

**LEISTER**

PROCESS HEAT



General Catalog | US-Edition

# Process Heat

Intelligent and efficient  
hot-air solutions.



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### Leister delivers performance.

For 70 years, Leister has been the worldwide leader in the field of plastic welding and industrial hot-air applications. In addition, we also offer innovative and effective lasersystems and microsystems. Leister is proud to develop and produce all products in Switzerland – so you can always rely on the proverbial Swiss made quality.

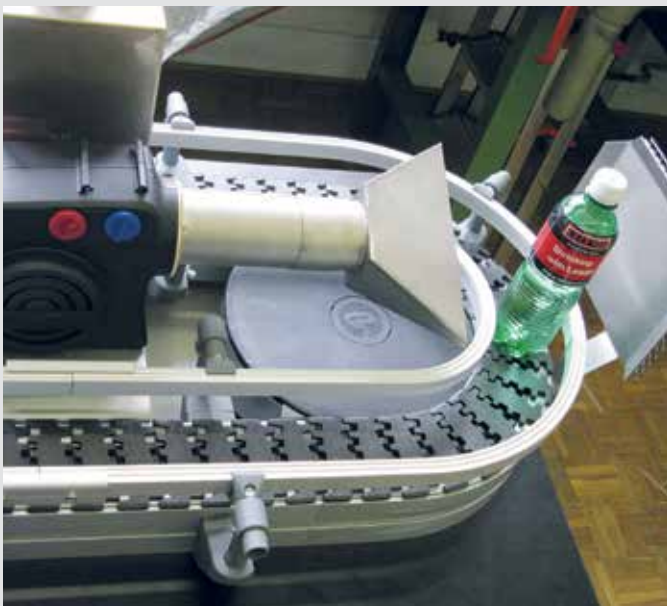
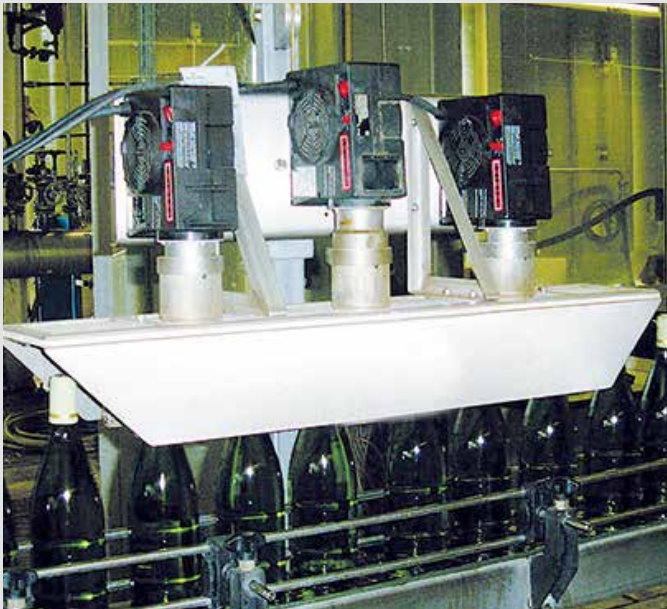
Over 98 percent of our products are exported. With an established network of 130 sales and service centers all over the globe, you will find a Leister partner guaranteed. We are local worldwide.





## Hot-Air Blowers

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# The new MISTRAL: The incomparable hot-air blower.

Two model groups are available in this range – the MISTRAL 2, 4, and 6 PREMIUM, and the top-of-the-range MISTRAL 6 SYSTEM. All MISTRAL 6 devices are equipped with a maintenance-free brushless blower motor, making them perfectly-suited to continuous operation. The MISTRAL 6 SYSTEM can either be operated using its integrated controls or via an external system interface.


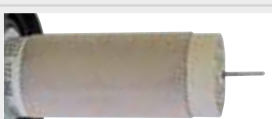




## Hot-air blower

### MISTRAL PREMIUM / SYSTEM

|       |   |  |
|-------|---|--|
| 1     |    | <b>Maintenance-free</b><br>Thanks to its brushless motor, the new MISTRAL <sup>®</sup> PREMIUM / SYSTEM is perfectly suited to continuous operation.   |
| 2 / 3 |    | <b>Innovative:</b><br>Using the "e-drive" operating unit, the air volume and temperature for the MISTRAL SYSTEM can be adjusted to suit every application.<br><br><b>Fully-integrated:</b><br>Main switch with integrated push button function for programming (MISTRAL SYSTEM). |
| 4     |   | <b>Multifaceted:</b><br>Can be operated as a device with integrated control or via an external system interface for integration into a closed-loop system (MISTRAL SYSTEM).  |
| 5     |  | <b>Informed:</b><br>Display with user status information and programming (MISTRAL SYSTEM).   |



### MISTRAL SYSTEM

|    |  |   |
|----|--|---|
| 6  |  | <b>Innovative design:</b><br>Special baffle for an even airflow distribution and an optimized, aerodynamic airflow velocity.  |
| 7  |  | <b>Integrated:</b><br>Thermocouple in the MISTRAL SYSTEM for enhanced precision.  |
| 8  |  | <b>Quick to connect:</b><br>Thanks to the integrated air hose connection adapter, with its internal 1-inch thread, an additional adapter is not required.                                     |
| 9  |  | <b>Convenient:</b><br>State-of-the-art industrial design featuring convenient mounting tabs.  |
| 10 |  | <b>Automatic cooling:</b><br>The MISTRAL SYSTEM is equipped with an automatic cool-down function. In the MISTRAL PREMIUM, the blower and heater can be controlled separately.                 |
| 11 |  | <b>Easy to switch:</b><br>The MISTRAL PREMIUM can be switched from an internal to an external potentiometer (optional). As a result, the temperature can even be controlled from the outside. |

|  | PREMIUM |   |   | SYSTEM |
|--|---------|---|---|--------|
|  | 2       | 4 | 6 | 6      |
| Brushless blower motor   |         |   | • | •      |
| Brush motor with replacement carbon brushes                              |         | • |   |        |
| Brush motor  | •       |   |   |        |
| Integrated heating element and tool protection                           | •       | • | • | •      |
| Integrated code switch for potentiometer (internal / external)           | •       | • | • |        |
| Infinitely adjustable heating capacity and air volume with the "e-drive" |         |   |   | •      |
| Automatic cool-down function   |         |   |   | •      |
| Remote control interface for temperature / air volume                    |         |   |   | •      |
| Integrated temperature probe   |         |   |   | •      |
| Target / actual values display   |         |   |   | •      |

Hot-air blower

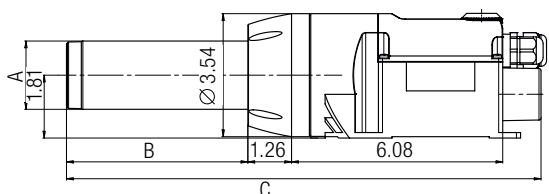
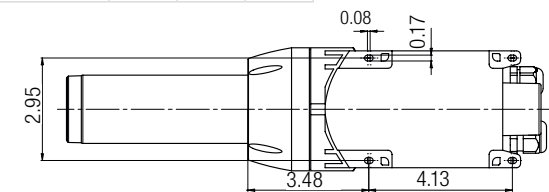
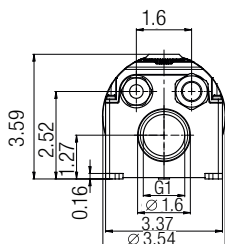
## MISTRAL PREMIUM / SYSTEM



**MISTRAL PREMIUM**

### Installation dimensions in inches

|  | A      | B    | C     |
|--|--------|------|-------|
| 230V / 2300 W<br>100V / 1500 W                                   | Ø 1.44 | 4.2  | 12.64 |
| 230V / 4500 W  | Ø 1.97 | 5.41 | 13.86 |
| 230V / 3400 W<br>120V / 2400 W<br>200V / 3000 W<br>220V / 3100 W | Ø 1.97 | 4.24 | 12.69 |

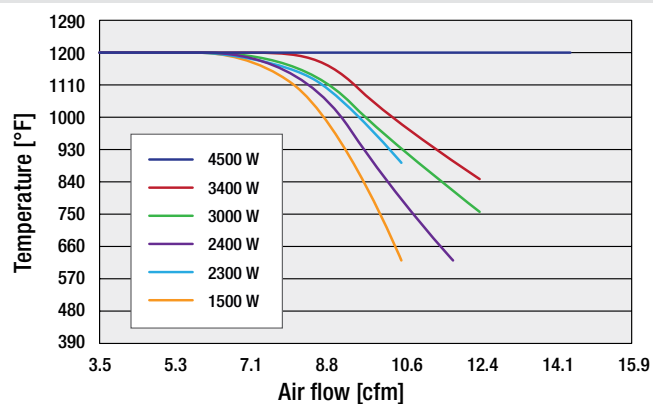


| Technical data                      | MISTRAL 2, 4, 6 PREMIUM |         |           |         |         |         |         |
|-------------------------------------|-------------------------|---------|-----------|---------|---------|---------|---------|
| Model                               | 2                       | 4       | 6         | 6       | 6       | 6       | 6       |
| Voltage                             | V~                      | 230     | 120       | 120     | 230     | 230     | 220     |
| Power                               | W                       | 3400    | 2400      | 2400    | 2300    | 3400    | 3100    |
| Temperature open                    | °F                      | 968     | 914       | 806     | 832     | 950     | 950     |
| Max. air volume (68 °F)             | cfm                     | 12.4    | 10.6      | 12.4    | 10.6    | 12.4    | 12.4    |
| Pressure                            | psi                     | 0.5     | 0.5       | 0.36    | 0.36    | 0.36    | 0.36    |
| Weight                              | lbs                     | 3.1     | 3.1       | 3.1     | 3.1     | 3.1     | 3.1     |
| Ø                                   | inches                  | 1.97    | 1.97      | 1.97    | 1.44    | 1.97    | 1.97    |
| Mark of conformity                  | CE                      |         | CE cRU us |         |         | CE      |         |
| Article no. MISTRAL 2, 4, 6 PREMIUM | 147.963                 | 147.964 | 147.965   | 148.006 | 147.966 | 147.967 | 146.522 |

| Model                        | MISTRAL 6 SYSTEM |         |           |         |         |         |         |
|------------------------------|------------------|---------|-----------|---------|---------|---------|---------|
| Voltage                      | V~               | 100     | 120       | 200     | 230     | 230     | 220     |
| Power                        | W                | 1500    | 2400      | 3000    | 2300    | 3400    | 3100    |
| Temperature open             | °F               | 1200    | 1200      | 1200    | 1200    | 1200    | 1200    |
| Air volume (68 °F) min.      | cfm              | 3.53    | 3.53      | 3.53    | 3.53    | 3.53    | 3.53    |
| max.                         | cfm              | 10.6    | 12.4      | 12.4    | 10.6    | 12.4    | 12.4    |
| Pressure                     | psi              | 0.5     | 0.5       | 0.5     | 0.5     | 0.5     | 0.5     |
| Weight                       | lbs              | 2.6     | 3.1       | 3.1     | 2.6     | 0.5     | 0.5     |
| Ø                            | inches           | 1.5     | 1.97      | 1.97    | 1.44    | 1.97    | 1.97    |
| Mark of conformity           | CE               |         | CE cRU us |         |         | CE      |         |
| Article no. MISTRAL 6 SYSTEM | 147.972          | 147.969 | 147.973   | 147.975 | 146.701 | 147.968 | 146.524 |

|                     |       |                                     |
|---------------------|-------|-------------------------------------|
| Frequenz            | Hz    | 50 / 60                             |
| Emissionspegel      | dB(A) | 65                                  |
| Masse               |       | see bottom left                     |
| Protection class II |       | <input type="checkbox"/>            |
| Approval mark       |       | <input checked="" type="checkbox"/> |

We reserve the right to make technical changes. Power cord sold separately.



Accessories 16

# HOTWIND PREMIUM / SYSTEM: The versatile hot-air blower.

Its brushless motor ensures that this hot-air blower has a long service life. The air volume can now be set up to 31.8 cfm via the potentiometer. The wide range of applications makes the new HOTWIND SYSTEM truly impressive: be it as a unit with integrated control, or as a unit for integration in a closed-loop control circuit using a system interface.

Hot-air blower

## HOTWIND PREMIUM / SYSTEM



**HOTWIND SYSTEM**

|   |  |   |
|---|--|---|
| 1 |    | <b>Infinitely adjustable:</b><br>Potentiometers for stepless adjustment of the heater and blower (PREMIUM and SYSTEM).  |
| 2 |    | <b>Remote controlled:</b><br>Interface with alarm contact in the HOTWIND SYSTEM for controlling the air volume and heat output, using 4 – 20 [mA] or 0 – 10 [V] signal. |
| 3 |    | <b>Integrated:</b><br>Thermocouple in the HOTWIND SYSTEM for even greater precision.  |
| 4 |  | <b>User-friendly:</b><br>Display on the HOTWIND SYSTEM provides the user with status information.   |
| 5 |  | <b>Cleverly combined:</b><br>Main switch with integral function button for programming (SYSTEM).  |
| 6 |  | <b>Automatic cooling:</b><br>HOTWIND PREMIUM and HOTWIND SYSTEM are equipped with an automatic cool-down function.  |

|   | PREMIUM | SYSTEM |
|---|---------|--------|
| Heat output and air volume steplessly adjustable with potentiometer | •       | •      |
| Integrated power electronics  | •       | •      |
| Protection against heating element or device overheating            | •       | •      |
| Brushless blower motor  | •       | •      |
| Alarm output  |         | •      |
| Integrated temperature probe  |         | •      |
| Integrated temperature control                                      |         | •      |
| Remote control interface for temperature or power set point         |         | •      |
| Remote control interface for air volume adjustment                  |         | •      |
| Display for showing the setpoint and actual values (°C or °F)       |         | •      |

