

ApenGroup[®]
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GB

Operating, Installation and Maintenance Manual
**MODULATING WARM AIR HEATER LP - PLUS AND
CONDENSING WARM AIR HEATER LK - KONDENSA**



CE

3.1. Technical Data

| Model | | LP015 | LP024 | LP034 | LP042 | LP052 | LP072 | LP102 | | | | | | | |
|---|-------------------|--|-------|----------------------|-------|----------------------|-------|----------------------|-------|----------------------|-------|----------------------|-------|-------------------------------------|-------|
| Type of equipment | | B23 - B23P - C13 - C33 - C43 - C53 - C63 | | | | | | | | | | | | | |
| EC certification | PIN. | 0694CP1457 | | | | | | | | | | | | | |
| NOx Class | Val | 5 | | | | | | | | | | | | | |
| Heater Performance | | | | | | | | | | | | | | | |
| | | min | max | min | max | min | max | min | max | min | max | min | max | min | max |
| Burner heat output (Hi) | kW | 13.0 | 16.5 | 21.8 | 27.0 | 27.5 | 34.8 | 33.3 | 44.0 | 39.4 | 52.2 | 60 | 73.5 | 81.8 | 100.0 |
| Heat output | kW | 12.1 | 15.0 | 20.4 | 24.6 | 25.8 | 31.9 | 31.2 | 40.2 | 37.0 | 47.9 | 56.2 | 67.5 | 76.8 | 92.3 |
| Efficiency (Net C.V.) | % | 93.2 | 90.7 | 93.7 | 91.2 | 93.7 | 91.8 | 93.8 | 91.3 | 94.0 | 91.8 | 93.7 | 91.8 | 93.9 | 92.3 |
| Efficiency (Gross C.V.) | % | 83.8 | 81.6 | 84.3 | 81.2 | 84.3 | 82.6 | 84.4 | 82.2 | 84.6 | 82.6 | 84.3 | 82.6 | 84.5 | 83.1 |
| Flue losses with burner on (Hi) | % | 6.8 | 9.3 | 6.3 | 8.8 | 6.3 | 8.2 | 6.2 | 8.7 | 6.0 | 8.2 | 6.3 | 8.2 | 6.1 | 7.7 |
| Flue losses with burner off (Hi) | % | <0.1 | | <0.1 | | <0.1 | | <0.1 | | <0.1 | | <0.1 | | <0.1 | |
| Losses in enclosure ⁽¹⁾ | | 0% | | 0% | | 0% | | 0% | | 0% | | 0% | | 0% | |
| Flue gas emissions | | | | | | | | | | | | | | | |
| Carbon monoxide - CO - (0% of O ₂) ⁽²⁾ | ppm | <5 | | <5 | | <5 | | <5 | | <5 | | <5 | | <5 | |
| Nitrogen oxides- NOx - (0% of O ₂) ⁽³⁾ | | 44 mg/kWh - 25 ppm | | 30 mg/kWh - 17 ppm | | 30 mg/kWh - 17 ppm | | 44 mg/kWh - 25 ppm | | 47 mg/kWh - 27 ppm | | 43 mg/kWh - 24 ppm | | 49 mg/kWh - 28 ppm | |
| Available pressure at flue | Pa | 80 | | 100 | | 120 | | 120 | | 130 | | 140 | | 140 | |
| | | Flue gas temperature, CO ₂ content and maximum flue gas flow rate: see gas tables on page 35 and on the following pages | | | | | | | | | | | | | |
| Electrical Data | | | | | | | | | | | | | | | |
| Power supply | V | 230 Vac - 50 Hz single-phase | | | | | | | | | | | | | |
| Power input | W | 117 | 143 | 172 | 197 | 175 | 205 | 267 | 320 | 280 | 330 | 470 | 493 | 550 | 582 |
| Power input in stand-by | W | <5 | | | | | | | | | | | | | |
| Ingress Protection Rating | IP | IP 20 | | | | | | | | | | | | | |
| Operating Temperatures | °C | from -15°C to +40°C - for lower temperatures, a burner housing heating kit is required | | | | | | | | | | | | | |
| Storage Temperatures | °C | from -25°C to +60°C | | | | | | | | | | | | | |
| Connections | | | | | | | | | | | | | | | |
| Ø gas connection ⁽⁴⁾ | GAS | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" ⁽⁵⁾ | |
| Ø Combustion air intake/exhaust pipes | mm | 80/80 | | 80/80 | | 80/80 | | 80/80 | | 80/80 | | 80/80 | | 100/100 ⁽⁶⁾ | |
| Air flow rate | | | | | | | | | | | | | | | |
| Air flow rate | m ³ /h | 2000 | | 2700 | | 2700 | | 4300 | | 4500 | | 7800 | | 9000 | |
| Air temperature increase | °C | 17.37 | 21.45 | 21.69 | 26.14 | 27.36 | 33.92 | 20.82 | 26.78 | 23.59 | 30.53 | 20.66 | 24.80 | 24.47 | 29.40 |
| Number and diameter of fans (no. of poles) | | 1 X Ø350 (6P) | | 1 X Ø350(4P) | | 1 X Ø350(4P) | | 1 X Ø450(4P) | | 1 X Ø450(4P) | | 2 X Ø400 (4P) | | 2 X Ø450 (4P) | |
| Fans speed | rpm | 920 | | 1370 | | 1370 | | 1370 | | 1370 | | 1370 | | 1370 | |
| Sound power level (Lw) ⁽⁷⁾ | dB(A) | | | | | | | | | | | | | | |
| Weight | | | | | | | | | | | | | | | |
| Net weight | kg | 67 | | 68 | | 68 | | 70 | | 79 | | 98 | | 127 | |
| Weight when packaged | kg | 70 | | 71 | | 85 | | 88 | | 97 | | 121 | | 155 | |

