x 1.0       | Cu 22 x 1.0       | Cu 22 x 1.0       |
| Outdoor unit heating water flow/return                                                                         | mm    | Cu 28 x 1.0       | Cu 28 x 1.0       | Cu 28 x 1.0       |
| <b>Length of connection line indoor unit — outdoor unit</b> (hydraulic connection set)                         | m     | 5 to 20           | 5 to 20           | 5 to 20           |
| <b>Sound power of the outdoor unit</b> at rated heating output (tested with reference to EN 12102/EN ISO 3744) |       |                   |                   |                   |
| Assessed total sound power level at A7/W55                                                                     |       |                   |                   |                   |
| – ErP                                                                                                          | dB(A) | 56                | 56                | 56                |
| – Max.                                                                                                         | dB(A) | 66                | 66                | 66                |
| – Low-noise mode                                                                                               | dB(A) | 59                | 59                | 59                |

\*<sup>3</sup> Based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)

## Dimensions – indoor unit



a Min. installation height:

Depending on the installation position of programming unit

- (A) Secondary circuit flow (heating/cooling circuit 1/external buffer cylinder), connection Cu 28 x 1.0 mm
- (B) DHW cylinder flow (on the heating water side), connection Cu 22 x 1.0 mm
- (C) Heating water **from** outdoor unit, connection Cu 28 x 1.0 mm
- (D) Heating water **to** outdoor unit, connection Cu 28 x 1.0 mm

- (E) DHW cylinder return (on the heating water side), connection Cu 22 x 1.0 mm

- (F) Secondary circuit return (heating/cooling circuit 1/external buffer cylinder), connection Cu 28 x 1.0 mm

- (G) Extra low voltage (ELV) connection sockets < 42 V

- (H) Junction box 230 V~

- (K) Drain hose safety valve

- (L) Extra low voltage (ELV) connection socket < 42 V

## Min. installation height a

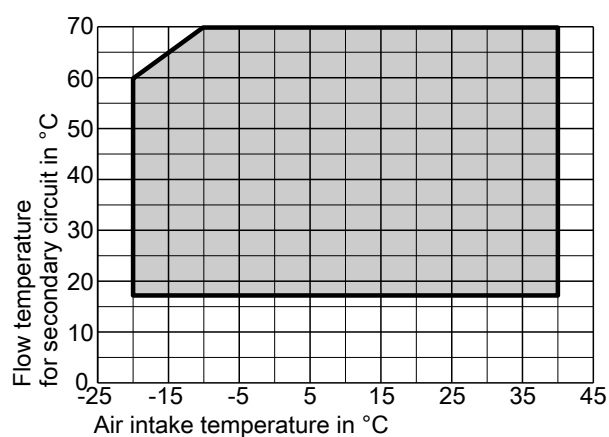
- $\geq 500$  to  $\geq 680$  mm
- Depending on the pre-plumbing jig used and the mounting position of programming unit
- For further information: See page 116.

## Outdoor unit dimensions

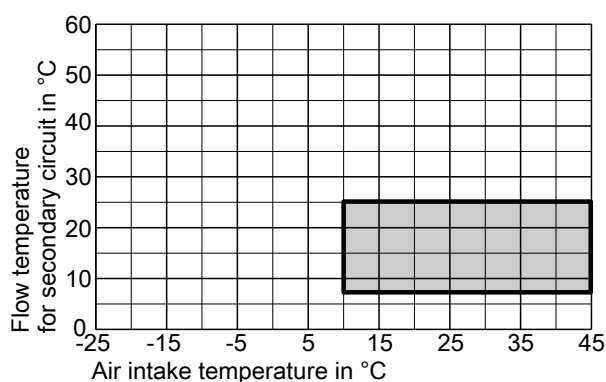
See page 35 onwards.

## Application limits to EN 14511

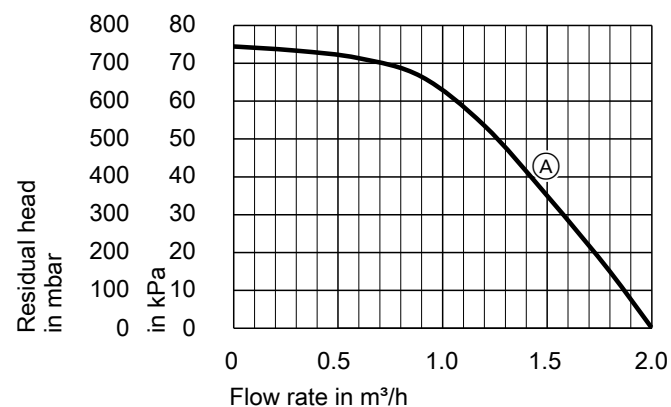
### Heating



### Cooling



## Residual heads of the integral circulation pump

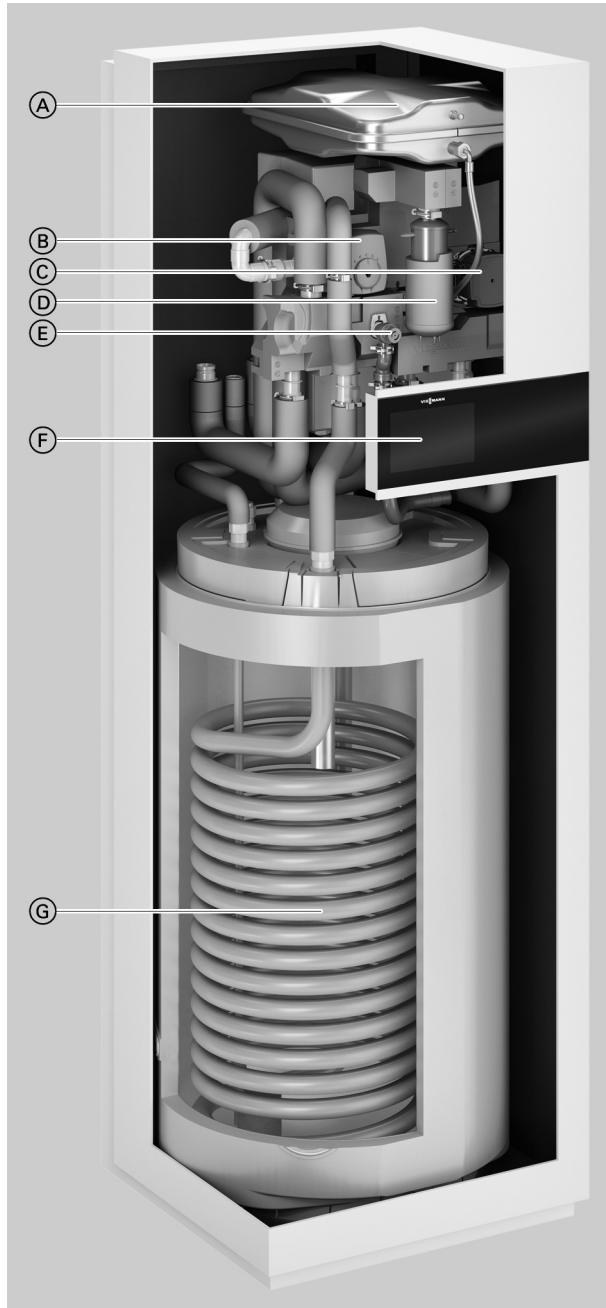


Ⓐ Secondary pump/circulation pump for heating/cooling circuit 1

## 3.1 Product description

### Benefits

#### Indoor unit



- Ⓐ Expansion vessel
- Ⓑ 4/3-way valve
- Ⓒ Secondary pump (high efficiency circulation pump)
- Ⓓ Instantaneous heating water heater
- Ⓔ Safety valve
- Ⓕ Heat pump control unit
- Ⓖ DHW cylinder 190 l

- Integral 190 l DHW cylinder
- Low running costs thanks to high COP (coefficient of performance) to EN 14511: Up to 5.0 at A7/W35
- Output control and DC inverter for high efficiency in partial load operation
- Maximum flow temperature of up to 70 °C at an outside temperature of –10 °C enables use in both new build and modernisation projects.
- Self-optimising control of the flow rate via Viessmann Hydro Auto-Control
- Environmentally responsible, natural refrigerant R290 with a particularly low GWP of 0.02 (GWP = Global Warming Potential)

- Convenient reversible design for heating and cooling
- Runtime-/efficiency-optimised cascade function for 2 heat pumps of equal output for heating operation
- Quiet operation thanks to Advanced Acoustic Design (AAD)
- Web-enabled through integral WiFi or service link
- Operation, optimisation, maintenance and service via ViCare app and ViGuide
- Guided commissioning
- Individual room control with components from ViCare Smart Climate

## Delivered condition

### Indoor unit

- Integral steel DHW cylinder with Ceraprotect enamel coating, protected from corrosion by a protective magnesium anode, with thermal insulation
- Integral 4/3-way valve for central heating/DHW heating/bypass
- Integral high efficiency circulation pump for the secondary circuit or heating/cooling circuit 1
- Integral instantaneous heating water heater
- Integral 16 l buffer cylinder
- Integral safety valve and digital pressure gauge
- Weather-compensated heat pump control unit with outside temperature sensor

- Flow sensor
- Expansion vessel 10 l

- Types ... **SP**  
Central 230 V~ power supply with line protection

### Outdoor unit

- Inverter-controlled compressor, 4-way diverter valve, electronic expansion valve, evaporator, condenser, EC fan
- Factory-filled with refrigerant R290
- Heating water filter upstream of condenser
- Transport aid
- Type AWOT(-M)-E-AC-**AF**:  
With integral electric ribbon heater for the condensate pan

## Type overview

| Type                    |  |  | Rated voltage |               |        | Central indoor unit power supply |    |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|---------------|--------|----------------------------------|---------------------------------------------------------------------------------------|
| AWOT-E-AC 151.A         | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 400 V~ | —                                |    |
| AWOT-M-E-AC 151.A       | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 230 V~ | —                                |    |
| AWOT-M-E-AC 151.A SP    | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 230 V~        | 230 V~ | X                                |    |
| AWOT-E-AC-AF 151.A      | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 400 V~ | —                                |   |
| AWOT-M-E-AC-AF 151.A    | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 400 V~/230 V~ | 230 V~ | —                                |  |
| AWOT-M-E-AC-AF 151.A SP | 1                                                                                 | 1 to 4                                                                            | 230 V~        | 230 V~        | 230 V~ | X                                |  |

-  Integral heating/cooling circuits
-  Heating/cooling circuits via buffer cylinder
-  Control unit/PCB, indoor unit
-  Outdoor unit
-  Instantaneous heating water heater

-  Electric ribbon heater for condensate pan
- X Available
-  Accessories
-  Integral

## 3.2 Specification

### Specification

#### Heat pumps with 230 V~ outdoor unit

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                                          | 151.A             | 04         | 06         | 08         | 10          | 13          | 16          |
|----------------------------------------------------------------------------------------------------------|-------------------|------------|------------|------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>                                                     |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 2.5        | 3.1        | 4.0        | 5.8         | 6.7         | 7.6         |
| Fan speed                                                                                                | rpm               | 376        | 401        | 447        |             |             |             |
| Power consumption                                                                                        | kW                | 0.66       | 0.82       | 1.08       | 1.41        | 1.76        | 2.00        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.8        | 3.8        | 3.7        | 4.1         | 3.8         | 3.8         |
| Output control                                                                                           | kW                | 1.8 to 4.5 | 1.8 to 6.0 | 1.8 to 6.8 | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b>                                         |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 4.0        | 4.8        | 5.6        | 7.3         | 8.1         | 9.1         |
| Fan speed                                                                                                | rpm               | 412        | 443        | 482        | 430         | 440         | 450         |
| Air flow rate                                                                                            | m <sup>3</sup> /h | 1813       | 1954       | 2125       | 4045        | 4188        | 4331        |
| Power consumption                                                                                        | kW                | 0.80       | 0.98       | 1.19       | 1.46        | 1.62        | 1.86        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 5.0        | 4.9        | 4.7        | 5.0         | 5.0         | 4.9         |
| Output control                                                                                           | kW                | 2.1 to 4.0 | 2.1 to 6.0 | 2.1 to 8.0 | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A-7/W35)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.8        | 5.6        | 6.5        | 9.7         | 11.1        | 12.4        |
| Power consumption                                                                                        | kW                | 1.27       | 2.00       | 2.41       | 3.23        | 3.87        | 4.39        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.0        | 2.8        | 2.7        | 3.0         | 2.87        | 2.82        |
| <b>Heating performance data to EN 14511 (A-7/W55)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.5        | 5.2        | 6.2        | 9.2         | 10.6        | 11.83       |
| Power consumption                                                                                        | kW                | 1.63       | 2.46       | 3.06       | 4.79        | 5.12        | 5.28        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 2.2        | 2.1        | 2.0        | 1.9         | 2.1         | 2.2         |
| <b>Heating performance data to Commission Regulation (EU) No. 813/2013 (average climatic conditions)</b> |                   |            |            |            |             |             |             |
| <b>Low temperature application (W35)</b>                                                                 |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 176        | 180        | 175        | 190         | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 4.0        | 5.5        | 6.5        | 9.8         | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 4.7        | 4.6        | 4.4        | 4.825       | 4.525       | 4.525       |
| <b>Medium temperature application (W55)</b>                                                              |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 127        | 141        | 137        | 145         | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 3.8        | 5.1        | 6.2        | 9.37        | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 3.6        | 3.6        | 3.5        | 3.7         | 3.6         | 3.6         |
| – DHW heating energy efficiency $\eta_{wh}$                                                              | %                 | 102        | 102        | 102        | 130         | 130         | 130         |
| <b>Energy efficiency class to Commission Regulation (EU) No. 813/2013</b>                                |                   |            |            |            |             |             |             |
| <b>Heating, average climatic conditions</b>                                                              |                   |            |            |            |             |             |             |
| – Low temperature application (W35)                                                                      |                   | A+++       | A+++       | A+++       | A+++        | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |                   | A++        | A++        | A++        | A++         | A++         | A++         |
| DHW heating, draw-off profile (XL)                                                                       |                   | A          | A          | A          | A+          | A+          | A+          |
| <b>Cooling performance data to EN 14511 (A35/W7)</b>                                                     |                   |            |            |            |             |             |             |
| Rated cooling capacity                                                                                   | kW                | 2.6        | 3.0        | 3.4        | 3.9         | 5.6         | 6.3         |
| Fan speed                                                                                                | rpm               |            |            |            | 550         | 550         | 550         |
| Power consumption                                                                                        | kW                | 0.90       | 1.03       | 1.17       | 1.18        | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |                   | 2.9        | 2.9        | 2.9        | 3.3         | 3.4         | 3.4         |
| Output control                                                                                           | kW                | 1.8 to 4.0 | 1.8 to 4.8 | 1.8 to 5.0 | 3.9 to 7.2  | 4.2 to 8.0  | 4.5 to 8.7  |
| <b>Cooling performance data average climatic conditions (A35/W7)</b>                                     |                   |            |            |            |             |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW                | 3.0        | 3.6        | 4.4        | 6.9         | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |                   | 3.8        | 3.9        | 4.0        | 3.6         | 3.8         | 4.1         |

## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                 | 151.A | 04                         | 06         | 08         | 10          | 13          | 16          |
|---------------------------------------------------------------------------------|-------|----------------------------|------------|------------|-------------|-------------|-------------|
| <b>Cooling performance data</b> to EN 14511 (A35/W18)                           |       |                            |            |            |             |             |             |
| Rated cooling capacity                                                          | kW    | 4.0                        | 5.0        | 6.0        | 9.6         | 11.0        | 13.2        |
| Fan speed                                                                       | rpm   | —                          | —          | —          | 550         | 550         | 550         |
| Power consumption                                                               | kW    | 0.85                       | 1.14       | 1.54       | 2.18        | 2.75        | 3.62        |
| Coefficient of performance in cooling mode (EER)                                |       | 4.7                        | 4.4        | 3.9        | 4.4         | 4.0         | 3.7         |
| Output control                                                                  | kW    | 3.2 to 4.0                 | 3.2 to 5.5 | 3.2 to 6.7 | 6.3 to 14.4 | 6.6 to 15.7 | 6.9 to 17.0 |
| <b>Cooling performance data</b> average climatic conditions (A35/W18)           |       |                            |            |            |             |             |             |
| Rated cooling capacity P <sub>rated</sub>                                       | kW    | 4.6                        | 5.6        | 6.9        | 9.81        | 11.51       | 13.32       |
| Seasonal cooling energy efficiency ratio (SEER)                                 |       | 4.5                        | 4.7        | 4.9        | 7.2         | 6.7         | 6.3         |
| <b>Air intake temperature</b>                                                   |       |                            |            |            |             |             |             |
| Cooling mode                                                                    |       |                            |            |            |             |             |             |
| – Min.                                                                          | °C    | 10                         | 10         | 10         | 10          | 10          | 10          |
| – Max.                                                                          | °C    | 45                         | 45         | 45         | 45          | 45          | 45          |
| Heating mode                                                                    |       |                            |            |            |             |             |             |
| – Min.                                                                          | °C    | –20                        | –20        | –20        | –20         | –20         | –20         |
| – Max.                                                                          | °C    | 40                         | 40         | 40         | 40          | 40          | 40          |
| <b>Heating water</b> (secondary circuit)                                        |       |                            |            |            |             |             |             |
| Capacity excl. expansion vessel                                                 | l     | 18                         | 18         | 18         | 18          | 18          | 18          |
| Heat pump circuit minimum flow rate (defrosting)                                | l/h   | 1000                       | 1000       | 1000       | 1000        | 1000        | 1000        |
| Max. flow temperature                                                           | °C    | 70                         | 70         | 70         | 70          | 70          | 70          |
| <b>Outdoor unit electrical values</b>                                           |       |                            |            |            |             |             |             |
| Rated voltage, compressor                                                       |       | 1/N/PE 230 V/50 Hz         |            |            |             |             |             |
| Max. operating current, compressor                                              | A     | 10                         | 15.5       | 16         | 20          | 20          | 24          |
| Cos φ                                                                           |       | 0.99                       | 0.99       | 0.99       | 0.99        | 0.99        | 0.92        |
| Compressor starting current, inverter controlled                                | A     | < 10                       | < 10       | < 10       | < 10        | < 10        | < 10        |
| Starting current, compressor with stalled armature                              | A     | < 10                       | < 10       | < 10       | < 10        | < 10        | < 10        |
| Fuse protection                                                                 | A     | B16A                       | B16A       | B16A       | B25A        | B25A        | B25A        |
| IP rating                                                                       |       | IP X4                      | IP X4      | IP X4      | IP X4       | IP X4       | IP X4       |
| <b>Indoor unit electrical values</b>                                            |       |                            |            |            |             |             |             |
| PCB                                                                             |       | 230 V/50 Hz or 400 V/50 Hz |            |            |             |             |             |
| – Rated voltage                                                                 |       | 1 x B16A                   |            |            |             |             |             |
| – Power supply fuse protection                                                  |       | 6.3 A H (slow)/250 V~      |            |            |             |             |             |
| – Internal fuse protection                                                      |       |                            |            |            |             |             |             |
| Instantaneous heating water heater                                              |       |                            |            |            |             |             |             |
| – Heating output                                                                |       |                            |            |            |             |             |             |
| Max.                                                                            | kW    | 8                          |            |            |             |             |             |
| Stage 1                                                                         | kW    | 2.4                        |            |            |             |             |             |
| Stage 2                                                                         | kW    | 2.4                        |            |            |             |             |             |
| Stage 3                                                                         | kW    | 3.2                        |            |            |             |             |             |
| – Fuse rating, power supply 230 V~                                              |       | 3 x B16A, 1-pole           |            |            |             |             |             |
| – Fuse rating, power supply 400 V~                                              |       | 1 x B16A, 3-pole           |            |            |             |             |             |
| – Power supply fuse protection                                                  |       | 3 x B16A                   |            |            |             |             |             |
| <b>Max. power consumption</b>                                                   |       |                            |            |            |             |             |             |
| <b>Outdoor unit</b>                                                             |       |                            |            |            |             |             |             |
| – Fan                                                                           | W     | 140                        | 140        | 140        | 2 x 140     | 2 x 140     | 2 x 140     |
| – Control unit/PCB                                                              | kW    | 2.3                        | 3.6        | 3.7        | 4.8         | 5.4         | 5.4         |
| <b>Indoor unit</b>                                                              |       |                            |            |            |             |             |             |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM) | W     | 60                         | 60         | 60         | 60          | 60          | 60          |
| – Energy efficiency index EEI of the circulation pumps                          |       | ≤ 0.2                      | ≤ 0.2      | ≤ 0.2      | ≤ 0.2       | ≤ 0.2       | ≤ 0.2       |
| – Control unit/PCB                                                              | W     | 5                          | 5          | 5          | 5           | 5           | 5           |
| – Max. connected load, function components 230 V~                               | W     | 1000                       | 1000       | 1000       | 1000        | 1000        | 1000        |

## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                                          | 151.A | 04          | 06          | 08          | 10                | 13          | 16          |
|----------------------------------------------------------------------------------------------------------|-------|-------------|-------------|-------------|-------------------|-------------|-------------|
| <b>Mobile data transfer</b>                                                                              |       |             |             |             |                   |             |             |
| WiFi                                                                                                     |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                      |       |             |             |             | IEEE 802.11 b/g/n |             |             |
| – Frequency band                                                                                         | MHz   |             |             |             | 2400 to 2483.5    |             |             |
| – Max. transmission power                                                                                | dBm   |             |             |             | +15               |             |             |
| Low power radio                                                                                          |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                      |       |             |             |             | IEEE 802.15.4     |             |             |
| – Frequency band                                                                                         | MHz   |             |             |             | 2400 to 2483.5    |             |             |
| – Max. transmission power                                                                                | dBm   |             |             |             | +6                |             |             |
| Service link                                                                                             |       |             |             |             |                   |             |             |
| – Transfer standard                                                                                      |       |             |             |             | LTE-CAT-NB1       |             |             |
| – Frequency band 3                                                                                       | MHz   |             |             |             | 1710 to 1785      |             |             |
| – Frequency band 8                                                                                       | MHz   |             |             |             | 880 to 915        |             |             |
| – Frequency band 20                                                                                      | MHz   |             |             |             | 832 to 862        |             |             |
| – Max. transmission power                                                                                | dBm   |             |             |             | +23               |             |             |
| <b>Refrigerant circuit</b>                                                                               |       |             |             |             |                   |             |             |
| Refrigerant                                                                                              |       | R290        | R290        | R290        | R290              | R290        | R290        |
| – Safety group                                                                                           |       | A3          | A3          | A3          | A3                | A3          | A3          |
| – Charge weight                                                                                          | kg    | 1.2         | 1.2         | 1.2         | 2                 | 2           | 2           |
| – Global warming potential (GWP)* <sup>4</sup>                                                           |       | 0.02        | 0.02        | 0.02        | 0.02              | 0.02        | 0.02        |
| – CO <sub>2</sub> equivalent                                                                             | t     | 0.000024    | 0.000024    | 0.000024    | 0.00004           | 0.00004     | 0.00004     |
| Compressor (hermetically sealed)                                                                         | Type  |             |             |             | Twin rotary       |             |             |
| – Oil in compressor                                                                                      | Type  | HAF68       | HAF68       | HAF68       | HAF68             | HAF68       | HAF68       |
| – Oil volume in compressor                                                                               | l     | 0.840       | 0.840       | 0.840       | 1.150             | 1.150       | 1.150       |
|                                                                                                          |       | ±0.020      | ±0.020      | ±0.020      | ±0.020            | ±0.020      | ±0.020      |
| Permissible operating pressure                                                                           |       |             |             |             |                   |             |             |
| – High pressure side                                                                                     | bar   | 30.3        | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        |
|                                                                                                          | MPa   | 3.03        | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        |
| – Low pressure side                                                                                      | bar   | 30.3        | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        |
|                                                                                                          | MPa   | 3.03        | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        |
| <b>Integral DHW cylinder</b>                                                                             |       |             |             |             |                   |             |             |
| Capacity                                                                                                 | l     | 190         | 190         | 190         | 190               | 190         | 190         |
| Max. draw-off volume at cylinder temperature 40 °C, storage temperature 53 °C and draw-off rate 10 l/min | l     | 305         | 305         | 305         | 260               | 260         | 260         |
| Max. permissible DHW temperature                                                                         | °C    | 60          | 60          | 60          | 70                | 70          | 70          |
| <b>Outdoor unit dimensions</b>                                                                           |       |             |             |             |                   |             |             |
| Total length                                                                                             | mm    | 600         | 600         | 600         | 600               | 600         | 600         |
| Total width                                                                                              | mm    | 1144        | 1144        | 1144        | 1144              | 1144        | 1144        |
| Total height                                                                                             | mm    | 841         | 841         | 841         | 1382              | 1382        | 1382        |
| <b>Indoor unit dimensions</b>                                                                            |       |             |             |             |                   |             |             |
| Total length                                                                                             | mm    | 597         | 597         | 597         | 597               | 597         | 597         |
| Total width                                                                                              | mm    | 600         | 600         | 600         | 600               | 600         | 600         |
| Total height                                                                                             | mm    | 1900        | 1900        | 1900        | 1900              | 1900        | 1900        |
| <b>Total weight</b>                                                                                      |       |             |             |             |                   |             |             |
| – Empty                                                                                                  | kg    | 170         | 170         | 170         | 170               | 170         | 170         |
| – With filled buffer cylinder                                                                            | kg    | 386         | 386         | 386         | 386               | 386         | 386         |
| Outdoor unit                                                                                             | kg    | 162         | 162         | 162         | 191               | 191         | 191         |
| <b>Permissible operating pressure, secondary side</b>                                                    |       |             |             |             |                   |             |             |
| Heating water                                                                                            | bar   | 3           | 3           | 3           | 3                 | 3           | 3           |
|                                                                                                          | MPa   | 0.3         | 0.3         | 0.3         | 0.3               | 0.3         | 0.3         |
| DHW                                                                                                      | bar   | 10          | 10          | 10          | 10                | 10          | 10          |
|                                                                                                          | MPa   | 1.0         | 1.0         | 1.0         | 1.0               | 1.0         | 1.0         |
| <b>Connections with connection pipes supplied</b>                                                        |       |             |             |             |                   |             |             |
| Heating water flow/return, heating circuits or heating water buffer cylinder                             | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 |
| Heating water flow/return, DHW cylinder                                                                  | mm    | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0       | Cu 22 x 1.0 | Cu 22 x 1.0 |
| Outdoor unit heating water flow/return                                                                   | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 |
| <b>Length of connection line indoor — outdoor unit (hydraulic connection set)</b>                        |       |             |             |             |                   |             |             |
|                                                                                                          | m     | 5 to 20     | 5 to 20     | 5 to 20     | 5 to 20           | 5 to 20     | 5 to 20     |

## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                                                       | 151.A | 04 | 06 | 08 | 10 | 13 | 16 |
|-----------------------------------------------------------------------------------------------------------------------|-------|----|----|----|----|----|----|
| <b>Sound power of the outdoor unit at rated heating output</b><br>(tested with reference to EN 12102/<br>EN ISO 3744) |       |    |    |    |    |    |    |
| Assessed total sound power level at A7/W55                                                                            |       |    |    |    |    |    |    |
| – ErP                                                                                                                 | dB(A) | 51 | 51 | 51 | 59 | 59 | 59 |
| – Max.                                                                                                                | dB(A) | 56 | 58 | 59 | 66 | 66 | 66 |
| – Low-noise mode (stage 2)                                                                                            | dB(A) | 52 | 52 | 52 | 59 | 59 | 59 |

### Heat pumps with 230 V~ outdoor unit and indoor unit with central power supply

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                                          | 151.A             | 04 SP      | 06 SP      | 08 SP      | 10 SP       | 13 SP       | 16 SP       |
|----------------------------------------------------------------------------------------------------------|-------------------|------------|------------|------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>                                                     |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 2.5        | 3.1        | 4.0        | 5.8         | 6.7         | 7.6         |
| Fan speed                                                                                                | rpm               | 376        | 401        | 447        |             |             |             |
| Power consumption                                                                                        | kW                | 0.66       | 0.82       | 1.08       | 1.41        | 1.76        | 2.00        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.8        | 3.8        | 3.7        | 4.1         | 3.8         | 3.8         |
| Output control                                                                                           | kW                | 1.8 to 4.5 | 1.8 to 6.0 | 1.8 to 6.8 | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b>                                         |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 4.0        | 4.8        | 5.6        | 7.3         | 8.1         | 9.1         |
| Fan speed                                                                                                | rpm               | 412        | 443        | 482        | 430         | 440         | 450         |
| Air flow rate                                                                                            | m <sup>3</sup> /h | 1813       | 1954       | 2125       | 4045        | 4188        | 4331        |
| Power consumption                                                                                        | kW                | 0.80       | 0.98       | 1.19       | 1.46        | 1.62        | 1.86        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 5.0        | 4.9        | 4.7        | 5.0         | 5.0         | 4.9         |
| Output control                                                                                           | kW                | 2.1 to 4.0 | 2.1 to 6.0 | 2.1 to 8.0 | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A–7/W35)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.8        | 5.6        | 6.5        | 9.7         | 11.1        | 12.4        |
| Power consumption                                                                                        | kW                | 1.27       | 2.00       | 2.41       | 3.23        | 3.87        | 4.39        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.0        | 2.8        | 2.7        | 3.0         | 2.87        | 2.82        |
| <b>Heating performance data to EN 14511 (A–7/W55)</b>                                                    |                   |            |            |            |             |             |             |
| Rated heating output                                                                                     | kW                | 3.5        | 5.2        | 6.2        | 9.2         | 10.6        | 11.83       |
| Power consumption                                                                                        | kW                | 1.63       | 2.46       | 3.06       | 4.79        | 5.12        | 5.28        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 2.2        | 2.1        | 2.0        | 1.9         | 2.1         | 2.2         |
| <b>Heating performance data to Commission Regulation (EU) No. 813/2013 (average climatic conditions)</b> |                   |            |            |            |             |             |             |
| Low temperature application (W35)                                                                        |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 176        | 180        | 175        | 190         | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 4.0        | 5.5        | 6.5        | 9.8         | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 4.7        | 4.6        | 4.4        | 4.825       | 4.525       | 4.525       |
| Medium temperature application (W55)                                                                     |                   |            |            |            |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 127        | 141        | 137        | 145         | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 3.8        | 5.1        | 6.2        | 9.37        | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 3.6        | 3.6        | 3.5        | 3.7         | 3.6         | 3.6         |
| – DHW heating energy efficiency $\eta_{wh}$                                                              | %                 | 102        | 102        | 102        | 130         | 130         | 130         |
| <b>Energy efficiency class to Commission Regulation (EU) No. 813/2013</b>                                |                   |            |            |            |             |             |             |
| Heating, average climatic conditions                                                                     |                   |            |            |            |             |             |             |
| – Low temperature application (W35)                                                                      |                   | A+++       | A+++       | A+++       | A+++        | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |                   | A++        | A++        | A++        | A+++        | A++         | A++         |
| DHW heating, draw-off profile (XL)                                                                       |                   | A          | A          | A          | A+          | A+          | A+          |
| <b>Cooling performance data to EN 14511 (A35/W7)</b>                                                     |                   |            |            |            |             |             |             |
| Rated cooling capacity                                                                                   | kW                | 2.6        | 3.0        | 3.4        | 3.9         | 5.6         | 6.3         |
| Fan speed                                                                                                | rpm               |            |            |            | 550         | 550         | 550         |
| Power consumption                                                                                        | kW                | 0.90       | 1.03       | 1.17       | 1.18        | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |                   | 2.9        | 2.9        | 2.9        | 3.3         | 3.4         | 3.4         |
| Output control                                                                                           | kW                | 1.8 to 4.0 | 1.8 to 4.8 | 1.8 to 5.0 | 3.9 to 7.2  | 4.2 to 8.0  | 4.5 to 8.7  |

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## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                 | 151.A | 04 SP                 | 06 SP      | 08 SP      | 10 SP       | 13 SP       | 16 SP       |
|---------------------------------------------------------------------------------|-------|-----------------------|------------|------------|-------------|-------------|-------------|
| <b>Cooling performance data</b> average climatic conditions (A35/W7)            |       |                       |            |            |             |             |             |
| Rated cooling capacity P <sub>rated</sub>                                       | kW    | 3.0                   | 3.6        | 4.4        | 6.9         | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                 |       | 3.8                   | 3.9        | 4.0        | 3.6         | 3.8         | 4.1         |
| <b>Cooling performance data</b> to EN 14511 (A35/W18)                           |       |                       |            |            |             |             |             |
| Rated cooling capacity                                                          | kW    | 4.0                   | 5.0        | 6.0        | 9.6         | 11.0        | 13.2        |
| Fan speed                                                                       | rpm   | —                     | —          | —          | 550         | 550         | 550         |
| Power consumption                                                               | kW    | 0.85                  | 1.14       | 1.54       | 2.18        | 2.75        | 3.62        |
| Coefficient of performance in cooling mode (EER)                                |       | 4.7                   | 4.4        | 3.9        | 4.4         | 4.0         | 3.7         |
| Output control                                                                  | kW    | 3.2 to 4.0            | 3.2 to 5.5 | 3.2 to 6.7 | 6.3 to 14.4 | 6.6 to 15.7 | 6.9 to 17.0 |
| <b>Cooling performance data</b> average climatic conditions (A35/W18)           |       |                       |            |            |             |             |             |
| Rated cooling capacity P <sub>rated</sub>                                       | kW    | 4.6                   | 5.6        | 6.9        | 9.81        | 11.51       | 13.32       |
| Seasonal cooling energy efficiency ratio (SEER)                                 |       | 4.5                   | 4.7        | 4.9        | 7.2         | 6.7         | 6.3         |
| <b>Air intake temperature</b>                                                   |       |                       |            |            |             |             |             |
| Cooling mode                                                                    |       |                       |            |            |             |             |             |
| – Min.                                                                          | °C    | 10                    | 10         | 10         | 10          | 10          | 10          |
| – Max.                                                                          | °C    | 45                    | 45         | 45         | 45          | 45          | 45          |
| Heating mode                                                                    |       |                       |            |            |             |             |             |
| – Min.                                                                          | °C    | –20                   | –20        | –20        | –20         | –20         | –20         |
| – Max.                                                                          | °C    | 40                    | 40         | 40         | 40          | 40          | 40          |
| <b>Heating water</b> (secondary circuit)                                        |       |                       |            |            |             |             |             |
| Capacity excl. expansion vessel                                                 | l     | 18                    | 18         | 18         | 18          | 18          | 18          |
| Heat pump circuit minimum flow rate                                             | l/h   | 1000                  | 1000       | 1000       | 1000        | 1000        | 1000        |
| Max. flow temperature                                                           | °C    | 70                    | 70         | 70         | 70          | 70          | 70          |
| <b>Outdoor unit electrical values</b>                                           |       |                       |            |            |             |             |             |
| Rated voltage, compressor                                                       |       | 1/N/PE 230 V/50 Hz    |            |            |             |             |             |
| Max. operating current, compressor                                              | A     | 10                    | 15.5       | 16         | 20          | 20          | 24          |
| Cos φ                                                                           |       | 0.99                  | 0.99       | 0.99       | 0.99        | 0.99        | 0.92        |
| Compressor starting current, inverter controlled                                | A     | < 10                  | < 10       | < 10       | < 10        | < 10        | < 10        |
| Starting current, compressor with stalled armature                              | A     | < 10                  | < 10       | < 10       | < 10        | < 10        | < 10        |
| Fuse protection                                                                 | A     | B16A                  | B16A       | B16A       | B25A        | B25A        | B25A        |
| IP rating                                                                       |       | IP X4                 | IP X4      | IP X4      | IP X4       | IP X4       | IP X4       |
| <b>Indoor unit electrical values</b>                                            |       |                       |            |            |             |             |             |
| PCB                                                                             |       |                       |            |            |             |             |             |
| – Rated voltage                                                                 |       | 1/N/PE 230 V/50 Hz    |            |            |             |             |             |
| – Internal fuse protection                                                      |       | 6.3 A H (slow)/250 V~ |            |            |             |             |             |
| Instantaneous heating water heater                                              |       |                       |            |            |             |             |             |
| – Heating output                                                                | kW    | 5                     |            |            |             |             |             |
| Power supply, indoor unit                                                       |       |                       |            |            |             |             |             |
| – Rated voltage                                                                 |       | 1/N/PE 230 V/50 Hz    |            |            |             |             |             |
| – Power supply fuse protection                                                  |       | 1 x B32A, 1-pole      |            |            |             |             |             |
| <b>Max. power consumption</b>                                                   |       |                       |            |            |             |             |             |
| <b>Outdoor unit</b>                                                             |       |                       |            |            |             |             |             |
| – Fan                                                                           | W     | 140                   | 140        | 140        | 2 x 140     | 2 x 140     | 2 x 140     |
| – Control unit/PCB                                                              | kW    | 2.3                   | 3.6        | 3.7        | 4.8         | 5.4         | 5.4         |
| <b>Indoor unit</b>                                                              |       |                       |            |            |             |             |             |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM) | W     | 60                    | 60         | 60         | 60          | 60          | 60          |
| – Energy efficiency index EEI of the circulation pumps                          |       | ≤ 0.2                 | ≤ 0.2      | ≤ 0.2      | ≤ 0.2       | ≤ 0.2       | ≤ 0.2       |
| – Control unit/PCB                                                              | W     | 5                     | 5          | 5          | 5           | 5           | 5           |
| – Max. connected load, function components 230 V~                               | W     | 1000                  | 1000       | 1000       | 1000        | 1000        | 1000        |

## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF                                                                                 | 151.A | 04 SP       | 06 SP       | 08 SP             | 10 SP       | 13 SP       | 16 SP       |
|-----------------------------------------------------------------------------------------------------------------|-------|-------------|-------------|-------------------|-------------|-------------|-------------|
| <b>Mobile data transfer</b>                                                                                     |       |             |             |                   |             |             |             |
| WiFi                                                                                                            |       |             |             |                   |             |             |             |
| – Transfer standard                                                                                             |       |             |             | IEEE 802.11 b/g/n |             |             |             |
| – Frequency band                                                                                                | MHz   |             |             | 2400 to 2483.5    |             |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             | +15               |             |             |             |
| Low power radio                                                                                                 |       |             |             |                   |             |             |             |
| – Transfer standard                                                                                             |       |             |             | IEEE 802.15.4     |             |             |             |
| – Frequency band                                                                                                | MHz   |             |             | 2400 to 2483.5    |             |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             | +6                |             |             |             |
| Service link                                                                                                    |       |             |             |                   |             |             |             |
| – Transfer standard                                                                                             |       |             |             | LTE-CAT-NB1       |             |             |             |
| – Frequency band 3                                                                                              | MHz   |             |             | 1710 to 1785      |             |             |             |
| – Frequency band 8                                                                                              | MHz   |             |             | 880 to 915        |             |             |             |
| – Frequency band 20                                                                                             | MHz   |             |             | 832 to 862        |             |             |             |
| – Max. transmission power                                                                                       | dBm   |             |             | +23               |             |             |             |
| <b>Refrigerant circuit</b>                                                                                      |       |             |             |                   |             |             |             |
| Refrigerant                                                                                                     |       | R290        | R290        | R290              | R290        | R290        | R290        |
| – Safety group                                                                                                  |       | A3          | A3          | A3                | A3          | A3          | A3          |
| – Charge weight                                                                                                 | kg    | 1.2         | 1.2         | 1.2               | 2           | 2           | 2           |
| – Global warming potential (GWP)* <sup>5</sup>                                                                  |       | 0.02        | 0.02        | 0.02              | 0.02        | 0.02        | 0.02        |
| – CO <sub>2</sub> equivalent                                                                                    | t     | 0.000024    | 0.000024    | 0.000024          | 0.00004     | 0.00004     | 0.00004     |
| Compressor (hermetically sealed)                                                                                | Type  |             |             |                   | Twin rotary |             |             |
| – Oil in compressor                                                                                             | Type  | HAF68       | HAF68       | HAF68             | HAF68       | HAF68       | HAF68       |
| – Oil volume in compressor                                                                                      | l     | 0.840       | 0.840       | 0.840             | 1.150       | 1.150       | 1.150       |
|                                                                                                                 |       | ±0.020      | ±0.020      | ±0.020            | ±0.020      | ±0.020      | ±0.020      |
| Permissible operating pressure                                                                                  |       |             |             |                   |             |             |             |
| – High pressure side                                                                                            | bar   | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        | 30.3        |
|                                                                                                                 | MPa   | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        | 3.03        |
| – Low pressure side                                                                                             | bar   | 30.3        | 30.3        | 30.3              | 30.3        | 30.3        | 30.3        |
|                                                                                                                 | MPa   | 3.03        | 3.03        | 3.03              | 3.03        | 3.03        | 3.03        |
| <b>Integral DHW cylinder</b>                                                                                    |       |             |             |                   |             |             |             |
| Capacity                                                                                                        | l     | 190         | 190         | 190               | 190         | 190         | 190         |
| Max. draw-off volume at cylinder temperature 40 °C, storage temperature 53 °C and draw-off rate 10 l/min        | l     | 305         | 305         | 305               | 260         | 260         | 260         |
| Max. permissible DHW temperature                                                                                | °C    | 60          | 60          | 60                | 70          | 70          | 70          |
| <b>Outdoor unit dimensions</b>                                                                                  |       |             |             |                   |             |             |             |
| Total length                                                                                                    | mm    | 600         | 600         | 600               | 600         | 600         | 600         |
| Total width                                                                                                     | mm    | 1144        | 1144        | 1144              | 1144        | 1144        | 1144        |
| Total height                                                                                                    | mm    | 841         | 841         | 841               | 1382        | 1382        | 1382        |
| <b>Indoor unit dimensions</b>                                                                                   |       |             |             |                   |             |             |             |
| Total length                                                                                                    | mm    | 597         | 597         | 597               | 597         | 597         | 597         |
| Total width                                                                                                     | mm    | 600         | 600         | 600               | 600         | 600         | 600         |
| Total height                                                                                                    | mm    | 1900        | 1900        | 1900              | 1900        | 1900        | 1900        |
| <b>Total weight</b>                                                                                             |       |             |             |                   |             |             |             |
| – Empty                                                                                                         | kg    | 170         | 170         | 170               | 170         | 170         | 170         |
| – With filled buffer cylinder                                                                                   | kg    | 386         | 386         | 386               | 386         | 386         | 386         |
| Outdoor unit                                                                                                    | kg    | 162         | 162         | 162               | 191         | 191         | 191         |
| <b>Permissible operating pressure, secondary side</b>                                                           |       |             |             |                   |             |             |             |
| Heating water                                                                                                   | bar   | 3           | 3           | 3                 | 3           | 3           | 3           |
|                                                                                                                 | MPa   | 0.3         | 0.3         | 0.3               | 0.3         | 0.3         | 0.3         |
| DHW                                                                                                             | bar   | 10          | 10          | 10                | 10          | 10          | 10          |
|                                                                                                                 | MPa   | 1.0         | 1.0         | 1.0               | 1.0         | 1.0         | 1.0         |
| <b>Connections with connection pipes supplied</b>                                                               |       |             |             |                   |             |             |             |
| Heating water flow/return, heating circuits or heating water buffer cylinder                                    | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| Heating water flow/return, DHW cylinder                                                                         | mm    | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0       | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 |
| Outdoor unit heating water flow/return                                                                          | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0       | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| <b>Length of connection line indoor — outdoor unit (hydraulic connection set)</b>                               |       |             |             |                   |             |             |             |
|                                                                                                                 | m     | 5 to 20     | 5 to 20     | 5 to 20           | 5 to 20     | 5 to 20     | 5 to 20     |
| <b>Sound power of the outdoor unit at rated heating output (tested with reference to EN 12102/ EN ISO 3744)</b> |       |             |             |                   |             |             |             |
| Assessed total sound power level at A7/W55                                                                      |       |             |             |                   |             |             |             |
| – ErP                                                                                                           | dB(A) | 51          | 51          | 51                | 56          | 56          | 56          |

\*<sup>5</sup> Based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

## Vitocal 151-A (cont.)

| Type AWOT-M-E-AC/AWOT-M-E-AC-AF | 151.A | 04 SP | 06 SP | 08 SP | 10 SP | 13 SP | 16 SP |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
| – Max.                          | dB(A) | 56    | 58    | 59    | 66    | 66    | 66    |
| – Low-noise mode (stage 2)      | dB(A) | 52    | 52    | 52    | 59    | 59    | 59    |