Hot-air blower

## HOTWIND PREMIUM / SYSTEM



**HOTWIND PREMIUM**

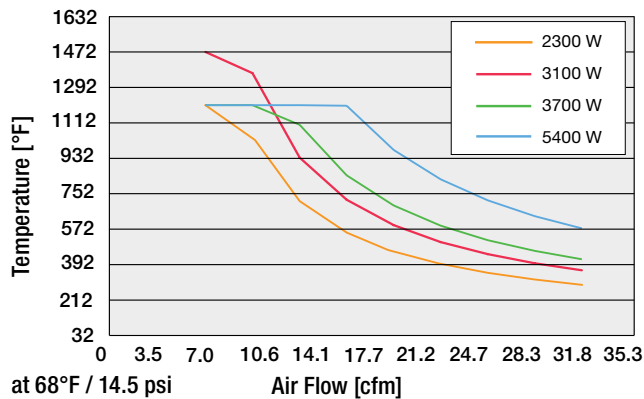
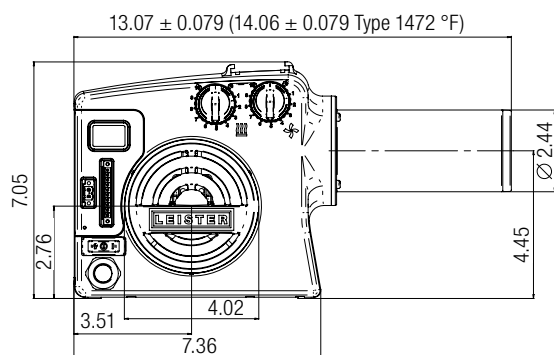
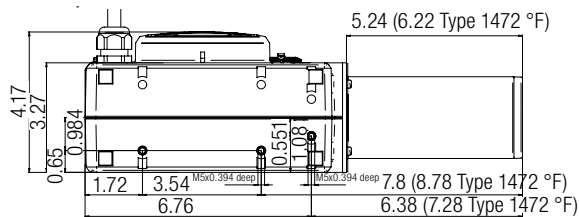
### Technical data HOTWIND PREMIUM / HOTWIND SYSTEM

|                             |       |                 |         |                 |         |         |                 |         |         |
|-----------------------------|-------|-----------------|---------|-----------------|---------|---------|-----------------|---------|---------|
| Voltage                     | V~    | 120             | 230     | 230             | 230     | 230     | 230             | 400     | 220     |
| Power consumption           | W     | 2300            | 2300    | 2300            | 3100    | 3680    | 3680            | 5400    | 3350    |
| Frequency                   | Hz    | 50 / 60         |         |                 |         |         |                 |         |         |
| Max. air outlet-temperature | °F    | 1202            | 1202    | 1202            | 1472    | 1202    | 1202            | 1202    | 1202    |
| Air flow (68 °F)            | cfm   | 7.1 – 31.8      |         |                 |         |         |                 |         |         |
| Static pressure             | psi   | 0.12            | 0.15    |                 |         |         |                 |         |         |
| Noise emission              | dB(A) | < 70            |         |                 |         |         |                 |         |         |
| Weight without cable        | lbs   | 4.85            |         | 5.1             | 4.85    |         | 5.3             | 4.85    |         |
| Dimensions                  |       | see below       |         |                 |         |         |                 |         |         |
| Protection class II         |       | □               |         |                 |         |         |                 |         |         |
| Conformity mark             |       | CE<br>cRU<br>US | CE      | CE<br>cRU<br>US | CE      | CE      | CE<br>cRU<br>US | CE      | CE      |
| Safety standard             |       | Ⓢ               | Ⓢ       | Ⓢ               | Ⓢ       | Ⓢ       | Ⓢ               | Ⓢ       | Ⓢ       |
| Without connecting plug     |       | •               |         | •               |         |         | •               | •       |         |
| Connecting plug (Euro)      |       |                 | •       |                 | •       | •       |                 |         |         |
| Connecting plug (Korea)     |       |                 |         |                 |         |         |                 |         | •       |
| order. No.                  |       | 140.095         | 142.612 | 142.643         | 142.608 | 142.609 | 140.098         | 142.644 | 143.299 |
| order. No.                  |       | 142.636         | 142.646 | 140.096         |         | 142.645 | 142.640         | 142.641 | 143.804 |

\* Note: Interface with cover, connecting plug included.

Subject to change without notice.  
Connection voltage non-switchable.

### Installation dimensions in inches



Accessories





## Accessories MISTRAL PREMIUM / SYSTEM (∅ 1.92 in)

|   |  |  |  |
|---|--|--|--|
|    | <b>107.254</b> Flange connector, push-fit<br>a = 2.44 in   |    | <b>107.286</b> PVC air hose<br>∅ 1.5 in  |
|    | <b>122.332</b> Nozzle adapter, push-fit (a × b)<br>from (a) ∅ 1.97 in to (b) ∅ 2.44 in<br><b>122.924</b> from (a) ∅ 1.97 in to (b) ∅ 1.46 in   |    | <b>107.287</b> Hose clip for ∅ 1.5 and 2.36 in<br>air hose   |
|    | <b>107.255</b> Extension nozzle, push-fit (a × b)<br>6.29 × 1.44 in  |    | <b>106.127</b> Sieve reflector «douche» (∅ 1.99 in)<br>∅ 2.56 in   |
|   | Tubular nozzle, push-fit (a × b × c)<br><b>105.950</b> 18.1 × 11.8 × 0.08 in<br><b>107.257</b> 23.2 × 16.5 × 0.07 in<br><b>105.955</b> 32.9 × 26.0 × 0.04 in<br><b>105.952</b> 35.4 × 31.5 × 0.04 in |    | <b>153.245</b> Stainless steel filter kit (∅ 1.5 in),<br>push-fit on air intake  |
|  | <b>107.256</b> Angled nozzle, push-fit (a × b)<br>shank length 3.94 × 6.3, ∅ 1.92 in   |  | <b>106.956</b> Thermocouple with plug<br>3.3 ft cable  |
|  | <b>105.961</b> Wide slot nozzle, push-fit (a × b)<br>1.77 × 0.47 in, length 13.8 in<br><b>107.258</b> 2.76 × 0.39 in   |  | Thermocouple extension cable<br>with plug and connection<br><b>106.958</b> 6.56 ft<br><b>106.960</b> 13.1 ft<br><b>106.962</b> 32.8 ft |
|  | Wide slot nozzle, push-fit (a × b)<br><b>106.057</b> 3.94 × 0.16 in<br><b>106.060</b> 5.91 × 0.24 in<br><b>107.270</b> 5.91 × 0.47 in<br><b>106.061</b> 11.8 × 0.24 in                               |  | <b>123.039</b> CSS – Temperature controller<br>(MISTRAL SYSTEM)  |
|  | <b>107.331</b> Hinged reflector, push-fit (d × b)<br>2.76 × 2.76 in  |  | <b>137.720</b> E5CC – digital Temperature controller<br>(MISTRAL SYSTEM)   |
|  | <b>107.340</b> Shell reflector, push-fit (a × b)<br>1.77 × 9.84 in   |  | <b>148.812</b> External potentiometer box,<br>analogue, 10 kΩ, with 9 ft signal cable<br>(MISTRAL PREMIUM)                             |
|  | Sieve reflector, push-fit (a × b)<br><b>107.327</b> 2.76 × 75 in<br><b>107.333</b> 4.33 × 5.91 in  |  |  |
|  | <b>107.330</b> Hinged reflector, push-fit (d × b)<br>4.92 × 0.87 in  |  |  |

Accessories for ∅ 1.44 inch can be found on page 40 (LHS 21 analog air heaters)

## Accessories HOTWIND PREMIUM / SYSTEM (Ø 2.44 in)

|   |  |  |  |
|---|--|--|--|
|    | <b>125.317</b> Flange connector, push-fit<br>a = 3.54 in   |   | <b>141.723</b> Hand tool kit<br>(handle and protective tube)           |
|    | <b>107.247</b> Extension nozzle, push-fit (a x b)<br>7.87 x 1.57 in  |  | <b>113.351</b> Extension tube, push-fit (a x b)<br>10.82 x Ø 2.44 inch |
|     | <b>105.907</b> Tubular nozzle, push-fit (a x b x c)<br>13.9 x 8.03 x 0.18 in<br><b>105.919</b> 18.0 x 12.0 x 0.12 in<br><b>107.253</b> 27.6 x 21.7 x 0.07 in<br><b>114.136</b> 31.3 x 25.8 x 0.06 in<br><b>105.906</b> 43.3 x 39.4 x 0.16 in   |  |  |
|   | <b>107.265</b> Angled nozzle, push-fit (a x b)<br>shank length 4.72 x 4.53, Ø 2.44 in  |  |  |
|  | <b>107.245</b> Round nozzle, push-fit<br>d = 1.57 in   |  |  |
|  | <b>107.342</b> Shell reflector, push-fit (a x b x c)<br>1.97 x 15.7 x 3.15 in<br><b>106.174</b> 2.56 x 15.7 x 3.74 in<br><b>106.175</b> 3.15 x 15.7 x 3.15 in  |  |  |
|  | <b>107.260</b> Wide slot nozzle, push-fit (a x b)<br>3.35 x 0.59 in<br><b>107.259</b> 5.91 x 0.47 in<br><b>105.977</b> 7.87 x 0.35 in<br><b>107.263</b> 9.84 x 0.0.47 in, with sieve insert<br><b>107.262</b> 11.8 x 0.16 in<br><b>105.992</b> 15.7 x 0.16 in<br><b>105.991</b> 19.7 x 0.16 in |  |  |
|  | <b>106.143</b> Sieve reflector, push-fit (a x b)<br>1.77 x 2.95 in<br><b>107.329</b> 2.76 x 2.95 in<br><b>107.336</b> 4.33 x 5.98 in   |  |  |
|  | <b>107.335</b> Sieve reflector, push-fit<br>Ø 5.91 in  |  |  |
|  | <b>107.248</b> Stainless steel filter,<br>push-fit on air intake   |  |  |

# VULCAN SYSTEM: The clever muscle man.

The muscle man among the hot-air blowers leaves no doubts about its performance. It is compactly built and easy to integrate into industrial processes. Just as Leister's smaller hot-air blowers, the VULCAN SYSTEM can be controlled remotely through a standard analog interface.

Hot-air blower

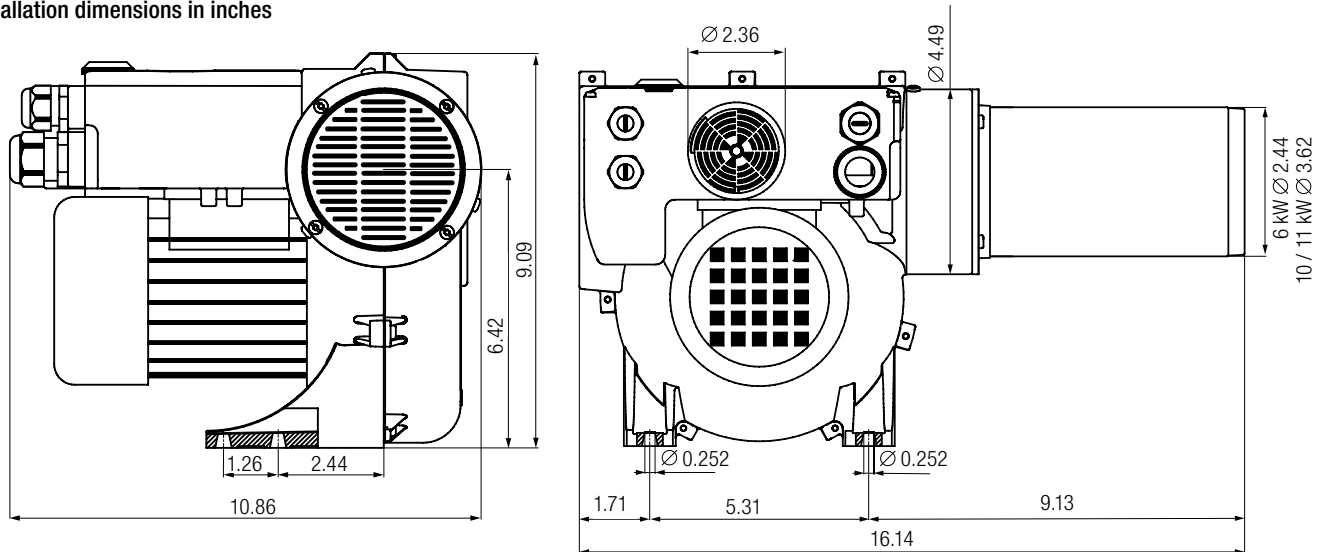
## VULCAN SYSTEM



|                   |    |         |         |         |         |         |         |
|-------------------|----|---------|---------|---------|---------|---------|---------|
| Voltage           | V~ | 3 × 230 |         | 3 × 400 |         | 3 × 480 |         |
| Power consumption | kW | 6       | 10      | 6       | 11      | 6       | 11      |
| Article no.       |    | 143.407 | 143.406 | 143.402 | 140.463 | 143.405 | 143.404 |



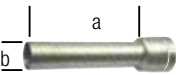

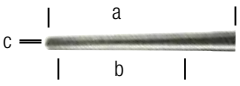
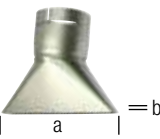
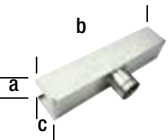
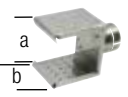


| Technical Data VULCAN SYSTEM  | Frequency | 50 Hz | 60 Hz |
|---|-----------|-------|-------|
| Heating power steplessly adjustable with potentiometer              |           | •     |       |
| Standard control interface through a 4 - 20 mA or a 0 - 10 V signal |           | •     |       |
| Integrated power electronics  |           | •     |       |
| Protection against heating element or device overheating            |           | •     |       |
| Brushless blower motor with FC control                              |           | •     |       |
| Alarm output  |           | •     |       |
| Integrated temperature control                                      |           | •     |       |
| Integrated temperature probe  |           | •     |       |
| Display for showing the setpoint and actual values                  |           | •     |       |
| Max. air outlet temperature °F                                      |           | 1202  |       |
| Max. air flow cfm (68 °F) 3 × 230 V~                                |           | 30    | 53    |
| Max. air flow cfm (68 °F) 3 × 400 V~ / 3 × 480 V~                   |           | 33.5  | 60    |
| Static pressure psi   |           | 0.45  | 0.59  |
| Noise emission level db (A)   |           | 65    |       |
| Weight (lbs)  |           | 21    |       |
| Conformity mark   |           | CE    |       |
| Protection class I  |           | ⊕     |       |
| Safety standard   |           | Ⓢ     |       |

### Installation dimensions in inches






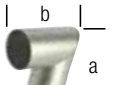
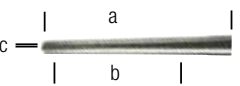