NOTES:

(1) The losses from the enclosure must be regarded as zero as the heater is installed in a heated environment.

(2) Value referenced to cat. H (G20)

(3) Weighted value to EN1020 ref. to class H (G20), referred to Hi (L.C.V.).

(4) The gas line must be measured by taking into account the length of the pipes and not the heater diameter.

For countries requiring an ISO connection different from the one shown above, an adaptor will be supplied.

(5) For LP102 models, the minimum gas supply duct diameter must be UNI/ISO 228/1- G 1".

(6) Ø100/100 achieved by using adaptors supplied as standard.

(7) Measured at a distance of 5m from the machine.

| Model | | LK020* | LK034 | LK045 | LK065 | LK080 | LK105 | | | | | | |
|---|-------------------|--|--------|----------------------|-------|----------------------|-------|----------------------|-------|-------------------------------------|-------|-------------------------------------|--------|
| Type of equipment | | B23 - B23P - C13 - C33 - C43 - C53 - C63 | | | | | | | | | | | |
| EC certification | PIN. | 0694CP1457 | | | | | | | | | | | |
| NOx Class | Val | 5 | | | | | | | | | | | |
| Heater Performance | | | | | | | | | | | | | |
| | | min | max | min | max | min | max | min | max | min | max | min | max |
| Burner heat output (Hi) | kW | 4.75 | 19.00* | 7.60 | 34.85 | 8.50 | 42.00 | 12.40 | 65.00 | 16.40 | 82.00 | 21.00 | 100.00 |
| Useful heat output | kW | 4.97 | 18.18 | 8.13 | 33.56 | 8.97 | 40.45 | 13.40 | 62.93 | 17.77 | 80.03 | 22.77 | 97.15 |
| Efficiency Hi (Net C.V.) | % | 104.63 | 95.68* | 106.97 | 96.30 | 105.50 | 96.30 | 108.06 | 96.82 | 108.35 | 97.60 | 108.40 | 97.15 |
| Efficiency Hs (Gross C.V.) | % | 94.26 | 86.20 | 96.37 | 86.76 | 95.07 | 86.76 | 97.36 | 87.22 | 97.62 | 87.93 | 97.68 | 87.52 |
| Flue losses with burner on (Hi) | % | 0.4 | 4.3 | 0.6 | 3.7 | 0.5 | 3.7 | 0.2 | 3.2 | 0.3 | 2.4 | 0.2 | 2.8 |
| Flue losses with burner off (Hi) | % | <0.1 | | <0.1 | | <0.1 | | <0.1 | | <0.1 | | <0.1 | |
| Losses in enclosure ⁽¹⁾ | | 0% | | 0% | | 0% | | 0% | | 0% | | 0% | |
| Max. condensation ⁽²⁾ | l/h | 0.4 | | 0.9 | | 1.1 | | 2.1 | | 3.3 | | 2.7 | |
| Flue gas emissions | | | | | | | | | | | | | |
| Carbon monoxide - CO - (0% of O ₂) ⁽³⁾ | ppm | < 5 | | < 5 | | < 5 | | < 5 | | < 5 | | < 5 | |
| Nitrogen oxides- NOx - (0% of O ₂) ⁽⁴⁾ | | 38 mg/kWh - 22 ppm | | 42 mg/kWh - 24 ppm | | 33 mg/kWh - 19 ppm | | 39 mg/kWh - 22 ppm | | 32 mg/kWh - 18 ppm | | 41 mg/kWh - 23 ppm | |