### Heat pumps with 400 V~ outdoor unit

| Type AWOT-E-AC/AWOT-E-AC-AF                                                                              | 151.A             | 10          | 13          | 16          |
|----------------------------------------------------------------------------------------------------------|-------------------|-------------|-------------|-------------|
| <b>Heating performance data to EN 14511 (A2/W35)</b>                                                     |                   |             |             |             |
| Rated heating output                                                                                     | kW                | 5.8         | 6.7         | 7.6         |
| Power consumption                                                                                        | kW                | 1.41        | 1.76        | 2.00        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 4.1         | 3.8         | 3.8         |
| Output control                                                                                           | kW                | 2.2 to 11.0 | 2.6 to 12.3 | 3.0 to 13.7 |
| <b>Heating performance data to EN 14511 (A7/W35, 5 K spread)</b>                                         |                   |             |             |             |
| Rated heating output                                                                                     | kW                | 7.3         | 8.1         | 9.1         |
| Fan speed                                                                                                | rpm               | 430         | 440         | 567         |
| Air flow rate                                                                                            | m <sup>3</sup> /h | 4045        | 4188        | 5393        |
| Power consumption                                                                                        | kW                | 1.46        | 1.65        | 1.86        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 5.0         | 4.9         | 4.9         |
| Output control                                                                                           | kW                | 2.6 to 12.0 | 3.0 to 13.4 | 3.3 to 14.9 |
| <b>Heating performance data to EN 14511 (A–7/W35)</b>                                                    |                   |             |             |             |
| Rated heating output                                                                                     | kW                | 9.7         | 11.1        | 12.4        |
| Power consumption                                                                                        | kW                | 3.23        | 3.96        | 4.4         |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 3.0         | 2.8         | 2.8         |
| <b>Heating performance data to EN 14511 (A–7/W55)</b>                                                    |                   |             |             |             |
| Rated heating output                                                                                     | kW                | 9.2         | 10.6        | 11.8        |
| Power consumption                                                                                        | kW                | 4.79        | 5.12        | 5.28        |
| Coefficient of performance $\epsilon$ in heating mode (COP)                                              |                   | 1.9         | 2.1         | 2.2         |
| <b>Heating performance data to Commission Regulation (EU) No. 813/2013 (average climatic conditions)</b> |                   |             |             |             |
| Low temperature application (W35)                                                                        |                   |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 190         | 178         | 178         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 9.8         | 12.4        | 13.67       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 4.825       | 4.525       | 4.525       |
| Medium temperature application (W55)                                                                     |                   |             |             |             |
| – Energy efficiency $\eta_s$                                                                             | %                 | 145         | 141         | 141         |
| – Rated heating output $P_{rated}$                                                                       | kW                | 9.37        | 12.1        | 13.37       |
| – Seasonal coefficient of performance (SCOP)                                                             |                   | 3.7         | 3.6         | 3.6         |
| – DHW heating energy efficiency $\eta_{wh}$                                                              | %                 | 130         | 130         | 130         |
| <b>Energy efficiency class to Commission Regulation (EU) No. 813/2013</b>                                |                   |             |             |             |
| Heating, average climatic conditions                                                                     |                   |             |             |             |
| – Low temperature application (W35)                                                                      |                   | A+++        | A+++        | A+++        |
| – Medium temperature application (W55)                                                                   |                   | A++         | A++         | A++         |
| DHW heating, draw-off profile (XL)                                                                       |                   | A+          | A+          | A+          |
| <b>Cooling performance data to EN 14511 (A35/W7)</b>                                                     |                   |             |             |             |
| Rated cooling capacity                                                                                   | kW                | 3.90        | 5.60        | 6.3         |
| Fan speed                                                                                                | rpm               | 550         | 550         | 550         |
| Power consumption                                                                                        | kW                | 1.18        | 1.65        | 1.85        |
| Coefficient of performance in cooling mode (EER)                                                         |                   | 3.30        | 3.40        | 3.40        |
| Output control                                                                                           | kW                | 3.9 to 7.2  | 4.2 to 8.0  | 4.5 to 8.7  |
| <b>Cooling performance data average climatic conditions (A35/W7)</b>                                     |                   |             |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW                | 6.90        | 8.11        | 8.93        |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |                   | 3.60        | 3.80        | 4.10        |
| <b>Cooling performance data to EN 14511 (A35/W18)</b>                                                    |                   |             |             |             |
| Rated cooling capacity                                                                                   | kW                | 9.50        | 11.20       | 13.30       |
| Power consumption                                                                                        | kW                | 2.10        | 2.70        | 3.60        |
| Coefficient of performance in cooling mode (EER)                                                         |                   | 4.50        | 4.10        | 3.70        |
| Output control                                                                                           | kW                | 6.5 to 13.4 | 6.8 to 14.7 | 7.1 to 16.0 |
| <b>Cooling performance data average climatic conditions (A35/W18)</b>                                    |                   |             |             |             |
| Rated cooling capacity $P_{rated}$                                                                       | kW                | 9.81        | 11.51       | 13.32       |
| Seasonal cooling energy efficiency ratio (SEER)                                                          |                   | 7.20        | 6.70        | 6.30        |
| <b>Air intake temperature</b>                                                                            |                   |             |             |             |
| Cooling mode                                                                                             |                   |             |             |             |
| – Min.                                                                                                   | °C                | 10          | 10          | 10          |
| – Max.                                                                                                   | °C                | 45          | 45          | 45          |
| Heating mode                                                                                             |                   |             |             |             |
| – Min.                                                                                                   | °C                | -20         | -20         | -20         |
| – Max.                                                                                                   | °C                | 40          | 40          | 40          |

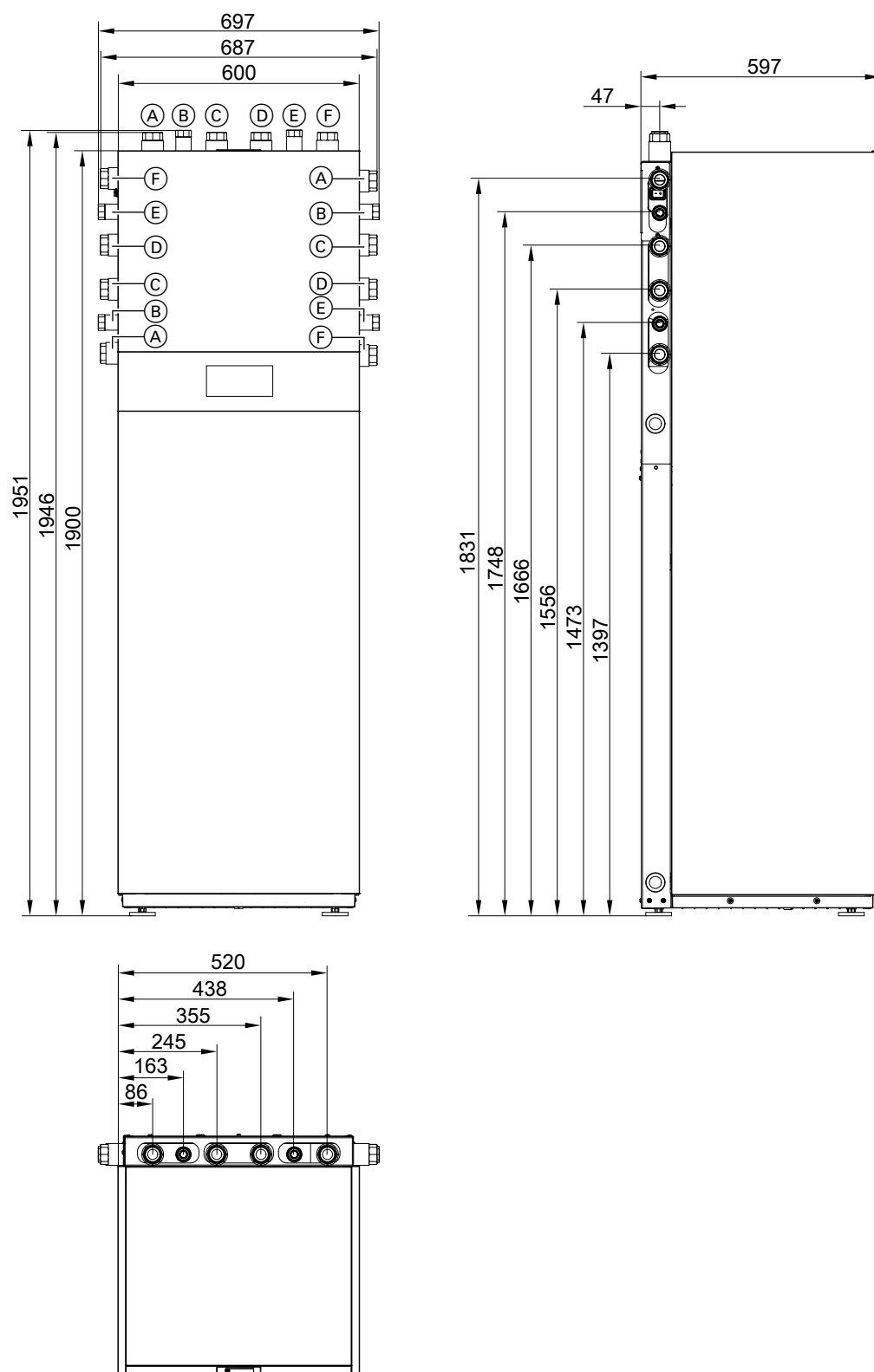
| Type AWOT-E-AC/AWOT-E-AC-AF                                                     | 151.A | 10                    | 13                | 16                |
|---------------------------------------------------------------------------------|-------|-----------------------|-------------------|-------------------|
| <b>Heating water</b> (secondary circuit)                                        |       |                       |                   |                   |
| Capacity excl. expansion vessel                                                 | l     | 10                    | 10                | 10                |
| Heat pump circuit minimum flow rate (defrosting)                                | l/h   | 1000                  | 1000              | 1000              |
| Max. flow temperature                                                           | °C    | 70                    | 70                | 70                |
| <b>Outdoor unit electrical values</b>                                           |       |                       |                   |                   |
| Rated voltage, compressor                                                       |       | 3/N/PE 400 V/50 Hz    |                   |                   |
| Max. operating current, compressor                                              | A     | 11.5                  | 11.5              | 11.5              |
| Cos φ                                                                           |       | 0.92                  | 0.92              | 0.92              |
| Compressor starting current, inverter controlled                                | A     | < 10                  | < 10              | < 10              |
| Starting current, compressor with stalled armature                              | A     | < 10                  | < 10              | < 10              |
| Fuse protection                                                                 |       | B16A                  | B16A              | B16A              |
| IP rating                                                                       |       | IP X4                 | IP X4             | IP X4             |
| <b>Indoor unit electrical values</b>                                            |       |                       |                   |                   |
| PCB                                                                             |       |                       |                   |                   |
| – Rated voltage                                                                 |       | 1/N/PE 230 V/50 Hz    |                   |                   |
| – Power supply fuse protection                                                  |       | 1 x B16A              | 1 x B16A          | 1 x B16A          |
| – Internal fuse protection                                                      |       | 6.3 A H (slow)/250 V~ |                   |                   |
| Instantaneous heating water heater                                              |       |                       |                   |                   |
| – Rated voltage                                                                 |       | 3/N/PE 400 V/50 Hz    |                   |                   |
| – Heating output                                                                |       |                       |                   |                   |
| Max.                                                                            | kW    | 8                     | 8                 | 8                 |
| Stage 1                                                                         | kW    | 2.4                   | 2.4               | 2.4               |
| Stage 2                                                                         | kW    | 2.4                   | 2.4               | 2.4               |
| Stage 3                                                                         | kW    | 3.2                   | 3.2               | 3.2               |
| – Power supply fuse protection                                                  |       | 3 x B16A              | 3 x B16A          | 3 x B16A          |
| <b>Max. power consumption</b>                                                   |       |                       |                   |                   |
| <b>Outdoor unit</b>                                                             |       |                       |                   |                   |
| – Fan                                                                           | W     | 2 x 140               | 2 x 140           | 2 x 140           |
| – Control unit/PCB                                                              | kW    | 4.8                   | 5.4               | 5.4               |
| <b>Indoor unit</b>                                                              |       |                       |                   |                   |
| – Integral secondary pump/heating circuit pump, heating/cooling circuit 1 (PWM) | W     | 60                    | 60                | 60                |
| – Energy efficiency index EEI of the circulation pumps                          |       | ≤ 0.2                 | ≤ 0.2             | ≤ 0.2             |
| – Control unit/PCB                                                              | W     | 5                     | 5                 | 5                 |
| – Max. connected load, function components 230 V~                               | W     | 1000                  | 1000              | 1000              |
| <b>Mobile data transfer</b>                                                     |       |                       |                   |                   |
| WiFi                                                                            |       |                       |                   |                   |
| – Transfer standard                                                             |       | IEEE 802.11 b/g/n     | IEEE 802.11 b/g/n | IEEE 802.11 b/g/n |
| – Frequency band                                                                | MHz   | 2400 to 2483.5        | 2400 to 2483.5    | 2400 to 2483.5    |
| – Max. transmission power                                                       | dBm   | +15                   | +15               | +15               |
| Low power radio                                                                 |       |                       |                   |                   |
| – Transfer standard                                                             |       | IEEE 802.15.4         | IEEE 802.15.4     | IEEE 802.15.4     |
| – Frequency band                                                                | MHz   | 2400 to 2483.5        | 2400 to 2483.5    | 2400 to 2483.5    |
| – Max. transmission power                                                       | dBm   | +6                    | +6                | +6                |
| Service link                                                                    |       |                       |                   |                   |
| – Transfer standard                                                             |       | LTE-CAT-NB1           | LTE-CAT-NB1       | LTE-CAT-NB1       |
| – Frequency band 3                                                              | MHz   | 1710 to 1785          | 1710 to 1785      | 1710 to 1785      |
| – Frequency band 8                                                              | MHz   | 880 to 915            | 880 to 915        | 880 to 915        |
| – Frequency band 20                                                             | MHz   | 832 to 862            | 832 to 862        | 832 to 862        |
| – Max. transmission power                                                       | dBm   | +23                   | +23               | +23               |
| <b>Refrigerant circuit</b>                                                      |       |                       |                   |                   |
| Refrigerant                                                                     |       | R290                  | R290              | R290              |
| – Safety group                                                                  |       | A3                    | A3                | A3                |
| – Charge weight                                                                 | kg    | 2                     | 2                 | 2                 |
| – Global warming potential (GWP)* <sup>6</sup>                                  |       | 0.02                  | 0.02              | 0.02              |
| – CO <sub>2</sub> equivalent                                                    | t     | 0.00004               | 0.00004           | 0.00004           |
| Compressor (hermetically sealed)                                                | Type  | Twin rotary           | Twin rotary       | Twin rotary       |
| – Oil in compressor                                                             | Type  | HAF68                 | HAF68             | HAF68             |
| – Oil volume in compressor                                                      | l     | 1.150 ±0.020          | 1.150 ±0.020      | 1.150 ±0.020      |
| Permissible operating pressure                                                  |       |                       |                   |                   |
| – High pressure side                                                            | bar   | 30.3                  | 30.3              | 30.3              |
|                                                                                 | MPa   | 3.03                  | 3.03              | 3.03              |
| – Low pressure side                                                             | bar   | 30.3                  | 30.3              | 30.3              |
|                                                                                 | MPa   | 3.03                  | 3.03              | 3.03              |

\*<sup>6</sup> Based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

## Vitocal 151-A (cont.)

| Type AWOT-E-AC/AWOT-E-AC-AF                                                                                    | 151.A | 10          | 13          | 16          |
|----------------------------------------------------------------------------------------------------------------|-------|-------------|-------------|-------------|
| <b>Integral DHW cylinder</b>                                                                                   |       |             |             |             |
| Capacity                                                                                                       | l     | 190         | 190         | 190         |
| Max. draw-off volume at DHW temperature 40 °C, storage temperature 53 °C and draw-off rate 10 l/min            | l     | 260         | 260         | 260         |
| Max. permissible DHW temperature                                                                               | °C    | 70          | 70          | 70          |
| <b>Outdoor unit dimensions</b>                                                                                 |       |             |             |             |
| Total length                                                                                                   | mm    | 600         | 600         | 600         |
| Total width                                                                                                    | mm    | 1144        | 1144        | 1144        |
| Total height                                                                                                   | mm    | 1382        | 1382        | 1382        |
| <b>Indoor unit dimensions</b>                                                                                  |       |             |             |             |
| Total length                                                                                                   | mm    | 597         | 597         | 597         |
| Total width                                                                                                    | mm    | 600         | 600         | 600         |
| Total height                                                                                                   | mm    | 1900        | 1900        | 1900        |
| <b>Total weight</b>                                                                                            |       |             |             |             |
| Indoor unit with 1 integrated heating/cooling circuit                                                          |       |             |             |             |
| – Empty                                                                                                        | kg    | 170         | 170         | 170         |
| – With filled buffer cylinder                                                                                  | kg    | 386         | 386         | 386         |
| Outdoor unit                                                                                                   | kg    | 197         | 197         | 197         |
| <b>Permissible operating pressure, secondary side</b>                                                          |       |             |             |             |
| Heating water                                                                                                  | bar   | 3           | 3           | 3           |
|                                                                                                                | MPa   | 0.3         | 0.3         | 0.3         |
| DHW                                                                                                            | bar   | 10          | 10          | 10          |
|                                                                                                                | MPa   | 1.0         | 1.0         | 1.0         |
| <b>Connections with connection pipes supplied</b>                                                              |       |             |             |             |
| Heating water flow/return, heating circuits or heating water buffer cylinder                                   | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| Heating water flow/return, DHW cylinder                                                                        | mm    | Cu 22 x 1.0 | Cu 22 x 1.0 | Cu 22 x 1.0 |
| Outdoor unit heating water flow/return                                                                         | mm    | Cu 28 x 1.0 | Cu 28 x 1.0 | Cu 28 x 1.0 |
| <b>Length of connection line indoor — outdoor unit (hydraulic connection set)</b>                              |       |             |             |             |
|                                                                                                                | m     | 5 to 20     | 5 to 20     | 5 to 20     |
| <b>Sound power of the outdoor unit at rated heating output (tested with reference to EN 12102/EN ISO 3744)</b> |       |             |             |             |
| Assessed total sound power level at A7/W55                                                                     |       |             |             |             |
| – ErP                                                                                                          | dB(A) | 56          | 56          | 56          |
| – Max.                                                                                                         | dB(A) | 66          | 66          | 66          |
| – Low-noise mode                                                                                               | dB(A) | 59          | 59          | 59          |

## Dimensions – indoor unit



- (A) Secondary circuit flow (heating/cooling circuit 1/external buffer cylinder), connection Cu 28 x 1.0 mm
- (B) Cold water, connection Cu 22 x 1.0 mm
- (C) Heating water **from** outdoor unit, connection Cu 28 x 1.0 mm

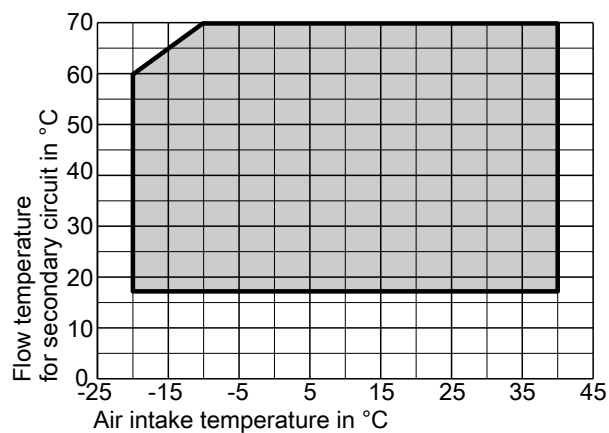
- (D) Heating water **to** outdoor unit, connection Cu 28 x 1.0 mm
- (E) DHW, connection Cu 22 x 1.0 mm
- (F) Secondary circuit return (heating/cooling circuit 1/external buffer cylinder), connection Cu 28 x 1.0 mm

## Outdoor unit dimensions

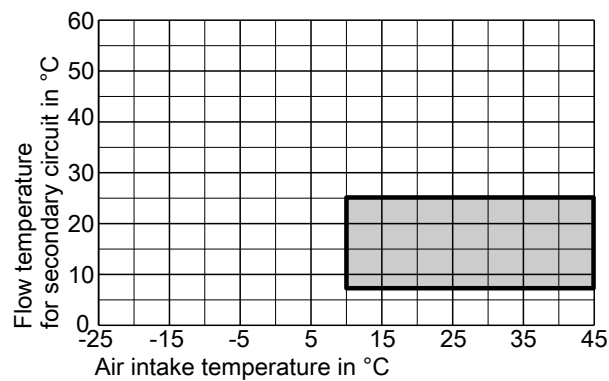
See page 35 onwards.

## Application limits to EN 14511

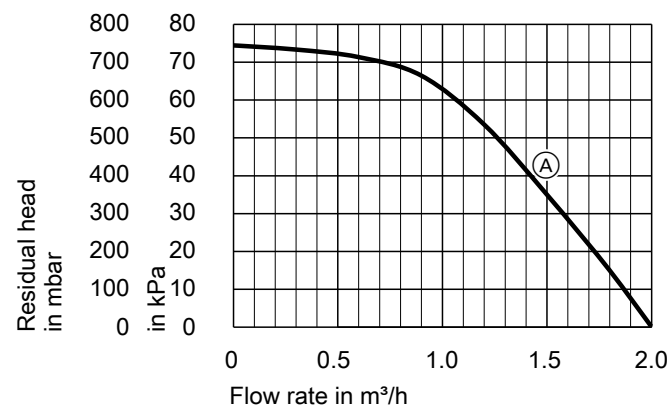
### Heating



### Cooling



## Residual heads of the integral circulation pump

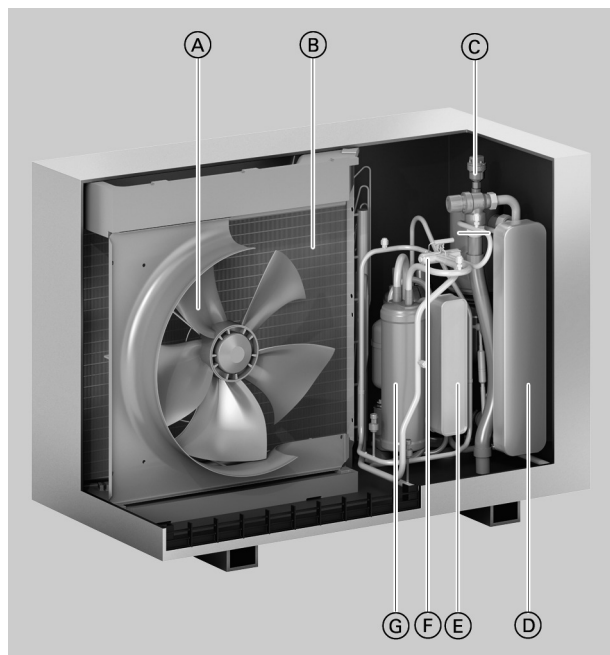


Ⓐ Secondary pump/circulation pump for heating/cooling circuit 1

## Outdoor units

### 4.1 Outdoor unit with 1 fan, 230 V~

#### Description



- Ⓐ Power saving variable speed EC fan
- Ⓑ Coated evaporator with corrugated fins for higher efficiency
- Ⓒ Safety valve
- Ⓓ Condenser
- Ⓔ Suction gas cooler inverter
- Ⓕ 4-way diverter valve
- Ⓖ Hermetically sealed twin rotary compressor with output-dependent control

#### Heat pump allocation

##### Vitocal 150-A

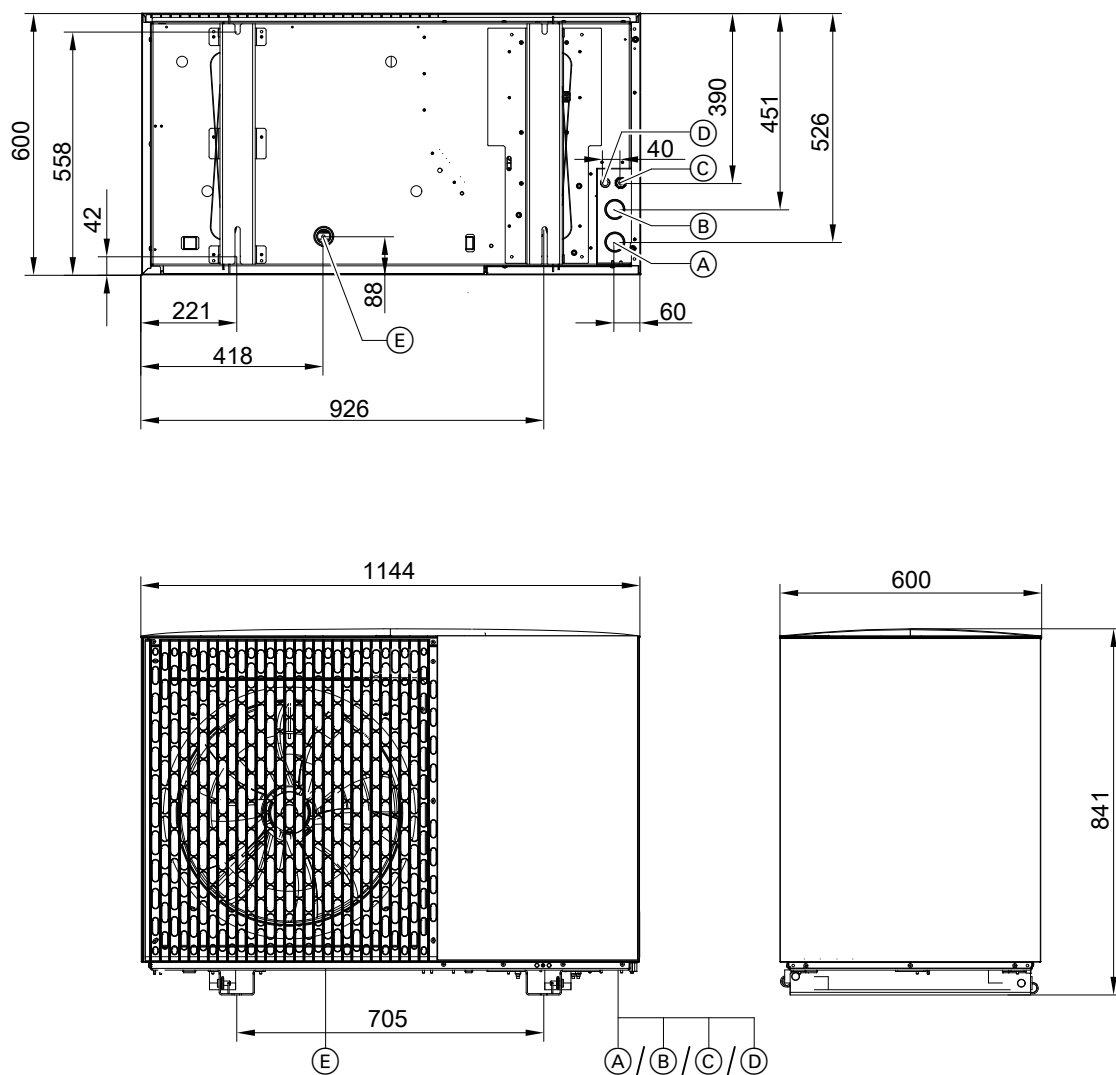
- Type AWO-M-E-AC 151.A04 to A08
- Type AWO-M-E-AC-AF 151.A04 to A08
- Type AWO-M-E-AC 151.A04 SP to A08 SP
- Type AWO-M-E-AC-AF 151.A04 SP to A08 SP

##### Vitocal 151-A

- Type AWOT-M-E-AC 151.A04 to A08
- Type AWOT-M-E-AC-AF 151.A04 to A08
- Type AWOT-M-E-AC 151.A04 SP to A08 SP
- Type AWOT-M-E-AC-AF 151.A04 SP to A08 SP

## Outdoor units (cont.)

### Dimensions



- |                                                                                                      |                                             |
|------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Ⓐ Heating water <b>to</b> indoor unit (heating water outlet): Plug-in connection for Cu 28 x 1.0 mm  | Ⓒ Power cable                               |
| Ⓑ Heating water <b>from</b> indoor unit (heating water inlet): Plug-in connection for Cu 28 x 1.0 mm | Ⓓ CAN bus communication cable (accessories) |
|                                                                                                      | Ⓔ Condensate drain                          |

### 4.2 Outdoor unit with 2 fans, 230 V~ and 400 V~

#### Description



- Ⓐ Power saving variable speed EC fan
- Ⓑ Coated evaporator with corrugated fins for higher efficiency
- Ⓒ Safety valve
- Ⓓ Condenser
- Ⓔ Inverter
- Ⓕ Suction gas cooler inverter
- Ⓖ 4-way diverter valve
- Ⓗ Hermetically sealed twin rotary compressor with output-dependent control

#### Heat pump allocation

##### Heat pumps with 230 V~ outdoor unit

###### Vitocal 150-A

- Type AWO-M-E-AC 151.A10 to A16
- Type AWO-M-E-AC-AF 151.A10 to A16
- Type AWO-M-E-AC 151.A10 SP to A16 SP
- Type AWO-M-E-AC-AF 151.A10 SP to A16 SP

###### Vitocal 151-A

- Type AWOT-M-E-AC 151.A10 to A16
- Type AWOT-M-E-AC-AF 151.A10 to A16

- Type AWOT-M-E-AC 151.A10 SP to A16 SP
- Type AWOT-M-E-AC-AF 151.A10 SP to A16 SP

##### Heat pumps with 400 V~ outdoor unit

###### Vitocal 150-A

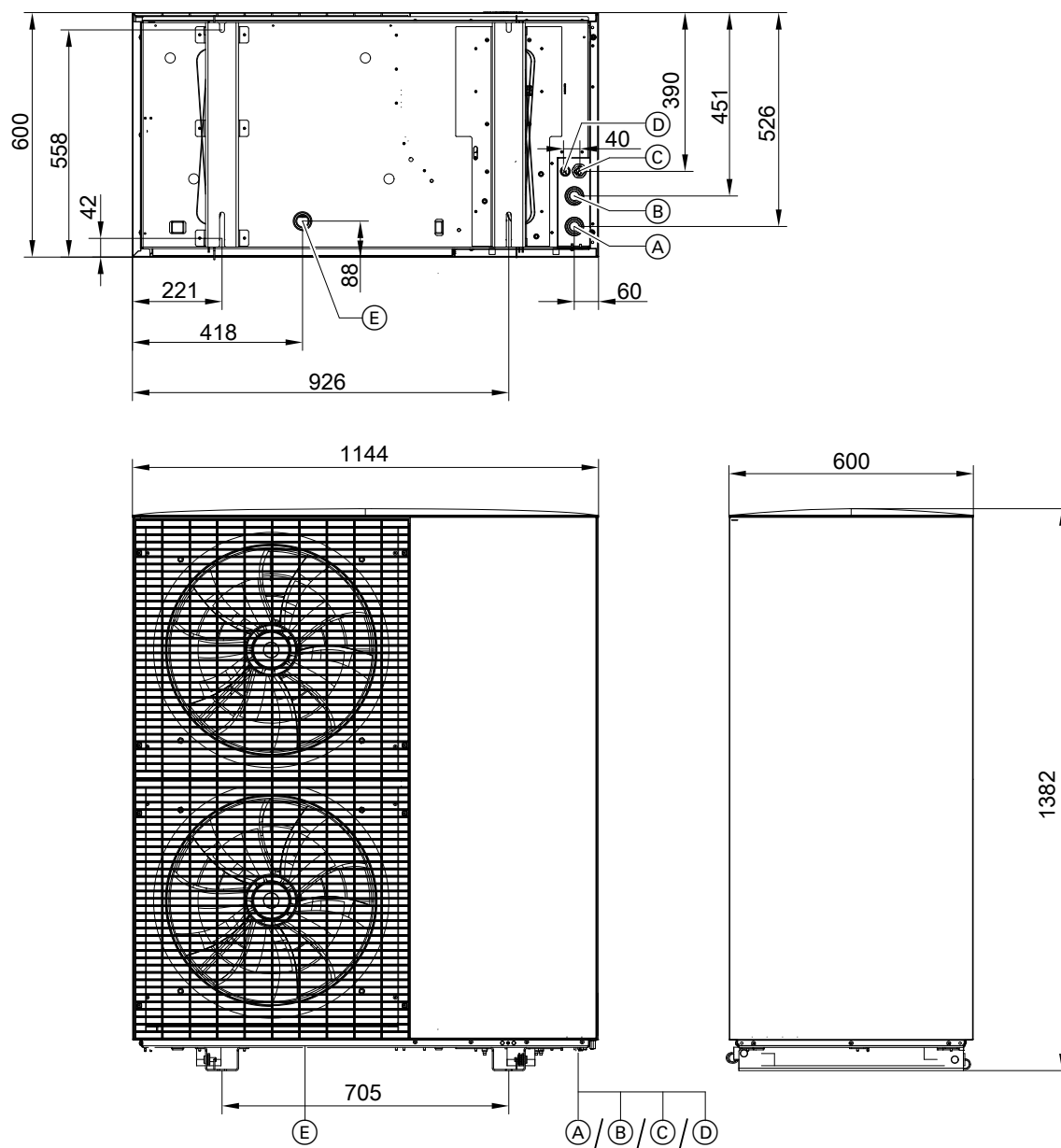
- Type AWO-E-AC 151.A10 to A16
- Type AWO-E-AC-AF 151.A10 to A16

###### Vitocal 151-A

- Type AWOT-E-AC 151.A10 to A16
- Type AWOT-E-AC-AF 151.A10 to A16

## Outdoor units (cont.)

### Dimensions



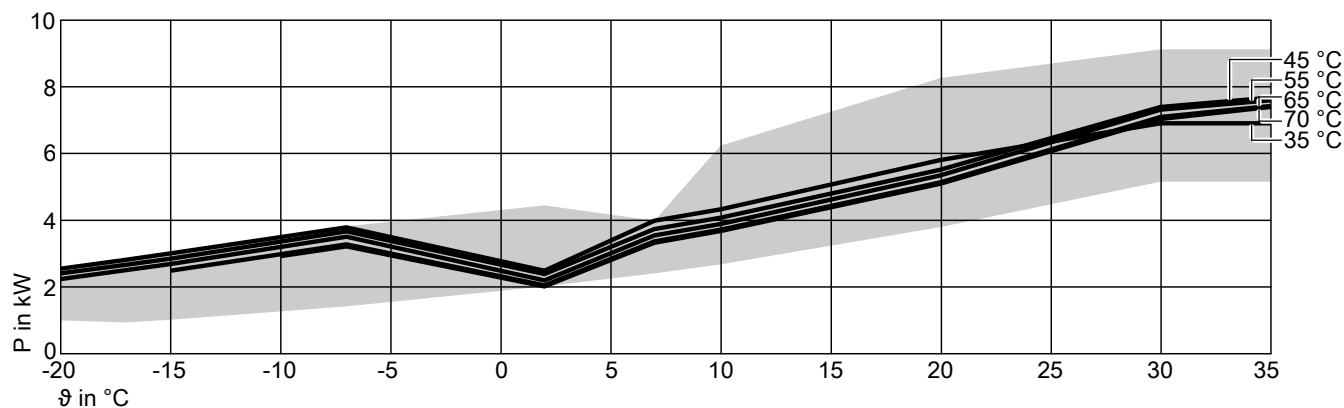
- |                                                                                                        |                                               |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| (A) Heating water <b>to</b> indoor unit (heating water outlet): Plug-in connection for Cu 28 x 1.0 mm  | (C) Power cable                               |
| (B) Heating water <b>from</b> indoor unit (heating water inlet): Plug-in connection for Cu 28 x 1.0 mm | (D) CAN bus communication cable (accessories) |
|                                                                                                        | (E) Condensate drain                          |

## Curves

### 5.1 Performance graph, outdoor unit type 151.A04, 230 V~

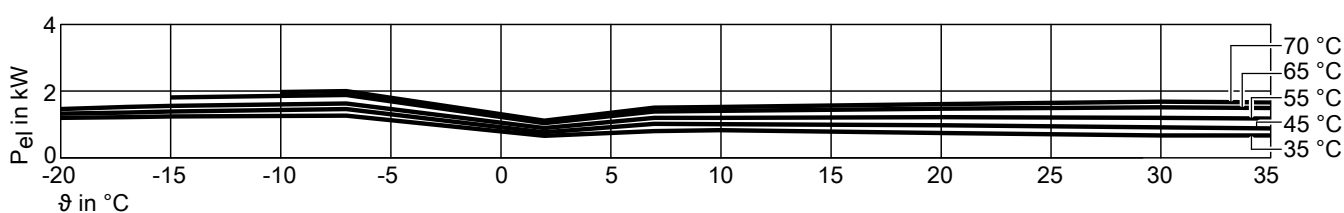
#### Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C

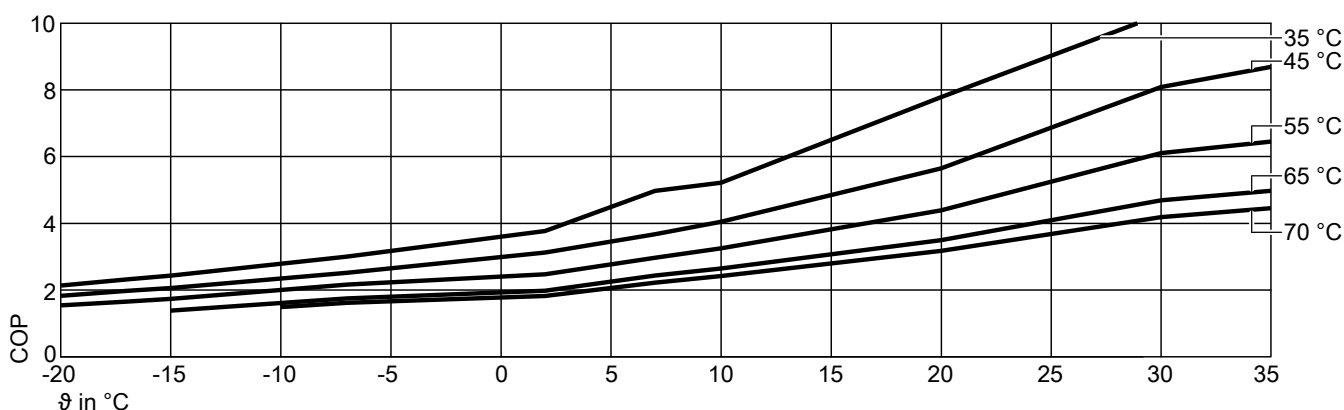


Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

#### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | -20  | -15  | -7   | 2    | 35<br>7 | 10   | 20   | 30    | 35    |
|------------------------------------|--------|----------|------|------|------|------|---------|------|------|-------|-------|
| Max. heating output                |        | kW       | 2.56 | 3.02 | 3.83 | 4.46 | 4.00    | 6.25 | 8.28 | 9.14  | 9.14  |
| Rated heating output               |        | kW       | 2.56 | 3.02 | 3.80 | 2.50 | 4.00    | 4.34 | 5.82 | 6.92  | 6.92  |
| Power consumption                  |        | kW       | 1.20 | 1.24 | 1.27 | 0.66 | 0.80    | 0.83 | 0.75 | 0.67  | 0.67  |
| Coefficient of performance ε (COP) |        |          | 2.13 | 2.43 | 3.00 | 3.77 | 4.97    | 5.22 | 7.79 | 10.27 | 10.27 |
| Min. heating output                |        | kW       | 1.49 | 1.53 | 1.67 | 1.77 | 2.10    | 2.27 | 2.98 | 4.17  | 4.17  |

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## Curves (cont.)