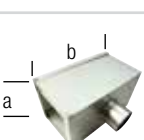



## Accessories VULCAN SYSTEM

6 kW (∅ 2.44 in)

|   |  |
|---|--|
|    | <b>125.317</b> Flange connector, push-fit<br>a = 3.54 in   |
|    | <b>107.245</b> Round nozzle, push-fit<br>d = 1.57 in   |
|    | <b>107.247</b> Extension nozzle, push-fit (a x b)<br>7.87 × 1.57 in  |
|   | <b>107.265</b> Angled nozzle, push-fit (a x b)<br>shank length 4.72 × 4.53, ∅ 2.44 in  |
|   | Tubular nozzle, push-fit (a x b x c)<br><b>105.907</b> 13.9 × 8.03 × 0.18 in<br><b>105.919</b> 18.0 × 12.0 × 0.12 in<br><b>107.253</b> 27.6 × 21.7 × 0.07 in<br><b>114.136</b> 31.3 × 25.8 × 0.06 in<br><b>105.906</b> 43.3 × 39.4 × 0.16 in   |
|  | Wide slot nozzle, push-fit (a x b)<br><b>107.260</b> 3.35 × 0.59 in<br><b>107.259</b> 5.91 × 0.47 in<br><b>105.977</b> 7.87 × 0.35 in<br><b>107.263</b> 9.84 × 0.47 in, with sieve insert<br><b>107.262</b> 11.8 × 0.16 in<br><b>105.992</b> 15.7 × 0.16 in<br><b>105.991</b> 19.7 × 0.16 in |
|  | Shell reflector, push-fit (a x b)<br><b>107.342</b> 1.97 × 15.7 in<br><b>106.174</b> 2.56 × 15.7 in<br><b>106.175</b> 3.15 × 15.7 in   |
|  | Shell reflector, push-fit (a x b x c)<br><b>106.143</b> 1.97 × 15.7 × 3.15 in<br><b>107.329</b> 2.56 × 15.7 × 3.74 in<br><b>107.336</b> 3.15 × 15.7 × 3.15 in  |
|  | <b>107.335</b> Sieve reflector, push-fit<br>∅ 5.91 in  |
|  | <b>107.277</b> Stainless steel filter,<br>push-fit on air intake   |

## Accessories VULCAN SYSTEM

10/11 kW (∅ 3.62 in)

|  |  |
|--|--|
|     | <b>125.318</b> Flange connector, push-fit<br>a = 4.72 in   |
|     | <b>107.244</b> Round nozzle, push-fit<br>d = 1.97 in   |
|    | <b>107.273</b> Extension nozzle, push-fit (a x b)<br>19.7 × 2.36 in  |
|    | <b>107.269</b> Angled nozzle, push-fit (a x b)<br>shank length 6.89 × 6.89 in  |
|  | Tubular nozzle, push-fit (a x b x c)<br><b>106.031</b> 39.4 × 31.5 × 0.08 in<br><b>106.035</b> 46.7 × 35.4 × 0.06 in<br><b>107.268</b> 50.7 × 39.4 × 0.06 in<br><b>106.033</b> 61.0 × 53.1 × 0.04 in   |
|  | Wide slot nozzle, push-fit (a x b)<br><b>107.274</b> 5.12 × 0.67 in<br><b>106.028</b> 8.66 × 0.47 in<br><b>107.272</b> 11.8 × 0.47 in<br><b>106.018</b> 15.7 × 0.39 in<br><b>106.024</b> 19.7 × 0.28 in<br><b>107.267</b> 19.7 × 0.59 in<br><b>106.023</b> 23.6 × 0.16 in<br><b>106.026</b> 23.6 × 0.35 in |
|   | <b>107.341</b> Shell reflector, push-fit (a x b)<br>6.3 × 14.6 in  |
|   | <b>107.276</b> Sieve reflector, push-fit<br>∅ 10.2 in  |
|   | <b>107.277</b> Stainless steel filter,<br>push-fit on air intake   |
|   | <b>133.517</b> Thermocouple holder   |

# IGNITER BM4 / BR4 – Ignites just about anything.

The new IGNITER ignition blower from Leister has been specially developed for installation into pellet and wood chip boilers. The IGNITER BR4 with 3.4 kW has what it takes. The interface was selected so that the ignition blowers can easily be installed into any heating boiler.

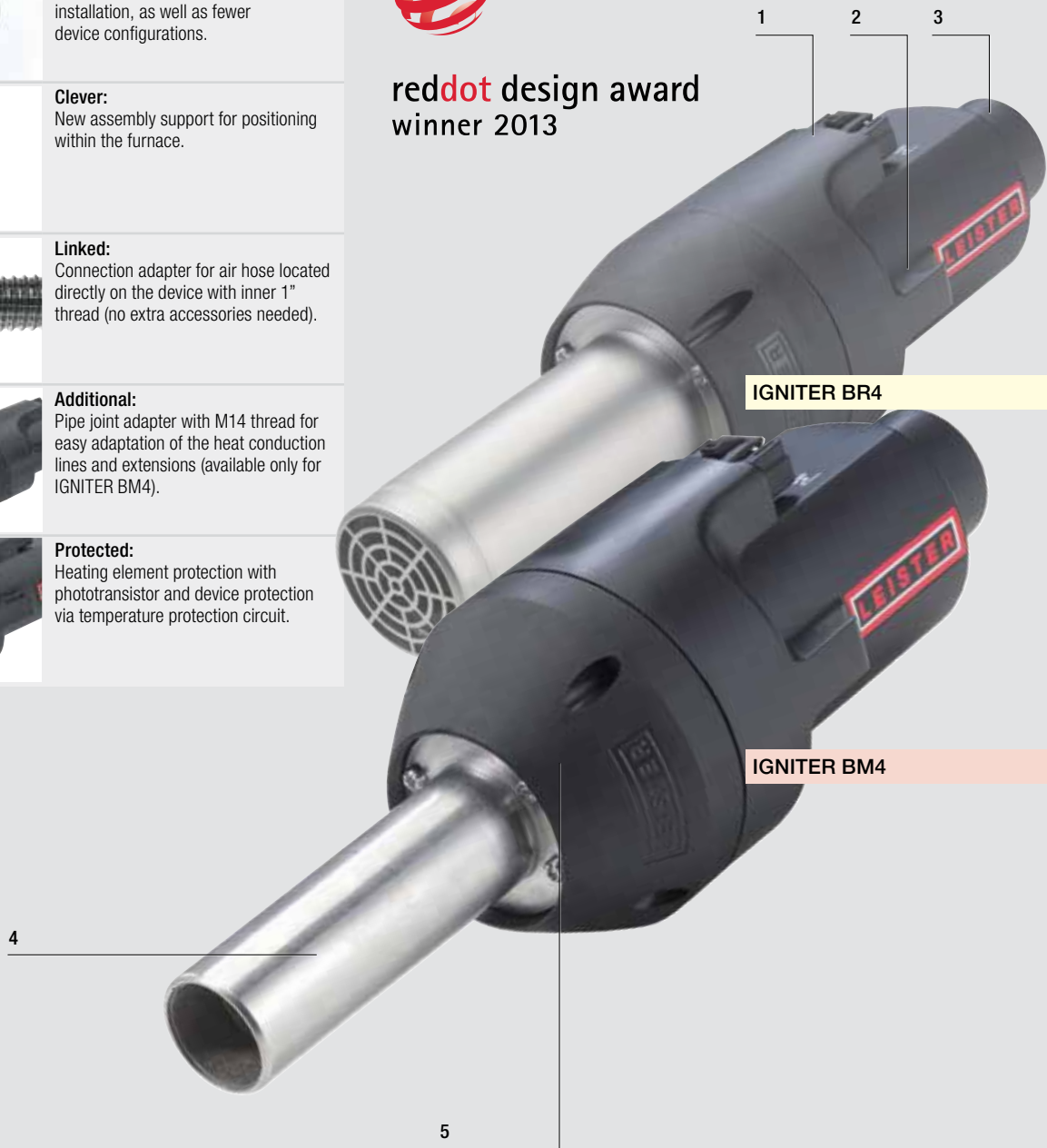
Hot-air blower

## IGNITER

|   |   |  |
|---|---|--|
| 1 |    | <p><b>Easy:</b><br/>Connector plug located directly on the device means easy removal and installation, as well as fewer device configurations.</p>                 |
| 2 |    | <p><b>Clever:</b><br/>New assembly support for positioning within the furnace.</p>   |
| 3 |   | <p><b>Linked:</b><br/>Connection adapter for air hose located directly on the device with inner 1" thread (no extra accessories needed).</p>                       |
| 4 |  | <p><b>Additional:</b><br/>Pipe joint adapter with M14 thread for easy adaptation of the heat conduction lines and extensions (available only for IGNITER BM4).</p> |
| 5 |  | <p><b>Protected:</b><br/>Heating element protection with phototransistor and device protection via temperature protection circuit.</p>                             |



reddot design award  
winner 2013





Clean ignition process due to optimum heat level.

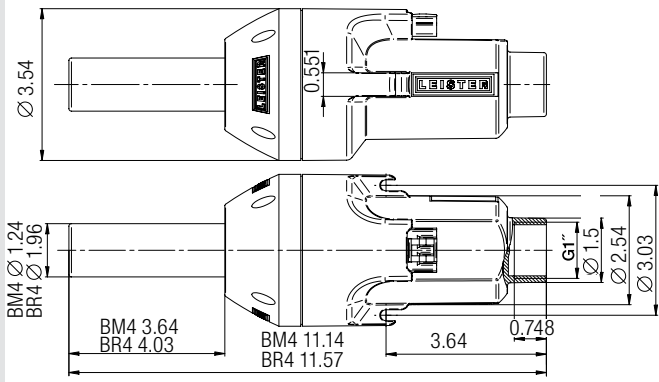
## Accessories IGNITER

| Technical Data       | IGNITER BM4 |                          |                            |         |                             |         |         |         |         |         |       |
|----------------------|-------------|--------------------------|----------------------------|---------|-----------------------------|---------|---------|---------|---------|---------|-------|
|                      |             |                          | BM4 with M14 screw adapter |         | BM4 with 3/8" screw adapter |         | BR4     |         |         |         |       |
| Voltage              | V           | 120                      | 120                        | 230     | 230                         | 230     | 230     | 230     | 230     | 230     |       |
| Frequency            | Hz          | 50 / 60                  |                            |         |                             |         |         |         |         |         |       |
| Power rating         | W           | 1100                     | 1550                       | 600     | 1100                        | 1600    | 1100    | 1600    | 1100    | 3400    |       |
| Min. air volume      | cfm<br>68°F | 8.1                      | 8.1                        | 2.8     | 8.1                         | 8.1     | 8.1     | 8.1     | 8.1     | 12.75   |       |
| Air pressure         | psi         | 0.36                     | 0.36                       | 0.044   | 0.36                        | 0.36    | 0.36    | 0.36    | 0.36    | 0.58    |       |
| Max temperature      | °F          | 1110                     | 1110                       | 930     | 1110                        | 1110    | 1110    | 1110    | 1110    | 1202    |       |
| Noise emission level | dB (A)      | 68                       | 68                         | 58      | 68                          | 68      | 68      | 68      | 68      | 68      |       |
| Aperture             | inches Ø    | 3.54                     |                            |         |                             |         |         |         |         |         |       |
| Weight               | lbs         | 2.2 (without power cord) |                            |         |                             |         |         |         |         |         | 2.64  |
| Length               | inches      | 11.14                    |                            |         |                             |         |         |         |         |         | 11.57 |
| Conformity mark      |             | CE cRU us                |                            |         |                             |         |         |         |         |         | CE    |
| Safety standard      |             | S                        |                            |         |                             |         |         |         |         |         |       |
| Certification        |             | CCA                      |                            |         |                             |         |         |         |         |         |       |
| Protection class II  |             | □                        |                            |         |                             |         |         |         |         |         |       |
| Article no.          |             | 141.882                  | 141.881                    | 139.232 | 140.711                     | 139.231 | 144.012 | 145.449 | 142.421 | 146.296 |       |

We reserve the right to make technical changes.  
Plug for cable connection and cable are not included.

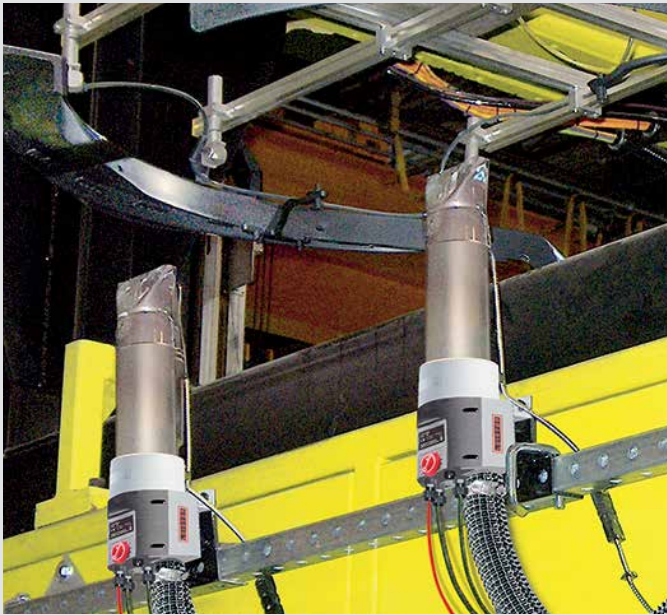
|  |                      |   |
|--|----------------------|---|
|  | <b>156.095</b>       | Heater tube 3/8" for extensions                                 |
|  | <b>156.094</b>       | Heater tube M14 for extensions                                  |
|  | <b>153.245</b>       | Stainless steel filter kit (Ø 1.49 in), push-fit on air intake  |
|  | <b>107.286</b>       | PVC Air hose Ø 1.5 in   |
|  | <b>107.287</b>       | Hose bracket for hose Ø 1.5 in and Ø 2.4 in                     |
|  | <b>142.717</b>       | Heating element 230V ~ 1550W                                    |
|  | <b>150.871</b>       | Heating element 230V ~ 1050W                                    |
|  | <b>150.872</b>       | Heating element 230V ~ 550W                                     |
|  | <b>142.718</b>       | Heating element 120V ~ 1500W                                    |
|  | <b>150.873</b>       | Heating element 120V ~ 1050W                                    |
|  | <b>145.606</b>       | Heating element (BR4) 230V ~ 3300W                              |
|  | <b>142.967</b>       | Power supply cord (rubber) with WAGO plug 3 x 16 AWG x 9.8 ft   |
|  | <b>143.131</b>       | Power supply cord (silicone) with WAGO plug 3 x 16 AWG x 9.8 ft |
|  | <b>142.976</b>       | Plug with strain relief, kit (WAGO 770) cable Ø 1.77 – 3.15 in  |
|  | <b>148.429 (BR4)</b> | Plug with strain relief, kit (WAGO 770) cable Ø 3.15 – 4.5 in   |
|  | <b>142.359</b>       | Accessory adapter to TRIAC S Economy heating pipe               |

### Installation dimensions in inches



Installation arrangement





## Air Heaters / Controllers

|  |         |
|--|---------|
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# Leister's air heaters: From mini to giant.