| Available pressure at flue | Pa | 80 | | 90 | | 100 | | 120 | | 120 | | 120 | |
| | | Flue gas temperature, CO ₂ content and maximum flue gas flow rate: see gas tables on page 35 and on the following pages | | | | | | | | | | | |
| Electrical Data | | | | | | | | | | | | | |
| Power supply | V | 230 Vac - 50 Hz single-phase | | | | | | | | | | | |
| Power input | W | 147 | 180 | 270 | 310 | 280 | 310 | 425 | 510 | 500 | 613 | 650 | 750 |
| Power input in stand-by | W | <5 | | | | | | | | | | | |
| Ingress Protection Rating | IP | IP 20 | | | | | | | | | | | |
| Operating Temperatures | °C | from -15°C a +40°C - for lower temperature, a burner housing heating kit is required | | | | | | | | | | | |
| Storage Temperatures | °C | from -25°C to +60°C | | | | | | | | | | | |
| Connections | | | | | | | | | | | | | |
| Ø gas connection ⁽⁵⁾ | GAS | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" | | UNI/ISO 228/1-G 3/4" ⁽⁶⁾ | | UNI/ISO 228/1-G 3/4" ⁽⁶⁾ | |
| Ø Combustion air intake/exhaust pipes | mm | 80/80 | | 80/80 | | 80/80 | | 80/80 | | 100/100 ⁽⁷⁾ | | 100/100 ⁽⁷⁾ | |
| Air flow rate | | | | | | | | | | | | | |
| Air flow rate | m ³ /h | 2700 | | 4300 | | 4500 | | 7800 | | 9000 | | 11100 | |
| Air temperature increase | °C | 5.28 | 19.30 | 5.42 | 22.37 | 5.73 | 25.74 | 4.92 | 23.13 | 5.66 | 25.49 | 5.89 | 25.09 |
| Number and diameter of fans | | 1 x Ø350 | | 1 x Ø450 | | 1 x Ø450 | | 2 x Ø400 | | 2 x Ø450 | | 3 x Ø400 | |
| Fans speed | rpm | 1370 | | 1370 | | 1370 | | 1370 | | 1370 | | 1370 | |
| Sound power level (Lw) ⁽⁸⁾ | dB(A) | | | | | | | | | | | | |
| Weight | | | | | | | | | | | | | |
| Net weight | kg | 70 | | 72 | | 80 | | 98 | | 127 | | 144 | |
| Weight when packaged | kg | 75 | | 90 | | 100 | | 121 | | 155 | | 172 | |

NOTES:

* For GB: LK020GB-00E0 in accordance with the ECA requirements. Heat output (Hi) max 15kW; Efficiency Hi (Net C.V.) 96,7%.

(1) The losses from the enclosure must be regarded as zero as the heater is installed in a heated environment.

(2) Max.. condensation produced acquired from testing at 30%Qn.

(3) Value referenced to cat. H (G20)

(4) Weighted value to EN1020 ref. to class H (G20), referred to Hi (L.C.V.).

(5) The gas line must be measured by taking into account the length of the pipes and not the heater diameter.