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |      |      |      |      |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20   | 30    | 35    |
| Max. heating output                |        | kW       | 2.42 | 2.86 | 3.68 | 4.35 | 5.49 | 5.98 | 7.95 | 10.52 | 10.86 |
| Rated heating output               |        | kW       | 2.42 | 2.86 | 3.68 | 2.40 | 3.75 | 4.09 | 5.53 | 7.41  | 7.69  |
| Power consumption                  |        | kW       | 1.33 | 1.39 | 1.46 | 0.77 | 1.02 | 1.01 | 0.98 | 0.92  | 0.88  |
| Coefficient of performance ε (COP) |        |          | 1.82 | 2.06 | 2.52 | 3.12 | 3.67 | 4.05 | 5.65 | 8.09  | 8.70  |
| Min. heating output                |        | kW       | 1.39 | 1.42 | 1.53 | 1.60 | 1.88 | 2.07 | 2.89 | 3.83  | 3.83  |

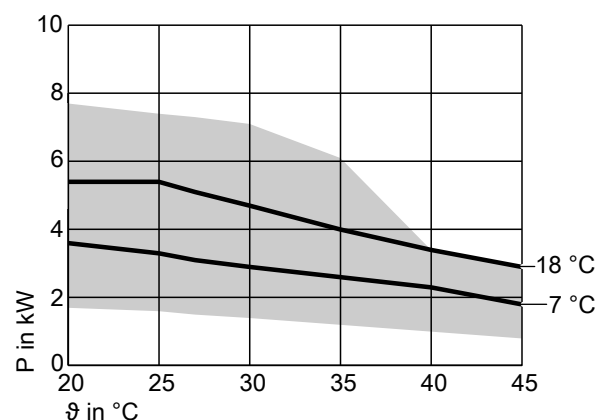
| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |      |      |      |      |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20   | 30    | 35    |
| Max. heating output                |        | kW       | 2.25 | 2.70 | 3.52 | 4.30 | 5.36 | 5.86 | 7.89 | 10.59 | 10.85 |
| Rated heating output               |        | kW       | 2.25 | 2.70 | 3.52 | 2.21 | 3.56 | 3.90 | 5.36 | 7.33  | 7.61  |
| Power consumption                  |        | kW       | 1.46 | 1.56 | 1.63 | 0.89 | 1.20 | 1.20 | 1.22 | 1.20  | 1.18  |
| Coefficient of performance ε (COP) |        |          | 1.54 | 1.73 | 2.16 | 2.47 | 2.97 | 3.25 | 4.39 | 6.11  | 6.45  |
| Min. heating output                |        | kW       | 1.24 | 1.27 | 1.09 | 1.43 | 1.67 | 1.86 | 2.67 | 3.62  | 3.62  |

| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |      |      |      |       |       |
|------------------------------------|--------|----------|-----|------|------|------|------|------|------|-------|-------|
|                                    |        |          | -20 | -15  | -7   | 2    | 7    | 10   | 20   | 30    | 35    |
| Max. heating output                |        | kW       |     | 2.50 | 3.29 | 4.44 | 5.19 | 5.68 | 7.68 | 10.37 | 10.34 |
| Rated heating output               |        | kW       |     | 2.50 | 3.29 | 2.06 | 3.38 | 3.73 | 5.15 | 7.11  | 7.44  |
| Power consumption                  |        | kW       |     | 1.81 | 1.88 | 1.04 | 1.39 | 1.41 | 1.47 | 1.52  | 1.49  |
| Coefficient of performance ε (COP) |        |          |     | 1.38 | 1.75 | 1.98 | 2.43 | 2.64 | 3.49 | 4.69  | 4.98  |
| Min. heating output                |        | kW       |     | 1.07 | 1.24 | 1.67 | 2.00 | 2.22 | 3.19 | 4.29  | 4.29  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |      |      |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|------|------|-------|-------|
|                                    |        |          | -20 | -15 | -7   | 2    | 7    | 10   | 20   | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 3.23 | 4.31 | 5.04 | 5.52 | 7.74 | 10.51 | 10.47 |
| Rated heating output               |        | kW       |     |     | 3.23 | 2.03 | 3.34 | 3.69 | 5.11 | 7.05  | 7.41  |
| Power consumption                  |        | kW       |     |     | 2.00 | 1.12 | 1.51 | 1.53 | 1.61 | 1.68  | 1.66  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.62 | 1.82 | 2.22 | 2.42 | 3.17 | 4.19  | 4.46  |
| Min. heating output                |        | kW       |     |     | 1.43 | 2.03 | 2.42 | 2.69 | 3.81 | 5.17  | 5.17  |

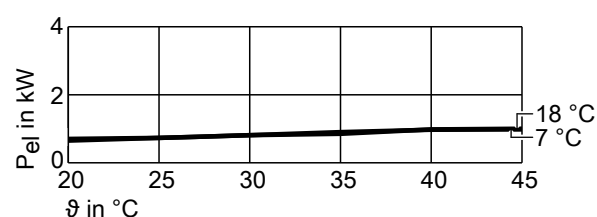
## Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C

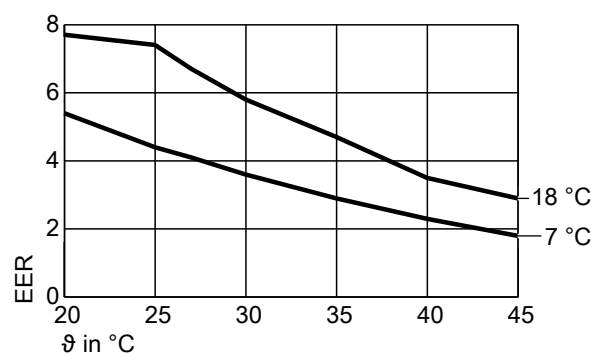


Possible output range

Power consumption for cooling at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



$\theta$  Air intake temperature  
 P Cooling capacity  
 $P_{el}$  Power consumption  
 EER Performance factor

### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

## Curves (cont.)

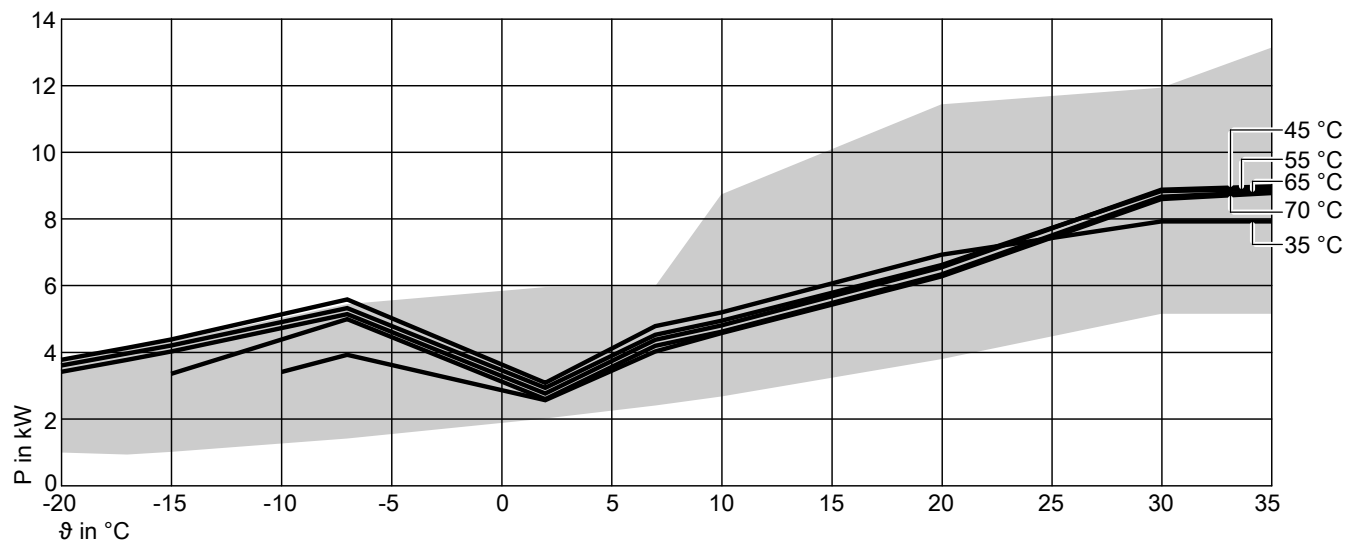
| Operating point             | W<br>A | °C<br>°C | 18   |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 7.7  | 7.4  | 7.3  | 7.1  | 6.1  | 3.4  | 2.9  |
| Cooling capacity            |        | kW       | 5.4  | 5.4  | 5.1  | 4.7  | 4.0  | 3.4  | 2.9  |
| Power consumption           |        | kW       | 0.70 | 0.73 | 0.76 | 0.81 | 0.85 | 0.98 | 1.00 |
| Energy efficiency ratio EER |        |          | 7.7  | 7.4  | 6.7  | 5.8  | 4.7  | 3.5  | 2.9  |
| Min. cooling capacity       |        | kW       | 1.5  | 1.5  | 1.5  | 1.6  | 1.9  | 2.0  | 2.1  |

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 5.4  | 4.9  | 4.7  | 4.4  | 3.9  | 3.1  | 1.8  |
| Cooling capacity            |        | kW       | 3.6  | 3.3  | 3.1  | 2.9  | 2.6  | 2.3  | 1.8  |
| Power consumption           |        | kW       | 0.65 | 0.73 | 0.76 | 0.81 | 0.90 | 0.97 | 0.98 |
| Energy efficiency ratio EER |        |          | 5.4  | 4.4  | 4.1  | 3.6  | 2.9  | 2.3  | 1.8  |
| Min. cooling capacity       |        | kW       | 1.7  | 1.6  | 1.5  | 1.4  | 1.2  | 1.0  | 0.8  |

## 5.2 Performance graph, outdoor unit type 151.A06, 230 V~

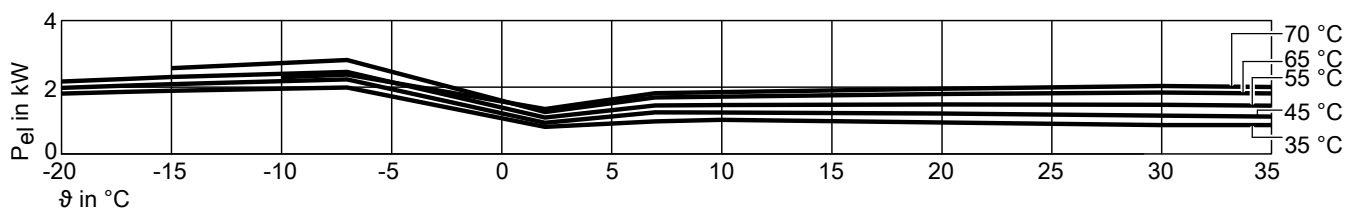
### Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C

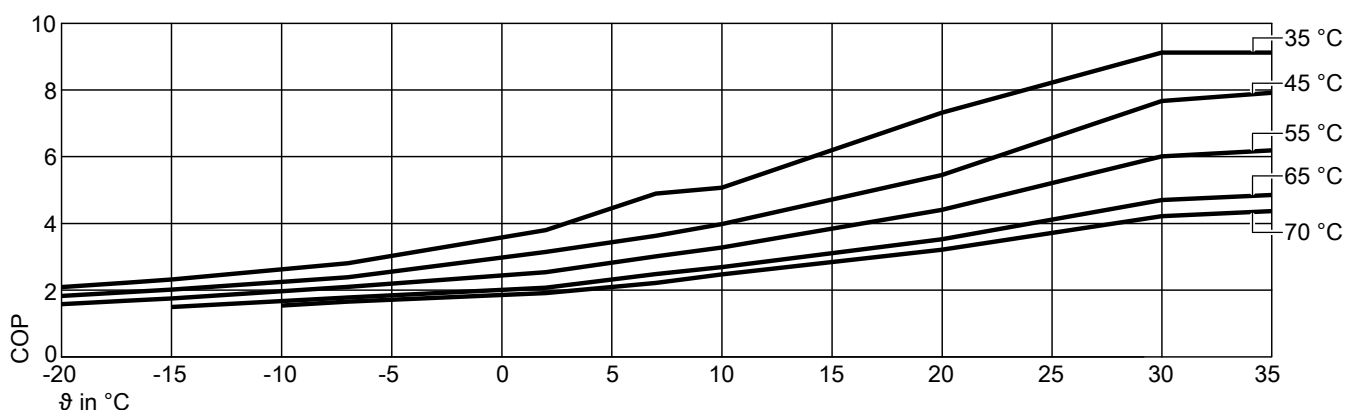


Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

#### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

## Curves (cont.)

| Operating point                    | W<br>A | °C<br>°C | 35   |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 3.79 | 4.40 | 5.60 | 5.97 | 6.00 | 8.75 | 11.45 | 11.95 | 13.15 |
| Rated heating output               |        | kW       | 3.79 | 4.40 | 5.60 | 3.10 | 4.80 | 5.21 | 6.94  | 7.94  | 7.94  |
| Power consumption                  |        | kW       | 1.81 | 1.90 | 2.00 | 0.82 | 0.98 | 1.03 | 0.95  | 0.87  | 0.87  |
| Coefficient of performance ε (COP) |        |          | 2.09 | 2.32 | 2.81 | 3.80 | 4.90 | 5.07 | 7.32  | 9.13  | 9.13  |
| Min. heating output                |        | kW       | 1.49 | 1.53 | 1.67 | 1.77 | 2.10 | 2.27 | 2.98  | 4.17  | 4.17  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 3.62 | 4.22 | 5.34 | 5.91 | 7.19 | 8.48 | 11.11 | 13.18 | 13.16 |
| Rated heating output               |        | kW       | 3.62 | 4.22 | 5.34 | 2.95 | 4.54 | 4.96 | 6.63  | 8.85  | 8.91  |
| Power consumption                  |        | kW       | 1.98 | 2.10 | 2.24 | 0.94 | 1.25 | 1.25 | 1.22  | 1.15  | 1.12  |
| Coefficient of performance ε (COP) |        |          | 1.82 | 2.01 | 2.38 | 3.14 | 3.63 | 3.98 | 5.45  | 7.68  | 7.92  |
| Min. heating output                |        | kW       | 1.39 | 1.42 | 1.53 | 1.60 | 1.88 | 2.07 | 2.89  | 3.83  | 3.83  |

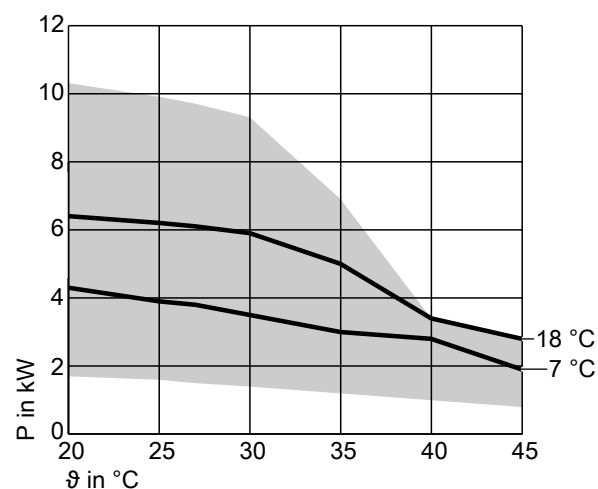
| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 3.43 | 4.04 | 5.16 | 5.94 | 7.16 | 8.40 | 11.12 | 13.26 | 13.19 |
| Rated heating output               |        | kW       | 3.43 | 4.04 | 5.16 | 2.78 | 4.39 | 4.82 | 6.56  | 8.89  | 8.99  |
| Power consumption                  |        | kW       | 2.18 | 2.31 | 2.46 | 1.10 | 1.46 | 1.47 | 1.49  | 1.48  | 1.45  |
| Coefficient of performance ε (COP) |        |          | 1.58 | 1.75 | 2.10 | 2.54 | 3.01 | 3.28 | 4.41  | 6.01  | 6.19  |
| Min. heating output                |        | kW       | 1.24 | 1.27 | 1.09 | 1.43 | 1.67 | 1.86 | 2.67  | 3.62  | 3.62  |

| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 3.37 | 5.01 | 5.90 | 7.37 | 8.03 | 10.93 | 12.30 | 12.65 |
| Rated heating output               |        | kW       |     | 3.37 | 5.01 | 2.61 | 4.21 | 4.63 | 6.35  | 8.68  | 8.83  |
| Power consumption                  |        | kW       |     | 2.58 | 2.82 | 1.26 | 1.70 | 1.72 | 1.80  | 1.85  | 1.82  |
| Coefficient of performance ε (COP) |        |          |     | 1.49 | 1.78 | 2.07 | 2.48 | 2.69 | 3.52  | 4.70  | 4.85  |
| Min. heating output                |        | kW       |     | 1.07 | 1.24 | 1.67 | 2.00 | 2.22 | 3.19  | 4.29  | 4.29  |

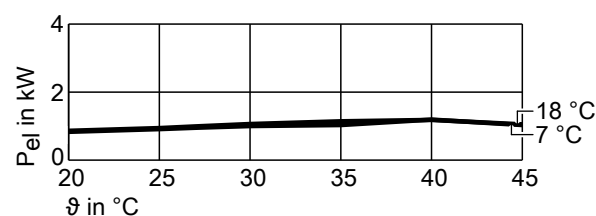
| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 3.94 | 5.64 | 7.40 | 8.07 | 10.77 | 12.54 | 12.78 |
| Rated heating output               |        | kW       |     |     | 3.94 | 2.58 | 4.04 | 4.59 | 6.29  | 8.61  | 8.79  |
| Power consumption                  |        | kW       |     |     | 2.38 | 1.35 | 1.83 | 1.86 | 1.96  | 2.04  | 2.01  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.65 | 1.91 | 2.21 | 2.47 | 3.21  | 4.22  | 4.37  |
| Min. heating output                |        | kW       |     |     | 1.43 | 2.03 | 2.42 | 2.69 | 3.81  | 5.17  | 5.17  |

## Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C



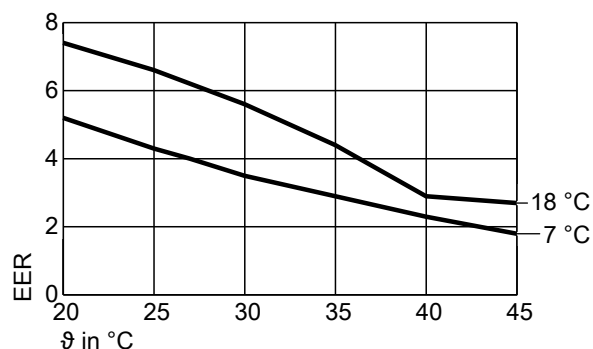
Power consumption for cooling at flow temperatures of 18 °C, 7 °C



Possible output range

## Curves (cont.)

### Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



θ Air intake temperature  
 P Cooling capacity  
 P<sub>el</sub> Power consumption  
 EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

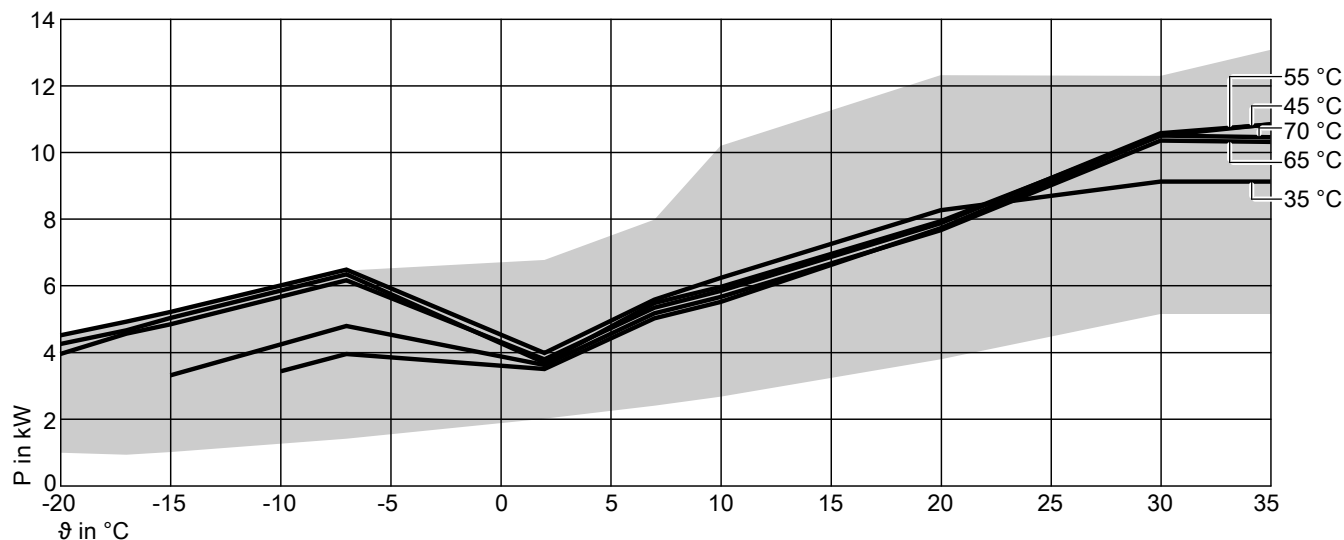
| Operating point             | W<br>A | °C<br>°C | 18   |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 10.3 | 9.9  | 9.7  | 9.3  | 6.9  | 3.4  | 2.8  |
| Cooling capacity            |        | kW       | 6.4  | 6.2  | 6.1  | 5.9  | 5.0  | 3.4  | 2.8  |
| Power consumption           |        | kW       | 0.86 | 0.94 | 0.99 | 1.06 | 1.14 | 1.18 | 1.05 |
| Energy efficiency ratio EER |        |          | 7.4  | 6.6  | 6.2  | 5.6  | 4.4  | 2.9  | 2.7  |
| Min. cooling capacity       |        | kW       | 1.5  | 1.5  | 1.5  | 1.6  | 1.9  | 2.0  | 2.1  |

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 7.7  | 7.0  | 6.7  | 6.0  | 4.5  | 3.1  | 1.9  |
| Cooling capacity            |        | kW       | 4.3  | 3.9  | 3.8  | 3.5  | 3.0  | 2.8  | 1.9  |
| Power consumption           |        | kW       | 0.83 | 0.91 | 0.95 | 1.00 | 1.03 | 1.19 | 1.03 |
| Energy efficiency ratio EER |        |          | 5.2  | 4.3  | 4.0  | 3.5  | 2.9  | 2.3  | 1.8  |
| Min. cooling capacity       |        | kW       | 1.7  | 1.6  | 1.5  | 1.4  | 1.2  | 1.0  | 0.8  |

### 5.3 Performance graph, outdoor unit type 151.A08, 230 V~

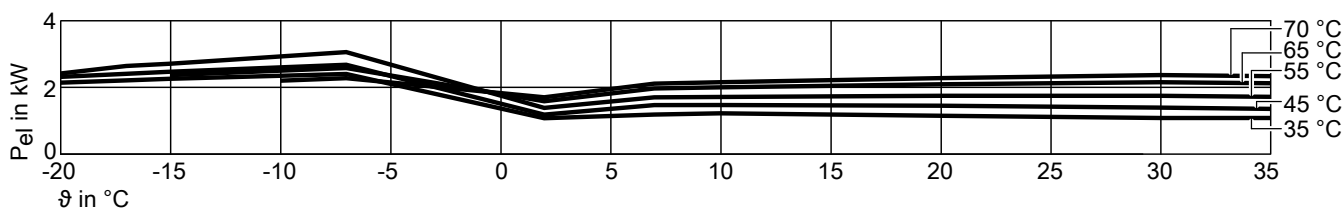
#### Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C

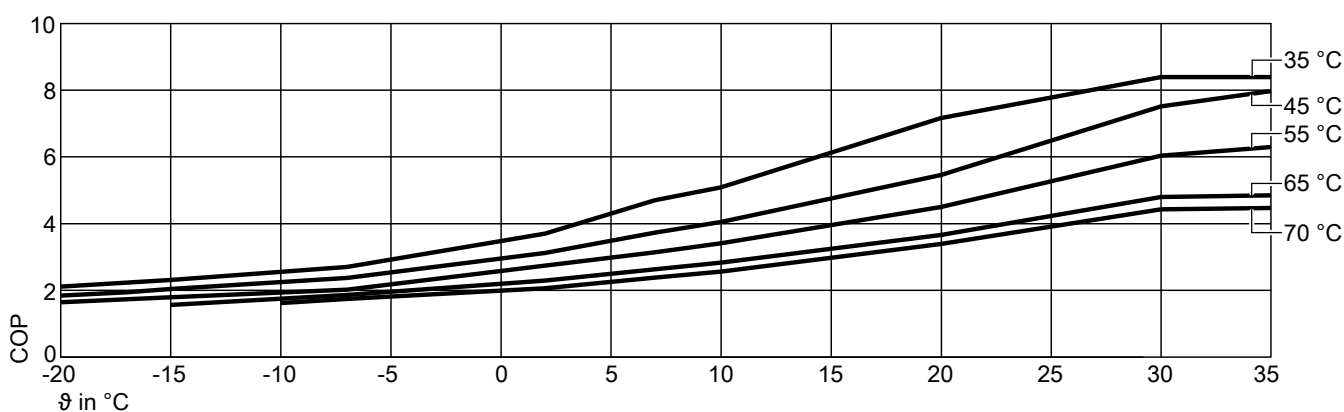


Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

#### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

## Curves (cont.)

| Operating point                    | W<br>A | °C<br>°C | 35   |      |      |      |      |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 4.53 | 5.23 | 6.50 | 6.79 | 8.00 | 10.21 | 12.33 | 12.31 | 13.09 |
| Rated heating output               |        | kW       | 4.53 | 5.23 | 6.50 | 4.00 | 5.60 | 6.25  | 8.28  | 9.14  | 9.14  |
| Power consumption                  |        | kW       | 2.15 | 2.26 | 2.41 | 1.08 | 1.19 | 1.23  | 1.15  | 1.09  | 1.09  |
| Coefficient of performance ε (COP) |        |          | 2.11 | 2.31 | 2.70 | 3.70 | 4.70 | 5.09  | 7.17  | 8.40  | 8.40  |
| Min. heating output                |        | kW       | 1.49 | 1.53 | 1.67 | 1.77 | 2.10 | 2.27  | 2.98  | 4.17  | 4.17  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 4.27 | 5.05 | 6.36 | 6.78 | 8.37 | 9.97 | 11.52 | 13.04 | 12.64 |
| Rated heating output               |        | kW       | 4.27 | 5.05 | 6.36 | 3.71 | 5.50 | 5.98 | 7.95  | 10.52 | 10.86 |
| Power consumption                  |        | kW       | 2.32 | 2.48 | 2.68 | 1.19 | 1.47 | 1.48 | 1.46  | 1.40  | 1.36  |
| Coefficient of performance ε (COP) |        |          | 1.84 | 2.04 | 2.37 | 3.12 | 3.73 | 4.05 | 5.46  | 7.52  | 7.98  |
| Min. heating output                |        | kW       | 1.39 | 1.42 | 1.53 | 1.60 | 1.88 | 2.07 | 2.89  | 3.83  | 3.83  |

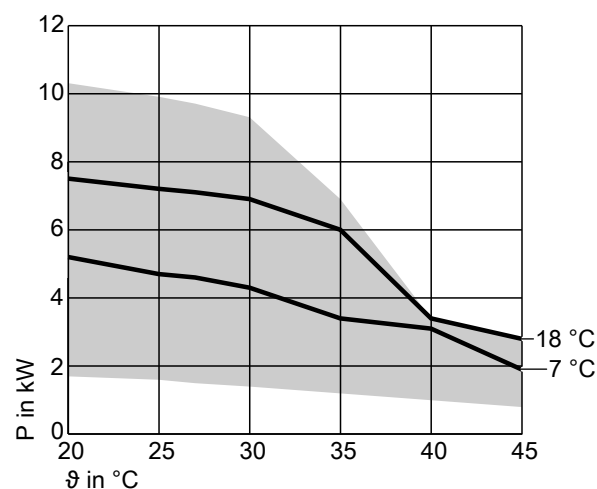
| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 3.97 | 4.86 | 6.18 | 6.83 | 8.38 | 9.94 | 11.50 | 13.07 | 13.11 |
| Rated heating output               |        | kW       | 3.97 | 4.86 | 6.18 | 3.81 | 5.36 | 5.86 | 7.89  | 10.59 | 10.85 |
| Power consumption                  |        | kW       | 2.42 | 2.72 | 3.06 | 1.39 | 1.71 | 1.72 | 1.75  | 1.75  | 1.72  |
| Coefficient of performance ε (COP) |        |          | 1.64 | 1.79 | 2.02 | 2.74 | 3.14 | 3.41 | 4.50  | 6.04  | 6.30  |
| Min. heating output                |        | kW       | 1.24 | 1.27 | 1.09 | 1.43 | 1.67 | 1.86 | 2.67  | 3.62  | 3.62  |

| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 3.33 | 4.81 | 6.32 | 8.14 | 9.55 | 11.29 | 12.10 | 12.18 |
| Rated heating output               |        | kW       |     | 3.33 | 4.81 | 3.64 | 5.19 | 5.68 | 7.68  | 10.37 | 10.33 |
| Power consumption                  |        | kW       |     | 2.37 | 2.59 | 1.59 | 1.97 | 2.01 | 2.10  | 2.16  | 2.13  |
| Coefficient of performance ε (COP) |        |          |     | 1.56 | 1.86 | 2.29 | 2.63 | 2.83 | 3.66  | 4.80  | 4.85  |
| Min. heating output                |        | kW       |     | 1.07 | 1.24 | 1.67 | 2.00 | 2.22 | 3.19  | 4.29  | 4.29  |

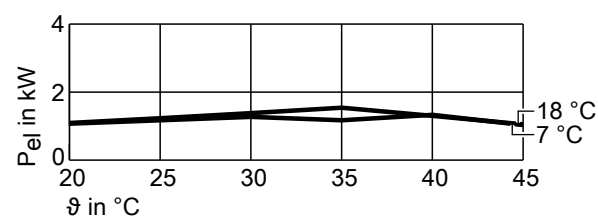
| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |      |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -7   | 2    | 7    | 10   | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 3.97 | 5.56 | 7.60 | 8.70 | 11.29 | 12.50 | 12.59 |
| Rated heating output               |        | kW       |     |     | 3.97 | 3.52 | 5.04 | 5.53 | 7.74  | 10.52 | 10.47 |
| Power consumption                  |        | kW       |     |     | 2.28 | 1.71 | 2.12 | 2.16 | 2.28  | 2.37  | 2.34  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.74 | 2.06 | 2.38 | 2.56 | 3.39  | 4.43  | 4.47  |
| Min. heating output                |        | kW       |     |     | 1.43 | 2.03 | 2.42 | 2.69 | 3.81  | 5.17  | 5.17  |

## Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C

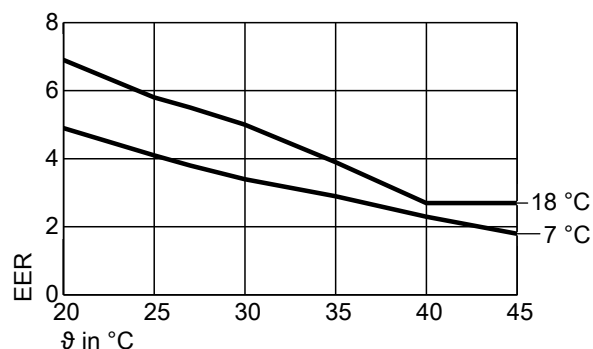


Power consumption for cooling at flow temperatures of 18 °C, 7 °C



## Curves (cont.)

### Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



$\theta$  Air intake temperature  
 P Cooling capacity  
 $P_{el}$  Power consumption  
 EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

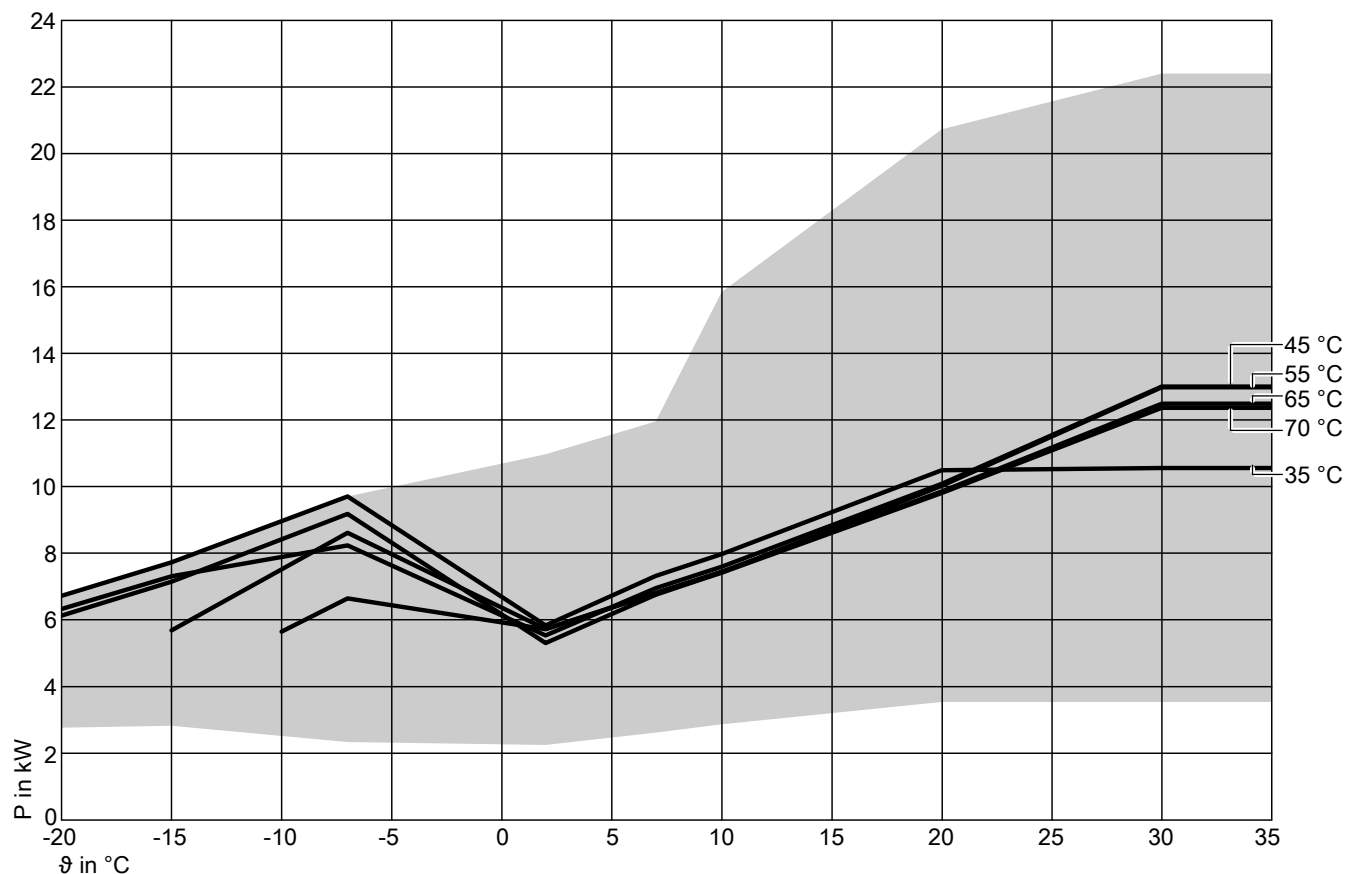
| Operating point             | W<br>A | °C<br>°C | 18   |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 10.3 | 9.9  | 9.7  | 9.3  | 6.9  | 3.4  | 2.8  |
| Cooling capacity            |        | kW       | 7.5  | 7.2  | 7.1  | 6.9  | 6.0  | 3.4  | 2.8  |
| Power consumption           |        | kW       | 1.09 | 1.23 | 1.29 | 1.38 | 1.54 | 1.30 | 1.05 |
| Energy efficiency ratio EER |        |          | 6.9  | 5.8  | 5.5  | 5.0  | 3.9  | 2.7  | 2.7  |
| Min. cooling capacity       |        | kW       | 1.5  | 1.5  | 1.5  | 1.6  | 1.9  | 2.0  | 2.1  |

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 8.5  | 7.8  | 7.0  | 6.0  | 4.5  | 3.1  | 1.9  |
| Cooling capacity            |        | kW       | 5.2  | 4.7  | 4.6  | 4.3  | 3.4  | 3.1  | 1.9  |
| Power consumption           |        | kW       | 1.07 | 1.17 | 1.21 | 1.27 | 1.17 | 1.33 | 1.03 |
| Energy efficiency ratio EER |        |          | 4.9  | 4.1  | 3.8  | 3.4  | 2.9  | 2.3  | 1.8  |
| Min. cooling capacity       |        | kW       | 1.7  | 1.6  | 1.5  | 1.4  | 1.2  | 1.0  | 0.8  |

## 5.4 Performance graph, outdoor unit type 151.A10, 230 V~

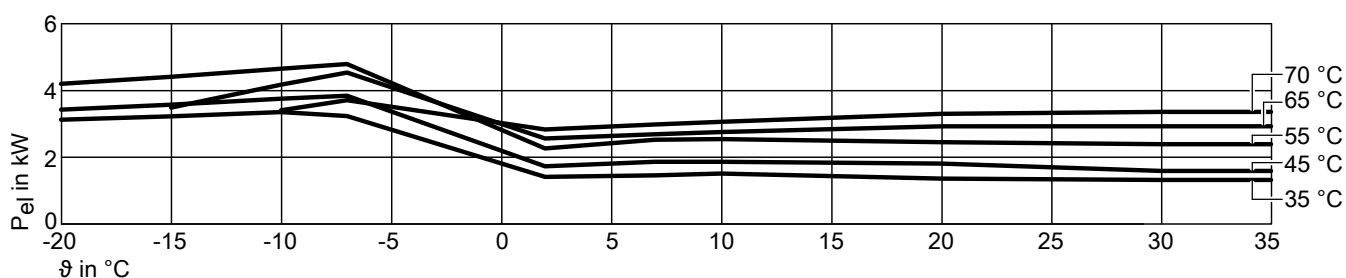
### Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



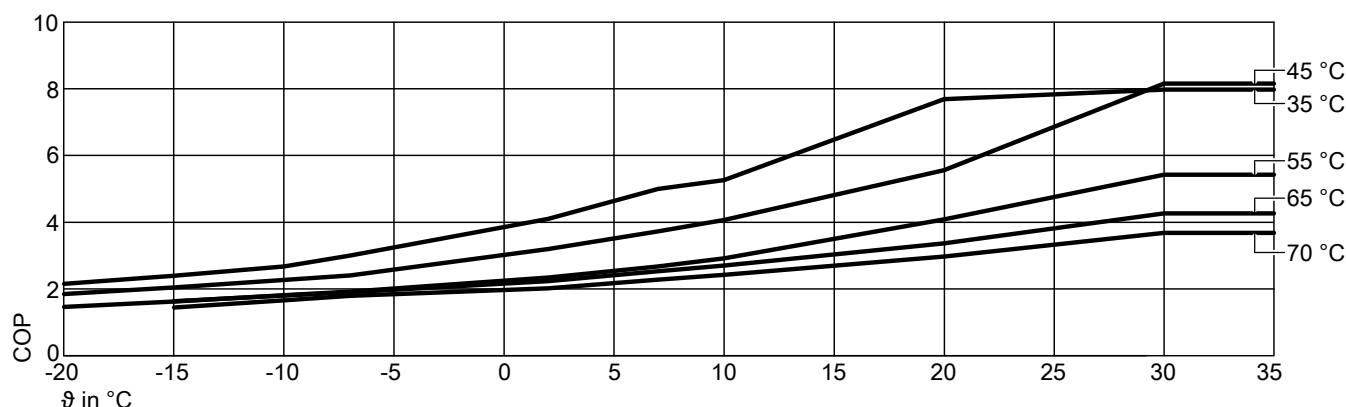
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.72 | 7.72 | 8.96 | 9.70 | 10.97 | 11.95 | 15.84 | 20.73 | 22.40 | 22.40 |
| Rated heating output               |        | kW       | 6.72 | 7.72 | 8.96 | 9.70 | 5.80  | 7.30  | 7.97  | 10.49 | 10.56 | 10.56 |
| Power consumption                  |        | kW       | 3.12 | 3.22 | 3.35 | 3.23 | 1.41  | 1.46  | 1.51  | 1.36  | 1.32  | 1.32  |
| Coefficient of performance ε (COP) |        |          | 2.15 | 2.39 | 2.67 | 3.00 | 4.10  | 5.00  | 5.27  | 7.70  | 7.98  | 7.98  |
| Min. heating output                |        | kW       | 2.75 | 2.81 | 2.51 | 2.32 | 2.24  | 2.61  | 2.86  | 3.53  | 3.53  | 3.53  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |      |      |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2    | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.32 | 7.30 | 7.88 | 8.23 | 9.86 | 10.72 | 13.22 | 20.24 | 22.96 | 23.19 |
| Rated heating output               |        | kW       | 6.32 | 7.30 | 7.88 | 8.23 | 5.53 | 6.95  | 7.59  | 10.08 | 13.00 | 13.00 |
| Power consumption                  |        | kW       | 3.43 | 3.57 | 3.47 | 3.42 | 1.73 | 1.87  | 1.87  | 1.81  | 1.59  | 1.59  |
| Coefficient of performance ε (COP) |        |          | 1.85 | 2.04 | 2.27 | 2.40 | 3.20 | 3.73  | 4.07  | 5.56  | 8.16  | 8.16  |
| Min. heating output                |        | kW       | 2.5  | 2.55 | 2.26 | 2.09 | 2.00 | 2.34  | 2.57  | 3.49  | 4.32  | 4.32  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.12 | 7.14 | 8.41 | 9.18 | 10.86 | 11.86 | 15.16 | 19.69 | 21.88 | 22.16 |
| Rated heating output               |        | kW       | 6.12 | 7.14 | 8.41 | 9.18 | 5.30  | 6.75  | 7.42  | 10.02 | 12.98 | 12.98 |
| Power consumption                  |        | kW       | 4.20 | 4.41 | 4.65 | 4.79 | 2.26  | 2.53  | 2.54  | 2.45  | 2.39  | 2.39  |
| Coefficient of performance ε (COP) |        |          | 1.46 | 1.62 | 1.81 | 1.92 | 2.34  | 2.67  | 2.92  | 4.09  | 5.43  | 5.43  |
| Min. heating output                |        | kW       | 2.30 | 2.35 | 2.08 | 1.93 | 2.64  | 3.12  | 3.44  | 4.68  | 5.62  | 5.62  |

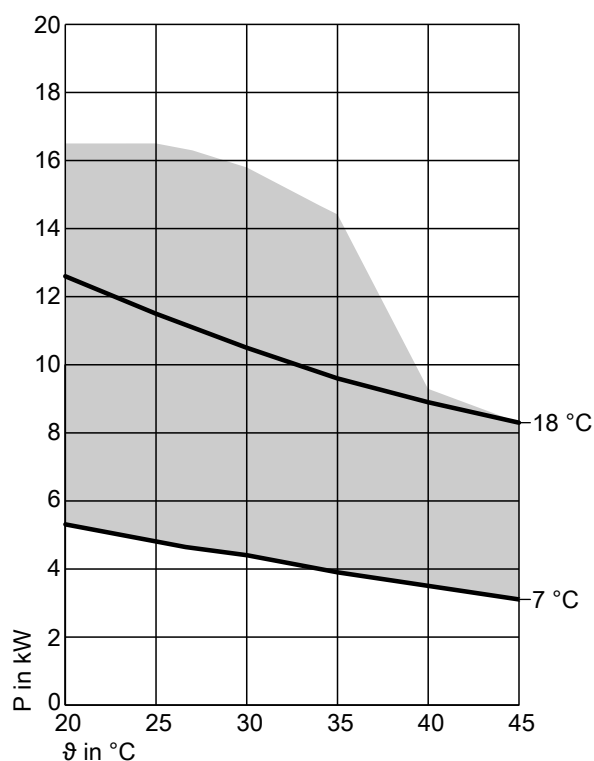
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 5.68 | 7.51 | 8.61 | 10.87 | 11.84 | 14.84 | 18.25 | 21.03 | 21.03 |
| Rated heating output               |        | kW       |     | 5.68 | 7.51 | 8.61 | 5.72  | 6.80  | 7.44  | 9.85  | 12.49 | 12.49 |
| Power consumption                  |        | kW       |     | 3.49 | 4.17 | 4.53 | 2.56  | 2.69  | 2.76  | 2.93  | 2.93  | 2.93  |
| Coefficient of performance ε (COP) |        |          |     | 1.63 | 1.80 | 1.90 | 2.23  | 2.53  | 2.70  | 3.37  | 4.27  | 4.27  |
| Min. heating output                |        | kW       |     | 2.24 | 2.42 | 2.52 | 3.50  | 4.23  | 4.69  | 6.48  | 8.05  | 8.05  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2    | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 5.64 | 6.64 | 9.33 | 10.78 | 13.76 | 16.83 | 20.74 | 20.78 |
| Rated heating output               |        | kW       |     |     | 5.64 | 6.64 | 5.71 | 6.79  | 7.41  | 9.80  | 12.36 | 12.36 |
| Power consumption                  |        | kW       |     |     | 3.41 | 3.71 | 2.83 | 2.98  | 3.06  | 3.30  | 3.36  | 3.36  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.66 | 1.79 | 2.02 | 2.28  | 2.42  | 2.97  | 3.68  | 3.68  |
| Min. heating output                |        | kW       |     |     | 2.75 | 3.05 | 4.22 | 5.01  | 5.55  | 7.57  | 9.08  | 9.08  |

## Curves (cont.)

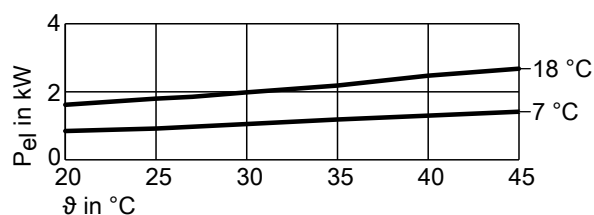
### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C

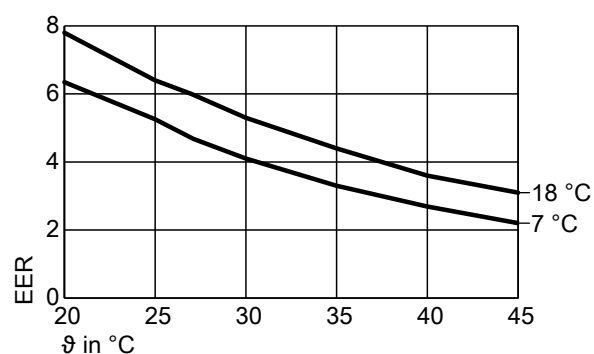


Possible output range

Power consumption for cooling at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



ϑ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |      |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40   | 45   |
| Max. cooling capacity       |        | kW       | 16.50 | 16.50 | 16.30 | 15.80 | 14.40 | 9.30 | 8.30 |
| Cooling capacity            |        | kW       | 12.60 | 11.50 | 11.10 | 10.50 | 9.60  | 8.90 | 8.30 |
| Power consumption           |        | kW       | 1.62  | 1.80  | 1.85  | 1.98  | 2.18  | 2.47 | 2.68 |
| Energy efficiency ratio EER |        |          | 7.80  | 6.40  | 6.00  | 5.30  | 4.40  | 3.60 | 3.10 |
| Min. cooling capacity       |        | kW       | 7.40  | 7.10  | 6.90  | 6.70  | 6.30  | 5.80 | 4.20 |