## Leister's air heater highlights: The LHS series.



Picture: LHS 21S SYSTEM (p. 28 – 29)

|   |  |   |
|---|--|---|
| 1 |    | <b>Compact:</b><br>Small dimensions for installation in tight spaces.   |
| 2 |    | <b>Reliable:</b><br>Very durable heating elements thanks to innovative, patented heating element protection.        |
| 3 |    | <b>Easy Maintenance:</b><br>Faster and easier heating element change.   |
| 4 |   | <b>Power electronics:</b><br>External power control becomes obsolete and system design times are reduced.           |
| 5 |  | <b>Thermocouple:</b><br>The integral thermocouple in SYSTEM devices improves precision and enables reproducibility. |
| 6 |  | <b>User-friendly:</b><br>The display of the SYSTEM devices provides users with precise, local information.          |

### 7 Professional integration or controlled stand-alone operation

| Operation modes<br>LHS SYSTEM       | Control mode   | Adjustment mode   |
|-------------------------------------|--|---|
| Internal (potentiometer) set point. | Temperature set point by potentiometer.<br>Display shows temperature set point and actual temperature.       | Capacity set point by potentiometer.<br>Display shows capacity set point in % and actual temperature.       |
| External (interface) set point.     | Temperature set point by external controller.<br>Display shows temperature set point and actual temperature. | Capacity set point by external controller.<br>Display shows capacity set point in % and actual temperature. |

# The LHS air heater family

The LHS air heater family covers an impressive power range from 550 W to 40 kW. The diversity of this portfolio makes it ideal for practically all hot-air applications. By choosing LHS air heaters, you are investing in devices that are manufactured using state-of-the-art technology. Between them, the CLASSIC, PREMIUM and SYSTEM models offer the ideal solutions for users' differing requirements.

| Features  | CLASSIC | PREMIUM | SYSTEM |
|---|---------|---------|--------|
| Easy to integrate (mounted from above)                                  | ✓       | ✓       | ✓      |
| Overheat detection with alarm output for the heating element            | ✓       |         |        |
| Tool overheat detection with alarm output                               | ✓       |         |        |
| Overheat protection with alarm output for the heating element           |         | ✓       | ✓      |
| Tool overheat protection with alarm output                              |         | ✓       | ✓      |
| Infinitely adjustable heating capacity via potentiometer                |         | ✓       | ✓      |
| Remote control via analog interface (4 – 20 mA or 0 – 10 V)             |         |         | ✓      |
| Various open-loop and closed-loop control modes available for selection |         |         | ✓ *    |
| LED display (target/actual value display)                               |         |         | ✓ *    |

\* = except the LHS 91 SYSTEM

Air Heaters  
Controllers

Alongside its optimized design and traditional Leister quality, the patented heating element protection guarantees yet another increase to the service life of the heating element. Thanks to their built-in temperature probes and controllers, integrating the LHS SYSTEM air heaters has never been easier. The integrated power electronics simplify the wiring and make external power controls a thing of the past.

| Model                 | LHS 15             |                  | LHS 21           |                  | LHS 41           |                 | LHS 61         |   | LHS 91 |
|-----------------------|--------------------|------------------|------------------|------------------|------------------|-----------------|----------------|---|--------|
|                       | S                  | L                | S                | L                | S                | L               | S              | L |        |
| Power Range from – to | 0.55 kW<br>0.77 kW | 1.0 kW<br>3.3 kW | 2.0 kW<br>3.6 kW | 2.0 kW<br>5.5 kW | 4.0 kW<br>9.0 kW | 5.0 kW<br>16 kW | 11 kW<br>40 kW |   |        |
| Catalog page          | 26                 | 28               | 30               | 32               | 34               |                 |                |   |        |

# LHS 15: Tiny and reliable.

The tiny LHS 15 air heater provides hot air up to 1202 °F. All prominent features of Leister air heaters also are offered with this tiny heater: long-life heating element, reliable protection systems, standard interfaces. Simply summarizing, the same Leister quality as usual, making it a perfect tool for applications in the semiconductor, electronics, automotive and other industries.

Air heater

## LHS 15



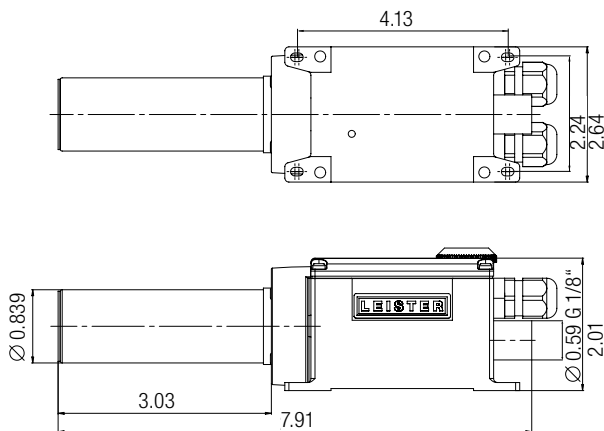
### Technical data

|                             |     |                |
|-----------------------------|-----|----------------|
| Max. air outlet temperature | °F  | 1202           |
| Max. air inlet temperature  | °F  | 149            |
| Max. ambient temperature    | °F  | 149            |
| Min. air flow               |     | As per diagram |
| Max. inlet pressure         | psi | 14.5           |
| Weight                      | lbs | 1              |

|                     |    |
|---------------------|----|
| Conformity mark     | CE |
| Approval mark       | UK |
| Protection class II | □  |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power

### Installation dimensions in inches



### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68 °F, 14.5 psi compliant with ISO 6358.

| Power Type | Number LHS 15 x power cons. kW | Air flow cfm. | Temperature °F |
|------------|--------------------------------|---------------|----------------|
| ROBUST     | 1 × 0.77                       | 1 × 5.30      | 788            |
| ROBUST     | 2 × 0.77                       | 2 × 4.59      | 860            |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).



Deflashing foil sleeves from charcoal filter elements

Air heater

**LHS 15 CLASSIC**



Heating power not adjustable

Detection of heating element and device overheating with alarm output

Air heater

**LHS 15 PREMIUM**



Heating power steplessly adjustable with potentiometer

Protection against heating element and device overheating with alarm output

Air heater

**LHS 15 SYSTEM**



Heating power or temperature steplessly adjustable with potentiometer or remote control interface

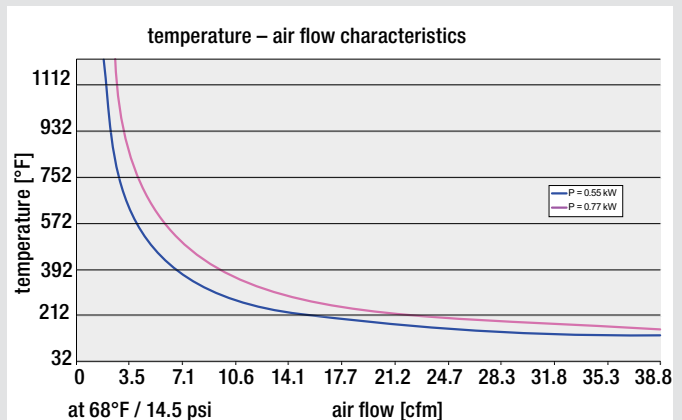
Protection against heating element and device overheating with alarm output

Remote control interface for external temperature controllers (Leister CSS, or PLCs)

Air Heaters  
Controllers

| Article no.:           | CLASSIC | PREMIUM | SYSTEM  |
|------------------------|---------|---------|---------|
| LHS 15 0.55 kW / 120 V | 139.873 | 139.908 | 139.894 |
| LHS 15 0.77 kW / 230 V | 139.874 | 139.893 | 139.895 |

Contact a Leister sales partner in your region for professional advice and information on our other air heaters and blowers.



Accessories



# LHS 21: Designed for professionals.

These advanced air heaters are distinguished by their extremely small dimensions—especially the lean design (only 2.64 inches wide)—as well as their long service life. Designed for professional integration into machine systems, the new LHS series enables any specific application. Sterilizing, drying, welding, cleaning, shrinking, shaping, deburring and activating are now more efficient and reliable thanks to Leister's proven hot-air technology!

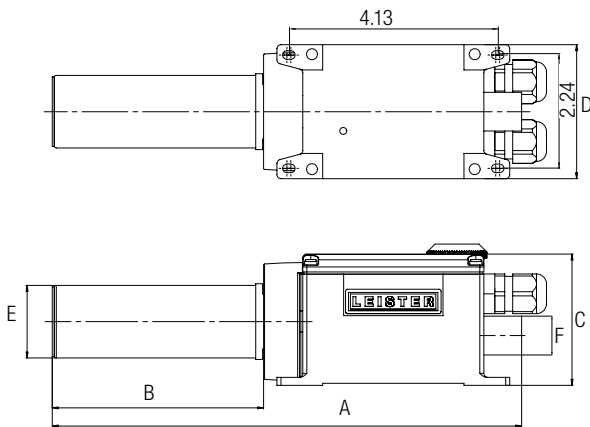
Air heater

## LHS 21



| Technical data   |     |                |
|--|-----|----------------|
| LHS 21S / 21L  |     |                |
| Max. air outlet temperature  | °F  | 1202           |
| Max. air inlet temperature   | °F  | 149            |
| Max. ambient temperature   | °F  | 149            |
| Min. air flow  |     | As per diagram |
| Max. inlet pressure  | psi | 14.5           |
| Weight 21S / 21L   | lbs | 1.21 / 1.43    |
| Conformity mark  | CE  |                |
| Approval mark  | Ⓢ   |                |
| Protection class II  | □   |                |
| Minimum quantity of air at air inlet temperature of 68°F at 100% heating power |     |                |

### Installation dimensions in inches



| Type    | A     | B    | C   | D    | E      | F             |
|---------|-------|------|-----|------|--------|---------------|
| LHS 21S | 9.29  | 4.17 | 2.6 | 2.64 | ∅ 1.44 | ∅ 0.77 G 3/8" |
| LHS 21L | 10.47 | 5.35 | 2.6 | 2.64 | ∅ 1.44 | ∅ 0.77 G 3/8" |

### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68 °F, 14.5 psi compliant with ISO 6358.

| Power Type | Number LHS 21S x power cons. kW | LHS 21S x Air flow cfm | LHS 21S Temperature °F |
|------------|---------------------------------|------------------------|------------------------|
| ROBUST     | 1 × 1.0                         | 1 × 22.6               | 320                    |
| ROBUST     | 2 × 1.0                         | 2 × 14.8               | 390                    |
| ROBUST     | 4 × 1.0                         | 4 × 8.5                | 570                    |
| ROBUST     | 1 × 2.0                         | 1 × 20.8               | 570                    |
| ROBUST     | 2 × 2.0                         | 2 × 13.8               | 720                    |
| ROBUST     | 4 × 2.0                         | 4 × 7.8                | 1000                   |
| MONO       | 2 × 1.0                         | 2 × 12.0               | 457                    |
| MONO       | 1 × 2.0                         | 1 × 18.5               | 631                    |
| MONO       | 2 × 2.0                         | 2 × 12.5               | 842                    |
| Power Type | Number LHS 21L x power cons. kW | LHS 21L x Air flow cfm | LHS 21L Temperature °F |
| ROBUST     | 1 × 3.3                         | 1 × 19.4               | 970                    |
| ROBUST     | 2 × 3.3                         | 2 × 13.6               | 1120                   |
| AIRPACK    | 2 × 3.3                         | 2 × 42.7               | 510                    |
| AIRPACK    | 4 × 3.3                         | 4 × 24.7               | 650                    |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

High-end air heaters on an indexing table for producing light bulbs.



Air heater

### LHS 21 CLASSIC



Heating power not adjustable

Detection of heating element and device overheating with alarm output

Air heater

### LHS 21 PREMIUM



Heating power steplessly adjustable with potentiometer

Protection against heating element and device overheating with alarm output

Air heater

### LHS 21 SYSTEM



Heating power or temperature steplessly adjustable with potentiometer or remote control interface

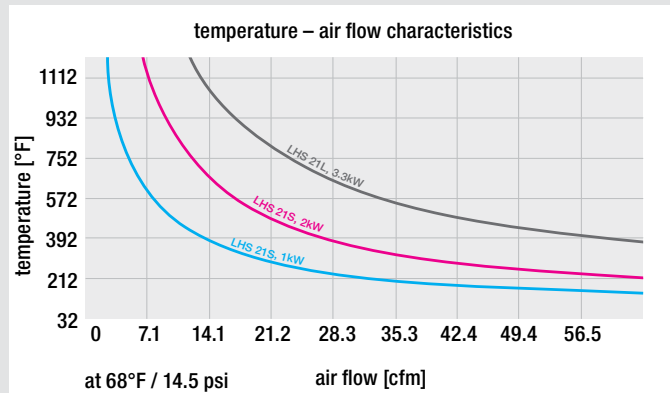
Protection against heating element and device overheating with alarm output

Remote control interface for external temperature controllers (Leister CSS, or PLCs)

Air Heaters  
Controllers

| Article No.: |               | CLASSIC | PREMIUM | SYSTEM  |
|--------------|---------------|---------|---------|---------|
| LHS 21S      | 1.0 kW / 120V | 139.868 | 140.454 | 140.458 |
| LHS 21S      | 1.0 kW / 230V | 139.869 | 140.455 | 140.459 |
| LHS 21S      | 2.0 kW / 120V | 139.870 | 140.456 | 140.460 |
| LHS 21S      | 2.0 kW / 230V | 139.871 | 139.909 | 139.910 |
| LHS 21L      | 3.3 kW / 230V | 139.872 | 140.457 | 140.461 |

Contact a Leister sales partner in your region for professional advice and information on our other air heaters and blowers.



Accessories



# LHS 41: Small but high performance.

The medium-sized, LHS 41 series air heaters cover an extremely wide application range. The small footprint enables easy integration into machines. The heater tube diameter, of 1.97 inches, allows for the passing sufficient air flow, and also high performance applications.

Air heater

## LHS 41



### Technical data

#### LHS 41S / 41L

|                             |     |                |
|-----------------------------|-----|----------------|
| Max. air outlet temperature | °F  | 1202           |
| Max. air inlet temperature  | °F  | 149            |
| Max. ambient temperature    | °F  | 149            |
| Min. air flow               |     | As per diagram |
| Max. inlet pressure         | psi | 14.5           |
| Weight 41S / 41L            | lbs | 1.87 / 2.1     |

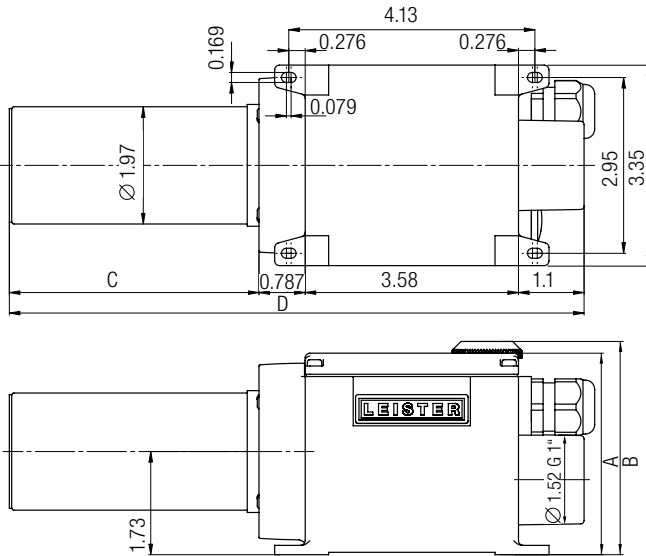
|                     |    |
|---------------------|----|
| Conformity mark     | CE |
| Approval mark       | Ⓢ  |
| Protection class II | □  |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power

### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68°F, 14.5 psi compliant with ISO 6358.