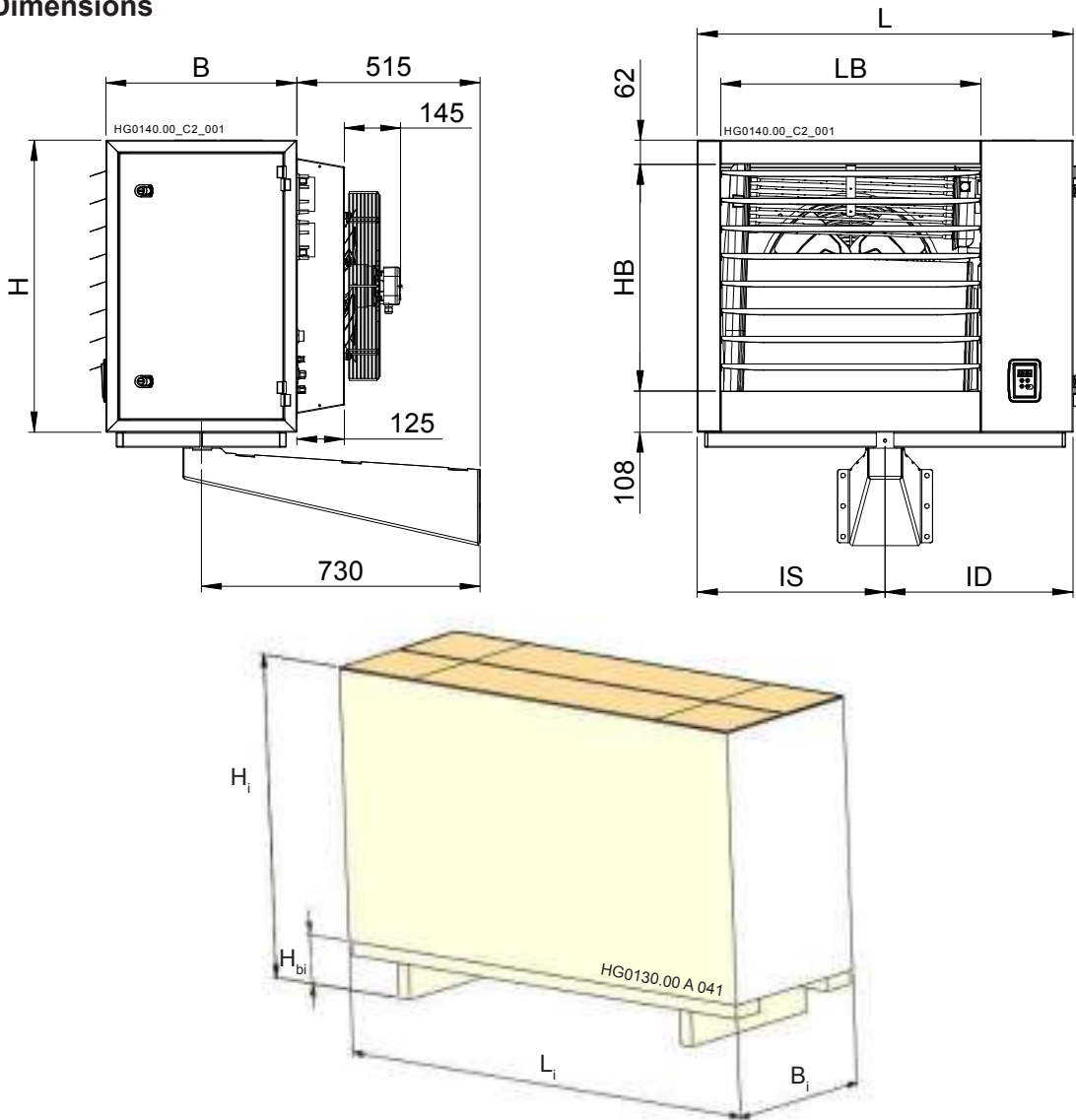
For countries requiring an ISO connection different from the one shown above, an adaptor will be supplied.

(6) For the LK080 and LK105 models, the minimum gas supply duct diameter must be UNI/ISO 228/1- G 1".