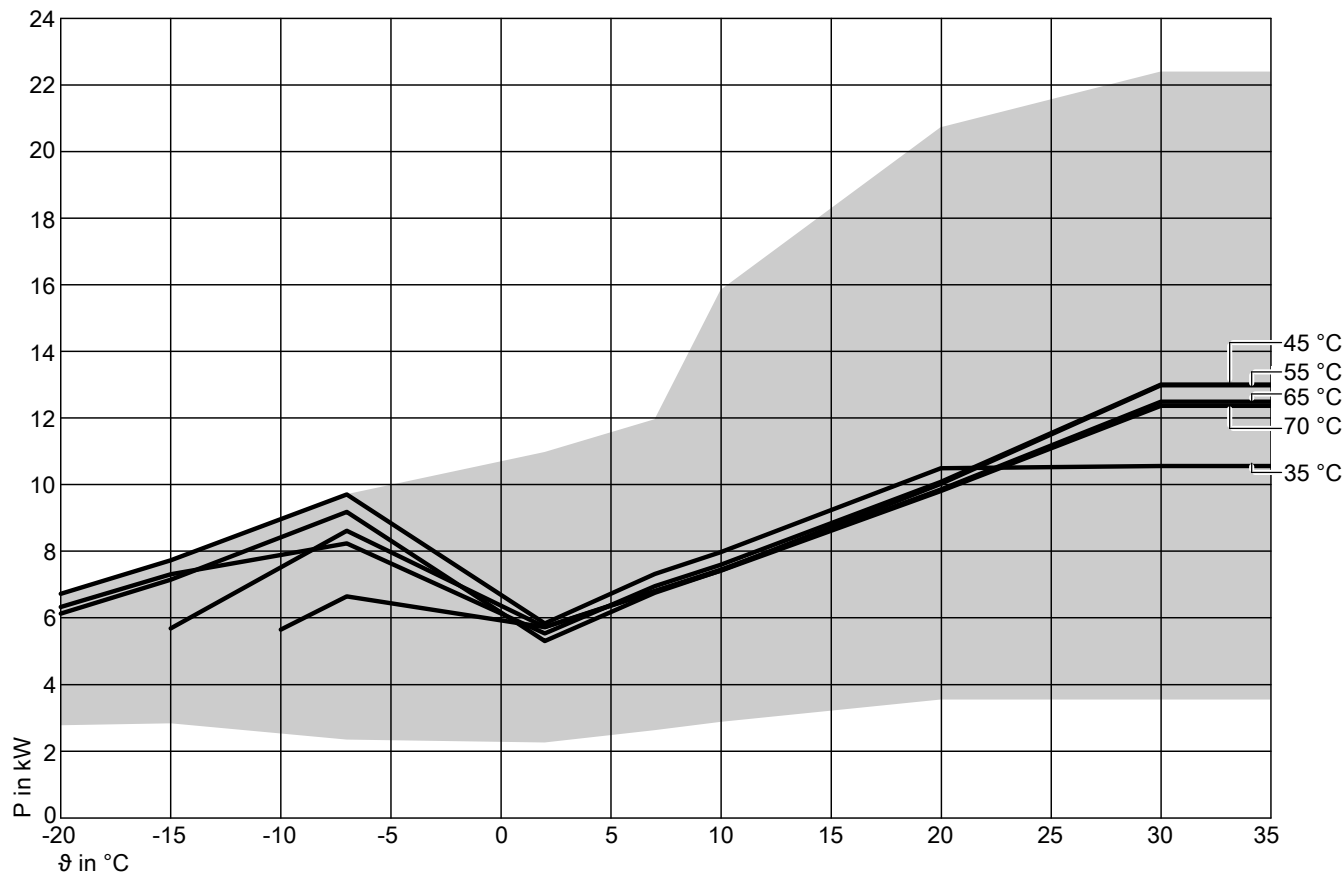
  

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 8.60 | 8.20 | 8.00 | 7.70 | 7.20 | 6.30 | 3.10 |
| Cooling capacity            |        | kW       | 5.30 | 4.80 | 4.60 | 4.40 | 3.90 | 3.50 | 3.10 |
| Power consumption           |        | kW       | 0.84 | 0.92 | 0.98 | 1.05 | 1.18 | 1.30 | 1.41 |
| Energy efficiency ratio EER |        |          | 6.30 | 5.20 | 4.70 | 4.10 | 3.30 | 2.70 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.30 | 4.80 | 4.60 | 4.40 | 3.90 | 3.50 | 3.10 |

## 5.5 Performance graph, outdoor unit type 151.A10, 400 V~

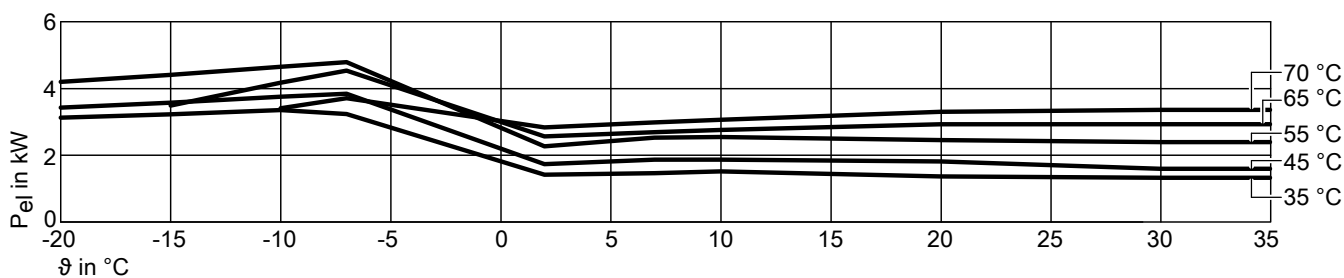
## Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



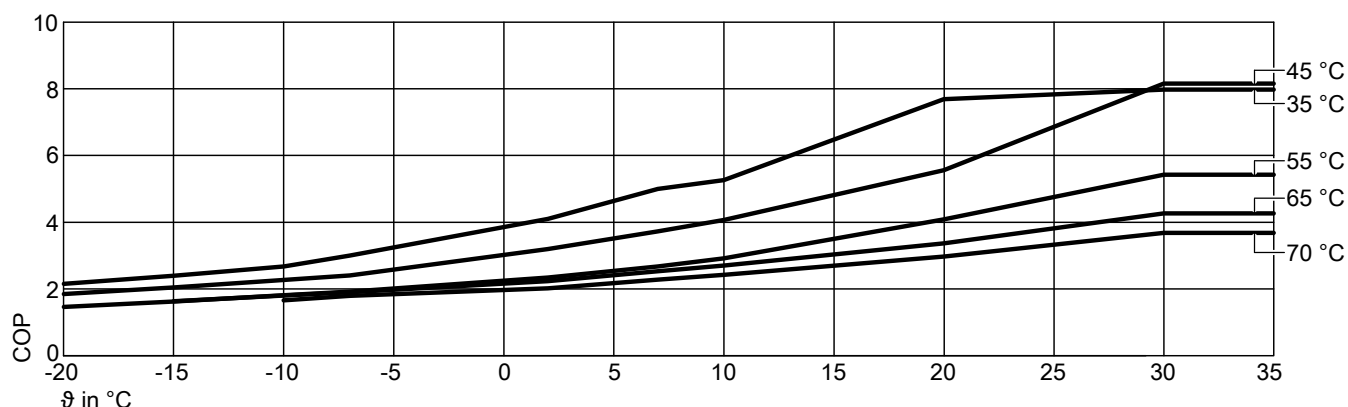
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.72 | 7.72 | 8.96 | 9.70 | 10.97 | 11.95 | 15.84 | 20.73 | 23.40 | 23.40 |
| Rated heating output               |        | kW       | 6.72 | 7.72 | 8.96 | 9.70 | 5.80  | 7.30  | 7.97  | 10.49 | 10.56 | 10.56 |
| Power consumption                  |        | kW       | 3.12 | 3.22 | 3.35 | 3.23 | 1.41  | 1.46  | 1.51  | 1.36  | 1.32  | 1.32  |
| Coefficient of performance ε (COP) |        |          | 2.15 | 2.39 | 2.67 | 3.00 | 4.10  | 5.00  | 5.27  | 7.70  | 7.98  | 7.98  |
| Min. heating output                |        | kW       | 2.75 | 2.81 | 2.51 | 2.32 | 2.24  | 2.61  | 2.86  | 3.53  | 3.53  | 3.53  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.32 | 7.30 | 8.51 | 9.23 | 10.86 | 11.72 | 13.02 | 20.24 | 22.96 | 23.19 |
| Rated heating output               |        | kW       | 6.32 | 7.30 | 8.51 | 9.23 | 5.53  | 6.95  | 7.59  | 10.08 | 13.00 | 13.00 |
| Power consumption                  |        | kW       | 3.43 | 3.57 | 3.75 | 3.84 | 1.73  | 1.87  | 1.87  | 1.81  | 1.59  | 1.59  |
| Coefficient of performance ε (COP) |        |          | 1.85 | 2.04 | 2.27 | 2.40 | 3.20  | 3.73  | 4.07  | 5.56  | 8.16  | 8.16  |
| Min. heating output                |        | kW       | 2.50 | 2.55 | 2.26 | 2.09 | 2.00  | 2.34  | 2.57  | 3.49  | 4.32  | 4.32  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 6.12 | 7.14 | 8.41 | 9.18 | 10.86 | 11.86 | 15.16 | 19.69 | 21.88 | 22.16 |
| Rated heating output               |        | kW       | 6.12 | 7.14 | 8.41 | 9.18 | 5.30  | 6.75  | 7.42  | 10.02 | 12.98 | 12.98 |
| Power consumption                  |        | kW       | 4.20 | 4.41 | 4.65 | 4.79 | 2.26  | 2.53  | 2.54  | 2.45  | 2.39  | 2.39  |
| Coefficient of performance ε (COP) |        |          | 1.46 | 1.62 | 1.81 | 1.92 | 2.34  | 2.67  | 2.92  | 4.09  | 5.43  | 5.43  |
| Min. heating output                |        | kW       | 2.30 | 2.35 | 2.08 | 1.93 | 2.64  | 3.12  | 3.44  | 4.68  | 5.62  | 5.62  |

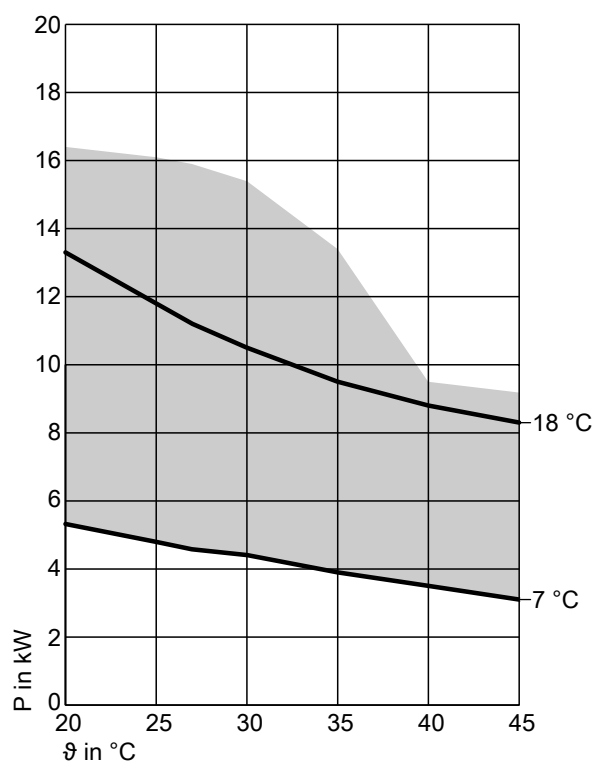
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 5.68 | 7.51 | 8.61 | 10.87 | 11.84 | 14.84 | 18.25 | 21.03 | 21.03 |
| Rated heating output               |        | kW       |     | 5.68 | 7.51 | 8.61 | 5.72  | 6.80  | 7.44  | 9.85  | 12.49 | 12.49 |
| Power consumption                  |        | kW       |     | 3.49 | 4.17 | 4.53 | 2.56  | 2.69  | 2.76  | 2.93  | 2.93  | 2.93  |
| Coefficient of performance ε (COP) |        |          |     | 1.63 | 1.80 | 1.90 | 2.23  | 2.53  | 2.70  | 3.37  | 4.27  | 4.27  |
| Min. heating output                |        | kW       |     | 2.24 | 2.42 | 2.52 | 3.50  | 4.23  | 4.69  | 6.48  | 8.05  | 8.05  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2    | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 5.64 | 6.64 | 8.83 | 10.78 | 13.76 | 16.83 | 20.74 | 20.78 |
| Rated heating output               |        | kW       |     |     | 5.64 | 6.64 | 5.71 | 6.79  | 7.41  | 9.80  | 12.36 | 12.36 |
| Power consumption                  |        | kW       |     |     | 3.41 | 3.71 | 2.83 | 2.98  | 3.06  | 3.30  | 3.36  | 3.36  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.66 | 1.79 | 2.02 | 2.28  | 2.42  | 2.97  | 3.68  | 3.68  |
| Min. heating output                |        | kW       |     |     | 2.75 | 3.05 | 4.22 | 5.01  | 5.55  | 7.57  | 9.08  | 9.08  |

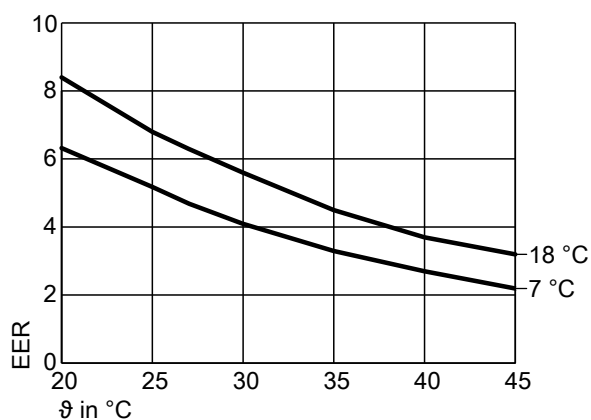
## Curves (cont.)

### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



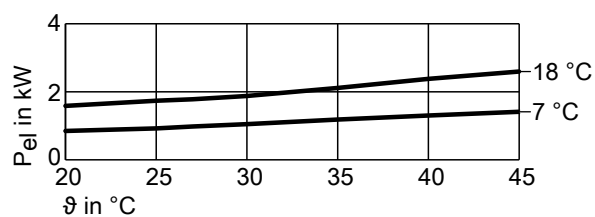
ϑ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

Possible output range

**Power consumption for cooling at flow temperatures of 18 °C, 7 °C**



| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |      |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40   | 45   |
| Max. cooling capacity       |        | kW       | 16.40 | 16.10 | 15.90 | 15.40 | 13.40 | 9.50 | 9.20 |
| Cooling capacity            |        | kW       | 13.30 | 11.80 | 11.20 | 10.50 | 9.50  | 8.80 | 8.30 |
| Power consumption           |        | kW       | 1.58  | 1.74  | 1.78  | 1.88  | 2.11  | 2.38 | 2.59 |
| Energy efficiency ratio EER |        |          | 8.40  | 6.80  | 6.30  | 5.60  | 4.50  | 3.70 | 3.20 |
| Min. cooling capacity       |        | kW       | 7.80  | 7.40  | 7.20  | 6.90  | 6.50  | 6.10 | 5.70 |

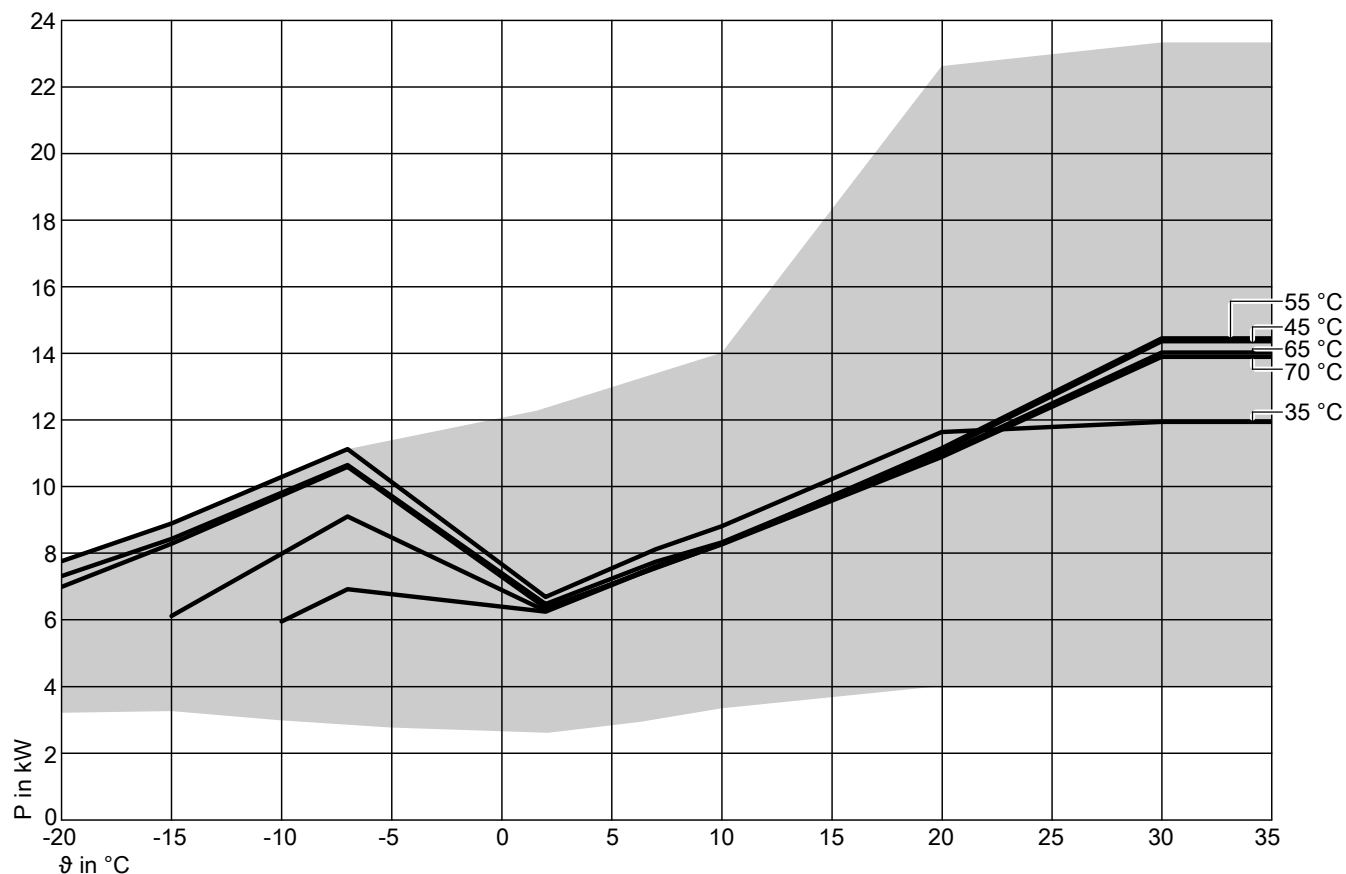
  

| Operating point             | W<br>A | °C<br>°C | 18   |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 8.60 | 8.20 | 8.00 | 7.70 | 7.20 | 6.30 | 3.10 |
| Cooling capacity            |        | kW       | 5.30 | 4.80 | 4.60 | 4.40 | 3.90 | 3.50 | 3.10 |
| Power consumption           |        | kW       | 0.84 | 0.92 | 0.98 | 1.05 | 1.18 | 1.30 | 1.41 |
| Energy efficiency ratio EER |        |          | 6.30 | 5.20 | 4.70 | 4.10 | 3.30 | 2.70 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.30 | 4.80 | 4.60 | 4.40 | 3.90 | 3.50 | 3.10 |

## 5.6 Performance graph, outdoor unit type 151.A13, 230 V~

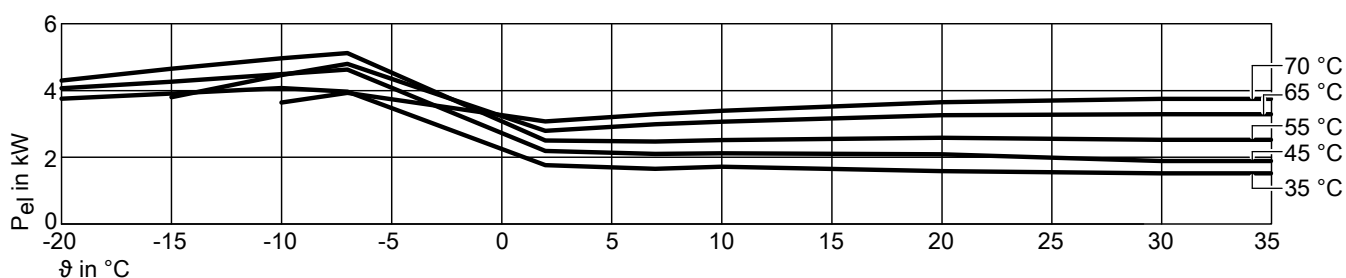
## Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



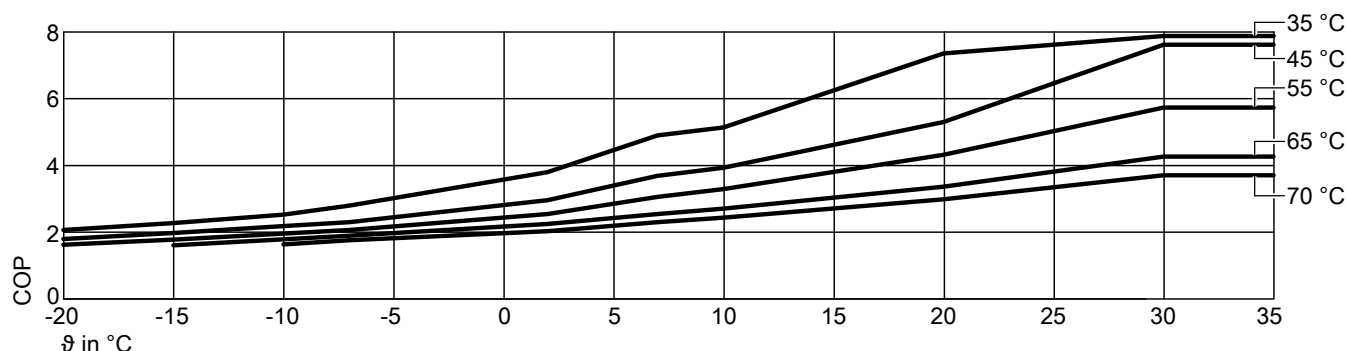
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.77 | 8.90 | 10.30 | 11.13 | 12.34 | 13.40 | 14.02 | 22.63 | 23.34 | 23.34 |
| Rated heating output               |        | kW       | 7.77 | 8.90 | 10.30 | 11.10 | 6.70  | 8.10  | 8.82  | 11.65 | 11.95 | 11.95 |
| Power consumption                  |        | kW       | 3.75 | 3.91 | 4.07  | 3.96  | 1.76  | 1.65  | 1.72  | 1.58  | 1.52  | 1.52  |
| Coefficient of performance ε (COP) |        |          | 2.07 | 2.28 | 2.53  | 2.80  | 3.80  | 4.90  | 5.14  | 7.35  | 7.88  | 7.88  |
| Min. heating output                |        | kW       | 3.22 | 3.27 | 2.99  | 2.82  | 2.61  | 3.00  | 3.35  | 4.02  | 4.02  | 4.02  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.32 | 8.44 | 9.82 | 10.66 | 12.10 | 13.18 | 13.82 | 22.03 | 23.65 | 24.24 |
| Rated heating output               |        | kW       | 7.32 | 8.44 | 9.82 | 10.66 | 6.48  | 7.75  | 8.33  | 11.07 | 14.37 | 14.37 |
| Power consumption                  |        | kW       | 4.07 | 4.26 | 4.49 | 4.63  | 2.19  | 2.10  | 2.12  | 2.09  | 1.89  | 1.89  |
| Coefficient of performance ε (COP) |        |          | 1.80 | 1.98 | 2.19 | 2.30  | 2.96  | 3.69  | 3.93  | 5.30  | 7.61  | 7.61  |
| Min. heating output                |        | kW       | 3.12 | 3.17 | 2.89 | 2.72  | 2.64  | 3.01  | 3.25  | 3.92  | 4.52  | 4.52  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.00 | 8.29 | 9.74 | 10.60 | 12.28 | 13.33 | 17.27 | 20.65 | 22.88 | 23.20 |
| Rated heating output               |        | kW       | 7.00 | 8.29 | 9.74 | 10.60 | 6.37  | 7.56  | 8.28  | 11.16 | 14.46 | 14.46 |
| Power consumption                  |        | kW       | 4.30 | 4.65 | 4.96 | 5.12  | 2.50  | 2.47  | 2.51  | 2.58  | 2.52  | 2.52  |
| Coefficient of performance ε (COP) |        |          | 1.63 | 1.78 | 1.96 | 2.07  | 2.55  | 3.06  | 3.29  | 4.32  | 5.73  | 5.73  |
| Min. heating output                |        | kW       | 2.70 | 2.74 | 2.48 | 2.32  | 3.03  | 3.51  | 3.84  | 5.07  | 6.10  | 6.10  |

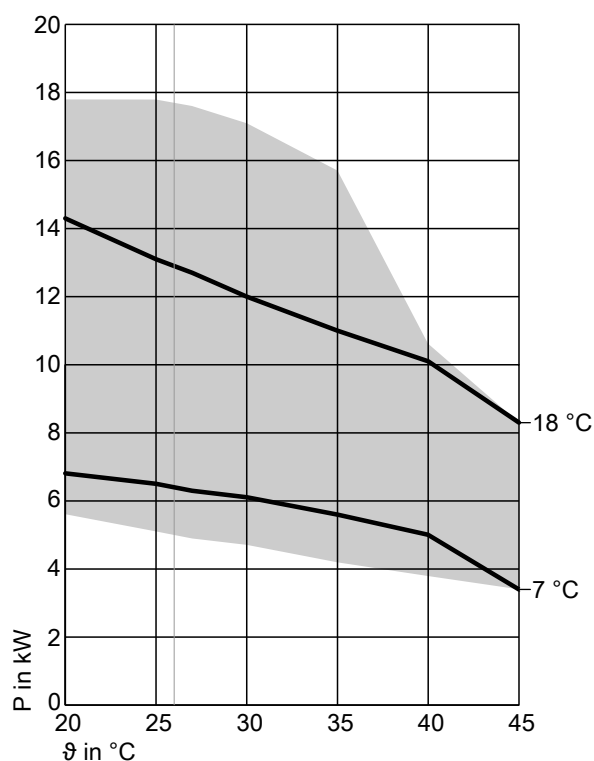
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 6.12 | 7.99 | 9.11 | 12.16 | 12.77 | 15.78 | 19.25 | 22.01 | 22.03 |
| Rated heating output               |        | kW       |     | 6.12 | 7.99 | 9.11 | 6.28  | 7.61  | 8.30  | 10.97 | 14.03 | 14.03 |
| Power consumption                  |        | kW       |     | 3.80 | 4.46 | 4.80 | 2.79  | 2.99  | 3.06  | 3.26  | 3.29  | 3.29  |
| Coefficient of performance ε (COP) |        |          |     | 1.61 | 1.79 | 1.90 | 2.25  | 2.55  | 2.71  | 3.37  | 4.27  | 4.27  |
| Min. heating output                |        | kW       |     | 2.67 | 2.83 | 2.93 | 3.85  | 4.60  | 5.05  | 6.81  | 8.44  | 8.44  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2    | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 5.96 | 6.93 | 9.83 | 11.78 | 14.76 | 17.83 | 21.74 | 21.78 |
| Rated heating output               |        | kW       |     |     | 5.96 | 6.93 | 6.25 | 7.58  | 8.27  | 10.90 | 13.90 | 13.90 |
| Power consumption                  |        | kW       |     |     | 3.64 | 3.93 | 3.07 | 3.29  | 3.39  | 3.65  | 3.75  | 3.75  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.64 | 1.76 | 2.03 | 2.30  | 2.44  | 2.99  | 3.71  | 3.71  |
| Min. heating output                |        | kW       |     |     | 3.15 | 3.43 | 4.57 | 5.36  | 5.88  | 7.97  | 9.48  | 9.48  |

## Curves (cont.)

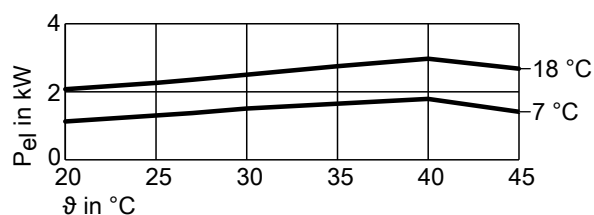
### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C

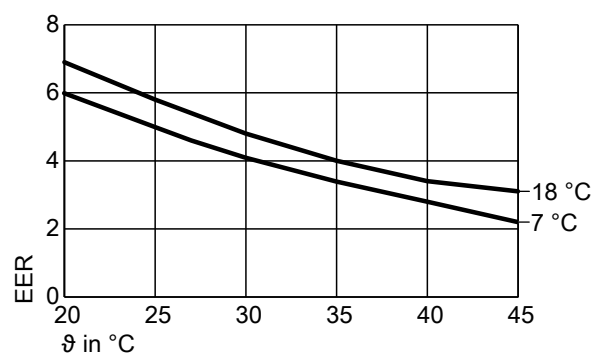


Possible output range

Power consumption for cooling at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



θ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |       |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|-------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40    | 45   |
| Max. cooling capacity       |        | kW       | 17.80 | 17.80 | 17.60 | 17.10 | 15.70 | 10.60 | 8.30 |
| Cooling capacity            |        | kW       | 14.30 | 13.10 | 12.70 | 12.00 | 11.00 | 10.10 | 8.30 |
| Power consumption           |        | kW       | 2.07  | 2.26  | 2.35  | 2.50  | 2.75  | 2.97  | 2.68 |
| Energy efficiency ratio EER |        |          | 6.90  | 5.80  | 5.40  | 4.80  | 4.00  | 3.40  | 3.10 |
| Min. cooling capacity       |        | kW       | 7.70  | 7.40  | 7.20  | 7.00  | 6.60  | 6.10  | 4.50 |

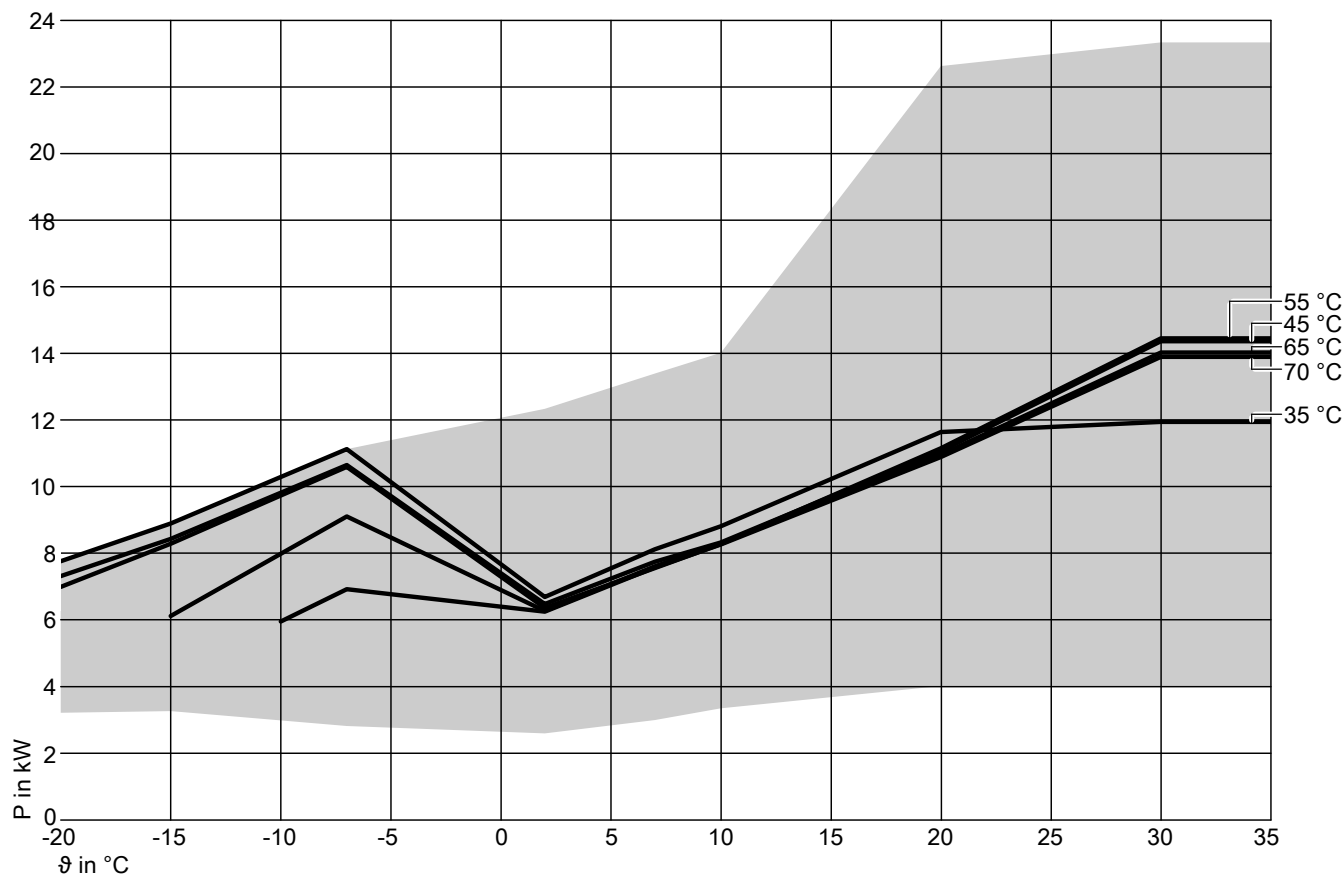
  

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 9.70 | 9.10 | 8.90 | 8.60 | 8.00 | 6.30 | 3.40 |
| Cooling capacity            |        | kW       | 6.80 | 6.50 | 6.30 | 6.10 | 5.60 | 5.00 | 3.40 |
| Power consumption           |        | kW       | 1.13 | 1.30 | 1.37 | 1.49 | 1.65 | 1.79 | 1.55 |
| Energy efficiency ratio EER |        |          | 6.00 | 5.00 | 4.60 | 4.10 | 3.40 | 2.80 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.60 | 5.10 | 4.90 | 4.70 | 4.20 | 3.80 | 3.40 |

## 5.7 Performance graph, outdoor unit type 151.A13, 400 V~

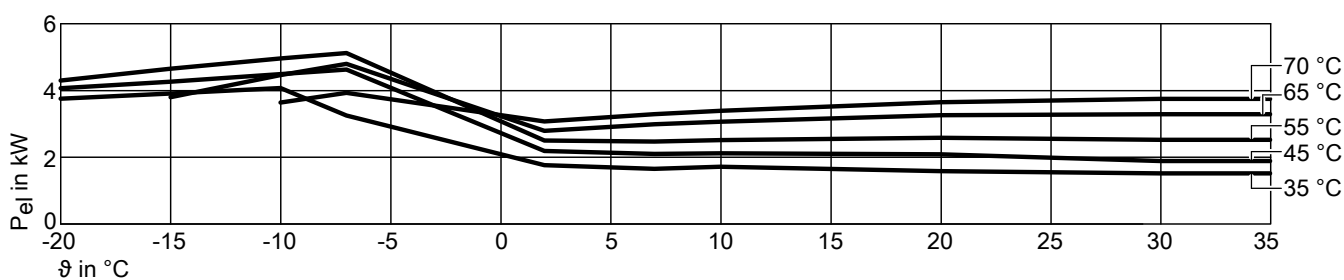
## Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



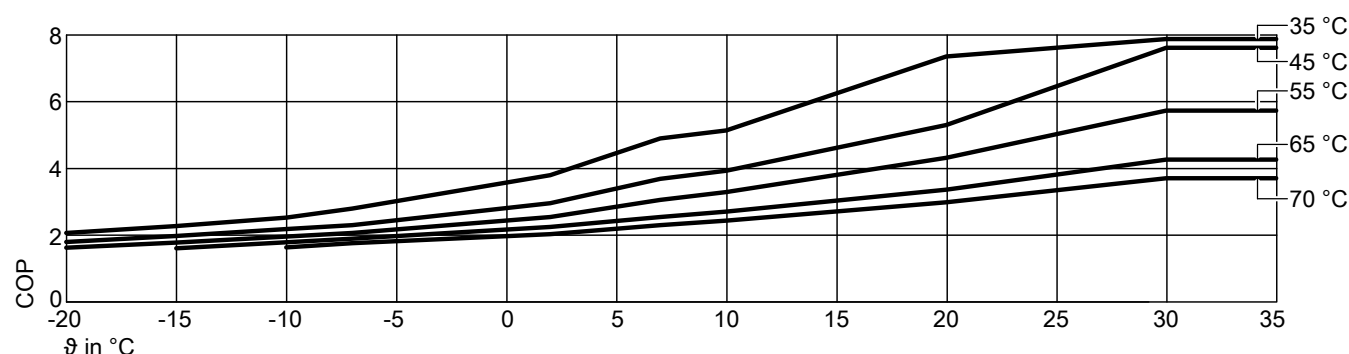
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.77 | 8.90 | 10.30 | 11.13 | 12.34 | 13.40 | 14.02 | 22.63 | 23.34 | 23.34 |
| Rated heating output               |        | kW       | 7.77 | 8.90 | 10.30 | 11.10 | 6.70  | 8.10  | 8.82  | 11.65 | 11.95 | 11.95 |
| Power consumption                  |        | kW       | 3.75 | 3.91 | 4.07  | 3.96  | 1.76  | 1.65  | 1.72  | 1.58  | 1.52  | 1.52  |
| Coefficient of performance ε (COP) |        |          | 2.07 | 2.28 | 2.53  | 2.80  | 3.80  | 4.90  | 5.14  | 7.35  | 7.88  | 7.88  |
| Min. heating output                |        | kW       | 3.22 | 3.27 | 2.99  | 2.82  | 2.61  | 3.00  | 3.35  | 4.02  | 4.02  | 4.02  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.32 | 8.44 | 9.82 | 10.66 | 12.10 | 13.18 | 13.82 | 22.03 | 23.65 | 24.24 |
| Rated heating output               |        | kW       | 7.32 | 8.44 | 9.82 | 10.66 | 6.48  | 7.75  | 8.33  | 11.07 | 14.37 | 14.37 |
| Power consumption                  |        | kW       | 4.07 | 4.26 | 4.49 | 4.63  | 2.19  | 2.10  | 2.12  | 2.09  | 1.89  | 1.89  |
| Coefficient of performance ε (COP) |        |          | 1.80 | 1.98 | 2.19 | 2.30  | 2.96  | 3.69  | 3.93  | 5.30  | 7.61  | 7.61  |
| Min. heating output                |        | kW       | 2.72 | 2.77 | 2.49 | 2.32  | 2.24  | 2.61  | 2.85  | 3.52  | 4.52  | 4.52  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.00 | 8.29 | 9.74 | 10.60 | 12.28 | 13.33 | 17.27 | 20.65 | 22.88 | 23.20 |
| Rated heating output               |        | kW       | 7.00 | 8.29 | 9.73 | 10.60 | 6.37  | 7.56  | 8.28  | 11.16 | 14.46 | 14.46 |
| Power consumption                  |        | kW       | 4.30 | 4.65 | 4.96 | 5.12  | 2.50  | 2.47  | 2.51  | 2.58  | 2.52  | 2.52  |
| Coefficient of performance ε (COP) |        |          | 1.63 | 1.78 | 1.96 | 2.07  | 2.55  | 3.06  | 3.29  | 4.32  | 5.73  | 5.73  |
| Min. heating output                |        | kW       | 2.70 | 2.74 | 2.48 | 2.32  | 3.03  | 3.51  | 3.84  | 5.07  | 6.10  | 6.10  |

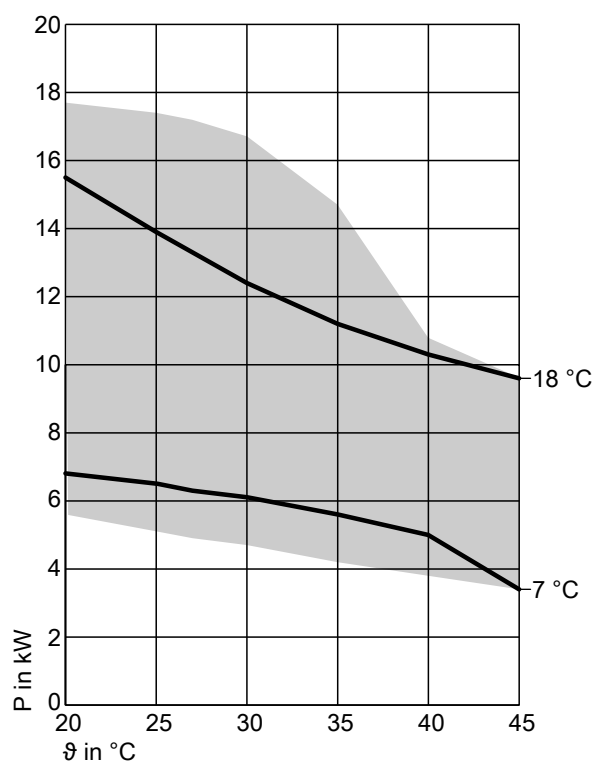
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 6.12 | 7.99 | 9.11 | 12.16 | 12.77 | 15.78 | 19.25 | 22.01 | 22.03 |
| Rated heating output               |        | kW       |     | 6.12 | 7.99 | 9.11 | 6.28  | 7.61  | 8.30  | 10.97 | 14.03 | 14.03 |
| Power consumption                  |        | kW       |     | 3.80 | 4.46 | 4.80 | 2.79  | 2.99  | 3.06  | 3.26  | 3.29  | 3.29  |
| Coefficient of performance ε (COP) |        |          |     | 1.61 | 1.79 | 1.90 | 2.25  | 2.55  | 2.71  | 3.37  | 4.27  | 4.27  |
| Min. heating output                |        | kW       |     | 2.67 | 2.83 | 2.93 | 3.85  | 4.60  | 5.05  | 6.81  | 8.44  | 8.44  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |      |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2    | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 5.96 | 6.93 | 9.83 | 11.78 | 14.76 | 17.83 | 21.74 | 21.78 |
| Rated heating output               |        | kW       |     |     | 5.96 | 6.93 | 6.25 | 7.58  | 8.27  | 10.90 | 13.90 | 13.90 |
| Power consumption                  |        | kW       |     |     | 3.64 | 3.93 | 3.07 | 3.29  | 3.39  | 3.65  | 3.75  | 3.75  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.64 | 1.76 | 2.03 | 2.30  | 2.44  | 2.99  | 3.71  | 3.71  |
| Min. heating output                |        | kW       |     |     | 3.15 | 3.43 | 4.57 | 5.36  | 5.88  | 7.97  | 9.48  | 9.48  |

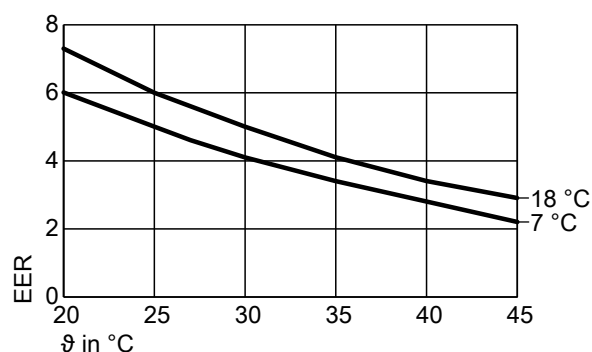
## Curves (cont.)

### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



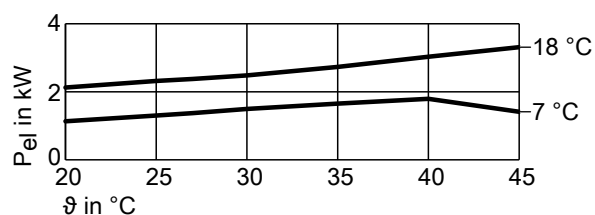
θ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

Possible output range

**Power consumption for cooling at flow temperatures of 18 °C, 7 °C**



| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |       |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|-------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40    | 45   |
| Max. cooling capacity       |        | kW       | 17.70 | 17.40 | 17.20 | 16.70 | 14.70 | 10.80 | 9.60 |
| Cooling capacity            |        | kW       | 15.50 | 13.90 | 13.30 | 12.40 | 11.20 | 10.30 | 9.60 |
| Power consumption           |        | kW       | 2.12  | 2.32  | 2.38  | 2.48  | 2.73  | 3.03  | 3.31 |
| Energy efficiency ratio EER |        |          | 7.30  | 6.00  | 5.60  | 5.00  | 4.10  | 3.40  | 2.90 |
| Min. cooling capacity       |        | kW       | 8.10  | 7.70  | 7.50  | 7.20  | 6.80  | 6.40  | 6.00 |

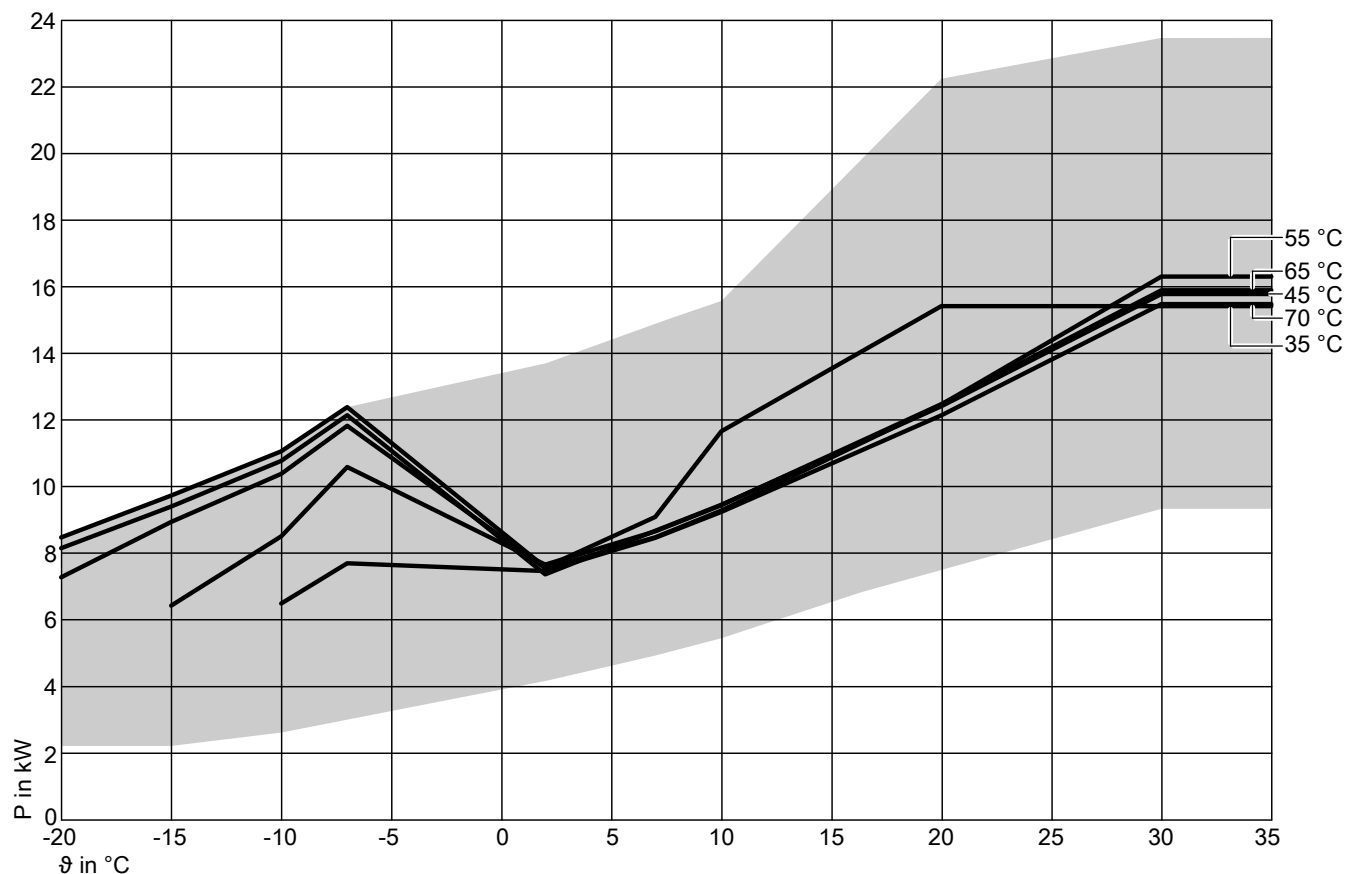
  

| Operating point             | W<br>A | °C<br>°C | 7    |      |      |      |      |      |      |
|-----------------------------|--------|----------|------|------|------|------|------|------|------|
|                             |        |          | 20   | 25   | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 9.70 | 9.10 | 8.90 | 8.60 | 8.00 | 6.30 | 3.40 |
| Cooling capacity            |        | kW       | 6.80 | 6.50 | 6.30 | 6.10 | 5.60 | 5.00 | 3.40 |
| Power consumption           |        | kW       | 1.13 | 1.30 | 1.37 | 1.49 | 1.65 | 1.79 | 1.55 |
| Energy efficiency ratio EER |        |          | 6.00 | 5.00 | 4.60 | 4.10 | 3.40 | 2.80 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.60 | 5.10 | 4.90 | 4.70 | 4.20 | 3.80 | 3.40 |

## 5.8 Performance graph, outdoor unit type 151.A16, 230 V~

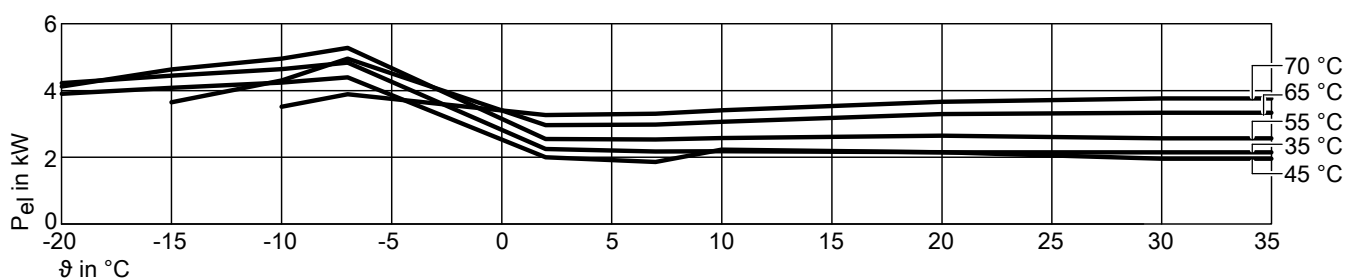
### Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



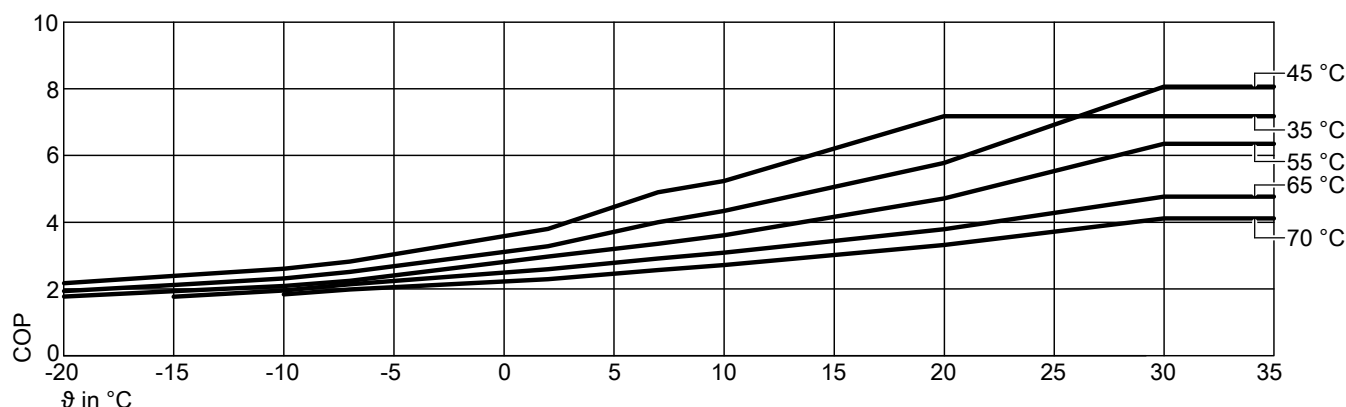
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 8.49 | 9.74 | 11.07 | 12.39 | 13.70 | 14.90 | 15.57 | 22.24 | 23.46 | 23.46 |
| Rated heating output               |        | kW       | 8.49 | 9.74 | 11.07 | 12.39 | 7.59  | 9.10  | 11.67 | 15.42 | 15.42 | 15.42 |
| Power consumption                  |        | kW       | 3.90 | 4.08 | 4.24  | 4.39  | 2.00  | 1.86  | 2.23  | 2.15  | 2.15  | 2.15  |
| Coefficient of performance ε (COP) |        |          | 2.17 | 2.39 | 2.61  | 2.82  | 3.80  | 4.90  | 5.24  | 7.18  | 7.18  | 7.18  |
| Min. heating output                |        | kW       | 3.00 | 3.00 | 3.00  | 3.00  | 3.00  | 3.30  | 3.30  | 3.55  | 3.55  | 3.55  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 8.16 | 9.41 | 10.78 | 12.15 | 13.62 | 14.89 | 19.58 | 21.78 | 24.01 | 24.01 |
| Rated heating output               |        | kW       | 8.16 | 9.41 | 10.78 | 12.15 | 7.38  | 8.68  | 9.46  | 12.42 | 15.79 | 15.79 |
| Power consumption                  |        | kW       | 4.22 | 4.45 | 4.64  | 4.84  | 2.25  | 2.17  | 2.18  | 2.15  | 1.96  | 1.96  |
| Coefficient of performance ε (COP) |        |          | 1.93 | 2.12 | 2.31  | 2.51  | 3.28  | 4.00  | 4.34  | 5.78  | 8.07  | 8.07  |
| Min. heating output                |        | kW       | 2.52 | 2.56 | 2.34  | 2.11  | 2.03  | 2.37  | 2.60  | 3.49  | 4.14  | 4.14  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.29 | 8.95 | 10.39 | 11.83 | 13.74 | 14.58 | 18.48 | 21.59 | 23.35 | 23.02 |
| Rated heating output               |        | kW       | 7.29 | 8.95 | 10.39 | 11.83 | 7.56  | 8.49  | 9.29  | 12.47 | 16.31 | 16.31 |
| Power consumption                  |        | kW       | 4.12 | 4.63 | 4.96  | 5.28  | 2.55  | 2.53  | 2.57  | 2.65  | 2.57  | 2.57  |
| Coefficient of performance ε (COP) |        |          | 1.77 | 1.93 | 2.09  | 2.24  | 2.97  | 3.35  | 3.61  | 4.71  | 6.36  | 6.36  |
| Min. heating output                |        | kW       | 2.31 | 2.35 | 2.14  | 1.93  | 2.64  | 3.13  | 3.44  | 4.69  | 5.56  | 5.56  |

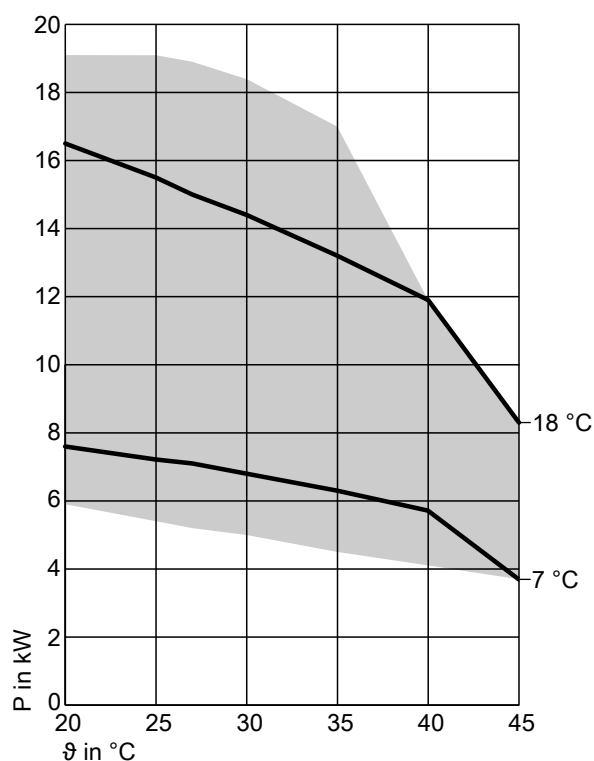
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 6.44 | 8.52 | 10.60 | 13.44 | 13.31 | 16.11 | 19.67 | 22.48 | 22.07 |
| Rated heating output               |        | kW       |     | 6.44 | 8.52 | 10.60 | 7.67  | 8.67  | 9.45  | 12.48 | 15.90 | 15.90 |
| Power consumption                  |        | kW       |     | 3.65 | 4.30 | 4.96  | 2.96  | 2.98  | 3.06  | 3.29  | 3.33  | 3.33  |
| Coefficient of performance ε (COP) |        |          |     | 1.77 | 1.95 | 2.14  | 2.59  | 2.91  | 3.09  | 3.79  | 4.77  | 4.77  |
| Min. heating output                |        | kW       |     | 2.27 | 2.42 | 2.56  | 3.54  | 4.16  | 4.65  | 6.38  | 7.83  | 7.83  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 6.50 | 7.71 | 10.87 | 12.66 | 15.01 | 18.17 | 22.12 | 21.79 |
| Rated heating output               |        | kW       |     |     | 6.50 | 7.71 | 7.48  | 8.47  | 9.25  | 12.15 | 15.48 | 15.48 |
| Power consumption                  |        | kW       |     |     | 3.51 | 3.89 | 3.26  | 3.30  | 3.41  | 3.66  | 3.76  | 3.76  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.83 | 1.98 | 2.29  | 2.57  | 2.72  | 3.32  | 4.12  | 4.12  |
| Min. heating output                |        | kW       |     |     | 2.63 | 3.04 | 4.18  | 4.94  | 5.46  | 7.63  | 9.34  | 9.34  |

## Curves (cont.)

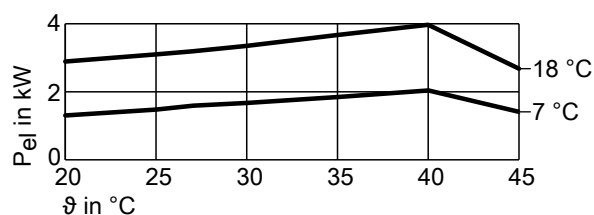
### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C

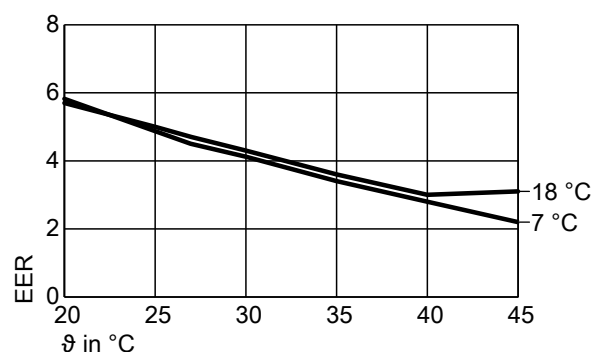


Possible output range

Power consumption for cooling at flow temperatures of 18 °C, 7 °C



Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



θ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |       |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|-------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40    | 45   |
| Max. cooling capacity       |        | kW       | 19.10 | 19.10 | 18.90 | 18.40 | 17.00 | 11.90 | 8.30 |
| Cooling capacity            |        | kW       | 16.50 | 15.50 | 15.00 | 14.40 | 13.20 | 11.90 | 8.30 |
| Power consumption           |        | kW       | 2.89  | 3.10  | 3.19  | 3.35  | 3.62  | 3.97  | 2.68 |
| Energy efficiency ratio EER |        |          | 5.70  | 5.00  | 4.70  | 4.30  | 3.65  | 3.00  | 3.10 |
| Min. cooling capacity       |        | kW       | 8.00  | 7.70  | 7.50  | 7.30  | 6.90  | 6.40  | 4.80 |

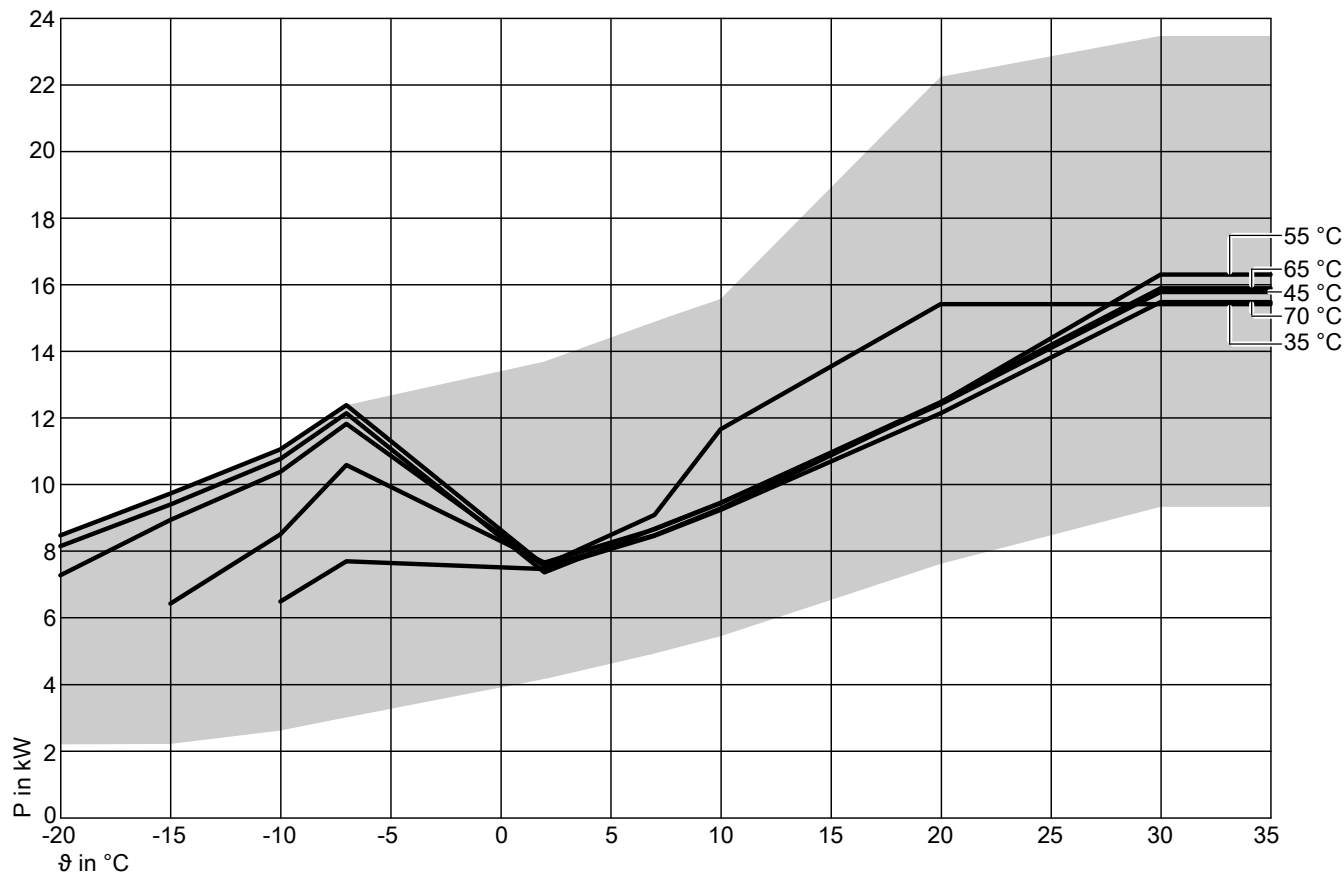
  

| Operating point             | W<br>A | °C<br>°C | 7     |       |      |      |      |      |      |
|-----------------------------|--------|----------|-------|-------|------|------|------|------|------|
|                             |        |          | 20    | 25    | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 11.00 | 10.10 | 9.70 | 9.30 | 8.70 | 6.30 | 3.70 |
| Cooling capacity            |        | kW       | 7.60  | 7.20  | 7.10 | 6.80 | 6.30 | 5.70 | 3.70 |
| Power consumption           |        | kW       | 1.31  | 1.47  | 1.58 | 1.66 | 1.85 | 2.04 | 1.68 |
| Energy efficiency ratio EER |        |          | 5.80  | 4.90  | 4.50 | 4.10 | 3.40 | 2.80 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.90  | 5.40  | 5.20 | 5.00 | 4.50 | 4.10 | 3.70 |

## 5.9 Performance graph, outdoor unit type 151.A16, 400 V~

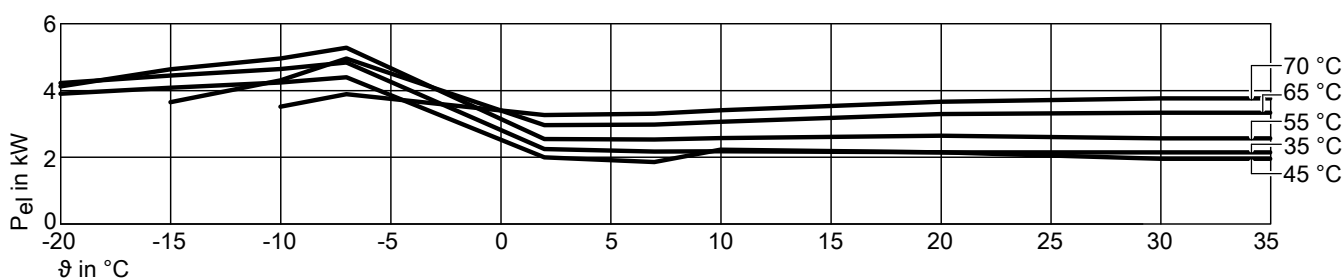
## Heating

Heating output at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



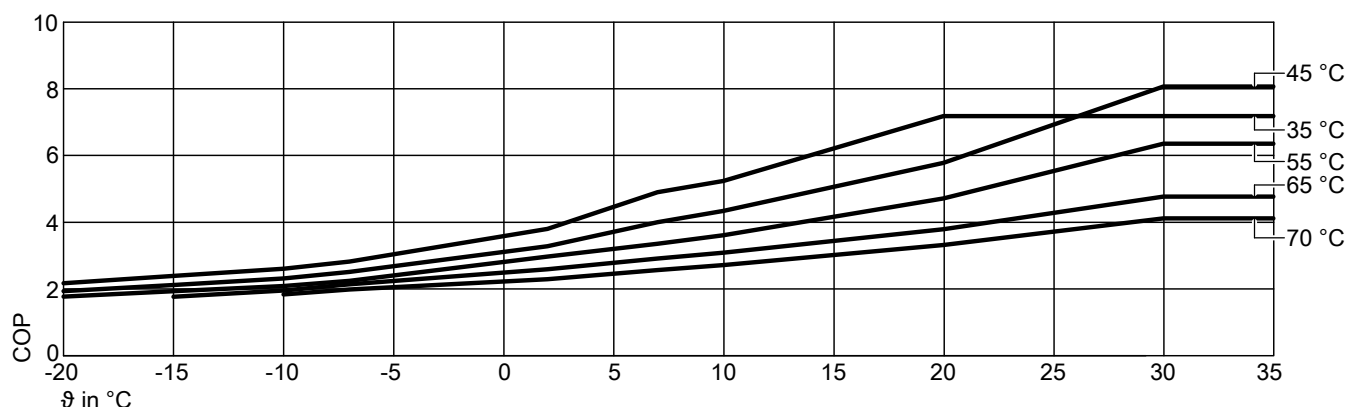
Possible output range

Power consumption for heating at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



## Curves (cont.)

Coefficient of performance (COP) at flow temperatures of 35 °C, 45 °C, 55 °C, 65 °C, 70 °C



θ Air intake temperature  
P Heating output  
P<sub>el</sub> Power consumption  
COP Performance factor

### Note

- The COP data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

| Operating point                    | W<br>A | °C<br>°C | 35   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 8.49 | 9.74 | 11.07 | 12.39 | 13.70 | 14.90 | 15.57 | 22.24 | 23.46 | 23.46 |
| Rated heating output               |        | kW       | 8.49 | 9.74 | 11.07 | 12.39 | 7.59  | 9.10  | 11.67 | 15.42 | 15.42 | 15.42 |
| Power consumption                  |        | kW       | 3.90 | 4.08 | 4.24  | 4.39  | 2.00  | 1.86  | 2.23  | 2.15  | 2.15  | 2.15  |
| Coefficient of performance ε (COP) |        |          | 2.17 | 2.39 | 2.61  | 2.82  | 3.80  | 4.90  | 5.24  | 7.18  | 7.18  | 7.18  |
| Min. heating output                |        | kW       | 2.75 | 2.80 | 2.58  | 2.35  | 2.27  | 2.64  | 2.88  | 3.55  | 3.55  | 3.55  |

| Operating point                    | W<br>A | °C<br>°C | 45   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 8.16 | 9.41 | 10.78 | 12.15 | 13.62 | 14.89 | 19.58 | 21.78 | 24.01 | 24.01 |
| Rated heating output               |        | kW       | 8.16 | 9.41 | 10.78 | 12.15 | 7.38  | 8.68  | 9.46  | 12.42 | 15.79 | 15.79 |
| Power consumption                  |        | kW       | 4.22 | 4.45 | 4.64  | 4.84  | 2.25  | 2.17  | 2.18  | 2.15  | 1.96  | 1.96  |
| Coefficient of performance ε (COP) |        |          | 1.93 | 2.12 | 2.31  | 2.51  | 3.28  | 4.00  | 4.34  | 5.78  | 8.07  | 8.07  |
| Min. heating output                |        | kW       | 2.52 | 2.56 | 2.34  | 2.11  | 2.03  | 2.37  | 2.60  | 3.49  | 4.14  | 4.14  |

| Operating point                    | W<br>A | °C<br>°C | 55   |      |       |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20  | -15  | -10   | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       | 7.29 | 8.95 | 10.39 | 11.83 | 13.74 | 14.58 | 18.48 | 21.59 | 23.35 | 23.02 |
| Rated heating output               |        | kW       | 7.29 | 8.95 | 10.39 | 11.83 | 7.56  | 8.49  | 9.29  | 12.47 | 16.31 | 16.31 |
| Power consumption                  |        | kW       | 4.12 | 4.63 | 4.96  | 5.28  | 2.55  | 2.53  | 2.57  | 2.65  | 2.57  | 2.57  |
| Coefficient of performance ε (COP) |        |          | 1.77 | 1.93 | 2.09  | 2.24  | 2.97  | 3.35  | 3.61  | 4.71  | 6.36  | 6.36  |
| Min. heating output                |        | kW       | 2.31 | 2.35 | 2.14  | 1.93  | 2.64  | 3.13  | 3.44  | 4.69  | 5.56  | 5.56  |

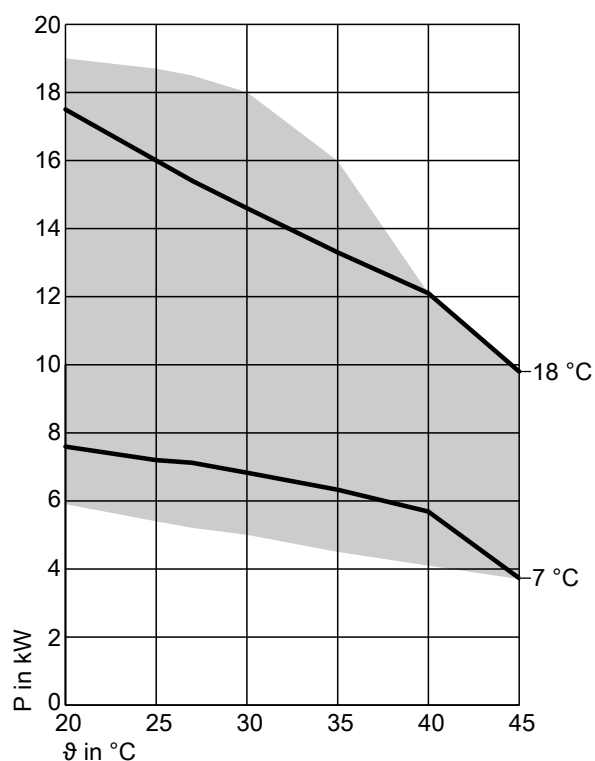
| Operating point                    | W<br>A | °C<br>°C | 65  |      |      |       |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|------|------|-------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15  | -10  | -7    | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     | 6.44 | 8.52 | 10.60 | 13.44 | 13.31 | 16.11 | 19.67 | 22.48 | 22.07 |
| Rated heating output               |        | kW       |     | 6.44 | 8.52 | 10.60 | 7.67  | 8.67  | 9.45  | 12.48 | 15.90 | 15.90 |
| Power consumption                  |        | kW       |     | 3.65 | 4.30 | 4.96  | 2.96  | 2.98  | 3.06  | 3.29  | 3.33  | 3.33  |
| Coefficient of performance ε (COP) |        |          |     | 1.77 | 1.95 | 2.14  | 2.59  | 2.91  | 3.09  | 3.79  | 4.77  | 4.77  |
| Min. heating output                |        | kW       |     | 2.27 | 2.42 | 2.56  | 3.54  | 4.16  | 4.65  | 6.38  | 7.83  | 7.83  |

| Operating point                    | W<br>A | °C<br>°C | 70  |     |      |      |       |       |       |       |       |       |
|------------------------------------|--------|----------|-----|-----|------|------|-------|-------|-------|-------|-------|-------|
|                                    |        |          | -20 | -15 | -10  | -7   | 2     | 7     | 10    | 20    | 30    | 35    |
| Max. heating output                |        | kW       |     |     | 6.50 | 7.71 | 10.87 | 12.66 | 15.01 | 18.17 | 22.12 | 21.79 |
| Rated heating output               |        | kW       |     |     | 6.50 | 7.71 | 7.48  | 8.47  | 9.25  | 12.15 | 15.48 | 15.48 |
| Power consumption                  |        | kW       |     |     | 3.51 | 3.89 | 3.26  | 3.30  | 3.41  | 3.66  | 3.76  | 3.76  |
| Coefficient of performance ε (COP) |        |          |     |     | 1.83 | 1.98 | 2.29  | 2.57  | 2.72  | 3.32  | 4.12  | 4.12  |
| Min. heating output                |        | kW       |     |     | 2.63 | 3.04 | 4.18  | 4.94  | 5.46  | 7.63  | 9.34  | 9.34  |

## Curves (cont.)

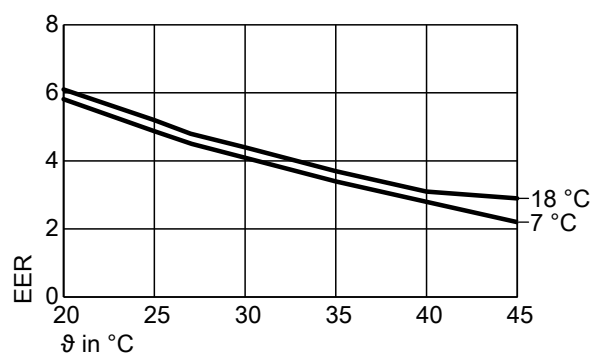
### Cooling

Cooling capacity at flow temperatures of 18 °C, 7 °C



Possible output range

Energy efficiency ratio EER at flow temperatures of 18 °C, 7 °C



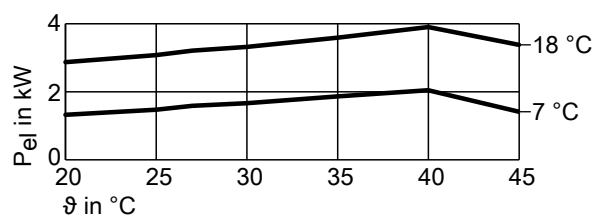
θ Air intake temperature  
P Cooling capacity  
P<sub>el</sub> Power consumption  
EER Performance factor

#### Note

- The EER data in the tables and graphs was calculated with reference to EN 14511.
- Performance characteristics apply to new appliances with clean plate heat exchangers.

5

Power consumption for cooling at flow temperatures of 18 °C, 7 °C



| Operating point             | W<br>A | °C<br>°C | 18    |       |       |       |       |       |      |
|-----------------------------|--------|----------|-------|-------|-------|-------|-------|-------|------|
|                             |        |          | 20    | 25    | 27    | 30    | 35    | 40    | 45   |
| Max. cooling capacity       |        | kW       | 19.00 | 18.70 | 18.50 | 18.00 | 16.00 | 12.10 | 9.80 |
| Cooling capacity            |        | kW       | 17.50 | 16.00 | 15.40 | 14.60 | 13.30 | 12.10 | 9.80 |
| Power consumption           |        | kW       | 2.87  | 3.08  | 3.21  | 3.32  | 3.59  | 3.90  | 3.38 |
| Energy efficiency ratio EER |        |          | 6.10  | 5.20  | 4.80  | 4.40  | 3.70  | 3.10  | 2.90 |
| Min. cooling capacity       |        | kW       | 8.40  | 8.00  | 7.80  | 7.50  | 7.10  | 6.70  | 6.30 |

| Operating point             | W<br>A | °C<br>°C | 7     |       |      |      |      |      |      |
|-----------------------------|--------|----------|-------|-------|------|------|------|------|------|
|                             |        |          | 20    | 25    | 27   | 30   | 35   | 40   | 45   |
| Max. cooling capacity       |        | kW       | 11.00 | 10.10 | 9.70 | 9.30 | 8.70 | 6.30 | 3.70 |
| Cooling capacity            |        | kW       | 7.60  | 7.20  | 7.10 | 6.80 | 6.30 | 5.70 | 3.70 |
| Power consumption           |        | kW       | 1.31  | 1.47  | 1.58 | 1.66 | 1.85 | 2.04 | 1.68 |
| Energy efficiency ratio EER |        |          | 5.80  | 4.90  | 4.50 | 4.10 | 3.40 | 2.80 | 2.20 |
| Min. cooling capacity       |        | kW       | 5.90  | 5.40  | 5.20 | 5.00 | 4.50 | 4.10 | 3.70 |

## Installation accessories

### 6.1 Overview

#### General accessories and heating/cooling circuits

| Accessories                                                                       | Part no. | Vitocal 150-A | Vitocal 151-A |
|-----------------------------------------------------------------------------------|----------|---------------|---------------|
| Ventilation unit: See page 65 onwards.                                            |          |               |               |
| Vitoair FS, type 300E                                                             | Z023297  | X             | X             |
| Hydraulic connection accessories, secondary circuit: See page 65 onwards.         |          |               |               |
| Pre-plumbing jig for surface mounting                                             | ZK06008  | X             |               |
| Valve/fittings cover, 450 mm                                                      | 7973427  | X             |               |
| Ball valve set                                                                    | ZK06057  | X             | X             |
| Hydraulic connection sets for heating/cooling circuit, surface mounting           |          |               |               |
| – To the top                                                                      | ZK06058  |               | X             |
| – To the left                                                                     | ZK06059  |               | X             |
| – To the right                                                                    | ZK06060  |               | X             |
| Pre-plumbing jig for compact appliance, heating/cooling circuit, surface mounting |          |               |               |
| – To the top                                                                      | ZK06061  |               | X             |
| – To the left                                                                     | ZK06062  |               | X             |
| – To the right                                                                    | ZK06063  |               | X             |
| DHW circulation connection set                                                    |          |               |               |
| – With high efficiency circulation pump                                           | ZK06064  |               | X             |
| – For on-site circulation pump                                                    | ZK06228  |               | X             |
| Heating filter with magnetite separation (backwashing)                            | 7266384  | X             | X             |
| Divicon heating/cooling circuit distributor: See page 69 onwards.                 |          |               |               |
| Without mixer, fully fitted                                                       |          |               |               |
| – With high efficiency circulation pump Wilo PARA 25/6, DN 20 - R ¾               | ZK06009  | X             | X             |
| – With high efficiency circulation pump Wilo PARA 25/6, DN 25 - R 1               | ZK06010  | X             | X             |
| – With high efficiency circulation pump Wilo PARA 25/8, DN 32 - R 1½              | ZK06011  | X             | X             |
| With mixer, fully fitted                                                          |          |               |               |
| – With high efficiency circulation pump Wilo PARA 25/6, DN 20 - R ¾               | Z024426  | X             | X             |
| – With high efficiency circulation pump Wilo PARA 25/6, DN 25 - R 1               | Z024427  | X             | X             |
| – With high efficiency circulation pump Wilo PARA 25/8, DN 32 - R 1½              | Z024428  | X             | X             |
| Mixer extension kits:<br>See control unit accessories on page 141.                |          |               |               |
| Cable set with plugs 40 and 74                                                    | ZK04322  | X             | X             |
| Wall mounting bracket for individual Divicons                                     | 7465894  | X             | X             |
| Bypass valve                                                                      | 7464889  | X             | X             |
| Manifold for 2 Divicons                                                           |          |               |               |
| – DN 20 - R ¾ / DN 25 - R 1                                                       | ZK06214  | X             | X             |
| Wall mounting bracket for manifold                                                | 7465439  | X             | X             |
| Cooling accessories: See page 74 onwards.                                         |          |               |               |
| Contact humidistat                                                                |          |               |               |
| – 24 V $\overline{\text{=}}$                                                      | 7181418  | X             | X             |
| – 230 V~                                                                          | 7452646  | X             | X             |
| Miscellaneous: See page 98 onwards.                                               |          |               |               |
| Platform for unfinished floors                                                    | 7417925  |               | X             |
| Drain outlet set                                                                  | 7176014  |               | X             |

#### DHW heating accessories

| Accessories                                                                                  | Part no.                  | Vitocal 150-A | Vitocal 151-A |
|----------------------------------------------------------------------------------------------|---------------------------|---------------|---------------|
| DHW heating, general: See page 74 onwards.                                                   |                           |               |               |
| Safety assembly to DIN 1988                                                                  | 7180662<br>AT:<br>7179666 | X             | X             |
| DHW heating with integral DHW cylinder: See page 75 onwards.                                 |                           |               |               |
| Impressed current anode                                                                      | Z004247                   |               | X             |
| DHW heating with Vitocell 100-V, type CVWC and Vitocell Modular 100-VE: See page 75 onwards. |                           |               |               |
| Vitocell 100-V, type CVWC, colour: Vitopearlwhite                                            |                           |               |               |
| – Cylinder capacity 200 l                                                                    | Z026454                   | X             |               |
| – Cylinder capacity 250 l                                                                    | Z026455                   | X             |               |
| – Cylinder capacity 300 l                                                                    | Z026456                   | X             |               |
| Vitocell Modular 100-VE, colour: Vitopearlwhite                                              |                           |               |               |
| Combination of Vitocell 100-V, type CVWC with buffer cylinder Vitocell 100-E, type MSCA 50 l |                           |               |               |
| – Vitocell 100-V cylinder capacity 200 l                                                     | Z026459                   | X             |               |
| – Vitocell 100-V cylinder capacity 250 l                                                     | Z026460                   | X             |               |
| – Vitocell 100-V cylinder capacity 300 l                                                     | Z026461                   | X             |               |

## Installation accessories (cont.)

| Accessories                                                                                  | Part no. | Vitocal 150-A | Vitocal 151-A |
|----------------------------------------------------------------------------------------------|----------|---------------|---------------|
| Vitocell Modular 100-VE, colour: Vitopearlwhite                                              |          |               |               |
| Combination of Vitocell 100-V, type CVWC with buffer cylinder Vitocell 100-E, type MSCA 75 l |          |               |               |
| – Vitocell 100-V cylinder capacity 200 l                                                     | Z026462  | X             |               |
| – Vitocell 100-V cylinder capacity 250 l                                                     | Z026463  | X             |               |
| – Vitocell 100-V cylinder capacity 300 l                                                     | Z026464  | X             |               |
| Automatic air vent valve                                                                     | 7984135  | X             |               |
| Immersion heater EHE                                                                         |          |               |               |
| – For cylinder capacity 250 l/300 l, installation in top section                             | Z012684  | X             |               |
| – For cylinder capacity 200 l/250 l/300 l, installation in bottom section                    | Z021939  | X             |               |
| DHW heating with Vitocell 100-V, type CVWB: See page 88 onwards.                             |          |               |               |
| Vitocell 100-V, type CVWB, colour: Vitopearlwhite                                            |          |               |               |
| – Cylinder capacity 390 l                                                                    | Z026497  | X             |               |
| – Cylinder capacity 500 l                                                                    | Z026498  | X             |               |
| Immersion heater EHE, installation in bottom section                                         |          |               |               |
| – For cylinder capacity 390 l/500 l, installation in top section                             | Z012684  | X             |               |
| – For cylinder capacity 390 l/500 l, installation in bottom section                          | Z026669  | X             |               |
| Solar heat exchanger set for cylinder capacity of 390 l/500 l                                | 7186663  | X             |               |
| Impressed current anode                                                                      | Z004247  | X             |               |

## Accessories, outdoor unit positioning

| Accessories                                                                                              | Part no. | Vitocal 150-A | Vitocal 151-A |
|----------------------------------------------------------------------------------------------------------|----------|---------------|---------------|
| Outdoor unit positioning: See page 94 onwards.                                                           |          |               |               |
| Basic connection set for outdoor unit                                                                    | 7973227  | X             | X             |
| Floor bracket and wall outlet above ground level — connection set for floorstanding installation bracket |          |               |               |
| – Copper pipes with thermal insulation                                                                   | ZK06018  | X             | X             |
| – Copper pipes without thermal insulation                                                                | ZK06428  | X             | X             |
| – Stainless steel corrugated pipes with thermal insulation                                               | ZK06019  | X             | X             |
| Wall mounting bracket and wall outlet — connection set for wall mounting bracket                         |          |               |               |
| – Copper pipes with thermal insulation                                                                   | ZK06021  | X             | X             |
| – Copper pipes without thermal insulation                                                                | ZK06429  | X             | X             |
| Floor bracket and cables routed underground — connection set for floorstanding installation bracket      |          |               |               |
| – Stainless steel corrugated pipes with thermal insulation                                               | ZK06020  | X             | X             |
| Quattro connection line laid underground                                                                 |          |               |               |
| – Horizontal line length 5 m                                                                             | 7984138  | X             | X             |
| – Horizontal line length 10 m                                                                            | 7984139  | X             | X             |
| – Horizontal line length 15 m                                                                            | 7984140  | X             | X             |
| – Horizontal line length 20 m                                                                            | 7984141  | X             | X             |
| Ring seal for Quattro connection line laid underground                                                   | 7984142  | X             | X             |
| Supports for outdoor unit: See page 97 onwards.                                                          |          |               |               |
| Design casing for floor bracket including wall connection                                                | ZK06015  | X             | X             |
| Bracket for floorstanding installation                                                                   | ZK06013  | X             | X             |
| Anti-vibration base                                                                                      | ZK06012  | X             | X             |
| Design casing for wall mounting bracket                                                                  | ZK06017  | X             | X             |
| Bracket set for mounting the outdoor unit on a wall                                                      | ZK06016  | X             | X             |
| Design casing for floor bracket                                                                          | ZK06014  | X             | X             |
| Miscellaneous: See page 98 onwards.                                                                      |          |               |               |
| Ribbon heater                                                                                            |          |               |               |
| – Condensate pan                                                                                         | ZK06022  | X             | X             |
| – Condensate drain                                                                                       | 7973114  | X             | X             |
| Cap set                                                                                                  | ZK02933  | X             | X             |
| Design covers for evaporator                                                                             | ZK06215  | X             | X             |
| Special cleaner                                                                                          | 7249305  | X             | X             |

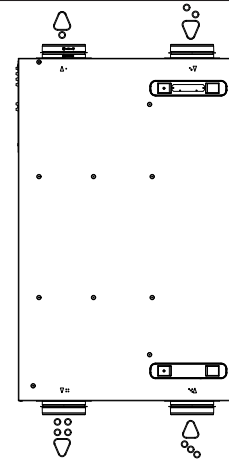
## 6.2 Ventilation unit

### Vitoair FS, type 300E

Part no. Z023297

#### Overview of ventilation unit

Arrangement of air connectors



|                                                      |     |
|------------------------------------------------------|-----|
| Countercurrent/enthalpy heat exchanger               | X   |
| Wall mounting                                        | X   |
| Ceiling mounting                                     | X   |
| Floorstanding                                        | X   |
| Max. air flow rate in m³/h                           | 300 |
| Max. area of residential unit in m² (standard value) | 280 |
| Constant flow rate control                           | X   |
| Automatic bypass                                     | X   |
| Electric preheating coil                             | ○   |

- X Standard delivery/possible  
○ Ventilation unit accessories

#### Note

Detailed information on planning a mechanical ventilation system with Vitoair FS: See technical guide "Vitoair FS".