### Installation dimensions in inches

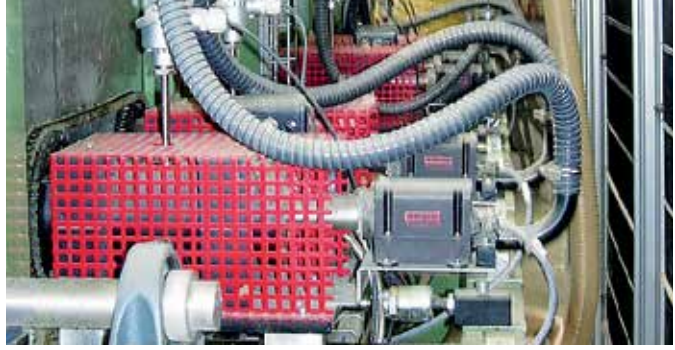


| Type            | A    | B    | C    | D     |
|-----------------|------|------|------|-------|
| LHS 41S CLASSIC | 3.39 | 3.39 | 4.17 | 9.65  |
| LHS 41L CLASSIC | 3.39 | 3.39 | 5.35 | 10.83 |
| LHS 41S PREMIUM | 3.39 | 3.58 | 5.17 | 9.65  |
| LHS 41L PREMIUM | 3.39 | 3.58 | 5.35 | 10.83 |
| LHS 41S SYSTEM  | 3.39 | 3.58 | 4.17 | 9.65  |
| LHS 41L SYSTEM  | 3.39 | 3.58 | 5.35 | 10.83 |

| Power Type | Number LHS 41S x power cons. kW | LHS 41S x Air flow cfm | LHS 41S Temperature °F |
|------------|---------------------------------|------------------------|------------------------|
| ROBUST     | 2 × 2.0                         | 2 × 17.0               | 570                    |
| ROBUST     | 4 × 2.0                         | 4 × 8.8                | 840                    |
| ROBUST     | 1 × 3.6                         | 1 × 28.6               | 700                    |
| ROBUST     | 2 × 3.6                         | 2 × 16.6               | 1000                   |
| SILENCE    | 2 × 2.0                         | 2 × 16.2               | 550                    |
| SILENCE    | 4 × 2.0                         | 4 × 13.4               | 570                    |
| SILENCE    | 1 × 3.6                         | 1 × 15.5               | 1110                   |
| SILENCE    | 2 × 3.6                         | 2 × 14.5               | 1110                   |
| SILENCE    | 4 × 3.6                         | 4 × 11.7               | 1110                   |
| ASO        | 4 × 2.0                         | 4 × 17.7               | 450                    |
| ASO        | 4 × 3.6                         | 4 × 17.0               | 840                    |
| MONO       | 1 × 2.0                         | 1 × 26.5               | 480                    |
| MONO       | 1 × 3.6                         | 1 × 23.5               | 870                    |
| Power Type | Number LHS 41L x power cons. kW | LHS 41L x Air flow cfm | LHS 41L Temperature °F |
| ROBUST     | 2 × 2.0                         | 2 × 18.0               | 590                    |
| ROBUST     | 4 × 2.0                         | 4 × 9.5                | 880                    |
| ROBUST     | 1 × 4.4                         | 1 × 28.6               | 730                    |
| ROBUST     | 2 × 4.4                         | 2 × 15.9               | 1040                   |
| SILENCE    | 2 × 2.0                         | 2 × 16.0               | 610                    |
| SILENCE    | 4 × 2.0                         | 4 × 13.0               | 620                    |
| SILENCE    | 1 × 4.4                         | 1 × 14.5               | 1150                   |
| SILENCE    | 2 × 4.4                         | 2 × 14.1               | 1150                   |
| SILENCE    | 4 × 4.4                         | 4 × 11.7               | 1170                   |
| ASO        | 4 × 2.0                         | 4 × 17.8               | 510                    |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

LHS air heaters in a production line for drying insulating material.



Air heater

**LHS 41 CLASSIC**



Heating power not adjustable

Detection of heating element and device overheating with alarm output

Air heater

**LHS 41 PREMIUM**



Heating power steplessly adjustable with potentiometer

Protection against heating element and device overheating with alarm output

Air heater

**LHS 41 SYSTEM**



Heating power or temperature steplessly adjustable with potentiometer or remote control interface

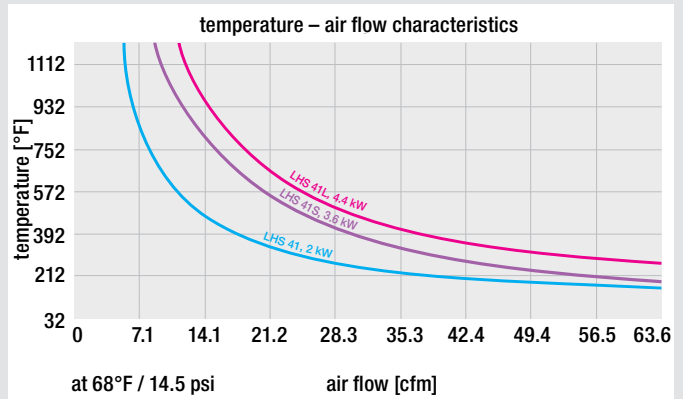
Protection against heating element and device overheating with alarm output

Remote control interface for external temperature controllers (Leister CSS, or PLCs)

Air Heaters  
Controllers

| Article No.: |             | CLASSIC | PREMIUM | SYSTEM  |
|--------------|-------------|---------|---------|---------|
| LHS 41S      | 2.0 kW/120V | 143.292 | 143.289 | 143.279 |
| LHS 41S      | 2.0 kW/230V | 143.291 | 143.287 | 143.278 |
| LHS 41S      | 3.6 kW/230V | 143.290 | 143.283 | 142.489 |
| LHS 41L      | 4.4 kW/230V | 145.726 | 145.435 | 145.729 |
| LHS 41L      | 2.0 kW/400V | 143.293 | 143.281 | 142.492 |
| LHS 41L      | 4.4 kW/400V | 143.294 | 143.282 | 143.280 |
| LHS 41L      | 5.5 kW/400V | 145.727 | 145.438 | 145.728 |

Contact a Leister sales partner in your region for professional advice and information on our other air heaters and blowers.



Accessories





# LHS 61: The large powerful models.

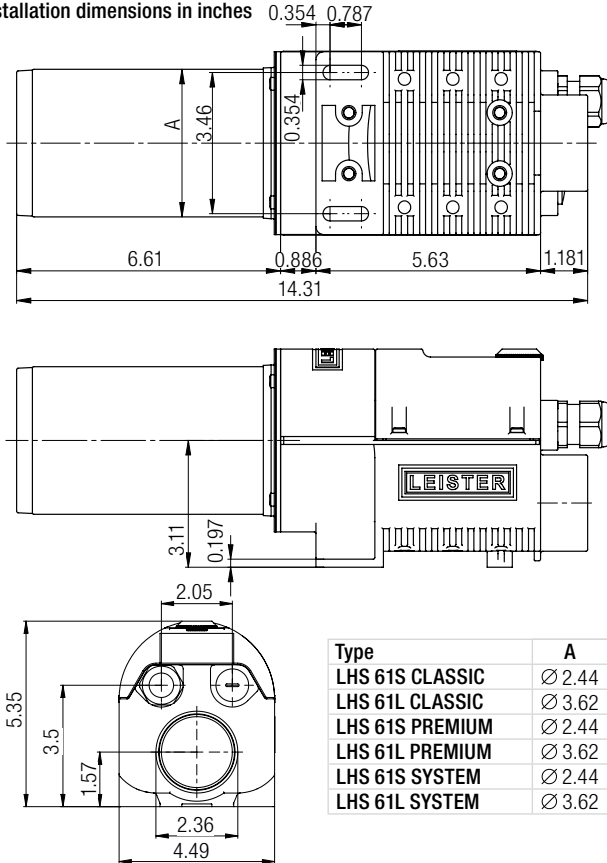
The LHS 61 series is your choice for high performance applications. The outlet diameter of 2.44 inches, for LHS 61S versions, and 3.62 inches for LHS 61L versions, allows high air flows with up to 16 kW heating power.

Air heater

## LHS 61



Installation dimensions in inches



### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68°F, 14.5 psi compliant with ISO 6358.

| Power Type | Number LHS 61S x<br>power cons. kW | LHS 61S x<br>Air flow cfm | LHS 61S<br>Temperature °F |
|------------|------------------------------------|---------------------------|---------------------------|
| ROBUST     | 2 × 4.0                            | 2 × 17.6                  | 920                       |
| ROBUST     | 1 × 6.0                            | 1 × 32.1                  | 770                       |
| SILENCE    | 2 × 4.0                            | 2 × 21.8                  | 710                       |
| SILENCE    | 1 × 6.0                            | 1 × 24.4                  | 930                       |
| SILENCE    | 2 × 4.0                            | 2 × 21.8                  | 710                       |
| SILENCE    | 2 × 6.0                            | 2 × 20.8                  | 950                       |
| ASO        | 2 × 4.0                            | 2 × 29.4                  | 590                       |
| ASO        | 2 × 6.0                            | 2 × 26.2                  | 800                       |
| ASO        | 4 × 6.0                            | 4 × 23.6                  | 870                       |
| AIRPACK    | 1 × 4.0                            | 1 × 109                   | 240                       |
| AIRPACK    | 2 × 4.0                            | 2 × 61.1                  | 350                       |
| AIRPACK    | 4 × 4.0                            | 4 × 33.8                  | 540                       |
| AIRPACK    | 1 × 6.0                            | 1 × 104                   | 320                       |
| AIRPACK    | 2 × 6.0                            | 2 × 60.0                  | 460                       |
| AIRPACK    | 4 × 6.0                            | 4 × 34.3                  | 730                       |
| Power Type | Number LHS 61L x<br>power cons. kW | LHS 61L x<br>Air flow cfm | LHS 61L<br>Temperature °F |
| ROBUST     | 1 × 8.0                            | 1 × 36.7                  | 940                       |
| SILENCE    | 2 × 8.0                            | 2 × 36.3                  | 830                       |
| SILENCE    | 1 × 11.0                           | 1 × 43.1                  | 890                       |
| SILENCE    | 2 × 11.0                           | 2 × 34.6                  | 1050                      |
| AIRPACK    | 1 × 8.0                            | 1 × 121                   | 380                       |
| AIRPACK    | 2 × 8.0                            | 2 × 81.7                  | 590                       |
| AIRPACK    | 4 × 8.0                            | 4 × 34.6                  | 940                       |
| AIRPACK    | 1 × 11.0                           | 1 × 120                   | 450                       |
| AIRPACK    | 2 × 11.0                           | 2 × 65.1                  | 710                       |
| AIRPACK    | 4 × 11.0                           | 4 × 35.8                  | 1090                      |
| AIRPACK    | 1 × 16.0                           | 1 × 122                   | 680                       |
| AIRPACK    | 2 × 16.0                           | 2 × 68.0                  | 1030                      |
| ASO        | 1 × 11.0                           | 1 × 56.5                  | 730                       |
| ASO        | 2 × 11.0                           | 2 × 52.5                  | 790                       |
| ASO        | 4 × 11.0                           | 4 × 40.9                  | 960                       |
| ASO        | 1 × 16.0                           | 1 × 52.8                  | 1130                      |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

Three LHS 61S air heaters with wide slot nozzles in a wrapping line.



**Air heater**

**LHS 61 CLASSIC**



Heating power not adjustable

Detection of heating element and device overheating with alarm output

**Air heater**

**LHS 61 PREMIUM**



Heating power steplessly adjustable with potentiometer

Protection against heating element and device overheating with alarm output

**Air heater**

**LHS 61 SYSTEM**



Heating power or temperature steplessly adjustable with potentiometer or remote control interface

Protection against heating element and device overheating with alarm output

Remote control interface for external temperature controllers (Leister CSS, or PLCs)

Air Heaters  
Controllers

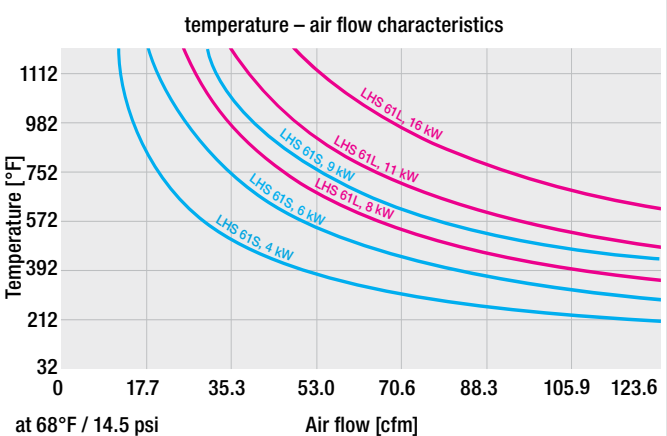
**Technical data**

**LHS 61S / 61L**

|                             |     |                |
|-----------------------------|-----|----------------|
| Max. air outlet temperature | °F  | 1202           |
| Max. air inlet temperature  | °F  | 149            |
| Max. ambient temperature    | °F  | 149            |
| Min. air flow               |     | As per diagram |
| Max. inlet pressure         | psi | 14.5           |
| Weight 61S / 61L            | lbs | 7 / 8          |
| Conformity mark             |     | CE             |
| Approval mark               |     | Ⓢ              |
| Protection class I          |     | Ⓢ              |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power

| <b>61S</b>     |             |         |         |         |         |         |         |         |
|----------------|-------------|---------|---------|---------|---------|---------|---------|---------|
| Voltage        | V ~         | 3 × 230 |         |         | 1 × 400 | 3 × 400 |         |         |
| Power          | kW          | 4       | 6       | 8       | 8.5     | 4       | 6       | 9       |
| <b>CLASSIC</b> | Article no. | 143.707 | 143.696 | 142.839 | 145.732 | 143.708 | 143.490 | 143.697 |
| <b>PREMIUM</b> | Article no. | 143.714 | 143.484 |         | 145.442 | 143.715 | 143.481 | 143.716 |
| <b>SYSTEM</b>  | Article no. | 143.726 | 143.727 |         | 145.734 | 143.728 | 142.496 | 143.729 |
| Voltage        | V ~         | 1 × 480 |         | 3 × 480 |         |         |         |         |
| Power          | kW          | 8       | 4       | 6       |         |         |         |         |
| <b>CLASSIC</b> | Article no. | 145.730 | 143.709 | 143.698 |         |         |         |         |
| <b>PREMIUM</b> | Article no. | 145.439 | 143.717 | 143.483 |         |         |         |         |
| <b>SYSTEM</b>  | Article no. | 145.733 | 143.730 | 143.731 |         |         |         |         |



| <b>61L</b>     |             |         |         |         |         |                 |    |
|----------------|-------------|---------|---------|---------|---------|-----------------|----|
| Voltage        | V ~         | 3 × 230 |         | 3 × 400 |         | 3 × 480         |    |
| Power          | kW          | 8       | 10      | 5       | 8       | 8               |    |
| <b>CLASSIC</b> | Article no. | 143.710 | 143.489 | 143.711 | 143.712 | 143.713         |    |
| <b>PREMIUM</b> | Article no. | 143.718 | 143.719 | 143.720 | 143.721 | 143.723         |    |
| <b>SYSTEM</b>  | Article no. | 143.732 | 143.733 | 143.734 | 143.735 | 143.736         |    |
| Voltage        | V ~         | 3 × 400 |         |         |         | 3 × 480         |    |
| Power          | kW          | 11      |         | 16      |         | 11              | 16 |
| <b>CLASSIC</b> | Article no. | 143.699 |         | 143.488 |         | 143.700 143.487 |    |
| <b>PREMIUM</b> | Article no. | 143.722 |         | 143.485 |         | 143.724 143.486 |    |
| <b>SYSTEM</b>  | Article no. | 142.568 |         | 143.478 |         | 143.737 143.479 |    |