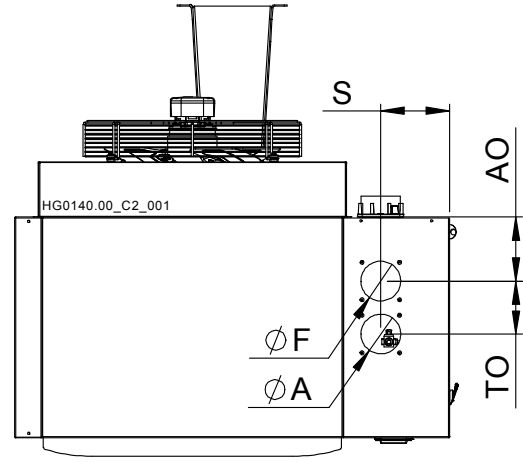
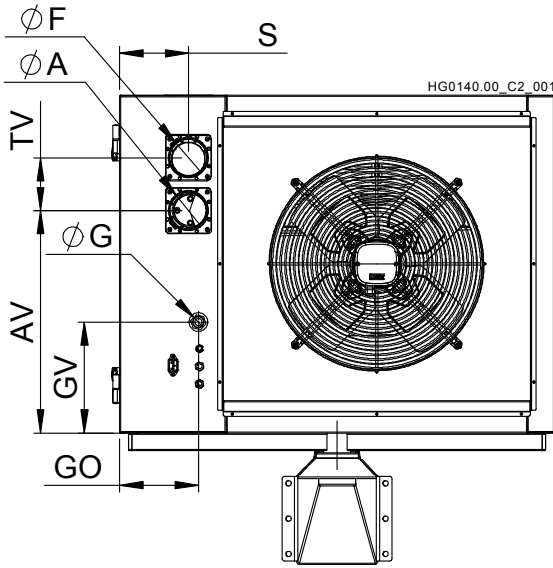
(7) Ø100/100 obtained by using adaptors supplied as standard.

(8) Measured at a distance of 5m from the machine.

3.2. Dimensions



| Mod. LP and LK | Overall dimensions | | | Inlet | | Shelf | | Supply GAS | | | Packaging | | | |
|------------------------|--------------------|-----|-----|-------|-----|-------|------|------------|-----|-----|-----------|------|------|-----|
| | B | H | L | HB | LB | IS | ID | ØG | GO | GV | Bi | Li | Hi | Hbi |
| LP015, LP024, LK020 | 500 | 690 | 795 | 520 | 490 | 395 | 400 | 3/4" | 180 | 255 | 810 | 890 | 850 | 123 |
| LP034, LP042, LK034 | | | 985 | | | | | | | | | 680 | | |
| LP052, LK045 | | 765 | 595 | 1010 | 655 | 660 | 1410 | | | | | 920 | | |
| LP072, LK065 | | | | 1310 | 655 | 660 | 1410 | | | | | 920 | | |
| LP102, LK080 | | 845 | 675 | 1180 | 770 | 745 | 1610 | | | | | 1040 | | |
| LK105 | | | | 1740 | 895 | 845 | | | | | | | 1810 | |



| Mod. LP and LK | Horizontal exhausts (STD) | | | | |
|------------------------|---------------------------|------|-----|-----|-----|
| | A | F | AV | TV | S |
| LP015, LP024, LK020 | 80 | 80 | 430 | 120 | 155 |
| LP034, LP042, LK034 | | | 505 | | |
| LP052, LK045 | | | 560 | | |
| LP072, LK065 | 100* | 100* | 140 | 185 | 185 |
| LP102, LK080 | | | 140 | | |
| LK105 | | | | | |

* Obtained by using the adaptors supplied as standard.

| Mod. LP and LK | Vertical drains (OPT.) | | | | |
|------------------------|------------------------|------|-----|-----|-----|
| | A | F | AO | TO | S |
| LP015, LP024, LK020 | 80 | 80 | 145 | 120 | 155 |
| LP034, LP042, LK034 | | | | | |
| LP052, LK045 | | | | | |
| LP072, LK065 | 100* | 100* | 140 | 185 | 185 |
| LP102, LK080 | | | | | |
| LK105 | | | | | |

Obtained by using adaptors supplied as standard.