## 6.3 Hydraulic connection accessories, secondary circuit

#### Note

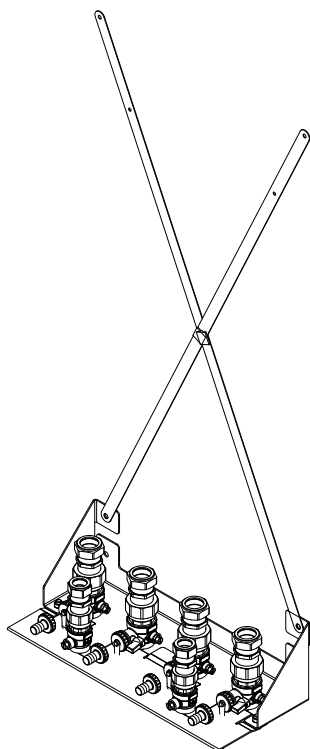
For hydraulic connection of the secondary circuit, one of the following connection accessories must be used.

### Pre-plumbing jigs for surface mounting

Part no. ZK06008

For indoor unit with 1 integral heating/cooling circuit:

- Width of indoor unit: 450 mm
- On-site insulation required for cooling mode
- With fixings
- With valves/fittings

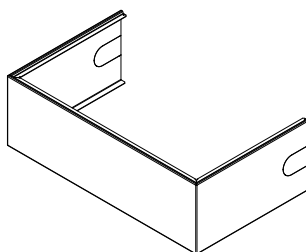


### Valve/fittings cover, 450 mm

Part no. 7973427

For indoor units with a width of 450 mm

- Colour: Vitopearlwhite
- Direct installation on indoor unit
- Can also be used in conjunction with pre-plumbing jig



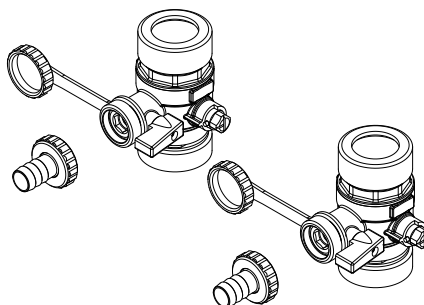
6

### Ball valve set

Part no. ZK06057

Valves for flushing and venting:

Required if no pre-plumbing jig is used.



### Hydraulic connection sets for heating/cooling circuit, surface mounting

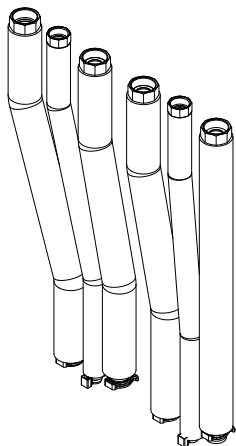
For indoor unit with 1 integrated heating/cooling circuit

- Thermally insulated heating water flow and heating water return line G 1¼
- Thermally insulated cold water and DHW line G 1

## Installation accessories (cont.)

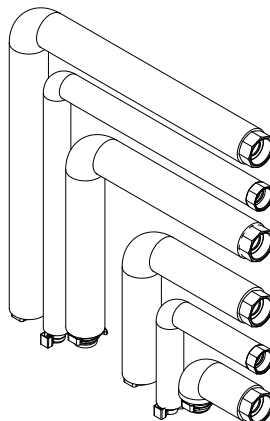
### Part no. ZK06058

Connections at the top



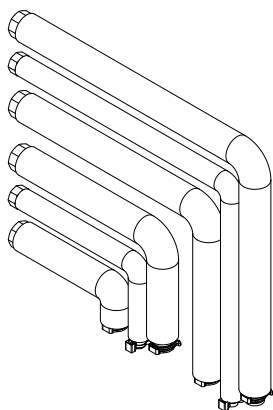
### Part no. ZK06060

Connection to the right



### Part no. ZK06059

Connection to the left



## Pre-plumbing jigs for compact appliance, heating/cooling circuit, surface mounting

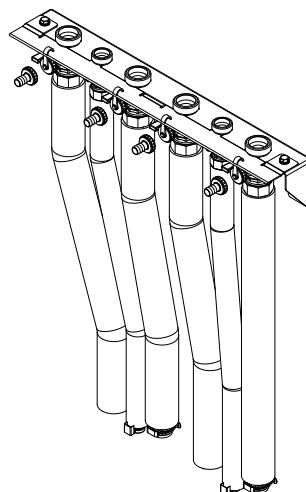
For indoor unit with 1 integrated heating/cooling circuit

On-site insulation of shut-off valves required for cooling mode

- Fitting assembly
- Thermally insulated heating water flow and heating water return line G 1¼
- Thermally insulated cold water and DHW line G 1
- Shut-off valves for heating water flow and return with BDF valve
- Shut-off valves for drinking water

### Part no. ZK06061

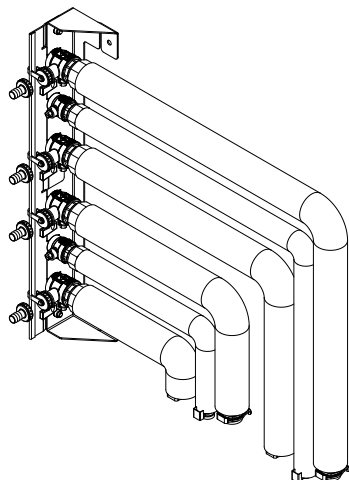
Connections at the top



## Installation accessories (cont.)

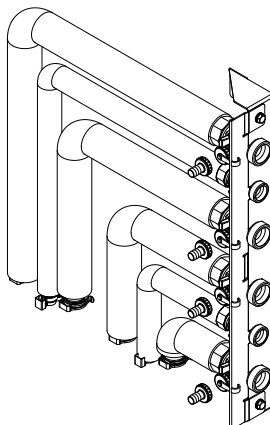
### Part no. ZK06062

Connection to the left



### Part no. ZK06063

Connection to the right

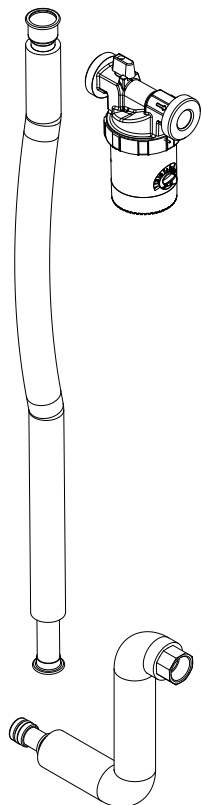


## Connection sets, DHW circulation

Pipe assembly with thermal insulation

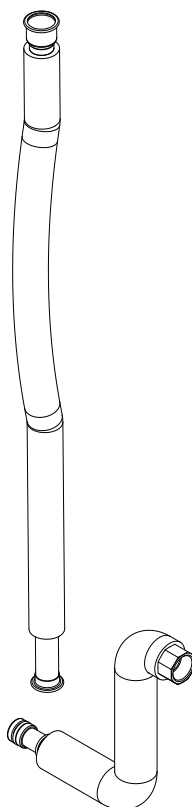
### Part no. ZK06064

With high efficiency circulation pump



### Part no. ZK06228

For on-site high efficiency circulation pump



## Heating filter with magnetite separation (backwashing)

### Part no. 7266384

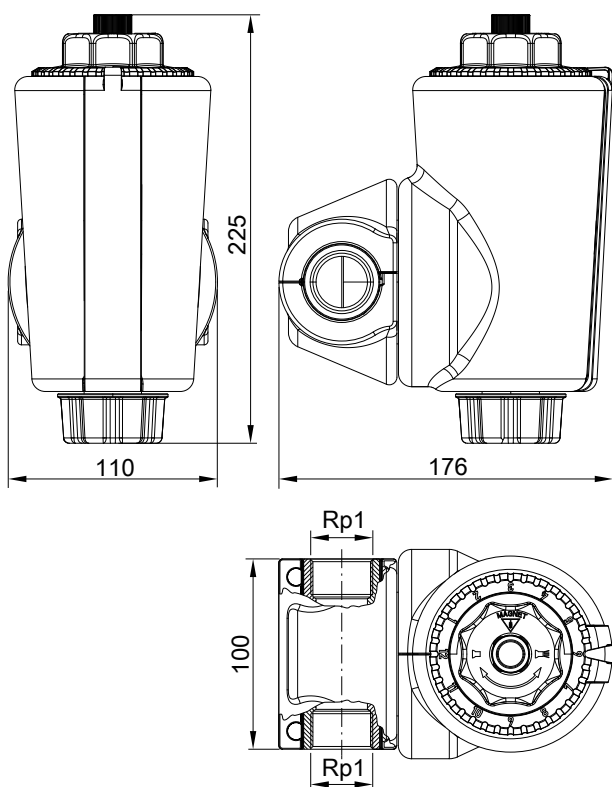
For installation between indoor and outdoor unit in the outdoor unit flow:

- Essential requirement in the case of heating system modernisations
- Recommended for new build
- Rotary connection flange for horizontal and vertical installation
- Stainless steel filter element
- Easy to backwash for cleaning the filter element and magnet



## Installation accessories (cont.)

- Replaceable filter element
- Manual backwashing and maintenance display



### Specification

|                                      |                     |
|--------------------------------------|---------------------|
| Connections                          | DN 25, Rp 1         |
| Max. operating pressure              | 10 bar<br>1000 kPa  |
| Operating temperature                | 10 to 110 °C        |
| Medium                               | Heating water       |
| Min. pressure for backwashing        | 1.5 bar<br>150 kPa  |
| Installation position                | Main axis, vertical |
| Filter mesh size                     | 100 µm              |
| Flow rate                            |                     |
| – At pressure drop 0.1 bar (10 kPa)  | 2.56 m³/h           |
| – At pressure drop 0.15 bar (15 kPa) | 3.20 m³/h           |
| – At pressure drop 0.18 bar (18 kPa) | 3.60 m³/h           |
| K <sub>VS</sub> value                | 8.0                 |

## 6.4 Divicon heating circuit distributor

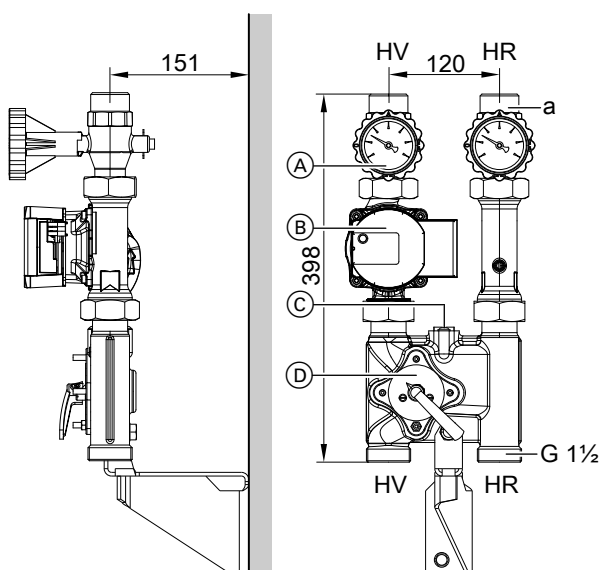
### Design and function

- Available with connections R ¾, R 1 and R 1½
- With heating/cooling circuit pump, check valve, ball valves with integral thermometers and 3-way mixer or without mixer
- Quick and simple installation due to pre-assembled unit and compact design
- All-round thermal insulation shells for low radiation losses
- High efficiency circulation pumps and optimised mixer curve ensure low electricity costs and precise control characteristics
- The bypass valve for hydronic balancing of the heating system is available as an accessory and is provided as a threaded component for inserting into the prepared hole in the cast body.
- Individually wall mounted or with a double manifold

**Part no. of Divicon versions: See Viessmann pricelist.**

The dimensions of the heating/cooling circuit distributor are the same, with or without mixer.

### Divicon with mixer



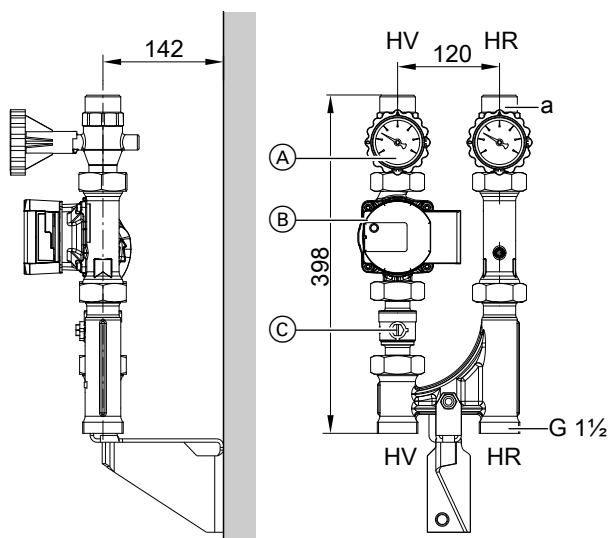
Divicon with mixer: Wall mounting, shown without thermal insulation and mixer extension kit

HR Heating return  
HV Heating flow

## Installation accessories (cont.)

- (A) Ball valves with thermometer (as operating element)
- (B) Circulation pump
- (C) Bypass valve (accessories)
- (D) Mixer-3

### Divicon without mixer



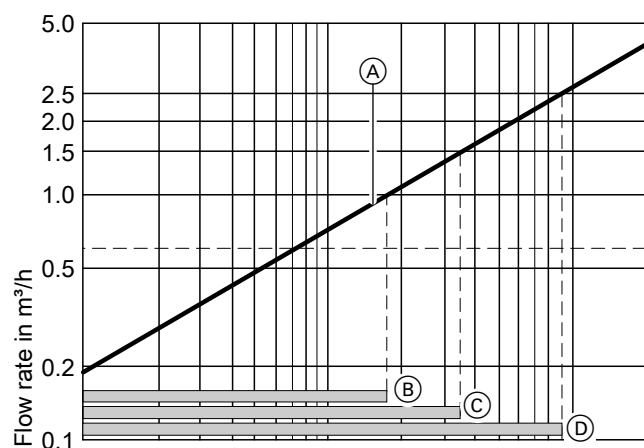
Divicon without mixer: Wall mounting, shown without thermal insulation

HR Heating return  
HV Heating flow

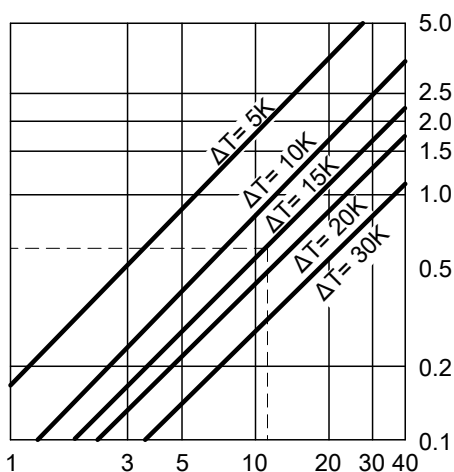
- (A) Ball valves with thermometer (as operating element)
- (B) Circulation pump
- (C) Ball valve

| Heating/cooling connection | R    | ¾   | 1   | 1½  |
|----------------------------|------|-----|-----|-----|
| Max. flow rate             | m³/h | 1.0 | 1.5 | 2.5 |
| a (female)                 | Rp   | ¾   | 1   | 1½  |
| a (male)                   | G    | 1¼  | 1¼  | 2   |

### Determining the required nominal diameter



Mixer control characteristics



Heating circuit output in kW

- (A) Divicon with mixer-3  
The operating ranges marked (B) to (D) provide optimum control characteristics with the Divicon mixer:
- (B) Divicon with mixer-3 (R ¾)  
Operating range: 0 to 1.0 m³/h

- (C) Divicon with mixer-3 (R 1)  
Operating range: 0 to 1.5 m³/h
- (D) Divicon with mixer-3 (R 1½)  
Operating range: 0 to 2.5 m³/h

## Installation accessories (cont.)

### Example:

- Heating/cooling circuit for radiators with a heating output  $\dot{Q} = 11.6 \text{ kW}$
- Heating system temperature  $75/60 \text{ }^{\circ}\text{C}$  ( $\Delta T = 15 \text{ K}$ )

$$\dot{Q} = \dot{m} \cdot c \cdot \Delta T \quad c = 1.163 \frac{\text{Wh}}{\text{kg} \cdot \text{K}} \quad \dot{m} \triangleq \dot{V} \text{ (1 kg} \approx \text{1 dm}^3\text{)}$$

$$\dot{V} = \frac{\dot{Q}}{c \cdot \Delta T} = \frac{11600 \text{ W} \cdot \text{kg} \cdot \text{K}}{1.163 \text{ Wh} \cdot (75-60) \text{ K}} = 665 \frac{\text{kg}}{\text{h}} \triangleq 0.665 \frac{\text{m}^3}{\text{h}}$$

c Specific thermal capacity

$\dot{m}$  Mass flow rate

$\dot{Q}$  Heating output

$\dot{V}$  Flow rate

Using the value  $\dot{V}$ , select the smallest possible mixer within the application limit.

Result for this example: Divicon with mixer-3 (R  $\frac{3}{4}$ )

## Circulation pump curves and pressure drop on the heating water side

The residual head of the circulation pump is derived from the differential between the selected pump curve and the pressure drop curve of the relevant heating circuit distributor and/or other components (pipe assembly, distributor, etc.).

The following pump graphs show the pressure drop curves of the different Divicon heating circuit distributors.

**Maximum flow rate** for Divicon:

- With R  $\frac{3}{4}$  = 1.0 m<sup>3</sup>/h
- With R 1 = 1.5 m<sup>3</sup>/h
- With R 1  $\frac{1}{4}$  = 2.5 m<sup>3</sup>/h

### Example:

Flow rate  $\dot{V} = 0.665 \text{ m}^3/\text{h}$

Selected:

- Divicon with mixer R  $\frac{3}{4}$
- Wilo PARA 25/6 circulation pump, variable differential pressure operating mode and set to maximum delivery head
- Pump rate 0.7 m<sup>3</sup>/h

Head of the relevant pump

curve: 48 kPa

Divicon pressure drop: 3.5 kPa

Residual head: 48 kPa – 3.5 kPa = 44.5 kPa.

### Note

For further components (pipe assembly, distributor, etc.) determine the pressure drop and deduct it from the residual head.

### Differential pressure-dependent heating circuit pumps

According to the [German] Buildings Energy Act (GEG), circulation pumps in central heating systems must be sized in accordance with current technical rules.

Ecodesign Directive 2009/125/EC requires high efficiency circulation pumps to be used throughout Europe from 1 January 2013, if these pumps are not installed in the heat generator.

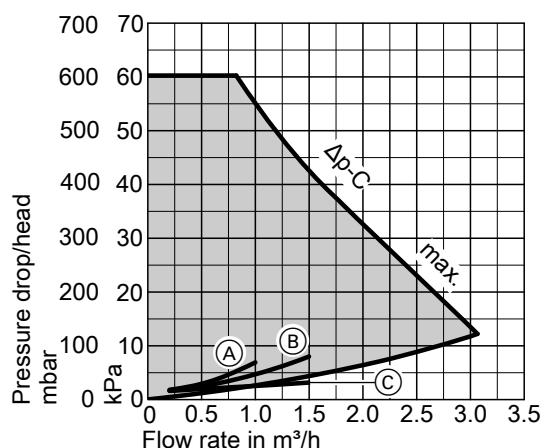
### Design information

The use of differential pressure-dependent heating circuit pumps requires heating circuits with variable pump rates, e.g. single-line and twin-line heating systems with thermostatic valves and under-floor heating systems with thermostatic valves or zone valves.

### Wilo Para 25/6

- Particularly power saving, high efficiency circulation pump
- Energy efficiency index EEI  $\leq 0.20$

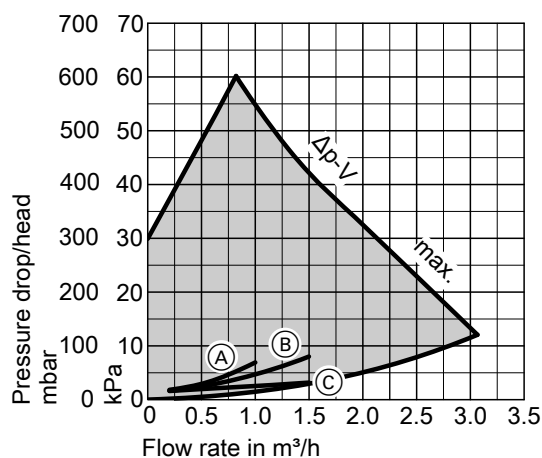
### Operating mode: Constant differential pressure



- (A) Divicon R  $\frac{3}{4}$  with mixer
- (B) Divicon R 1 with mixer
- (C) Divicon R  $\frac{3}{4}$  and R 1 without mixer

## Installation accessories (cont.)

### Operating mode: Variable differential pressure

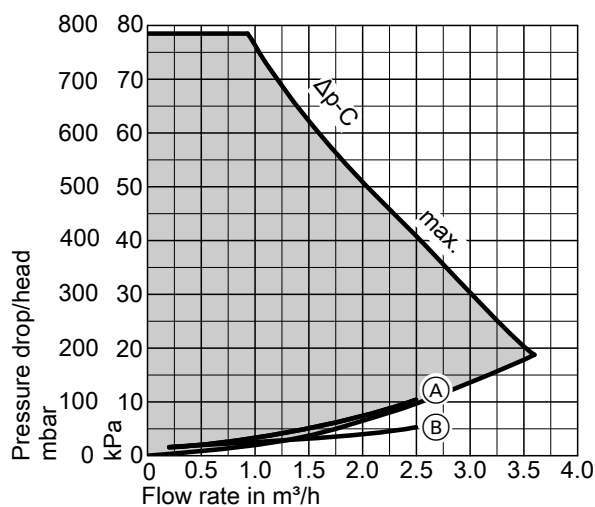


- (A) Divicon R  $\frac{3}{4}$  with mixer
- (B) Divicon R 1 with mixer
- (C) Divicon R  $\frac{3}{4}$  and R 1 without mixer

### Wilo Para 25/8

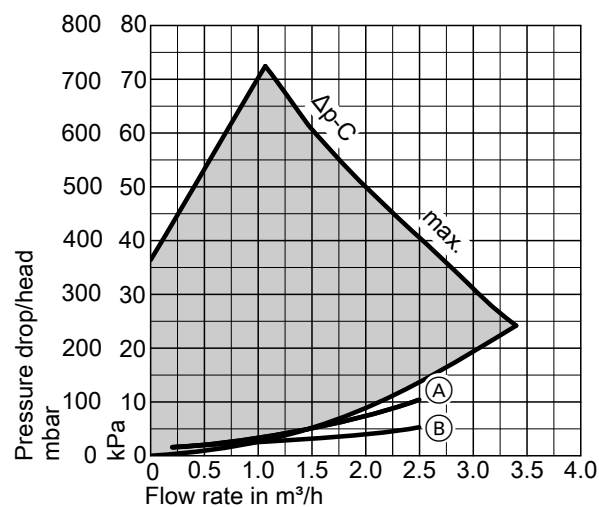
■ Energy efficiency index  $EEL \leq 0.20$

### Operating mode: Constant differential pressure



- (A) Divicon R  $1\frac{1}{4}$  with mixer
- (B) Divicon R  $1\frac{1}{4}$  without mixer

### Operating mode: Variable differential pressure



- (A) Divicon R  $1\frac{1}{4}$  with mixer
- (B) Divicon R  $1\frac{1}{4}$  without mixer

### Cable set with plugs 40 and 74

#### Part no. ZK04322

For connecting the mixer PCBs with 2 or 3 heating circuits with mixer

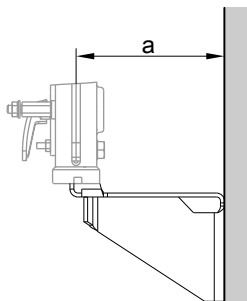
The connecting cable included in standard delivery of the extension kits with mixer is replaced with the cable set with plugs 40 and 74.

## Installation accessories (cont.)

### Wall mounting bracket for individual Divicon

**Part no. 7465894**

With screws and rawl plugs

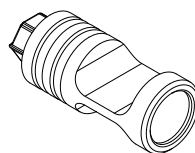


| Divicon |    | With mixer | Without mixer |
|---------|----|------------|---------------|
| a       | mm | 151        | 142           |

### Bypass valve

**Part no. 7464889**

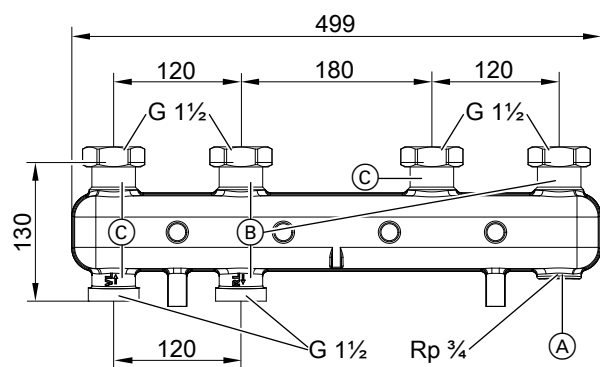
- For hydronic balancing of the heating circuit with mixer
- To be inserted into the Divicon.



### Manifold for 2 Divicons

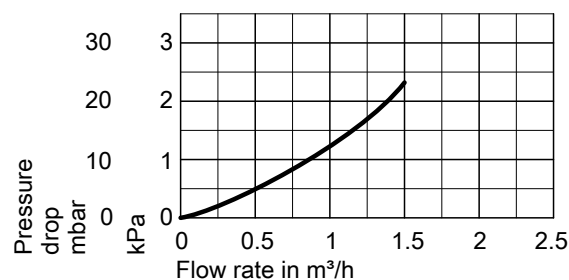
**Part no. ZK06214**

- For Divicon R  $\frac{3}{4}$  and R 1
- Incl. thermal insulation
- Wall mounted with wall mounting bracket to be ordered separately
- The connection between energy generator and manifold must be made on site.



- (A) Connection option for expansion vessel
- (B) Heating water/coolant return
- (C) Heating water/coolant flow

### Pressure drop



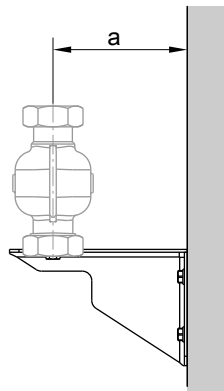
## Installation accessories (cont.)

### Wall mounting bracket for manifold

Part no. 7465439

With screws and rawl plugs

| Divicon | R ¾ and R 1 | R 1¼ |
|---------|-------------|------|
| a mm    | 142         | 167  |



## 6.5 Accessories, cooling

Recommendation:

- Contact humidistat 24 V $\overline{\text{=}}$ :  
For systems with 1 **directly** connected heating/cooling circuit
- Contact humidistat 230 V $\sim$ :  
For systems with external heating water/coolant buffer cylinder

### Contact humidistat 24 V

Part no. 7181418

- Dew point contact switch
- To prevent the formation of condensate when cooling via a heating/cooling circuit

### Contact humidistat 230 V

Part no. 7452646

- For capturing the dew point
- To prevent the formation of condensate

## 6.6 Accessories for DHW heating, general

### Safety assembly to DIN 1988

- Part no. 7180662  
10 bar (1 MPa)
- AT: Part no. 7179666  
6 bar (0.6 MPa)
- DN 20/R 1
- Max. heat input: 150 kW

Components:

- Shut-off valve
- Non-return valve and test connector
- Pressure gauge connector
- Diaphragm safety valve



### 6.7 Accessories for DHW heating with integral DHW cylinder

#### Impressed current anode

##### Part no. Z004247

- Maintenance-free
- Install in place of the magnesium anode supplied

### 6.8 DHW heating with Vitocell 100-V, type CVWC and Vitocell Modular 100-VE

Observe the information on sizing DHW cylinders: See page 134 onwards.

#### Vitocell 100-V, type CVWC

- DHW cylinder
- Steel with Ceraprotect enamel coating
- Includes impressed current anode
- Integrated carrying handles for easy transportation
- Cylinder capacity 200 l:
  - 1 immersion heater can be integrated
- Cylinder capacity 250 l or 300 l:
  - 2 immersion heaters can be integrated

#### Vitocell 100-E, type MSCA

- Buffer cylinder for heating/cooling circuits
- For storing heating water/cooling water in conjunction with heat pumps with up to 17 kW heating output
- With rigid PUR foam thermal insulation

- Cylinder capacity 50 l or 75 l
- For cylinder capacity 75 l: 1 immersion heater can be integrated

#### Vitocell Modular 100-VE

- Combination of Vitocell 100-V, type CVWC DHW cylinder and Vitocell 100-E, type MSCA buffer cylinder
- Space saving system: Buffer cylinder can be stacked on DHW cylinder
- For Vitocell 100-E, type MSCA: Cylinder connections can be rotated through 360° for positioning specific to application
- With Vitocell 100-E, type MSCA, cylinder capacity 50 l:
  - Can be used as low loss header
- With Vitocell 100-E, type MSCA, cylinder capacity 75 l:
  - Can be used in hybrid applications (with 2nd heat generator)
  - The 2 additional connections on the buffer cylinder enable a low loss header to be dispensed with for heat generators with a minimum water circulation volume.

| Part no. | Cylinder                  | Cylinder capacity         |                           |
|----------|---------------------------|---------------------------|---------------------------|
|          |                           | Vitocell 100-V, type CVWC | Vitocell 100-E, type MSCA |
| Z026454  | Vitocell 100-V, type CVWC | 200 l                     | —                         |
| Z026455  | Vitocell 100-V, type CVWC | 250 l                     | —                         |
| Z026456  | Vitocell 100-V, type CVWC | 300 l                     | —                         |
| Z026459  | Vitocell Modular 100-VE   | 200 l                     | 50 l                      |
| Z026460  | Vitocell Modular 100-VE   | 250 l                     | 50 l                      |
| Z026461  | Vitocell Modular 100-VE   | 300 l                     | 50 l                      |
| Z026462  | Vitocell Modular 100-VE   | 200 l                     | 75 l                      |
| Z026463  | Vitocell Modular 100-VE   | 250 l                     | 75 l                      |
| Z026464  | Vitocell Modular 100-VE   | 300 l                     | 75 l                      |

#### Assignment of immersion heater to cylinder

| Immersion heater | Vitocell 100-V, type CVWC                              | Vitocell 100-E, type MSCA |
|------------------|--------------------------------------------------------|---------------------------|
| Z012684          | 250 l and 300 l, installation in top section           | 75 l                      |
| Z021939          | 200 l, 250 l and 300 l, installation in bottom section | —                         |

#### Vitocell 100-V, type CVWC

##### Information on continuous output

When designing systems with the specified or calculated continuous output, allow for a matching circulation pump. The stated continuous output is only achieved if the heat generator's rated heating output is  $\geq$  the continuous output.

##### Sizing entry points

The actual dimensions of the DHW cylinder may vary slightly due to manufacturing tolerances.

## Installation accessories (cont.)

### Specification

| Type                                                                                                                                       |       |     | CVWC        |      |      |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-------------|------|------|
| Cylinder capacity<br>(AT: Actual water capacity)                                                                                           | I     |     | 200         | 250  | 300  |
| Heating water capacity                                                                                                                     | I     |     | 14.5        | 16.5 | 18   |
| Gross volume                                                                                                                               | I     |     | 209         | 252  | 299  |
| DIN registration no.                                                                                                                       |       |     | Applied for |      |      |
| Continuous output at the stated heating water flow temperature and heating water flow rate listed below                                    |       |     |             |      |      |
| – For DHW heating from 10 to 45 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 65 °C | kW  | 23.3        | 26   | 35.7 |
|                                                                                                                                            |       | l/h | 576         | 636  | 876  |
|                                                                                                                                            | 60 °C | kW  | 19.6        | 22   | 30.2 |
|                                                                                                                                            |       | l/h | 486         | 540  | 744  |
|                                                                                                                                            | 55 °C | kW  | 15.8        | 17.6 | 24.4 |
|                                                                                                                                            |       | l/h | 390         | 432  | 600  |
|                                                                                                                                            | 50 °C | kW  | 11.5        | 12.9 | 17.9 |
|                                                                                                                                            |       | l/h | 282         | 318  | 438  |
| – For DHW heating from 10 to 50 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 65 °C | kW  | 20.8        | 23.3 | 32   |
|                                                                                                                                            |       | l/h | 450         | 498  | 690  |
|                                                                                                                                            | 60 °C | kW  | 16.9        | 18.9 | 26.1 |
|                                                                                                                                            |       | l/h | 366         | 408  | 564  |
|                                                                                                                                            | 55 °C | kW  | 12.5        | 14   | 19.4 |
|                                                                                                                                            |       | l/h | 270         | 300  | 414  |
| – For DHW heating from 10 to 55 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 65 °C | kW  | 27.8        | 20.1 | 27.8 |
|                                                                                                                                            |       | l/h | 342         | 384  | 534  |
|                                                                                                                                            | 60 °C | kW  | 13.4        | 15   | 20.8 |
|                                                                                                                                            |       | l/h | 258         | 288  | 396  |
| – For DHW heating from 10 to 60 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 65 °C | kW  | 14.3        | 16   | 22.3 |
|                                                                                                                                            |       | l/h | 246         | 276  | 384  |
| Heating water flow rate for the stated continuous outputs                                                                                  |       |     | m³/h        | 2.7  | 2.7  |
| Draw-off rate                                                                                                                              |       |     | l/min       | 15   | 15   |
| Drawable water volume without reheating                                                                                                    |       |     |             |      |      |
| Water at t = 45 °C (constant)                                                                                                              |       |     |             |      |      |
| – Cylinder volume heated to 45 °C                                                                                                          |       |     | I           | 140  | 175  |
| – Cylinder volume heated to 50 °C                                                                                                          |       |     | I           | 203  | 254  |
| – Cylinder volume heated to 55 °C                                                                                                          |       |     | I           | 266  | 333  |
| – Cylinder volume heated to 60 °C                                                                                                          |       |     | I           | 330  | 412  |
| Drawable water volume without reheating                                                                                                    |       |     |             |      |      |
| Water at t = 55 °C (constant)                                                                                                              |       |     |             |      |      |
| – Cylinder volume heated to 55 °C                                                                                                          |       |     | I           | 140  | 175  |
| – Cylinder volume heated to 60 °C                                                                                                          |       |     | I           | 203  | 254  |
| Heat-up time when connected to a heat pump with the stated rated heating output (A7/W35) and for a heating water flow temperature of 60 °C |       |     |             |      |      |
| – For DHW heating from 10 to 45 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 6 kW  | min | 86          | 108  | 129  |
|                                                                                                                                            | 8 kW  | min | 65          | 81   | 97   |
|                                                                                                                                            | 10 kW | min | 52          | 65   | 78   |
|                                                                                                                                            | 13 kW | min | —           | 50   | 60   |
|                                                                                                                                            | 17 kW | min | —           | —    | 46   |
| – For DHW heating from 10 to 50 °C                                                                                                         |       |     |             |      |      |
|                                                                                                                                            | 6 kW  | min | 98          | 123  | 147  |
|                                                                                                                                            | 8 kW  | min | 74          | 92   | 111  |
|                                                                                                                                            | 10 kW | min | 59          | 74   | 89   |
|                                                                                                                                            | 13 kW | min | —           | 57   | 68   |
|                                                                                                                                            | 17 kW | min | —           | —    | 52   |

## Installation accessories (cont.)

| Type                                                                                                                                               |                |  | CVWC            |       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|-----------------|-------|-------|
| Cylinder capacity                                                                                                                                  | I              |  | 200             | 250   | 300   |
| <b>(AT: Actual water capacity)</b>                                                                                                                 |                |  |                 |       |       |
| <b>Heat-up time</b> when connected to a heat pump with the stated heating output (A7/W35) and for a heating water flow temperature of <b>70 °C</b> |                |  |                 |       |       |
| – For DHW heating from 10 to 45 °C                                                                                                                 |                |  |                 |       |       |
| 6 kW                                                                                                                                               | min            |  | 86              | 108   | 129   |
| 8 kW                                                                                                                                               | min            |  | 65              | 81    | 97    |
| 10 kW                                                                                                                                              | min            |  | 52              | 65    | 78    |
| 13 kW                                                                                                                                              | min            |  | —               | 50    | 60    |
| 17 kW                                                                                                                                              | min            |  | —               | —     | 46    |
| – For DHW heating from 10 to 50 °C                                                                                                                 |                |  |                 |       |       |
| 6 kW                                                                                                                                               | min            |  | 98              | 123   | 147   |
| 8 kW                                                                                                                                               | min            |  | 74              | 92    | 111   |
| 10 kW                                                                                                                                              | min            |  | 59              | 74    | 89    |
| 13 kW                                                                                                                                              | min            |  | —               | 57    | 68    |
| 17 kW                                                                                                                                              | min            |  | —               | —     | 52    |
| – For DHW heating from 10 to 55 °C                                                                                                                 |                |  |                 |       |       |
| 6 kW                                                                                                                                               | min            |  | 111             | 138   | 166   |
| 8 kW                                                                                                                                               | min            |  | 83              | 104   | 124   |
| 10 kW                                                                                                                                              | min            |  | 67              | 83    | 100   |
| 13 kW                                                                                                                                              | min            |  | —               | 64    | 77    |
| 17 kW                                                                                                                                              | min            |  | —               | —     | 59    |
| – For DHW heating from 10 to 60 °C                                                                                                                 |                |  |                 |       |       |
| 6 kW                                                                                                                                               | min            |  | 123             | 153   | 184   |
| 8 kW                                                                                                                                               | min            |  | 92              | 115   | 138   |
| 10 kW                                                                                                                                              | min            |  | 74              | 92    | 111   |
| 13 kW                                                                                                                                              | min            |  | —               | 71    | 85    |
| 17 kW                                                                                                                                              | min            |  | —               | —     | 65    |
| <b>Max. connectible heat pump output</b>                                                                                                           | kW             |  | 10              | 13    | 17    |
| <b>Standby heat loss</b>                                                                                                                           | kWh/24 h       |  | 1.22            | 1.31  | 1.54  |
| <b>Permissible temperatures</b>                                                                                                                    |                |  |                 |       |       |
| – Heating water side                                                                                                                               | °C             |  | 160             | 160   | 160   |
| – DHW side                                                                                                                                         | °C             |  | 95              | 95    | 95    |
| <b>Permissible operating pressure</b>                                                                                                              |                |  |                 |       |       |
| – Heating water side                                                                                                                               | bar            |  | 10              | 10    | 10    |
|                                                                                                                                                    | MPa            |  | 1.0             | 1.0   | 1.0   |
| – DHW side                                                                                                                                         | bar            |  | 10              | 10    | 10    |
|                                                                                                                                                    | MPa            |  | 1.0             | 1.0   | 1.0   |
| <b>Dimensions</b>                                                                                                                                  |                |  |                 |       |       |
| Length a (∅)                                                                                                                                       | mm             |  | 668             | 668   | 668   |
| Total width b                                                                                                                                      | mm             |  | 714             | 714   | 714   |
| Height c                                                                                                                                           | mm             |  | 1229            | 1430  | 1697  |
| Height when tilted                                                                                                                                 | mm             |  | 1365            | 1548  | 1790  |
| <b>Total weight</b> incl. thermal insulation                                                                                                       | kg             |  | 97              | 111   | 126   |
| <b>Heating surface</b>                                                                                                                             | m <sup>2</sup> |  | 2.0             | 2.25  | 2.5   |
| <b>Electrical conductivity</b> , DHW side                                                                                                          | µS/cm          |  | ≥ 100           | ≥ 100 | ≥ 100 |
| <b>Connections</b>                                                                                                                                 |                |  |                 |       |       |
| Heating water flow and return (male thread)                                                                                                        | R              |  | 1               | 1     | 1     |
| Cold water, DHW (male thread)                                                                                                                      | R              |  | 1               | 1     | 1     |
| DHW circulation (male thread)                                                                                                                      | R              |  | 1               | 1     | 1     |
| Immersion heater (female thread)                                                                                                                   | Rp             |  | 1½              | 1½    | 1½    |
| <b>Energy efficiency class</b>                                                                                                                     |                |  | B               | B     | B     |
| <b>Colour</b>                                                                                                                                      |                |  | Vitoppearlwhite |       |       |

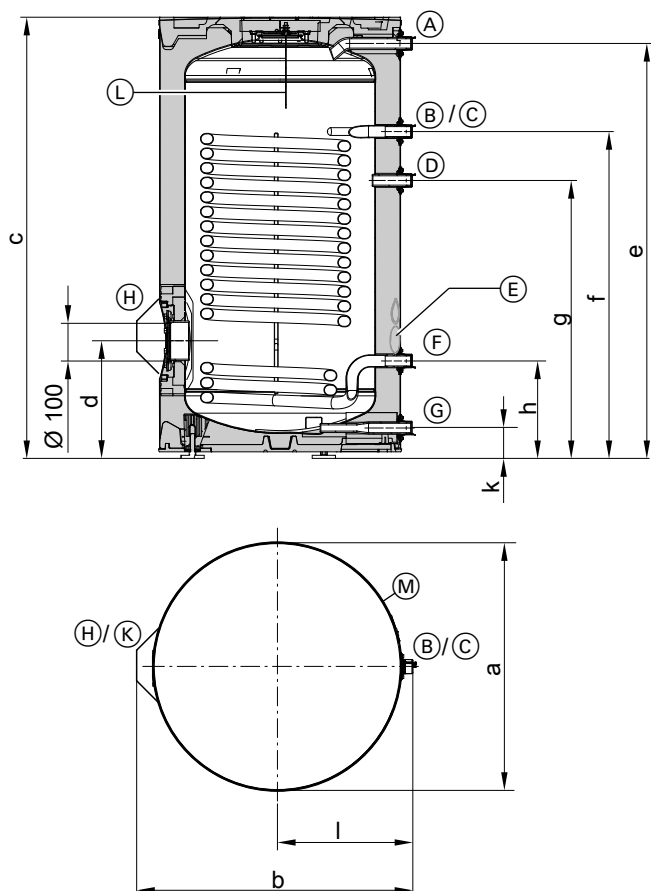
For further specifications, see separate datasheet for Vitocell 100-V, type CVWC.

### Specification – impressed current anode electronic unit

|                                |                 |         |
|--------------------------------|-----------------|---------|
| <b>Power supply</b>            | 1/N/230 V/50 Hz |         |
| <b>Recommended power cable</b> |                 |         |
| – Without power-OFF            | mm <sup>2</sup> | 2 x 1.5 |
| <b>Max. cable length</b>       | m               | 50      |
| <b>Max. fuse rating</b>        | A               | 16      |

## Installation accessories (cont.)

### Dimensions, cylinder capacity 200 l



- (A) DHW
- (B) Heating water flow, heat generator
- (C) Sensor well for cylinder temperature sensor or temperature controller (Ø 16 mm)
- (D) DHW circulation
- (E) Injection process plug: Do not connect anything here!