Accessories 42 / 43

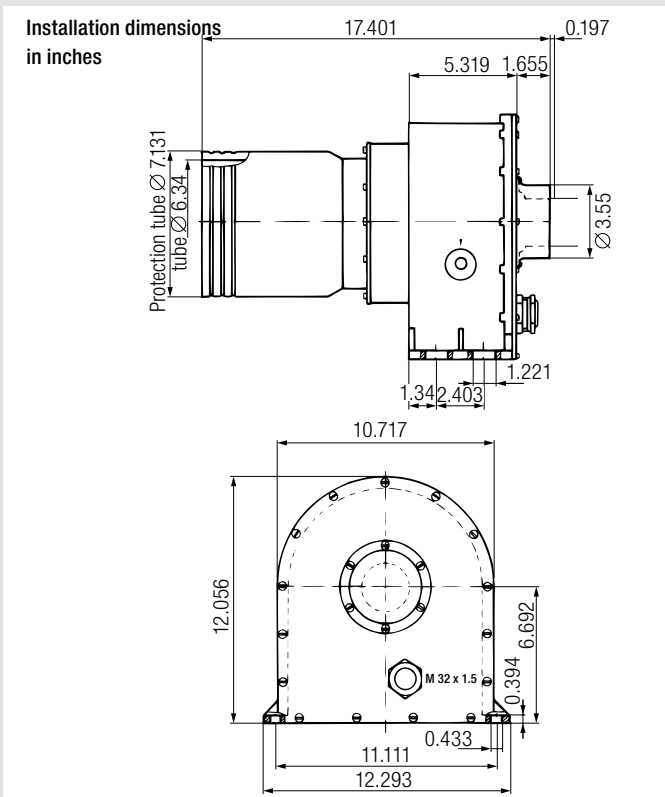
# LHS 91: The intelligent power giant.

With power of up to 40 kW, the LHS 91 is the tool for even the most demanding of heating applications. With this performance it is even capable of replacing many gas-fired heaters.

## Air heater LHS 91



| Technical data<br>LHS 91S  |     | BASIC | SYSTEM |
|--|-----|-------|--------|
| Max. air outlet temperature  | °F  | 1202  | 1202   |
| Min. air flow acc. as per diagram  |     |       |        |
| Max. air inlet temperature   | °F  | 212   | 122    |
| Max. ambient temperature   | °F  | 140   | 140    |
| Weight   | lbs | 30    | 30     |
| Mark of conformity   |     | CE    | CE     |
| Protection class I   |     | ⊕     | ⊕      |
| Minimum quantity of air at air inlet temperature of 68°F at 100% heating power |     |       |        |



|  |                    |                |                |                |                |
|--|--------------------|----------------|----------------|----------------|----------------|
| Tension                                  | V ~                | 3 × 400        | 3 × 480        | 3 × 480        |                |
| Power cons.                              | kW                 | 11             | 32             | 32             | 40             |
| <b>BASIC</b>                             | <b>Article no.</b> |                | <b>100.764</b> | <b>100.766</b> | <b>139.206</b> |
| <b>SYSTEM</b>                            | <b>Article no.</b> | <b>140.358</b> | <b>140.356</b> | <b>146.862</b> | <b>145.685</b> |
| Ø 3.55 inch air inlet nozzle as standard |                    |                |                |                |                |

**Combination possibilities**

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 inch after air outlet, measured at the hottest point.
- Air flow at 68 °F, 14.5 psi compliant with ISO 6358.

| Power Typ | Number LE x power cons. kW | Air flow cfm | Temperature °F |
|-----------|----------------------------|--------------|----------------|
| ASO       | 2 × 32                     | 2 × 148      | 932            |
| AIRPACK   | 1 × 32                     | 1 × 117      | 1004           |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

Two air heaters and two blowers used to dry impregnated Eternit piping. Two wide slot nozzles ensure the air is evenly distributed.



Air heater

### LHS 91 BASIC



Heating power not adjustable

Air heater

### LHS 91 SYSTEM

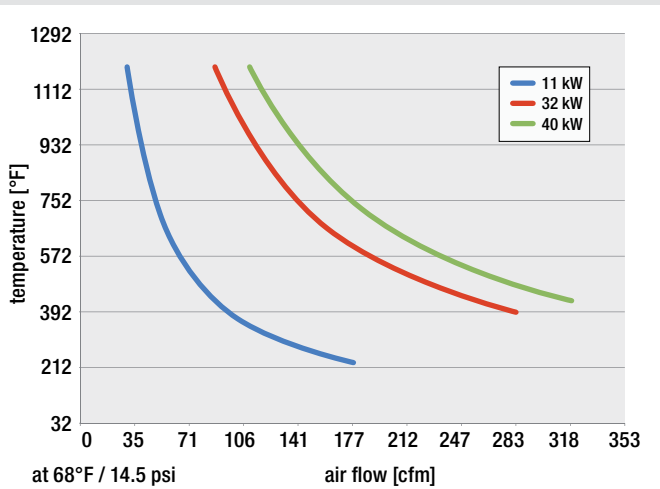


Heating power or temperature steplessly adjustable with potentiometer or remote control interface

Protection against heating element and device overheating with alarm output

Remote control interface for external temperature controllers (Leister CSS, or PLCs)

Air Heaters  
Controllers



Accessories

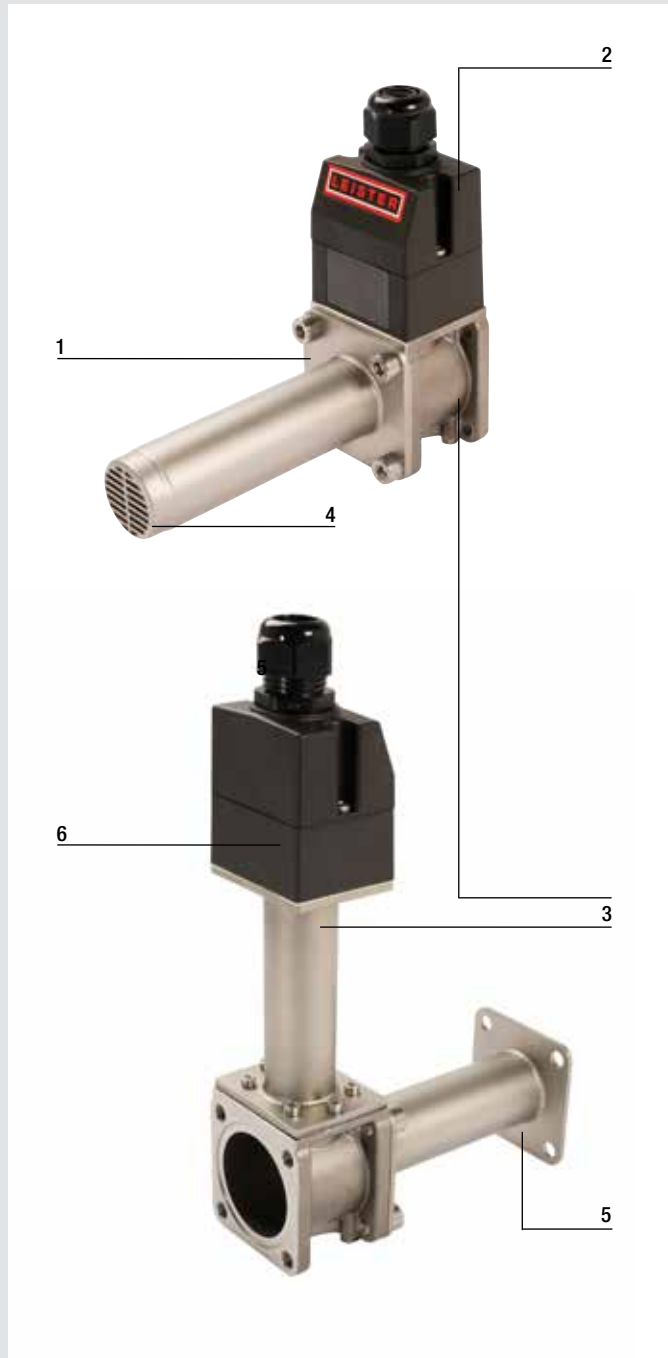








# New LHS 210/410

Leister Air Heaters

## LHS 210/410



|   |  |   |
|---|--|---|
| 1 |    | <p><b>Compact:</b><br/>Small dimensions for installation in tight spaces.</p>   |
| 2 |   | <p><b>Connection:</b><br/>Connecting the power supply is also very easy thanks to the well thought-out design.</p>  |
| 3 |  | <p><b>Various versions:</b><br/>SF = Single Flange<br/>SF-R = Single Flange for Recirculation<br/>DF = Double Flange<br/>DF-R = Double Flange for Recirculation</p>   |
| 4 |  | <p><b>Compatible with various nozzles:</b><br/>The LHS SF is compatible with numerous nozzles from Leister, which enables countless application possibilities.</p>  |
| 5 |  | <p><b>Double flange for piping installations:</b><br/>Thanks to its flanges on both sides, the Leister LHS DF / DF-R tubular air heater is easy to install in piping systems and is suitable for a wide range of industrial processes and applications.</p>       |
| 6 |  | <p><b>LHS SF-R / DF-R air heater for recirculation:</b><br/>The housing connection is located outside the air flow. In addition, the housing connection is protected against overheating, making it possible to work with air inlet temperatures up to 662°F.</p> |

Air Heaters  
Controllers

# LHS 210

The LHS 210 is a small air heater from the Leister. Due to its particularly compact design, it can be easily integrated into industrial plants with limited space.

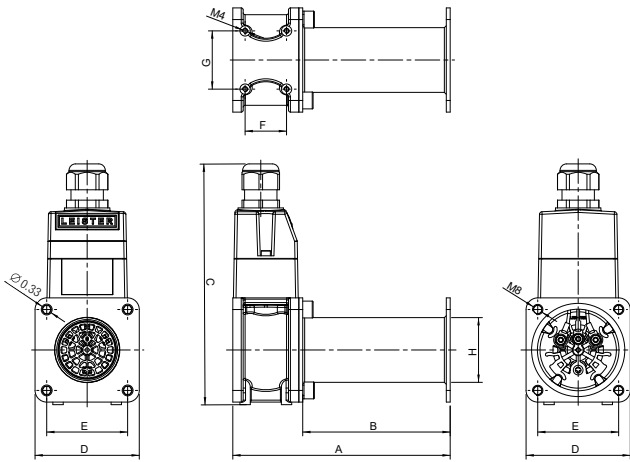


The housing connection on the LHS 210 is located outside the air flow, allowing the air to flow through the air heater unhindered and with hardly any loss in pressure. In addition, the housing connection of the LHS 210 SF-R and DF-R is protected against overheating, making it possible to work with air inlet temperatures up to 662 °F.

| Technical Data              |     | LHS 210 SF   | LHS 210 SF-R | LHS 210 DF | LHS 210 DF-R |
|-----------------------------|-----|--|--------------|------------|--------------|
| Frequency                   | Hz  | 50/60  | 50/60        | 50/60      | 50/60        |
| Nozzle connection Ø         | in  | 1.44   | 1.44         |            |              |
| Max. air outlet temperature | °F  | 1202   | 1202         | 1202       | 1202         |
| Max. air inlet temperature  | °F  | 212  | 662          | 212        | 662          |
| Max. ambient temperature    | °F  | 149  | 149          | 149        | 149          |
| Max. supply air pressure    | psi | 14.5   | 14.5         | 14.5       | 14.5         |
| Weight                      | lbs | 2.62   | 3.32         | 2.75       | 3.46         |
| Mark of conformity          |     |       |              |            |              |
| Protection class I          |     |   |              |            |              |

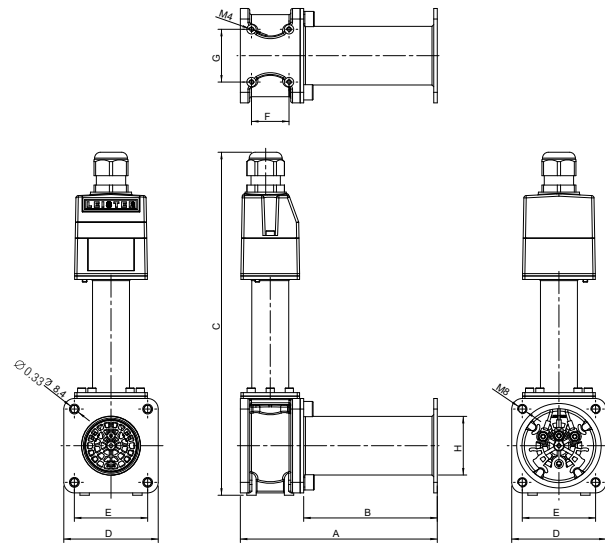


**Installation dimensions in inches**



| Type       | A    | B    | C    | D    | E | F    | G    | H    |
|------------|------|------|------|------|---|------|------|------|
| LHS 210 SF | 7.01 | 4.88 | 6.89 | 2.64 | 2 | 1.26 | 1.34 | 1.44 |
| LHS 210 DF | 6.61 | 4.49 | 6.89 | 2.64 | 2 | 1.26 | 1.34 | 1.44 |

**Installation dimensions in inches**



| Type         | A    | B    | C    | D    | E | F    | G    | H    |
|--------------|------|------|------|------|---|------|------|------|
| LHS 210 SF-R | 7.01 | 4.88 | 11.1 | 2.64 | 2 | 1.26 | 1.34 | 1.44 |
| LHS 210 DF-R | 6.61 | 4.49 | 11.1 | 2.64 | 2 | 1.26 | 1.34 | 1.44 |