- (F) Heating water return, heat generator
- (G) Cold water/drain outlet
- (H) Inspection and cleaning aperture with flange cover, also for installation of an immersion heater
- (L) Impressed current anode
- (M) Position of electronic unit for impressed current anode

#### Dimensions

| Cylinder capacity |   | l  | 200  |
|-------------------|---|----|------|
| Length (Ø)        | a | mm | 668  |
| Width             | b | mm | 714  |
| Height            | c | mm | 1229 |
|                   | d | mm | 323  |
|                   | e | mm | 1140 |
|                   | f | mm | 763  |
|                   | g | mm | 898  |
|                   | h | mm | 268  |
|                   | k | mm | 83   |
|                   | l | mm | 361  |

## Installation accessories (cont.)

Dimensions, cylinder capacity 250 l/300 l

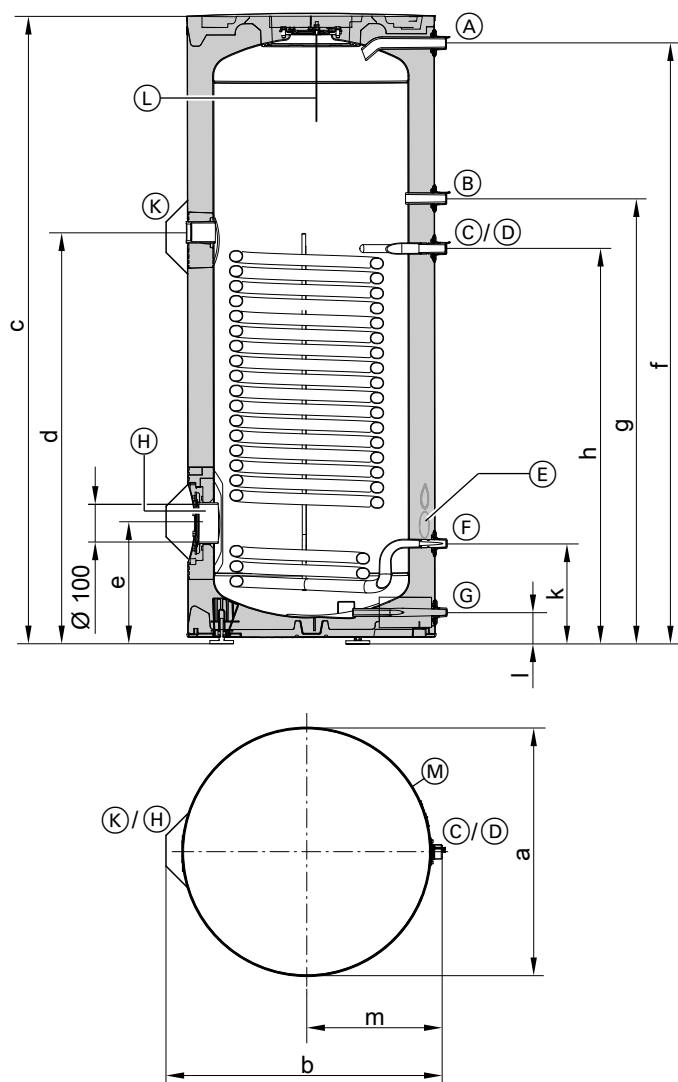


Illustration of type CVWC 300 l

- |                                                                                     |                                                                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| (A) DHW                                                                             | (F) Heating water return, heat generator                                                             |
| (B) DHW circulation                                                                 | (G) Cold water/drain outlet                                                                          |
| (C) Sensor well for cylinder temperature sensor or temperature controller (Ø 16 mm) | (H) Inspection and cleaning aperture with flange cover, also for installation of an immersion heater |
| (D) Heating water flow, heat generator                                              | (K) Female connection for immersion heater                                                           |
| (E) Injection process plug: Do not connect anything here!                           | (L) Impressed current anode                                                                          |
|                                                                                     | (M) Position of electronic unit for impressed current anode                                          |

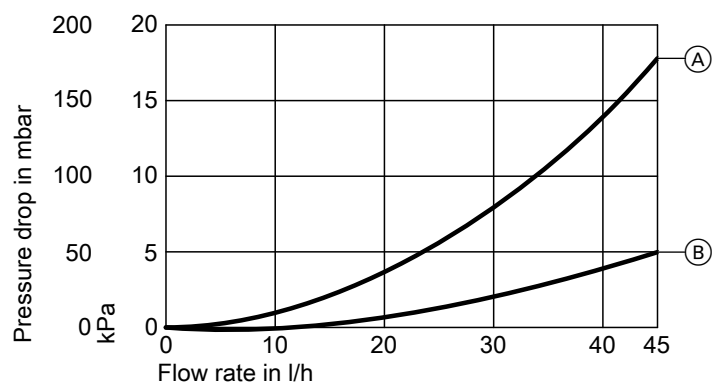
### Dimensions

| Cylinder capacity |   | I  | 250  | 300  |
|-------------------|---|----|------|------|
| Length (Ø)        | a | mm | 668  | 668  |
| Width             | b | mm | 714  | 714  |
| Height            | c | mm | 1430 | 1697 |
|                   | d | mm | 1022 | 1101 |
|                   | e | mm | 323  | 323  |
|                   | f | mm | 1345 | 1607 |
|                   | g | mm | 1085 | 1191 |
|                   | h | mm | 978  | 1057 |
|                   | k | mm | 268  | 267  |
|                   | l | mm | 83   | 83   |
|                   | m | mm | 361  | 361  |

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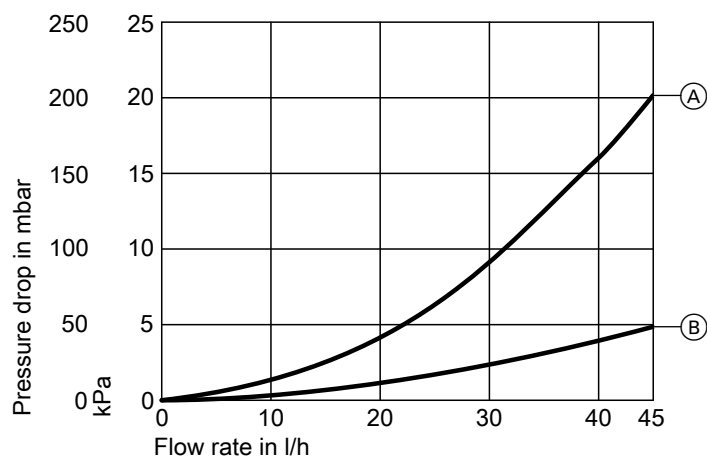
## Installation accessories (cont.)

### Pressure drop, cylinder capacity 200 l



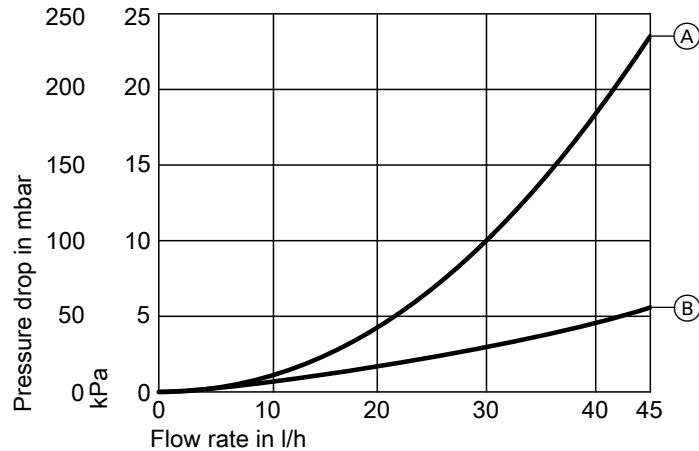
- (A) Heating water side
- (B) DHW side

### Pressure drop, cylinder capacity 250 l



- (A) Heating water side
- (B) DHW side

Pressure drop, cylinder capacity 300 l



- (A) Heating water side  
(B) DHW side

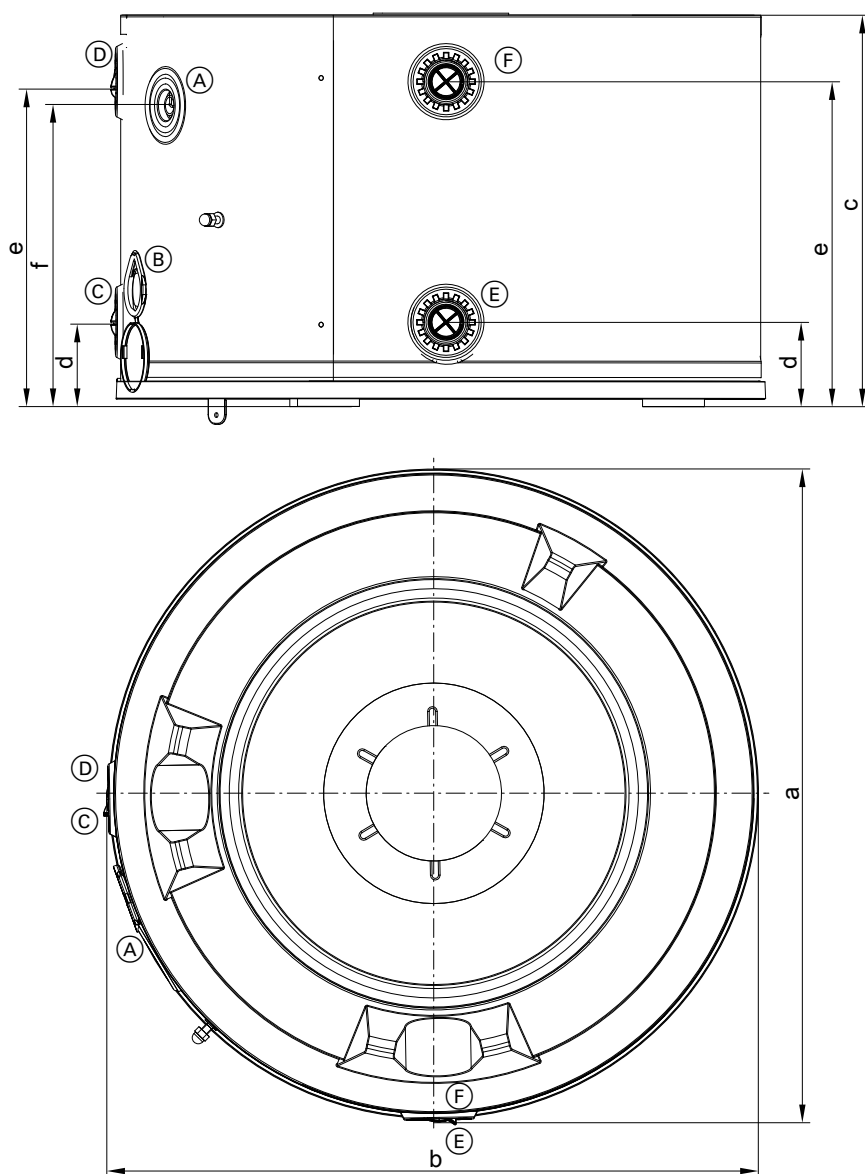
Vitocell 100-E, type MSCA

Specification

| Type                                                      |          | MSCA           |      |
|-----------------------------------------------------------|----------|----------------|------|
| Cylinder capacity<br>(AT: Actual water capacity)          | l        | 50             | 75   |
| Max. flow rate                                            | l/h      | 2700           | 2700 |
| <b>Permissible temperatures on the heating water side</b> |          |                |      |
| – Max. temperature, heating mode                          | °C       | 110            | 110  |
| – Min. temperature, cooling mode                          | °C       | 7              | 7    |
| <b>Permissible operating pressure</b>                     |          |                |      |
|                                                           | bar      | 3              | 3    |
|                                                           | MPa      | 0.3            | 0.3  |
| <b>Dimensions</b>                                         |          |                |      |
| Length a (∅)                                              | mm       | 668            | 668  |
| Total width b                                             | mm       | 675            | 675  |
| Height c                                                  | mm       | 415            | 533  |
| Total weight                                              | kg       | 40             | 50   |
| <b>Connections (female thread)</b>                        |          |                |      |
| Heating water flow and return, heat generator 2           | R        | 1              | 1    |
| Heating water flow and return, heat generator             | R        | 1              | 1    |
| Immersion heater                                          | Rp       | —              | 1½   |
| Standby heat loss                                         | kWh/24 h | 0.67           | 0.83 |
| Energy efficiency class                                   |          | B              | B    |
| Colour                                                    |          | Vitopearlwhite |      |

## Installation accessories (cont.)

### Dimensions, 50 l capacity



- (A) Sensor well Ø 16 mm for immersion temperature sensor
- (B) Injection process plug: Do not connect anything here!
- (C) Heating water return, heating circuits

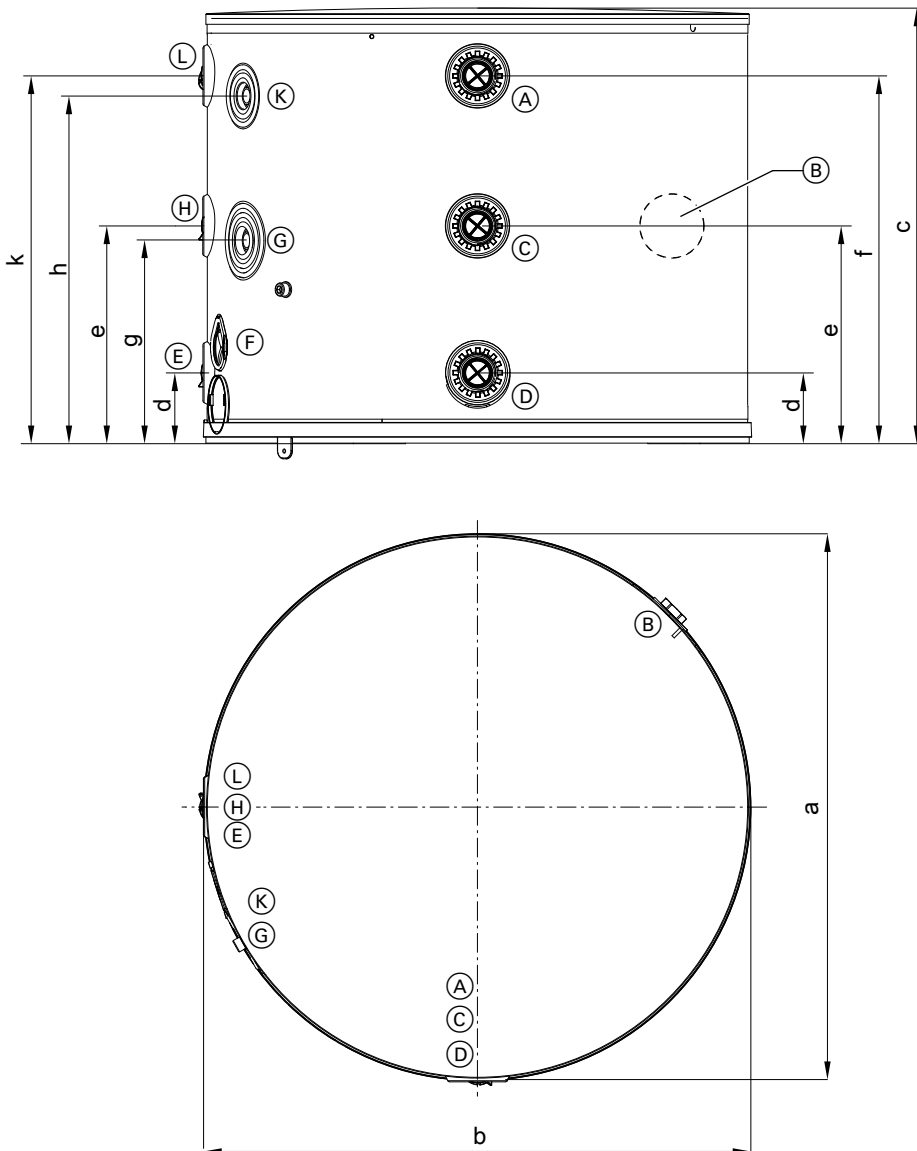
- (D) Heating water flow, heating circuits, air vent valve
- (E) Heating water return, heat generator, drain
- (F) Heating water flow, heat generator

#### Dimensions

| Cylinder capacity |   | I  | 50  |
|-------------------|---|----|-----|
| Length (Ø)        | a | mm | 668 |
| Width             | b | mm | 675 |
| Height            | c | mm | 415 |
|                   | d | mm | 87  |
|                   | e | mm | 366 |
|                   | f | mm | 311 |

# Installation accessories (cont.)

## Dimensions, 75 l capacity



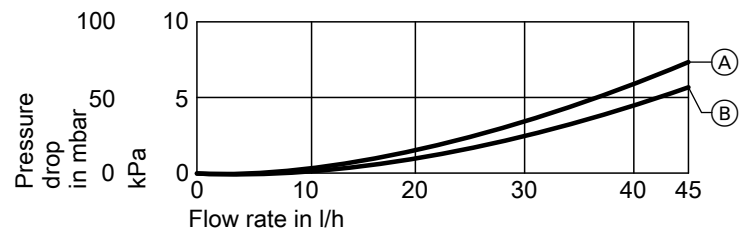
- (A) Heating water flow, heat generator 2
- (B) Immersion heater (EHE)
- (C) Heating water flow, heat generator
- (D) Heating water return, heat generator, drain
- (E) Heating water return, heating circuits

- (F) Injection process plug: Do not connect anything here!
- (G) Sensor well Ø 16 mm for immersion temperature sensor, bottom
- (H) Heating water return, heat generator 2
- (K) Sensor well Ø 16 mm for immersion temperature sensor, top
- (L) Heating water flow, heating circuits, air vent valve

### Dimensions

| Cylinder capacity |   | I  | 75  |
|-------------------|---|----|-----|
| Length (Ø)        | a | mm | 668 |
| Width             | b | mm | 675 |
| Height            | c | mm | 533 |
|                   | d | mm | 87  |
|                   | e | mm | 267 |
|                   | f | mm | 450 |
|                   | g | mm | 251 |
|                   | h | mm | 429 |
|                   | k | mm | 450 |

Pressure drop on the heating water side



- (A) Cylinder capacity 75 l
- (B) Cylinder capacity 50 l

Vitocell Modular 100-VE

Vitocell Modular 100-VE comprises a Vitocell 100-V DHW cylinder, type CVWC and a Vitocell 100-E heating water buffer cylinder, type MSCA.

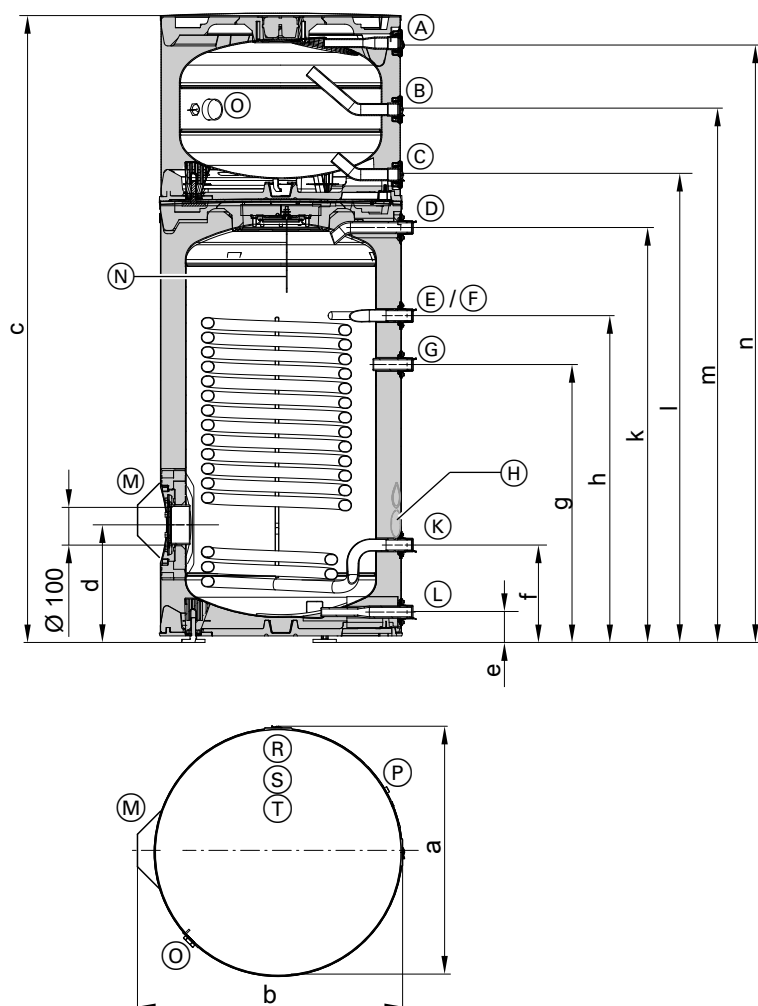
Possible combinations

| Vitocell 100-E | Vitocell 100-V |       |       |
|----------------|----------------|-------|-------|
|                | 200 l          | 250 l | 300 l |
| 50 l           | X              | X     | X     |
| 75 l           | X              | X     | X     |

- Note**
- If installing the Vitocell 100-E, type MSCA on top of the Vitocell 100-V, type CVWC, you will need an additional 25 mm of room height.
  - The connections for the Vitocell 100-E, type MSCA heating water buffer cylinder can be rotated (360°) to position them as required.

## Installation accessories (cont.)

Cylinder capacity, type CVWC 200 l and type MSCA 50 l/75 l



- (A) Heating water flow, heating circuits, air vent valve
- (B) Heating water return, heat generator 2
- (C) Heating water return, heating circuits
- (D) DHW
- (E) Heating water flow, heat generator
- (F) Sensor well for cylinder temperature sensor or temperature controller (Ø 16 mm)
- (G) DHW circulation
- (H) Injection process plug: Do not connect anything here!
- (K) Heating water return, heat generator

- (L) Cold water/drain outlet
- (M) Inspection and cleaning aperture with flange cover, also for installation of an immersion heater
- (N) Impressed current anode
- (O) Only for 75 l cylinder capacity:  
Immersion heater (EHE)
- (P) Position of electronic unit for impressed current anode
- (R) Heating water flow, heat generator 2
- (S) Heating water flow, heat generator
- (T) Heating water return, heat generator, drain

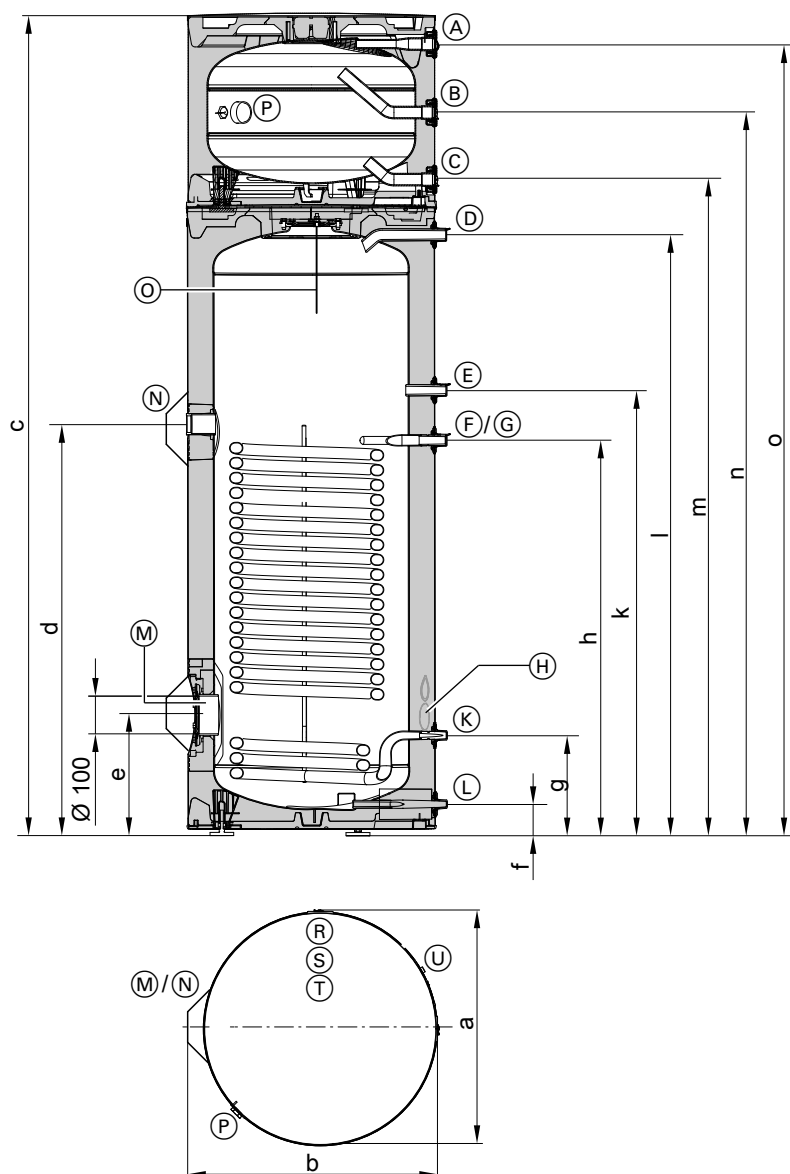
### Dimensions

| Vitocell 100-V, type CVWC cylinder capacity |   | I  | 200  | 200  |
|---------------------------------------------|---|----|------|------|
| Vitocell 100-E, type MSCA cylinder capacity |   | I  | 50   | 75   |
| Length (Ø)                                  | a | mm | 668  | 668  |
| Width                                       | b | mm | 714  | 714  |
| Height                                      | c | mm | 1610 | 1728 |
|                                             | d | mm | 323  | 323  |
|                                             | e | mm | 763  | 763  |
|                                             | f | mm | 898  | 898  |
|                                             | g | mm | 268  | 268  |
|                                             | h | mm | 83   | 83   |
|                                             | k | mm | 361  | 361  |
|                                             | l | mm | 1278 | 1277 |
|                                             | m | mm | —    | 1457 |
|                                             | n | mm | 1526 | 1641 |

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## Installation accessories (cont.)

Cylinder capacity, type CVWC 250 l/300 l and type MSCA 50 l/75 l



Representation of type CVWC 300 l and type MSCA 75 l

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Ⓐ Heating water flow, heating circuits, air vent valve</li> <li>Ⓑ Heating water return, heat generator 2</li> <li>Ⓒ Heating water return, heating circuits</li> <li>Ⓓ DHW</li> <li>Ⓔ DHW circulation</li> <li>Ⓕ Sensor well for cylinder temperature sensor or temperature controller (Ø 16 mm)</li> <li>Ⓖ Heating water flow, heat generator</li> <li>Ⓗ Injection process plug: Do not connect anything here!</li> <li>Ⓚ Heating water return, heat generator</li> </ul> | <ul style="list-style-type: none"> <li>Ⓛ Cold water/drain outlet</li> <li>Ⓜ Inspection and cleaning aperture with flange cover, also for installation of an immersion heater</li> <li>Ⓝ Female connection for immersion heater</li> <li>Ⓞ Impressed current anode</li> <li>Ⓟ Only for 75 l cylinder capacity:<br/>Immersion heater (EHE)</li> <li>Ⓡ Heating water flow, heat generator 2</li> <li>Ⓢ Heating water flow, heat generator</li> <li>Ⓣ Heating water return, heat generator, drain</li> <li>Ⓤ Position of electronic unit for impressed current anode</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Installation accessories (cont.)

### Dimensions

| Vitocell 100-V, type CVWC cylinder capacity |   | I  | 250  |      | 300  |      |
|---------------------------------------------|---|----|------|------|------|------|
| Vitocell 100-E, type MSCA cylinder capacity |   | I  | 50   | 75   | 50   | 75   |
| Length (Ø)                                  | a | mm | 668  | 668  | 668  | 668  |
| Width                                       | b | mm | 714  | 714  | 714  | 714  |
| Height                                      | c | mm | 1811 | 1929 | 2078 | 2196 |
|                                             | d | mm | 1022 | 1022 | 1101 | 1101 |
|                                             | e | mm | 323  | 323  | 323  | 323  |
|                                             | f | mm | 83   | 83   | 83   | 83   |
|                                             | g | mm | 268  | 268  | 267  | 267  |
|                                             | h | mm | 978  | 978  | 1057 | 1057 |
|                                             | k | mm | 1085 | 1085 | 1191 | 1191 |
|                                             | l | mm | 1345 | 1345 | 1607 | 1607 |
|                                             | m | mm | 1488 | 1488 | 1754 | 1754 |
|                                             | n | mm | —    | 1667 | —    | 1934 |
|                                             | o | mm | 1736 | 1851 | 2002 | 2118 |

### Automatic air vent valve

#### Part no. 7984135

- For Vitocell 100-E, type MSCA
- For installation on one of the cylinder connections
- With 1 in. tee

### Immersion heater EHE

#### Part no. Z012684

#### Components:

- High limit safety cut-out
- Temperature controller

For installation in the connector in the **upper** section of the DHW cylinder

- Use the immersion heater only with soft to medium hard water up to 14 °dH (hardness level 2, up to 2.5 mol/m<sup>3</sup>).
- Selectable heating output: 2, 4 or 6 kW

#### Specification – immersion heater EHE

|                                               |    |                       |      |                     |
|-----------------------------------------------|----|-----------------------|------|---------------------|
| Max. output range                             | kW | 6                     |      |                     |
| Rated consumption standard mode/quick heat-up | kW | 2                     | 4    | 6                   |
| Rated voltage                                 |    | 1/N/PE<br>230 V/50 Hz |      | 3/PE<br>400 V/50 Hz |
| Rated current                                 | A  | 8.7                   | 17.4 | 8.7                 |
| Weight                                        | kg | 2                     | 2    | 2                   |
| IP rating                                     |    | IP 45                 |      |                     |

#### Specification – immersion heater EHE in conjunction with Vitocell 100-E and Vitocell 100-V

|                                                                 |    | Vitocell 100-E<br>Type MSCA | Vitocell 100-V |           |      |      |
|-----------------------------------------------------------------|----|-----------------------------|----------------|-----------|------|------|
|                                                                 |    |                             | Type CVWC      | Type CVWB |      |      |
| Cylinder capacity                                               | I  | 75                          | 250            | 300       | 390  | 500  |
| Content that can be heated by the immersion heater              | l  | 38                          | 62             | 101       | 129  | 133  |
| Heat-up time from 10 to 60 °C with immersion heater EHE:        |    |                             |                |           |      |      |
| 2 kW                                                            | h  | 1.10                        | 1.83           | 3.00      | 3.74 | 3.86 |
| 4 kW                                                            | h  | 0.55                        | 0.91           | 1.75      | 1.87 | 1.93 |
| 6 kW                                                            | h  | 0.37                        | 0.61           | 1.00      | 1.25 | 1.29 |
| Minimum wall clearance for installation of the immersion heater | mm | 650                         | 500            | 500       | 500  | 500  |

### Immersion heater EHE

#### Part no. Z021939

- For installation into the **lower** flanged aperture
- Use the immersion heater only with soft to medium hard water with a calcium hardness up to 14 °dH (hardness level 2, up to 2.5 mol/m<sup>3</sup>).
- Selectable heating output: 2, 4 or 6 kW

#### Components:

- High limit temperature cut-out device
- Temperature controller
- Flange
- Colour of flange cover: Vitopearlwhite
- Gasket

## Installation accessories (cont.)

### Specification – immersion heater EHE

|                                               |    |                       |      |                     |
|-----------------------------------------------|----|-----------------------|------|---------------------|
| Output range                                  | kW | Max. 6                |      |                     |
| Rated consumption standard mode/quick heat-up | kW | 2                     | 4    | 6                   |
| Rated voltage                                 |    | 1/N/PE<br>230 V/50 Hz |      | 3/PE<br>400 V/50 Hz |
| Rated current                                 | A  | 8.7                   | 17.4 | 8.7                 |
| Weight                                        | kg | 2                     | 2    | 2                   |
| IP rating                                     |    | IP 45                 |      |                     |

### Specification – immersion heater EHE in conjunction with Vitocell 100-V

|                                                                 |    |      |      |      |
|-----------------------------------------------------------------|----|------|------|------|
| Vitocell 100-V cylinder capacity                                | l  | 200  | 250  | 300  |
| Content that can be heated by the immersion heater              | l  | 140  | 185  | 241  |
| Heat-up time from 10 to 60 °C with immersion heater EHE:        |    |      |      |      |
| – 2 kW                                                          | h  | 4.08 | 5.38 | 7.00 |
| – 4 kW                                                          | h  | 2.05 | 2.70 | 3.51 |
| – 6 kW                                                          | h  | 1.37 | 1.80 | 2.35 |
| Minimum wall clearance for installation of the immersion heater | mm | 500  | 500  | 500  |

## 6.9 DHW heating with Vitocell 100-V, type CVWB

Observe the information on sizing DHW cylinders: See page 134 onwards.

- DHW cylinder
- Steel with Ceraprotect enamel coating
- 2 immersion heaters can be integrated

| Part no. | Cylinder type             | Thermal insulation | Cylinder capacity |
|----------|---------------------------|--------------------|-------------------|
| Z026497  | Vitocell 100-V, type CVWB | Highly efficient   | 390 l             |
| Z026498  | Vitocell 100-V, type CVWB | Highly efficient   | 500 l             |

### Specification

#### Information on continuous output

When designing systems with the specified or calculated continuous output, allow for a matching circulation pump. The stated continuous output is achieved only if the heat generator's rated heating output is  $\geq$  the continuous output.

### Sizing entry points

The actual dimensions of the DHW cylinder may vary slightly due to manufacturing tolerances.

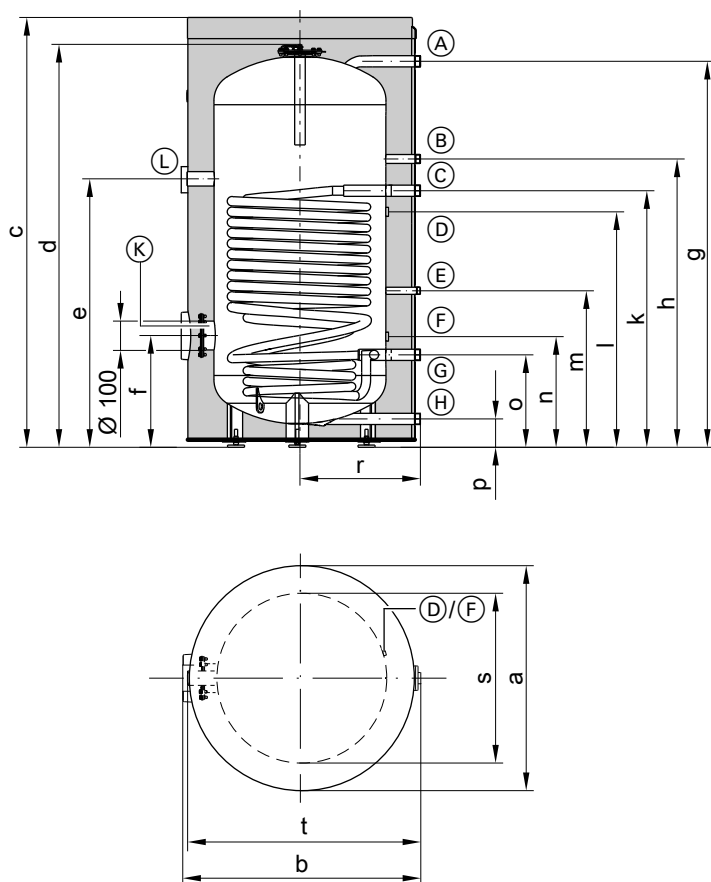
### Specification

| Type                                                                                                    | CVWB        |                  |             |                  |
|---------------------------------------------------------------------------------------------------------|-------------|------------------|-------------|------------------|
| Cylinder capacity<br>(AT: Actual water capacity)                                                        | 390         |                  | 500         |                  |
| Thermal insulation                                                                                      | Standard    | Highly efficient | Standard    | Highly efficient |
| Heating water capacity                                                                                  | 27          | 27               | 40          | 40               |
| Gross volume                                                                                            | 417         | 417              | 540         | 540              |
| DIN registration no.                                                                                    | Applied for |                  | Applied for |                  |
| Continuous output at the stated heating water flow temperature and heating water flow rate listed below |             |                  |             |                  |
| – For DHW heating from 10 to 45 °C                                                                      |             |                  |             |                  |
| 90 °C                                                                                                   | kW          | 98               | 98          | 118              |
|                                                                                                         | l/h         | 2422             | 2422        | 2896             |
| 80 °C                                                                                                   | kW          | 82               | 82          | 99               |
|                                                                                                         | l/h         | 2027             | 2027        | 2428             |
| 70 °C                                                                                                   | kW          | 66               | 66          | 79               |
|                                                                                                         | l/h         | 1623             | 1623        | 1950             |
| 60 °C                                                                                                   | kW          | 49               | 49          | 59               |
|                                                                                                         | l/h         | 1202             | 1202        | 1451             |
| 50 °C                                                                                                   | kW          | 29               | 29          | 36               |
|                                                                                                         | l/h         | 723              | 723         | 881              |
| – For DHW heating from 10 to 60 °C                                                                      |             |                  |             |                  |
| 90 °C                                                                                                   | kW          | 85               | 85          | 102              |
|                                                                                                         | l/h         | 1458             | 1458        | 1754             |
| 80 °C                                                                                                   | kW          | 67               | 67          | 81               |
|                                                                                                         | l/h         | 1159             | 1159        | 1399             |
| 70 °C                                                                                                   | kW          | 48               | 48          | 59               |
|                                                                                                         | l/h         | 830              | 830         | 1008             |

## Installation accessories (cont.)

| Type                                                                                                                                    |                   | CVWB           |                  |          |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|------------------|----------|------------------|
| Cylinder capacity<br>(AT: Actual water capacity)                                                                                        |                   | 390            |                  | 500      |                  |
| Thermal insulation                                                                                                                      |                   | Standard       | Highly efficient | Standard | Highly efficient |
| Heating water flow rate for the stated continuous outputs                                                                               | m <sup>3</sup> /h | 3.0            | 3.0              | 3.0      | 3.0              |
| Draw-off rate                                                                                                                           | l/min             | 15             | 15               | 15       | 15               |
| Drawable water volume without reheating                                                                                                 |                   |                |                  |          |                  |
| – Cylinder volume heated to 45 °C                                                                                                       | l                 | 285            | 285              | 350      | 350              |
| – Cylinder volume heated to 55 °C                                                                                                       | l                 | 285            | 285              | 350      | 350              |
| Heat-up time if connected to a heat pump with 16 kW rated heating output and a heating water flow temperature of 55 or 65 °C            |                   |                |                  |          |                  |
| – For DHW heating from 10 to 45 °C                                                                                                      | min               | 60             | 60               | 66       | 66               |
| – For DHW heating from 10 to 55 °C                                                                                                      | min               | 76             | 76               | 85       | 85               |
| Max. connectible heat pump output at 65 °C heating water flow and 55 °C DHW temperature and the heating water flow rate specified above | kW                | 15             | 15               | 17       | 17               |
| Max. aperture area that can be connected to the solar heat exchanger set (accessories)                                                  |                   |                |                  |          |                  |
| – Vitosol-T                                                                                                                             | m <sup>2</sup>    | 6              | 6                | 6        | 6                |
| – Vitosol-F                                                                                                                             | m <sup>2</sup>    | 11.5           | 11.5             | 11.5     | 11.5             |
| Performance factor N <sub>L</sub> in conjunction with a heat pump                                                                       |                   |                |                  |          |                  |
| Cylinder storage temperature                                                                                                            |                   |                |                  |          |                  |
| 45 °C                                                                                                                                   |                   | 2.5            | 2.5              | 3.5      | 3.5              |
| 50 °C                                                                                                                                   |                   | 2.8            | 2.8              | 3.9      | 3.9              |
| Standby heat loss                                                                                                                       | kWh/24 h          | 2.00           | 1.65             | 2.43     | 2.00             |
| Permissible temperatures                                                                                                                |                   |                |                  |          |                  |
| – Heating water side                                                                                                                    | °C                | 110            | 110              | 110      | 110              |
| – DHW side                                                                                                                              | °C                | 95             | 95               | 95       | 95               |
| – Solar side                                                                                                                            | °C                | 140            | 140              | 140      | 140              |
| Permissible operating pressure                                                                                                          |                   |                |                  |          |                  |
| – Heating water side                                                                                                                    | bar               | 10             | 10               | 10       | 10               |
|                                                                                                                                         | MPa               | 1.0            | 1.0              | 1.0      | 1.0              |
| – DHW side                                                                                                                              | bar               | 10             | 10               | 10       | 10               |
|                                                                                                                                         | MPa               | 1.0            | 1.0              | 1.0      | 1.0              |
| – Solar side                                                                                                                            | bar               | 10             | 10               | 10       | 10               |
|                                                                                                                                         | MPa               | 1.0            | 1.0              | 1.0      | 1.0              |
| Dimensions                                                                                                                              |                   |                |                  |          |                  |
| Length a (∅)                                                                                                                            |                   |                |                  |          |                  |
| – Incl. thermal insulation                                                                                                              | mm                | 859            | 859              | 859      | 859              |
| – Excl. thermal insulation                                                                                                              | mm                | 650            | 650              | 650      | 650              |
| Total width b                                                                                                                           |                   |                |                  |          |                  |
| – Incl. thermal insulation                                                                                                              | mm                | 923            | 923              | 923      | 923              |
| – Excl. thermal insulation                                                                                                              | mm                | 881            | 881              | 881      | 881              |
| Height c                                                                                                                                |                   |                |                  |          |                  |
| – Incl. thermal insulation                                                                                                              | mm                | 1624           | 1659             | 1948     | 1983             |
| – Excl. thermal insulation                                                                                                              | mm                | 1522           | 1522             | 1844     | 1844             |
| Height when tilted                                                                                                                      |                   |                |                  |          |                  |
| – Incl. thermal insulation                                                                                                              | mm                | —              | —                | —        | —                |
| – Excl. thermal insulation                                                                                                              | mm                | 1550           | 1550             | 1860     | 1860             |
| Total weight incl. thermal insulation                                                                                                   | kg                | 190            | 187              | 200      | 215              |
| Heating surface                                                                                                                         | m <sup>2</sup>    | 4.0            | 4.0              | 5.5      | 5.5              |
| Connections                                                                                                                             |                   |                |                  |          |                  |
| Heating water flow and return (male thread)                                                                                             | R                 | 1¼             | 1¼               | 1¼       | 1¼               |
| Cold water, DHW (male thread)                                                                                                           | R                 | 1¼             | 1¼               | 1¼       | 1¼               |
| Solar heat exchanger set (male thread)                                                                                                  | R                 | ¾              | ¾                | ¾        | ¾                |
| DHW circulation (male thread)                                                                                                           | R                 | ¾              | ¾                | ¾        | ¾                |
| Immersion heater (female thread)                                                                                                        | Rp                | 1½             | 1½               | 1½       | 1½               |
| Energy efficiency class                                                                                                                 |                   | B              | B                | B        | B                |
| Colour                                                                                                                                  |                   | Vitopearlwhite |                  |          |                  |

## Dimensions



- Ⓐ DHW
- Ⓑ DHW circulation
- Ⓒ Heating water flow, heat generator
- Ⓓ Upper clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors
- Ⓔ DHW from solar heat exchanger set
- Ⓕ Lower clamping device for securing immersion temperature sensors to the cylinder jacket, with fixing points for 3 immersion temperature sensors
- Ⓖ Heating water return, heat generator
- Ⓗ Cold water/drain outlet
- Ⓚ Inspection and cleaning aperture with flange cover, also for installation of an immersion heater
- Ⓛ Connector for immersion heater

## Dimensions

| Cylinder capacity  |   | I  | 390      |                  | 500      |                  |
|--------------------|---|----|----------|------------------|----------|------------------|
| Thermal insulation |   |    | Standard | Highly efficient | Standard | Highly efficient |
| Length (Ø)         | a | mm |          | 859              |          | 859              |
| Width              | b | mm |          | 923              |          | 923              |
| Height             | c | mm | 1624     | 1659             | 1948     | 1983             |
|                    | d | mm |          | 1522             |          | 1844             |
|                    | e | mm |          | 1000             |          | 1307             |
|                    | f | mm |          | 403              |          | 442              |
|                    | g | mm |          | 1439             |          | 1765             |
|                    | h | mm |          | 1070             |          | 1370             |
|                    | k | mm |          | 950              |          | 1250             |
|                    | l | mm |          | 816              |          | 1116             |
|                    | m | mm |          | 572              |          | 572              |
|                    | n | mm |          | 366              |          | 396              |
|                    | o | mm |          | 330              |          | 330              |
|                    | p | mm |          | 88               |          | 88               |
|                    | r | mm |          | 455              |          | 455              |
|                    | s | mm |          | 650              |          | 650              |
|                    | t | mm |          | 881              |          | 881              |

## Installation accessories (cont.)

### Performance factor $N_L$ to DIN 4708

| Cylinder capacity                          | I | 390  | 500  |
|--------------------------------------------|---|------|------|
| <b>Performance factor <math>N_L</math></b> |   |      |      |
| Heating water flow temperature             |   |      |      |
| 90 °C                                      |   | 12.6 | 16.5 |
| 80 °C                                      |   | 11.3 | 14.9 |
| 70 °C                                      |   | 10.0 | 13.3 |

- The performance factor  $N_L$  depends on the cylinder storage temperature  $T_{cyl}$
- Cylinder storage temperature  $T_{cyl}$  = cold water inlet temperature + 50 K <sup>+5 K/-0 K</sup>

Standard values for performance factor  $N_L$

- $T_{cyl} = 60\text{ °C} \rightarrow 1.0 \times N_L$
- $T_{cyl} = 55\text{ °C} \rightarrow 0.75 \times N_L$
- $T_{cyl} = 50\text{ °C} \rightarrow 0.55 \times N_L$
- $T_{cyl} = 45\text{ °C} \rightarrow 0.3 \times N_L$