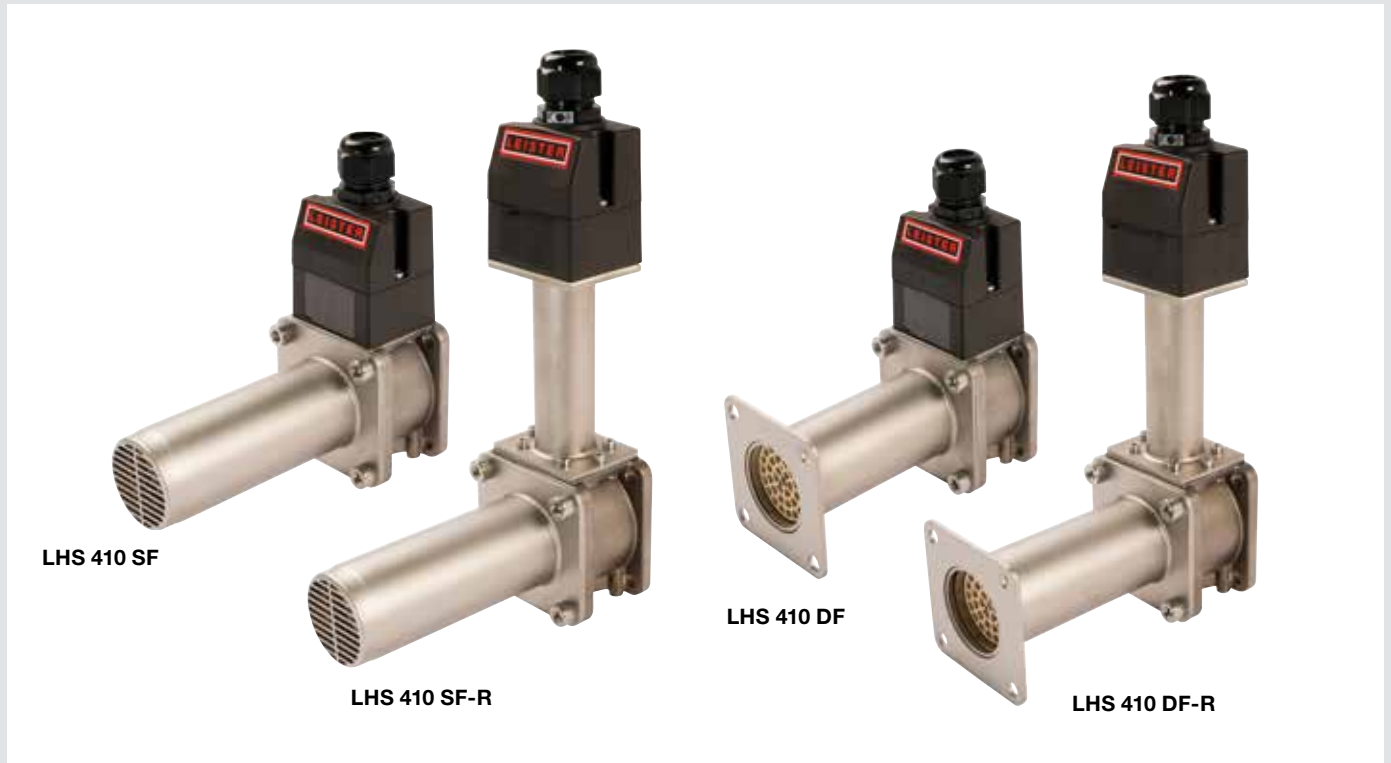
**Order no.:**

|                            |         |                              |         |
|----------------------------|---------|------------------------------|---------|
| LHS 210 SF, 120 V / 2 kW   | 170.898 | LHS 210 SF-R, 120 V / 2 kW   | 170.909 |
| LHS 210 SF, 230 V / 1 kW   | 170.899 | LHS 210 SF-R, 230 V / 1 kW   | 170.910 |
| LHS 210 SF, 230 V / 2 kW   | 170.900 | LHS 210 SF-R, 230 V / 2 kW   | 170.911 |
| LHS 210 SF, 230 V / 3.3 kW | 170.901 | LHS 210 SF-R, 230 V / 3.3 kW | 170.912 |
| LHS 210 DF, 120 V / 2 kW   | 170.920 | LHS 210 DF-R, 120 V / 2 kW   | 170.931 |
| LHS 210 DF, 230 V / 1 kW   | 170.921 | LHS 210 DF-R, 230 V / 1 kW   | 170.932 |
| LHS 210 DF, 230 V / 2 kW   | 170.922 | LHS 210 DF-R, 230 V / 2 kW   | 170.933 |
| LHS 210 DF, 230 V / 3.3 kW | 170.923 | LHS 210 DF-R, 230 V / 3.3 kW | 170.934 |



# LHS 410

The LHS 410 is a compact air heater from Leister. It offers an even higher air volume than the LHS 210. Thanks to its small design, it can be easily integrated into various industrial processes with limited space. Connecting the power supply is also very easy due to the well thought-out design.

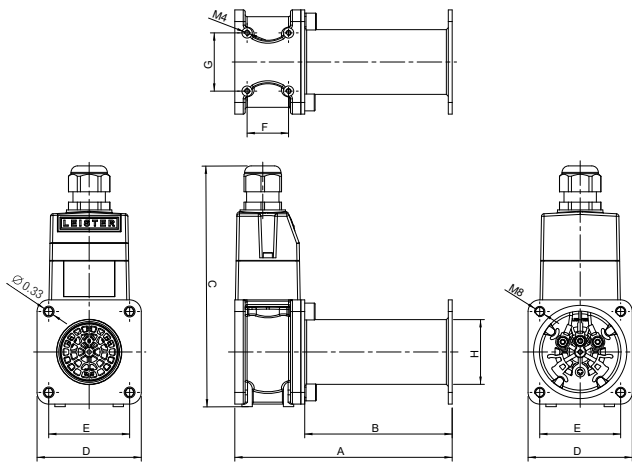


The housing connection on the LHS 410 is located outside the air flow, allowing the air to flow through the air heater unhindered and with hardly any loss in pressure. In addition, the housing connection of the LHS 410 SF-R and DF-R is protected against overheating, making it possible to work with air inlet temperatures up to 662°F.

| Technical Data              |     | LHS 410 SF | LHS 410 SF-R | LHS 410 DF | LHS 410 DF-R |
|-----------------------------|-----|------------|--------------|------------|--------------|
| Frequency                   | Hz  | 50 / 60    | 50 / 60      | 50 / 60    | 50 / 60      |
| Nozzle connection Ø         | in  | 1.97       | 1.97         |            |              |
| Max. air outlet temperature | °F  | 1202       | 1202         | 1202       | 1202         |
| Max. air inlet temperature  | °F  | 212        | 662          | 212        | 662          |
| Max. ambient temperature    | °F  | 149        | 149          | 149        | 149          |
| Max. supply air pressure    | psi | 14.5       | 14.5         | 14.5       | 14.5         |
| Weight                      | lbs | 3.42       | 4.17         | 3.64       | 4.39         |
| Mark of conformity          |     |            |              | CE         | UL US UK CA  |
| Protection class I          |     |            |              |            | ⊕            |

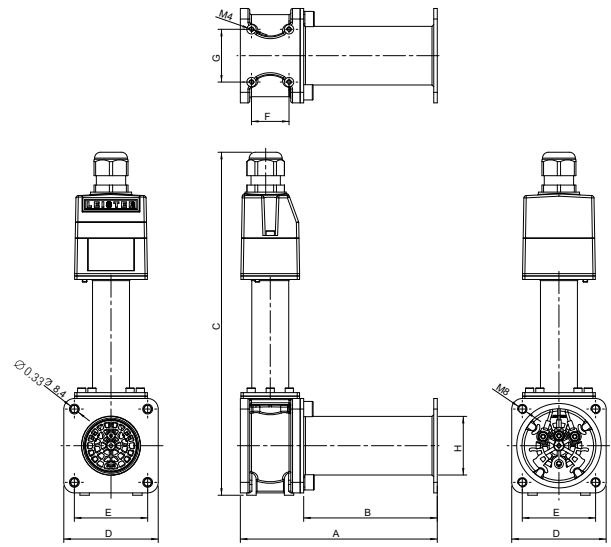


**Installation dimensions in inches**



| Type       | A    | B    | C    | D    | E    | F    | G    | H    |
|------------|------|------|------|------|------|------|------|------|
| LHS 410 SF | 7.01 | 4.88 | 7.32 | 3.19 | 2.46 | 1.26 | 1.77 | 1.97 |
| LHS 410 DF | 6.61 | 4.49 | 7.32 | 3.19 | 2.46 | 1.26 | 1.77 | 1.97 |

**Installation dimensions in inches**



| Type         | A    | B    | C     | D    | E    | F    | G    | H    |
|--------------|------|------|-------|------|------|------|------|------|
| LHS 410 SF-R | 7.01 | 4.88 | 11.54 | 3.19 | 2.46 | 1.26 | 1.77 | 1.97 |
| LHS 410 DF-R | 6.61 | 4.49 | 11.54 | 3.19 | 2.46 | 1.26 | 1.77 | 1.97 |

**Order no.:**

|                            |         |                              |         |
|----------------------------|---------|------------------------------|---------|
| LHS 410 SF, 120 V / 2 kW   | 170.902 | LHS 410 SF-R, 120 V / 2 kW   | 170.913 |
| LHS 410 SF, 230 V / 2 kW   | 170.903 | LHS 410 SF-R, 230 V / 2 kW   | 170.914 |
| LHS 410 SF, 230 V / 3.6 kW | 170.904 | LHS 410 SF-R, 230 V / 3.6 kW | 170.915 |
| LHS 410 SF, 230 V / 4.4 kW | 170.905 | LHS 410 SF-R, 230 V / 4.4 kW | 170.916 |
| LHS 410 SF, 400 V / 2 kW   | 170.906 | LHS 410 SF-R, 400 V / 2 kW   | 170.917 |
| LHS 410 SF, 400 V / 4.4 kW | 170.907 | LHS 410 SF-R, 400 V / 4.4 kW | 170.918 |
| LHS 410 SF, 400 V / 5.5 kW | 170.908 | LHS 410 SF-R, 400 V / 5.5 kW | 170.919 |
| LHS 410 DF, 120 V / 2 kW   | 170.924 | LHS 410 DF-R, 120 V / 2 kW   | 170.935 |
| LHS 410 DF, 230 V / 2 kW   | 170.925 | LHS 410 DF-R, 230 V / 2 kW   | 170.936 |
| LHS 410 DF, 230 V / 3.6 kW | 170.926 | LHS 410 DF-R, 230 V / 3.6 kW | 170.937 |
| LHS 410 DF, 230 V / 4.4 kW | 170.927 | LHS 410 DF-R, 230 V / 4.4 kW | 170.938 |
| LHS 410 DF, 400 V / 2 kW   | 170.928 | LHS 410 DF-R, 400 V / 2 kW   | 170.939 |
| LHS 410 DF, 400 V / 4.4 kW | 170.929 | LHS 410 DF-R, 400 V / 4.4 kW | 170.940 |
| LHS 410 DF, 400 V / 5.5 kW | 170.930 | LHS 410 DF-R, 400 V / 5.5 kW | 170.941 |

# High temperature air heater: Our hottest models.

The high temperature air heaters are suitable for temperatures up to 1652 °F. The devices have no integrated power electronics.

## High temperature air heater

### LE 5000 HT (up to 1652 °F)



#### Technical data

##### High temperature LE 5000 HT

|   |      |      |
|---|------|------|
| No integrated power electronics           |      | •    |
| Heating element tube with protective tube |      | •    |
| Max. air outlet temperature               | °F   | 1650 |
| Min. air flow                             | scfm | 20.5 |
| Max. air inlet temperature                | °F   | 212  |
| Max. ambient temperature                  | °F   | 212  |
| Weight                                    | lbs  | 5    |

Mark of conformity

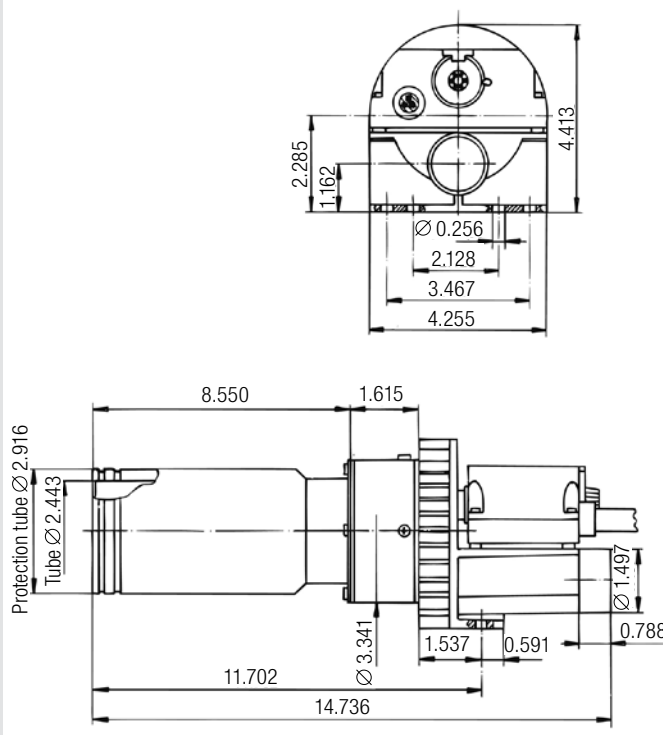


Protection class I



Minimum quantity of air at air inlet temperature of 68°F at 100% heating power  
scfm = standard cubic feet per minute according to STP

#### Installation dimensions in inches



#### Optional temperature regulation

With CSS (CSS EASY) and Solid state relay (p 58 – 59)

|                   |     |         |
|-------------------|-----|---------|
| Voltage           | V ~ | 3 × 400 |
| Power consumption | kW  | 11      |
| Article no.       |     | 108.717 |

#### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68 °F, 14.5 psi compliant with ISO 6358.

| Power-Type | Number LE x<br>Power cons. kW | Air flow<br>cfm. | Temperature<br>°F |
|------------|-------------------------------|------------------|-------------------|
| ROBUST     | 1 × 11                        | 1 × 28.2         | 1472              |
| AIRPACK    | 1 × 11                        | 1 × 97.7         | 680               |
| AIRPACK    | 2 × 11                        | 2 × 52.9         | 1022              |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

Two LE 10 000 HT air heaters and an ASO blower in combination with a shrink tunnel.