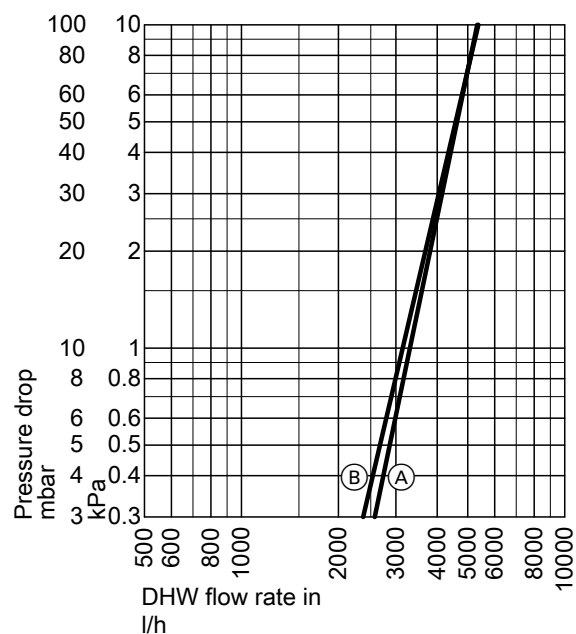
### Peak output over 10 min, relative to performance factor $N_L$

| Cylinder capacity                                   | I        | 390 | 500 |
|-----------------------------------------------------|----------|-----|-----|
| <b>Peak output for DHW heating from 10 to 45 °C</b> |          |     |     |
| Heating water flow temperature                      |          |     |     |
| 90 °C                                               | l/10 min | 540 | 690 |
| 80 °C                                               | l/10 min | 521 | 667 |
| 70 °C                                               | l/10 min | 455 | 596 |

### Max. draw-off rate over 10 min., relative to performance factor $N_L$

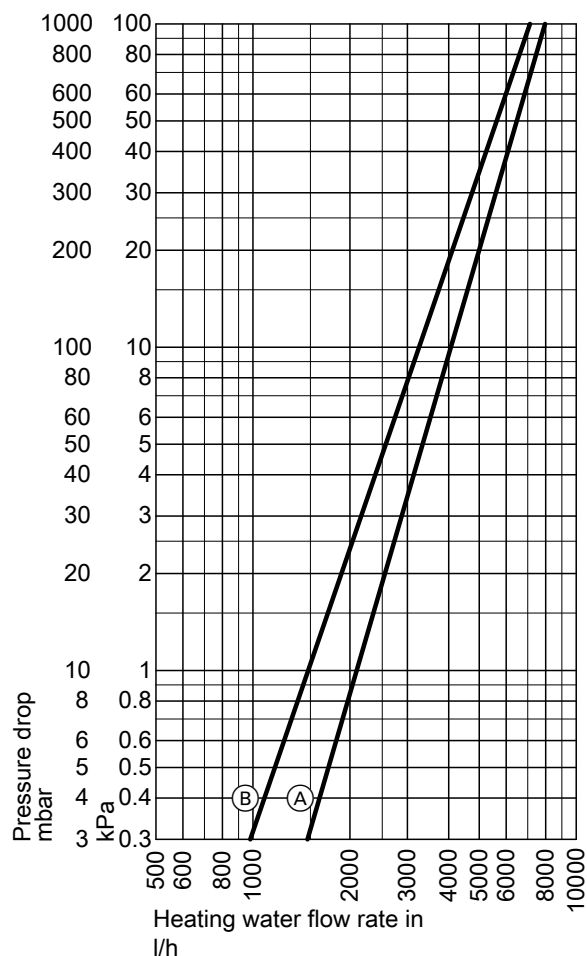
| Cylinder capacity                                                          | I     | 390 | 500 |
|----------------------------------------------------------------------------|-------|-----|-----|
| <b>Max. draw-off rate for DHW heating from 10 to 45 °C, with reheating</b> |       |     |     |
| Heating water flow temperature                                             |       |     |     |
| 90 °C                                                                      | l/min | 54  | 69  |
| 80 °C                                                                      | l/min | 52  | 66  |
| 70 °C                                                                      | l/min | 46  | 59  |

### Pressure drop on the DHW side



- (A) Cylinder capacity 390 l
- (B) Cylinder capacity 500 l

## Pressure drop on the heating water side



- (A) Cylinder capacity 390 l  
(B) Cylinder capacity 500 l

## Immersion heater EHE

Part no. Z012684

For installation in the connector in the **upper** section of the DHW cylinder

- Use the immersion heater only with soft to medium hard water up to 14 °dH (hardness level 2, up to 2.5 mol/m<sup>3</sup>).
- Selectable heating output: 2, 4 or 6 kW

Components:

- High limit safety cut-out
- Temperature controller

### Specification – immersion heater EHE

|                                                      |    |                       |      |                     |
|------------------------------------------------------|----|-----------------------|------|---------------------|
| <b>Max. output range</b>                             | kW | 6                     |      |                     |
| <b>Rated consumption</b> standard mode/quick heat-up | kW | 2                     | 4    | 6                   |
| <b>Rated voltage</b>                                 |    | 1/N/PE<br>230 V/50 Hz |      | 3/PE<br>400 V/50 Hz |
| <b>Rated current</b>                                 | A  | 8.7                   | 17.4 | 8.7                 |
| <b>Weight</b>                                        | kg | 2                     | 2    | 2                   |
| <b>IP rating</b>                                     |    | IP 45                 |      |                     |

## Installation accessories (cont.)

### Specification – immersion heater EHE in conjunction with Vitocell 100-E and Vitocell 100-V

|                                                                 |    | Vitocell 100-E<br>Type MSCA | Vitocell 100-V |           |      |      |
|-----------------------------------------------------------------|----|-----------------------------|----------------|-----------|------|------|
|                                                                 |    |                             | Type CVWC      | Type CVWB |      |      |
| Cylinder capacity                                               | l  | 75                          | 250            | 300       | 390  | 500  |
| Content that can be heated by the immersion heater              | l  | 38                          | 62             | 101       | 129  | 133  |
| Heat-up time from 10 to 60 °C with immersion heater EHE:        |    |                             |                |           |      |      |
| 2 kW                                                            | h  | 1.10                        | 1.83           | 3.00      | 3.74 | 3.86 |
| 4 kW                                                            | h  | 0.55                        | 0.91           | 1.75      | 1.87 | 1.93 |
| 6 kW                                                            | h  | 0.37                        | 0.61           | 1.00      | 1.25 | 1.29 |
| Minimum wall clearance for installation of the immersion heater | mm | 650                         | 500            | 500       | 500  | 500  |

### Immersion heater EHE

#### Part no. Z026669

- For installation into the **lower** flanged aperture
- Use the immersion heater only with soft to medium hard water with a calcium hardness up to 14 °dH (hardness level 2, up to 2.5 mol/m<sup>3</sup>).
- Selectable heating output: 2, 4 or 6 kW

#### Components:

- High limit temperature cut-out device
- Temperature controller
- Flange
- Colour of flange cover: Vitopearlwhite
- Gasket

### Specification – immersion heater EHE

|                                               |    |                       |      |                     |
|-----------------------------------------------|----|-----------------------|------|---------------------|
| Output range                                  | kW | Max. 6                |      |                     |
| Rated consumption standard mode/quick heat-up | kW | 2                     | 4    | 6                   |
| Rated voltage                                 |    | 1/N/PE<br>230 V/50 Hz |      | 3/PE<br>400 V/50 Hz |
| Rated current                                 | A  | 8.7                   | 17.4 | 8.7                 |
| Weight                                        | kg | 2                     | 2    | 2                   |
| IP rating                                     |    | IP 45                 |      |                     |

### Specification – immersion heater EHE in conjunction with Vitocell 100-V

|                                                                 |    |      |       |
|-----------------------------------------------------------------|----|------|-------|
| Vitocell 100-V cylinder capacity                                | l  | 390  | 500   |
| Content that can be heated by the immersion heater              | l  | 301  | 373   |
| Heat-up time from 10 to 60 °C with immersion heater EHE:        |    |      |       |
| – 2 kW                                                          | h  | 8.73 | 10.82 |
| – 4 kW                                                          | h  | 4.36 | 5.41  |
| – 6 kW                                                          | h  | 2.91 | 3.61  |
| Minimum wall clearance for installation of the immersion heater | mm | 650  | 650   |

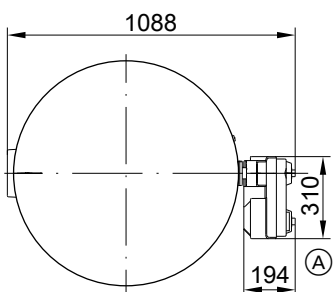
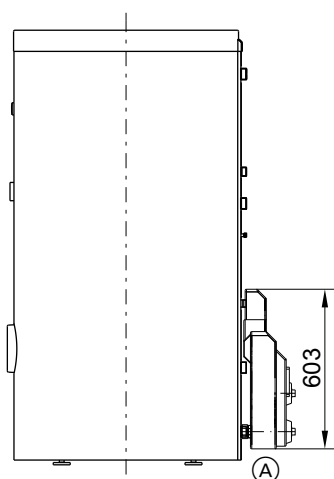
### Solar heat exchanger set

#### Part no. 7186663

For connecting the solar collectors to the DHW cylinder (390 and 500 l capacity)  
Suitable for systems to DIN 4753. Up to a total water hardness of 20 °dH (3.6 mol/m<sup>3</sup>)

Max. collector surface area that can be connected:

- 11.5 m<sup>2</sup> flat-plate collectors
- 6 m<sup>2</sup> tube collectors



(A) Solar heat exchanger set

### Specification

|                                                  |                  |
|--------------------------------------------------|------------------|
| <b>Permissible temperatures</b>                  |                  |
| Solar side                                       | 140 °C           |
| Heating water side                               | 110 °C           |
| DHW side                                         |                  |
| – For boiler operation                           | 95 °C            |
| – For solar operation                            | 60 °C            |
| <b>Permissible operating pressure</b>            |                  |
| Solar side, heating and DHW side                 | 10 bar (1.0 MPa) |
| <b>Test pressure</b>                             |                  |
| Solar side, heating and DHW side                 | 13 bar (1.3 MPa) |
| <b>Minimum wall clearance</b>                    |                  |
| For installation of the solar heat exchanger set | 350 mm           |
| <b>Circulation pump</b>                          |                  |
| Power supply                                     | 230 V/50 Hz      |
| IP rating                                        | IP 42            |

## Impressed current anode

### Part no. 7265008

- Maintenance free
- Install in place of the magnesium anode supplied

## 6.10 Siting the outdoor unit

### Basic connection set for outdoor unit

#### Part no. 7973227

For connecting the outdoor unit to the heating system:  
2 x copper pipe Ø 28 mm with plug-in connector, length 50 mm

### Connection sets for floor bracket, pipework above ground level

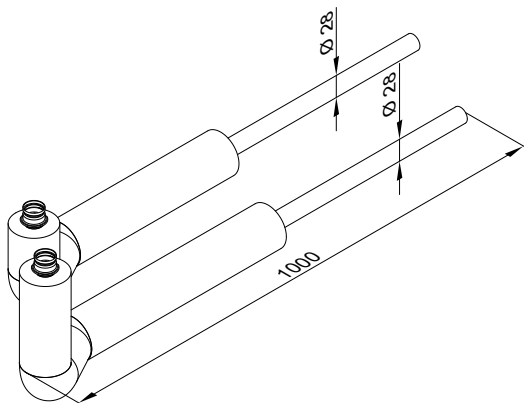
For connecting the outdoor unit to the heating system:

- 2 x copper pipe Ø 28 mm, length 1 m
- Or
- 2 x stainless steel corrugated pipes DN 25 x 600 mm with union nut 1¼" and push-in nipple
- Wall outlet DN 150, 750 mm long
- Sealing insert with entries 2 x for Ø 28 mm and 3 x for Ø 18 mm
- Cap with entries 2 x for Ø 28 mm and 3 x for lines of varying diameters

## Installation accessories (cont.)

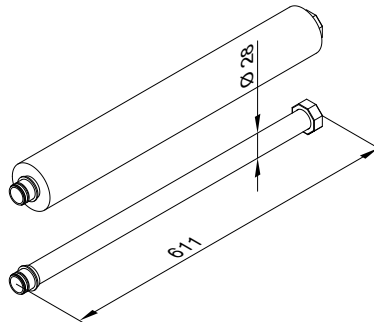
### Part no. ZK06018

Copper pipes with thermal insulation



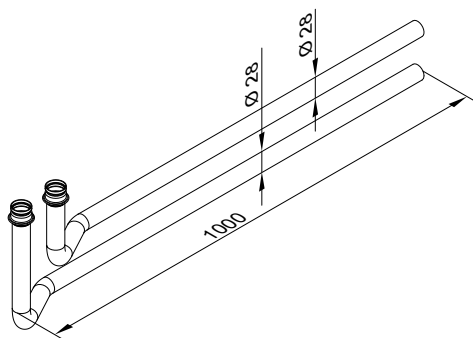
### Part no. ZK06019

Stainless steel corrugated pipes with thermal insulation



### Part no. ZK06428

Copper pipes without thermal insulation



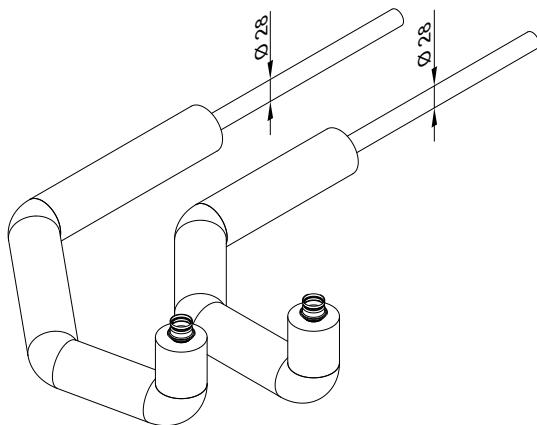
## Connection set for wall mounting bracket

For connecting the outdoor unit to the heating system:

- 2 x copper pipe Ø 28 mm, length 1 m
- Wall outlet DN 150, 750 mm long
- Sealing insert with entries for copper pipe 2 x for Ø 28 mm and 3 x for Ø 18 mm
- Cap with entries for copper pipe 2 x for Ø 28 mm and 3 x for lines of varying diameters

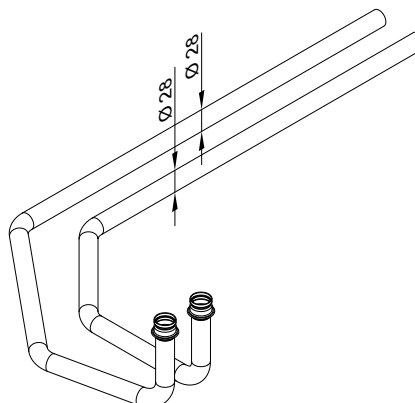
### Part no. ZK06021

Incl. thermal insulation



### Part no. ZK06429

Excl. thermal insulation



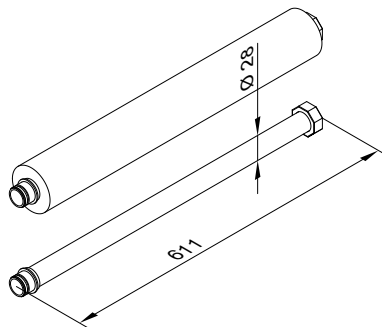
## Installation accessories (cont.)

### Connection set for floor bracket, pipework below ground level

Part no. ZK06020

For connecting the outdoor unit to the heating system:

- 2 x stainless steel corrugated pipes DN 25 x 600 mm with union nut 1 1/4" and push-in nipple

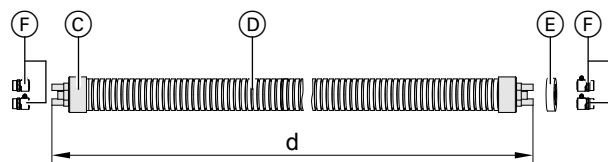
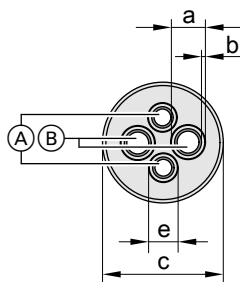


### Quattro connection line laid underground

| Part no. | Line length: Dimension d |
|----------|--------------------------|
| 7984138  | 5 m                      |
| 7984139  | 10 m                     |
| 7984140  | 15 m                     |
| 7984141  | 20 m                     |

For hydraulic connection of the outdoor unit to the indoor unit, flexible routing underground:

- 4 adaptors DN 32 to R 1 1/4 (male)
- 2 rubber end collars
- 1 roll of route warning tape



- (A) Conduits for 230 V~/400 V~ connecting cables and for bus communication cable
- (B) Flow and return lines made of polybutene PB 40 x 3.7

- (C) Outside end collar
- (D) Outer pipe, thermally insulated
- (E) Inside end collar
- (F) Adaptors

|                                |                  |
|--------------------------------|------------------|
| Flow and return lines (B)      | DN 32            |
| – Dim. a: External Ø           | 40 mm            |
| – Dim. b: Wall thickness       | 3.7 mm           |
| – Adaptors: 4 pce              | DN 32 to G 1 1/4 |
| Conduits: 2 pce                |                  |
| – Dim. e: External Ø           | 32 mm            |
| – Internal Ø                   | 25 mm            |
| Outer pipe (D)                 |                  |
| – Dim. c: External Ø           | 160 mm           |
| Min. bending radius            | 600 mm           |
| Number of end collars (C), (E) | 1 each           |

- The flow and return lines are made of polybutene to EN ISO 15876 with a pressure rating of 8 bar at 95 °C. To differentiate between the two pipes, one is marked with a stripe.
- The flow and return lines can be trimmed.
- The thermal insulation is made from longitudinally watertight polyolefin foam, which is connected to the polyethylene (HDPE) outer pipe.
- To seal the opening through the wall or floor plate, always use a ring seal (accessories).

### Ring seal for Quattro connection line laid underground

Part no. 7984142

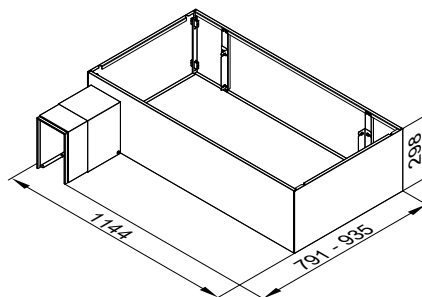
- To seal against infiltrating water when laid underground with Quattro DN 32 hydraulic connection set
- For direct use in waterproof concrete. With other wall materials, use an appropriate pipe liner.

### 6.11 Brackets for outdoor unit

#### Design casing for floor bracket including wall connection

##### Part no. ZK06015

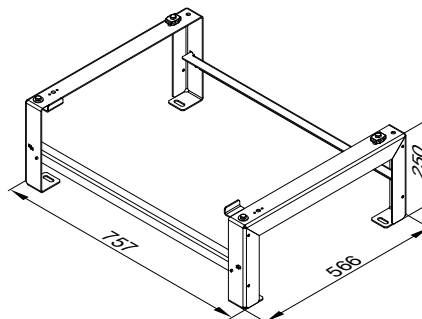
- For covering the hydraulic pipework between the heat pump and the building at a distance of 200 to 300 mm
- For wall mounting and floorstanding installation when the pipework is above ground level
- Made from zinc-plated sheet steel
- Colour: Vitographite



#### Bracket for floorstanding installation

##### Part no. ZK06013

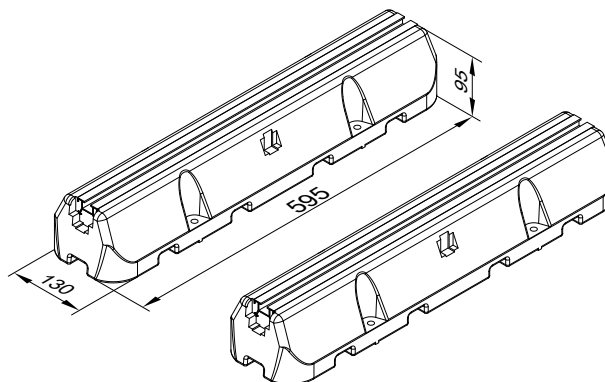
- For positioning on level ground
- Made from stainless steel profiles
- The design casing for the floor bracket can be retrofitted.



#### Anti-vibration base

##### Part no. ZK06012

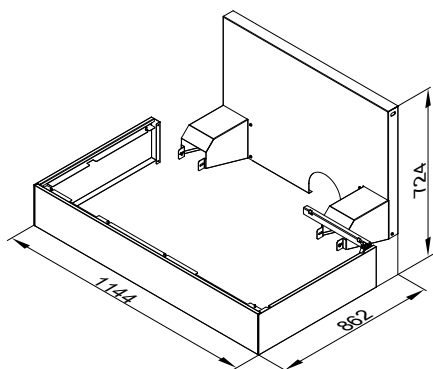
Anti-vibration base for mounting the outdoor unit on a solid surface



#### Design casing for wall mounting bracket

##### Part no. ZK06017

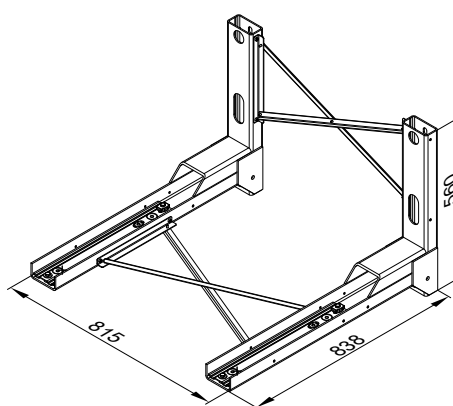
- For covering the hydraulic pipework when wall mounted
- Colour: Vitographite



### Bracket set for mounting the outdoor unit on a wall

Part no. ZK06016

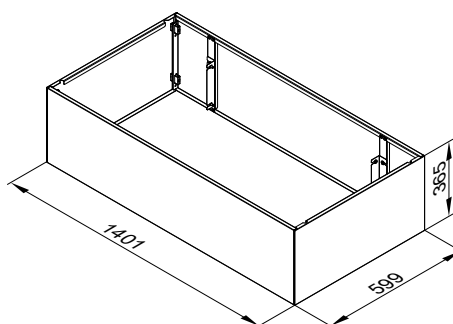
- Made from zinc-plated sheet steel
- Can be used for outdoor units weighing up to 250 kg



### Design casing for floor bracket

Part no. ZK06014

- For positioning on level ground
- Colour: Vitagraphite



## 6.12 Miscellaneous

### Electric ribbon heater for condensate pan

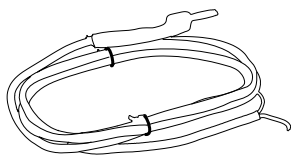
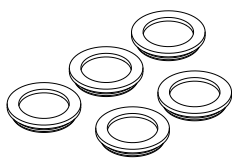
Part no. ZK06022

- As frost protection for the outdoor unit condensate pan
- Only for free flowing condensate
- Ribbon heater length 1.6 m
- With retaining clips to secure the ribbon heater in the condensate pan

#### Note

- In conjunction with refrigerant R290, **only** this electric ribbon heater can be used. The use of an on-site ribbon heater is prohibited.
- If the condensate is routed away via a drainage pipe or hose, both the condensate pan and the drainage pipe or hose must be protected from frost with a ribbon heater, e.g. with the "electric ribbon heater for condensate drain".

## Installation accessories (cont.)



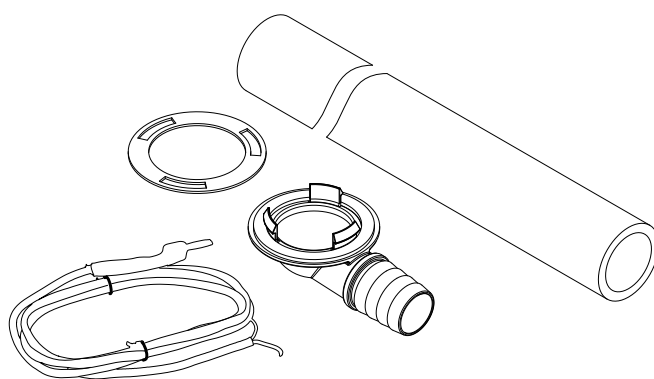
### Ribbon heater for condensate drain

**Part no. 7973114**

- For routing condensate away via a drainage pipe or hose
- In addition to electric ribbon heater for condensate pan

**Components:**

- Ribbon heater, length: 2.8 m
- Drainage hose, length: 1.25 m, Ø 33.4 mm, wall thickness: 4 mm
- Condensate drain elbow



### Cap set

**Part no. ZK02933**

Caps for covering the openings at the outdoor unit base rails

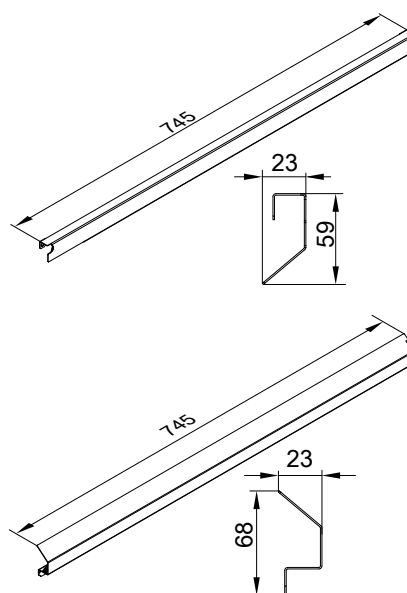
### Design covers for evaporator

**Part no. ZK06215**

- To encase the EPP parts around the evaporator
- Colour: Vitagraphite

**Note**

The evaporator design covers can **not** be used together with the grille design casing.



## Installation accessories (cont.)

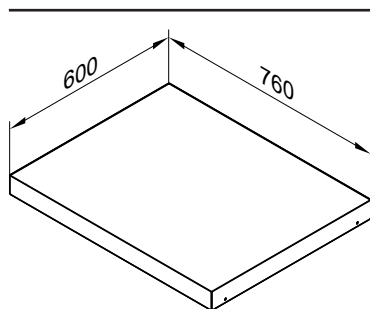
### Special cleaner

Part no. 7249305

1 l spray bottle for cleaning the evaporator

### Platform for unfinished floors

Part no. 7417925



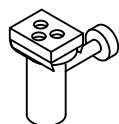
- With adjustable feet, for screed heights between 10 and 18 cm.
- For installation of the appliance on unfinished floors; suitable for siting tight against the wall.
- Incl. thermal insulation.

#### Note

*In the case of installation flush with the wall, insert edge insulation strips for sound insulation between the platform for unfinished floors and the wall.*

### Tundish set

Part no. 7176014



Tundish with trap and bezel: DN 40

## Design information

### 7.1 Power supply and tariffs

According to current Federal tariffs [Germany], the electrical demand for heat pumps is considered domestic usage. Where heat pumps are used to heat buildings, the local power supply utility must first give permission [check with your local power supply utility]. Check the connection conditions specified by the local power supply utility for the stated equipment details. It is crucial to establish whether mono mode and/or mono energetic heat pump operation is feasible in the supply area.

It is also important to obtain information about standing charges and energy tariffs, about the options for utilising off-peak electricity during the night and about any power-off times. Address any questions relating to these issues to the customer's local power supply utility.

### Application procedure

The following details are required to assess the effect of the heat pump operation on the grid of the local power supply utility:

- Operator's address
- Location where the heat pump is to be used
- Type of demand in accordance with general tariffs (domestic, agricultural, commercial, professional and other use)
- Intended heat pump operating mode
- Heat pump manufacturer

- Type of heat pump
- Connected load in kW (from rated voltage and rated current)
- Max. starting current in A
- Max. heat load of the building in kW

#### ***In conjunction with heat pump cascades***

*Type-specific details are required for each heat pump.*

### 7.2 Siting the outdoor unit

The outdoor units are painted with UV resistant paint.

## Design information (cont.)

### Note

When the heat pump is installed in a corrosive atmosphere, the ambient air and the air drawn in by the heat pump contain substances such as ammonia, sulphur, chloride, salts, etc. These substances can cause internal and external damage to the heat pump.

Viessmann heat pumps for outdoor installation are designed for operation in moderately aggressive atmospheres. This makes them suitable for installation in urban and industrial environments as well as in coastal areas.

Higher corrosive loads can cause visual defects on the casing or affect operation. The service life of the heat pump may be shortened.

### Transporting the outdoor unit

Incorrect unloading and transportation can result in damage to the outdoor unit. Should damage to the refrigerant circuit occur, there is the risk of explosion or asphyxiation. Equipment damaged in transit must **not** be used.

The outdoor unit may be transported **only** with the transport aid or a crane:

#### ■ Transport aid

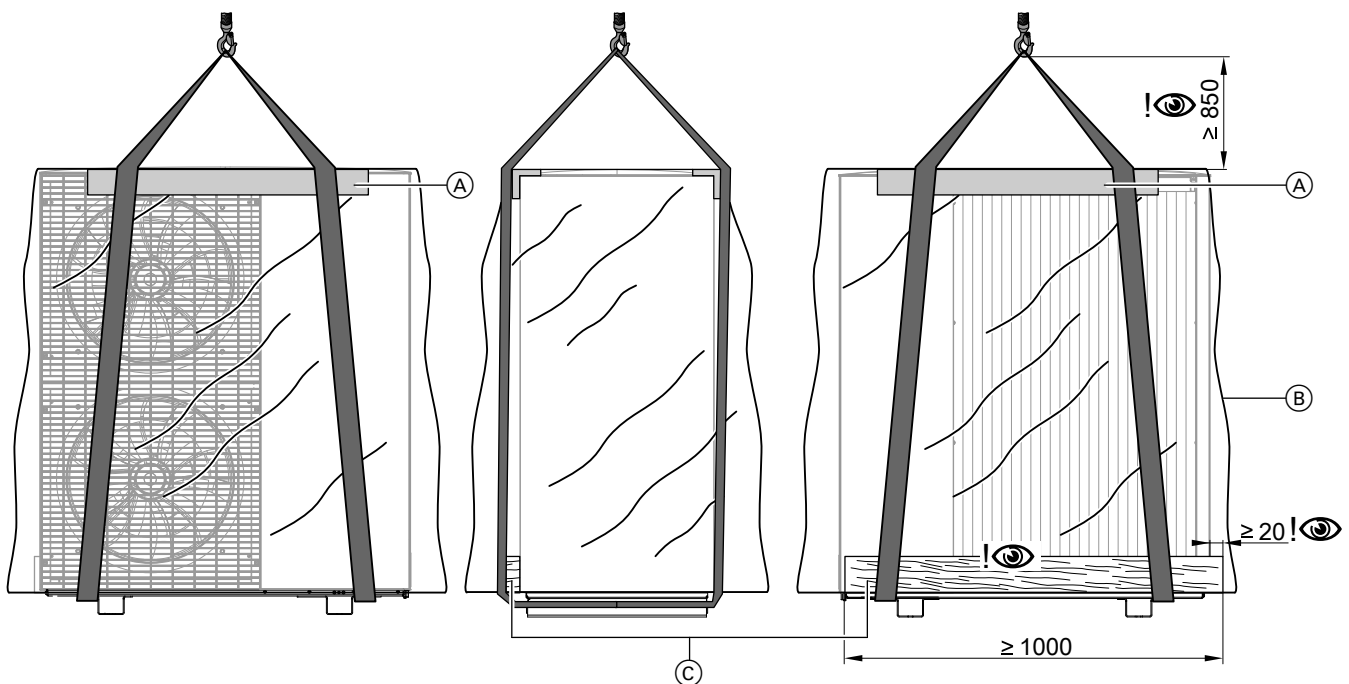
- The transport aid is factory-fitted to the outdoor unit on site and is removed at the final installation site.
- Check transport aid for damage **before** handling.
- Use the transport aid **only once** to transport the outdoor unit.
- Do **not** use the transport aid when transporting by crane.

#### ■ Crane

On-site lifting gear such as slings and cross beams should be checked for damage **before** transportation.

During transportation, observe the following points:

- Avoid mechanical stresses, e.g. compression and tensile strain, jolts, vibrations.
- Protect the evaporator from mechanical stress, e.g. with cardboard packaging or bubble wrap.
- Remove the packaging from the outdoor unit only after transporting.
- Scratches on the outer casing can lead to corrosion damage. Protect outdoor unit against direct contact with tools and transport equipment, e.g. using cardboard packaging or bubble wrap.
- Take note of the weight of the outdoor unit: See chapter "Specification".
- Note the max. tilting angle of 45°.



Transport by crane using the example of the outdoor unit with 2 fans

- (A) Edge protection
- (B) Protective wrap
- (C) Wooden board

### Requirements of the installation location

- Maximum geographical height of the installation location: 1500 m above sea level
- Select a site with good air circulation, so that the cooled air can dissipate and be replaced by warm air.
- Do not install in recesses or between walls. This could result in an "air short circuit" between the air being discharged and the air being drawn in.
  - An "air short circuit" during **heating mode** will result in the cooled, discharged air re-entering the unit. This can result in reduced heat pump efficiency and defrosting problems.
  - An air short circuit during **cooling mode** will result in the heated, discharged air re-entering the unit. This can lead to high pressure faults.
- If siting the appliance in a location that is exposed to wind, ensure that the wind cannot influence the fan area. Strong wind can have a negative influence on the air flow through the evaporator.
- Select an installation location where the evaporator cannot be blocked by leaves, snow, etc.
- Select the installation location giving due consideration to the physical laws concerning the propagation and reflection of sound.
- Do not install above cellar shafts or floor troughs.
- Do not install near windows or bedrooms.
- To avoid increased wind loads, maintain 1 m distance from building edges and corners.
- Maintain a clearance of at least 3 m to pathways, downpipes or sealed surfaces. The cooled air in the discharge area creates a risk of ice forming when outside temperatures are below 10 °C.
- The installation location must be easily accessible, for example for maintenance work: See chapter "Minimum clearances".

#### Additional requirements for flat roof installation:

- Never install the outdoor unit on a flat roof immediately next to or above living rooms or bedrooms.
- Do not locate in front of windows, or keep a distance of 1 m from them.
- Due to the higher static loads (roof/wind load) and the higher acoustic requirements for roof installation, a design engineer should be involved. The design engineer will determine the static load requirements and distance from the edges of buildings, and will produce an acoustic plan.

### Siting

- In accordance with EN 378-3, the outdoor unit may only be installed in the open air.
  - The refrigerant circuit in the outdoor unit contains easily flammable refrigerant belonging to safety group A3 according to ANSI/ASHRAE Standard 34.  
Therefore a safety zone is defined in the immediate vicinity of the outdoor unit, in which special requirements apply: See chapter "Safety zone".
  - Observe the information regarding noise levels.  
Sound emission regulations (TA Lärm in Germany) must be observed.
  - When siting the heat pump, always take into account the distances to neighbouring properties in accordance with local building regulations.
  - Do not install with the discharge side facing towards the house wall or the main wind direction.
  - During defrosting, cool vapour escapes from the outdoor unit air discharge vents. This vapour discharge must be taken into consideration during installation (choosing the installation location, orientation of the heat pump).
  - Provide wall outlets and protective conduits for the hydraulic connection lines and electrical connecting cables without moulded parts or changes of direction.  
Building entry points, whether below or above ground level, must be sealed in accordance with current engineering standards.  
Safety zone requirements must be observed in all cases.
  - Provide equipment for the protection of the outdoor unit against mechanical damage e.g. Impact damage from footballs.
  - Take environmental and weather influences into account in the selection of the installation location, e.g. flooding, wind, snow, ice damage, etc. Install suitable protection equipment if required.
- #### Siting in garages, multi-storey car parks and car parking areas:
- Prior to installation, it must be established for the case in question whether the installation is permissible under local garage and parking area regulations (German regulations GaStellV, GaStpIVO, BetrVO).
  - Systems with refrigerants belonging to safety group A3 must be fitted with impact protection. This impact protection must be designed so that a strike by a vehicle at the applicable maximum speed does not result in damage to the refrigerant circuit.
  - Mark the outdoor unit safety zone with prohibition notices to identify ignition sources.
  - Siting in underground car parks is **not** permissible.
- #### Siting in coastal areas: Distance < 1000 m
- In coastal areas salt and sand particles in the air increase the likelihood of corrosion:  
Site the heat pump where it is protected from direct onshore wind.
  - If necessary provide a wind break on site. Observe the minimum clearances to the heat pump: See chapter "Minimum clearances".

### Types of installation

- Floorstanding installation with line entry above ground level
- Floorstanding installation with line entry below ground level
- Wall mounting
- Roof installation (flat or pitched roof)

#### Note

*We recommend installing the outdoor unit on a roof only if floor or wall installation is not possible due to the site conditions.*

## Design information (cont.)

### Floorstanding installation

- Particularly in adverse climatic environments (minus temperatures, snow and humidity) a distance to the substrate of at least 300 mm is required.
- Secure the outdoor unit with supports for floorstanding installation (accessories) to a concrete foundation.  
Use ground anchors with a tensile force of at least 2.5 kN to secure the support to the foundation.
- If the support cannot be used, site the outdoor unit on a concrete foundation  $\geq 150$  mm high using an anti-vibration base (accessories).  
If the outdoor unit is installed under a snow-free awning, (e.g. a carport) a lower plinth can be used.
- Take the weight of the outdoor unit into account: See chapter "Specification".

### Wall mounting

- Use the wall mounting bracket set (accessories).
  - The wall must meet the structural requirements.
- Use suitable fixing materials, depending on the wall structure.
- If there is no level access to the outdoor unit, ensure it is easily accessible all year round for service and maintenance. Provide sufficient maintenance areas. Install suitable protection equipment, e.g. fall protection.

### Roof installation

#### Flat roof installation

##### Note

*Due to the higher static loads (roof/wind load) and the higher acoustic requirements for roof installation, the structural calculations and sound concept require input from specialist design engineers.*

If the outdoor unit is to be installed on a flat roof, in addition to the requirements for floor and wall installation, the planning measures to be taken into account include the following:

- As the outdoor unit is located higher up when installed on a flat roof, operating noise propagation is more intense than when the unit is installed on the ground. Roof surfaces are normally more reverberant than areas on the ground.  
To prevent noise nuisance, install the outdoor unit at a sufficient distance from neighbouring buildings. If required, provide suitable noise reduction measures. Take into account sound reflection from the surfaces of buildings when analysing sound propagation: See information on structure-borne noise insulation and vibration isolation.
  - Provide on-site wind protection measures if required, e.g. screens, walls, etc.
  - Check to ensure that the installed height of the outdoor unit does not exceed the permissible building height, e.g. as specified in outline planning restrictions.
  - Provide easy, year-round access to the outdoor unit for service and maintenance. Provide sufficient maintenance areas which comply with the safety regulations.  
Install suitable protection equipment which complies with the safety regulations, e.g. anchorage points.
- Recommendation: Install the heat pump on a steel-reinforced concrete roof
  - Installation on flat roofs with a low weight per unit area (e.g. roofs made from timber rafters or trapezoidal sheet metal) is **not permissible**.
  - With flat roof installation, considerable wind loads may occur, depending on the relevant wind zone and the height of the building. Have the substructure designed according to DIN 1991-1-4 by a specialist design engineer.
  - The higher roof and wind loads must be taken into account in the structural calculations and the fixture system of the outdoor unit. It is essential to comply with the specifications provided by the design engineer with regard to statics, distances from building edges and the sound concept.
  - Where design casings are concerned, check that these are able to withstand wind and snow loads. Some of the design casings simply attach magnetically to the outdoor unit.

#### Pitched roof installation

We recommend installing the outdoor unit **only** on the floor, the wall or a flat roof.

If due to the building characteristics the outdoor unit can be installed only on a pitched roof, the same requirements apply as for flat roof installation.

### Weather influences

- Observe wind loads when installing the unit on sites exposed to the wind.
- Fit the pipework exposed to the outdoor air outside the support for floorstanding installation (accessories) with adequately thick thermal insulation in accordance with the German Buildings Energy Act (GEG): See the following table.

| Pipework internal $\varnothing$ | Min. thickness of thermal insulation layer with $\lambda = 0.035 \text{ W/(m}\cdot\text{K)}$ |
|---------------------------------|----------------------------------------------------------------------------------------------|
| $\leq 22 \text{ mm}$            | 40 mm                                                                                        |
| $> 22 \text{ mm}$               | 60 mm                                                                                        |

$\lambda$  Thermal conductivity

- The thermal insulation must be UV-resistant.
- If a design casing for the support for floorstanding installation (accessories) is used:  
For pipework inside the support, use the thermal insulation supplied.
- Incorporate the outdoor unit into the lightning protection system.
- Note the heat absorbed (heating mode) and heat emitted (cooling mode) by the appliance when designing weatherproofing measures or an enclosure.

## Design information (cont.)

### Condensate

In regions where the outside temperature is often below 0 °C, we recommend installing an electrical ribbon heater (accessories) for the condensate pan of the outdoor unit. For types ...-AF an electric ribbon heater is factory-fitted.

Floorstanding installation:

- Ensure that condensate can drain freely.
- Allow condensate to soak away into a gravel bed or into a deep seepage layer, or direct it into the waste water system: See chapter "Draining condensate via a soakaway".

#### Note

*If refrigerant gets into the waste water system (e.g. as a result of a leak in the refrigerant circuit), there is a risk of explosion.*

*Therefore, only connect the condensate drain to the waste water system via a trap.*

Wall mounting:

- Ensure that condensate can drain freely.
- Allow condensate to soak away into a gravel bed: See chapter "Draining condensate via a soakaway".

Flat roof installation:

- Allowing the condensate to drain freely onto the roof surface is not permissible, as this may result in the formation of layers of ice. Layers of ice on the roof may prevent further condensate from draining freely, resulting in increased roof loads.
- Use an electric ribbon heater for the condensate pipe (accessories).
- To drain the condensate, connect the condensate hose on the outdoor unit to an insulated condensate pipe. The condensate pipe is part of the standard delivery of the electric ribbon heater for the condensate pipe.  
If required, insert the condensate hose via a trap insert.

### Structure-borne noise insulation and vibration isolation between the building and outdoor unit

- Route cables/leads between the indoor and outdoor units so they are not stressed.
- Installation only on walls with a high weight per unit area (> 250 kg/m<sup>2</sup>); in other words not on lightweight walls, roof structures, etc.
- Vibration isolation components are included in the standard delivery of the wall mounting bracket.
- Do not use additional anti-vibration mounts, springs, rubber mounts, etc.

- When installing the outdoor unit on roof surfaces, there is a risk that structure-borne noise and vibrations will be transmitted into the building.  
If the outdoor unit is installed on freestanding garages, insufficient structure-borne noise insulation and vibration isolation can cause excessive noise due to resonance amplification.

- When using a KG conduit:

After installing the hydraulic connection lines, fill the KG conduit with sand.

See chapter "Information on reducing sound emissions" on page 127.

### Safety zone

The refrigerant circuit in the outdoor unit contains easily flammable refrigerant in safety group A3 according to ISO 817 and ANSI/ASHRAE Standard 34.

Therefore a safety zone is defined in the immediate vicinity of the outdoor unit, in which special requirements apply.

The following conditions must not be present or occur within the safety zone:

- Building openings, e.g. windows, doors, light wells, flat roof windows
- Outdoor air and exhaust air apertures from ventilation and air conditioning systems
- Property boundaries, neighbouring properties, footpaths and driveways
- Pump shafts, inlets to waste water systems, downpipes and waste water shafts, etc.
- Other slopes, troughs, depressions, shafts
- Electrical house supply connections
- Electrical systems, sockets, lamps, light switches
- Snowfall from roofs

Do not introduce ignition sources into the safety zone:

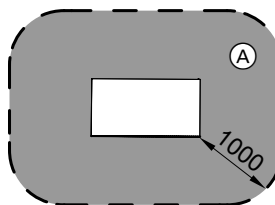
- Naked flames or burner gauze assemblies
- Grills
- Tools that generate sparks
- Electrical devices not free of ignition sources, mobile devices with integrated batteries (e.g. mobile phones, fitness watches, etc.)
- Objects with temperatures above 360 °C

#### Note

*The particular safety zone is dependent on the surroundings of the outdoor unit.*

- The safety zones shown in the following are for the floorstanding installation of an outdoor unit with 2 fans.
  - These safety zones also apply to outdoor units with 1 fan.
  - These safety zones also apply to wall and roof installation.
- In the case of wall installation, the requirements listed above also apply to the area **below** the outdoor unit, down to the ground.

### Freestanding positioning of the outdoor unit



Ⓐ Safety zone