## High temperature air heater

### LE 10000 HT (up to 1652 °F)



#### Technical data

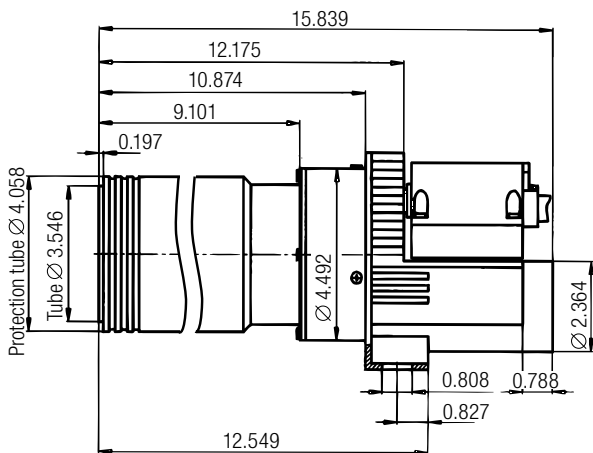
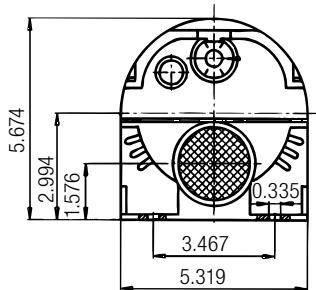
##### High temperature LE 10000 HT

|   |      |      |
|---|------|------|
| No integrated power electronics           |      | •    |
| Heating element tube with protective tube |      | •    |
| Max. air outlet temperature               | °F   | 1650 |
| Min. air flow                             | scfm | 28.3 |
| Max. air inlet temperature                | °F   | 212  |
| Max. ambient temperature                  | °F   | 212  |
| Weight                                    | lbs  | 9    |

|                    |    |
|--------------------|----|
| Mark of conformity | CE |
| Protection class I | ⊕  |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power scfm = standard cubic feet per minute according to STP

#### Installation dimensions in inches



#### Optional temperature regulation

With CSS (CSS EASY) and Solid state relay (p 58 – 59)

|                   |     |         |         |
|-------------------|-----|---------|---------|
| Voltage           | V ~ | 3 × 400 | 3 × 480 |
| Power consumption | kW  | 15      | 15      |
| Article no.       |     | 110.568 | 113.349 |

#### Combination possibilities

- Leister air heater at maximum heat power and without nozzle with Leister blower at 50 Hz, 4.9 ft hose length and unimpeded air outflow.
- Hot-air temperature 0.12 in after air outlet, measured at the hottest point.
- Air flow at 68 °F, 14.5 psi compliant with ISO 6358.

| Power-Type | Number LE x Power cons. kW | Air flow cfm. | Temperature °F |
|------------|----------------------------|---------------|----------------|
| ROBUST     | 1 × 15                     | 1 × 38.8      | 1562           |
| ASO        | 1 × 15                     | 1 × 77.6      | 1274           |
| ASO        | 2 × 15                     | 2 × 74.0      | 1292           |
| AIRPACK    | 1 × 15                     | 1 × 120       | 644            |
| AIRPACK    | 2 × 15                     | 2 × 58.2      | 1148           |

Air flow and temperature values may deviate from those above based on the design of the entire hot-air system (including nozzles, air hoses, environmental conditions).

Accessories 43

# LE MINI: The precise and accurate minis.

The world's smallest air heater with an integrated temperature probe. The LE MINI is especially suited for applications in which heat is concentrated to a point. It is simple to incorporate into the tightest spaces. LE MINI operates with compressed air at a pressure of 29 psi. Model versions are available with or without an integrated sensor. The SENSOR KIT add-on box offers a plug'n play solution with its integrated power electronics and temperature regulator.

Air heater

## LE MINI



Air heater

## LE MINI SENSOR



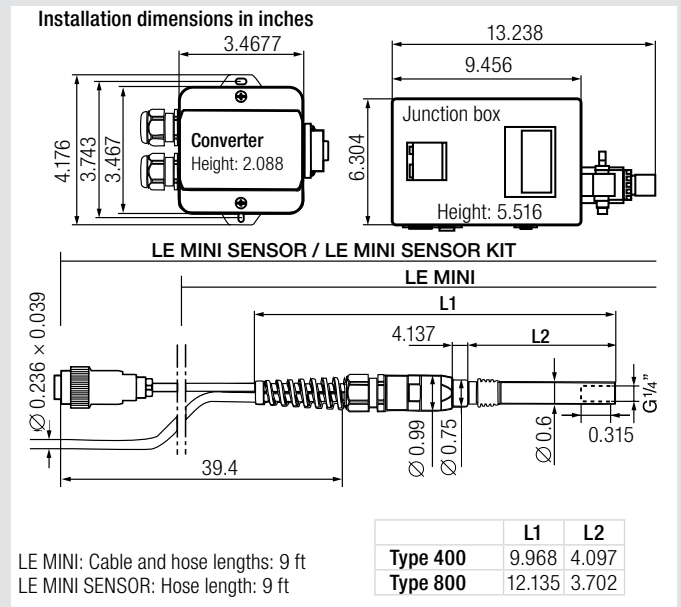
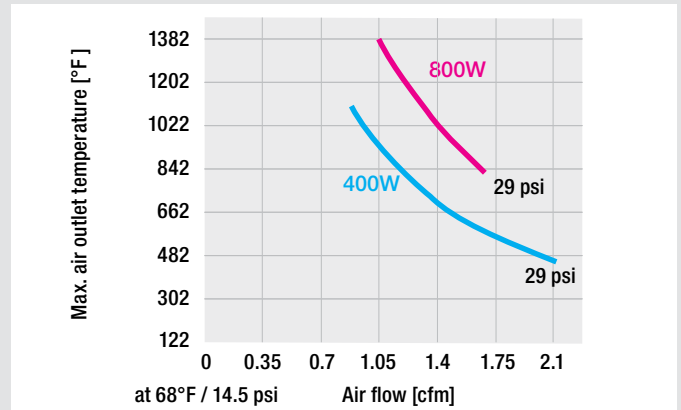
Air heater

## LE MINI SENSOR KIT



| Technical data   |     |       | LE MINI | LE MINI SENSOR | LE MINI SENSOR KIT |
|--|-----|-------|---------|----------------|--------------------|
| Temperature regulator integrated into the connection box |     |       |         |                | •                  |
| Integrated temperature probe                             |     |       |         | •              | •                  |
| Thermoswitch for device protection                       |     |       | •       | •              | •                  |
| Heating element protection                               |     |       |         | •              | •                  |
| Analogue output (passive) 4 – 20 mA                      |     |       |         | •              |                    |
| Pressure reduction valve                                 |     |       |         |                | •                  |
| Max. air outlet temperature                              | °F  | 400 W | 1112    | 1112           | 1112               |
|  |     | 800 W | 1382    | 1382           | 1382               |
| Min. air flow  | cfm | 400 W | 0.88    | 0.35           | 0.35               |
|  |     | 800 W | 1.06    | 0.35           | 0.35               |
| Max. air inlet temperature                               | °F  |       | 140     | 140            | 140                |
| Max. ambient temperature                                 | °F  |       | 140     | 141            | 140                |
| Max. supply air pressure                                 | psi |       | 29      | 29             | 29                 |
| Weight LE MINI   | lbs | 400 W | 0.26    | 0.26           | 0.26               |
|  |     | 800 W | 0.33    | 0.33           | 0.33               |
| Weight Converter   | lbs |       |         | 0.5            |                    |
| Weight Terminal box                                      | lbs |       |         |                | 5                  |
| Mark of conformity                                       |     |       | CE      | CE             | CE                 |
| Protection class II                                      |     |       | □       | □              | □                  |

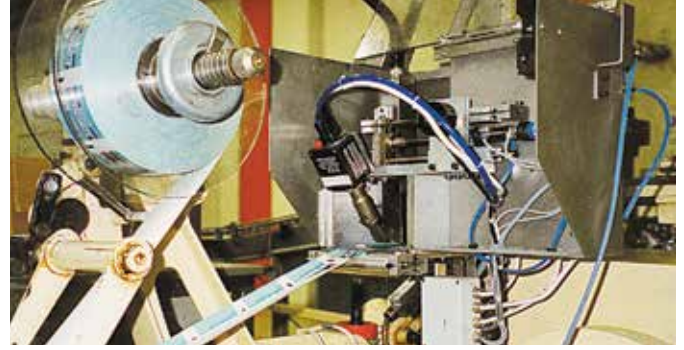
|                           |                    |                |                |                |
|---------------------------|--------------------|----------------|----------------|----------------|
| Voltage                   | V ~                | 120            | 230            | 230            |
| Power consumption         | W                  | 400            | 400            | 800            |
| Approval mark             |                    |                | Ⓢ              | Ⓢ              |
| <b>LE MINI</b>            | <b>Article no.</b> | <b>115.683</b> | <b>115.682</b> | <b>115.369</b> |
| <b>LE MINI SENSOR</b>     | <b>Article no.</b> | <b>117.371</b> | <b>117.370</b> | <b>117.369</b> |
| <b>LE MINI SENSOR KIT</b> | <b>Article no.</b> | <b>128.536</b> |                | <b>125.416</b> |






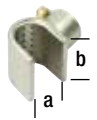





## Accessories LE MINI (∅ 0.84 in)

|  |   |
|--|---|
|  <p>a</p>         | <p><b>107.282</b> Flange connector, push-fit<br/>a = 1.58 in</p>  |
|                   | <p><b>117.955</b> Nozzle adapter, screw-fit for nozzles<br/>∅ 0.84 in</p>   |
|                   | <p><b>105.624</b> Round nozzle, push-fit<br/>∅ 0.20 in, 1.6 inch straight<br/><b>107.145</b> ∅ 0.39 in, 1.78 inch straight</p>  |
|                 | <p><b>107.152</b> Round nozzle, push-fit<br/>∅ 0.47 in with screw terminal</p>  |
|  <p>a<br/>b</p> | <p><b>107.310</b> Sieve reflector, push-fit (a × b)<br/>0.79 × 1.38 in<br/><b>107.311</b> 1.97 × 1.38 in</p>  |
|  <p>a<br/>b</p> | <p><b>105.549</b> Wide slot nozzle, push-fit (a × b)<br/>0.39 × 0.08 in, angled<br/><b>105.559</b> 0.79 × 0.08 in, length 2.17 in<br/><b>105.548</b> 1.57 × 0.20 in<br/><b>105.547</b> 1.97 × 0.31 in</p>         |
|                  | <p><b>129.407</b> cable prolongation 6.56 ft,<br/>with plug and connection<br/><b>113.806</b> cable prolongation 16.4 ft,<br/>with plug and connection</p> <p>&gt; LE MINI SENSOR<br/>&gt; LE MINI SENSOR KIT</p> |

Air heater and blower for drying labels. Fast drying allows for high throughput speeds.



## Accessories LHS 15 (∅ 0.84 in)

|   |  |
|---|--|
|    | <b>107.282</b> Flange connector, push-fit<br>a = 1.58 in   |
|    | <b>105.624</b> Round nozzle, push-fit<br>∅ 0.20 in, 1.78 inch straight<br><b>107.145</b> ∅ 0.39 in, 1.78 inch straight   |
|    | <b>107.152</b> Round nozzle, push-fit<br>∅ 0.47 in with screw terminal   |
|   | <b>107.310</b> Sieve reflector, push-fit (a × b)<br>0.79 × 1.38 in<br><b>107.311</b> 1.38 × 1.97 in  |
|  | <b>105.549</b> Wide slot nozzle, push-fit (a × b)<br>0.39 × 0.08 in, angled<br><b>105.559</b> 0.79 × 0.08 in, length 2.17 in<br><b>105.548</b> 1.57 × 0.20 in<br><b>105.547</b> 1.97 × 0.31 in |
|  | <b>144.035</b> Compressed air connection   |
|  | <b>143.533</b> Adapter plate LHS 15 to LE 700  |
|  | <b>149.941</b> Round nozzle (∅ 0.84 in)  |
|  | <b>150.097</b> Air inlet reduction valve   |
|  | <b>150.192</b> Heater tube (∅ 0.84 in) with protection tube  |

## Accessories LHS 21 (∅ 1.44 in)

|  |  |
|--|--|
|    | <b>125.316</b> Flange connector, push-fit<br>a = 2.44 in   |
|    | <b>107.251</b> Extension nozzle, push-fit (a × b)<br>8.27 × 1.44 in  |
|    | <b>107.003</b> Round nozzle, push-fit<br>∅ 0.47 in<br><b>107.002</b> ∅ 0.47 in with screw terminal                                       |
|    | <b>107.261</b> Wide slot nozzle, push-fit (a × b)<br>2.76 × 0.157 in<br><b>108.078</b> 3.94 × 0.157 in<br><b>105.982</b> 5.91 × 0.157 in |
|   | <b>107.308</b> Sieve reflector, push-fit (a × b)<br>1.38 × 1.97 in<br><b>107.309</b> 0.79 × 1.38 in                                      |
|  | <b>107.314</b> Spoon reflector, push-fit (a × b)<br>0.98 × 1.18 in   |
|  | <b>107.319</b> Sieve reflector «Douche», push-fit<br>∅ 2.56 in   |
|  | <b>106.132</b> Shell reflector, push-fit<br>(a × b × c) 5.91 × 1.02 × 1.73 in  |
|  | <b>133.515</b> Thermocouple holder   |
|   | <b>144.037</b> Compressed air connection   |
|  | <b>142.230</b> Adapter plate<br>LHS 21 to LHS 20<br><b>143.480</b> LHS 21 to LE 3000   |
|  | <b>150.194</b> Heater tube (∅ 1.44 in) with protection tube for LHS 21L  |
|  | <b>150.193</b> Heater tube (∅ 1.44 in) with protection tube for LHS 21S  |
|  | <b>149.942</b> Round nozzle (∅ 1.44 in)  |
|  | <b>150.098</b> Air inlet reduction valve   |

Drying pills, mints and sweets and smoothing their coatings.



## Accessories LHS 41 (∅1.97 in)

|   |  |  |  |
|---|--|--|--|
|    | <b>107.254</b> Flange connector, push-fit<br>a = 2.76 in   |     | <b>133.516</b> Thermocouple holder   |
|    | <b>122.332</b> Nozzle adapter, push-fit (a × b)<br>from (a) ∅ 1.97 in to (b) ∅ 2.44 in<br><b>122.924</b> from (a) ∅ 1.97 in to (b) ∅ 1.46 in   |     | <b>144.038</b> Compressed air connection   |
|    | <b>107.255</b> Extension nozzle, push-fit (a × b)<br>6.29 × 1.44 in  |    | <b>142.232</b> Adapter plate LHS 41 to LHS 40<br><b>143.436</b> Adapter plate LHS 41 to LE 3300  |
|     | <b>105.950</b> Tubular nozzle, push-fit (a × b × c)<br>18.1 × 11.8 × 0.08 in<br><b>107.257</b> 23.2 × 16.5 × 0.07 in<br><b>105.955</b> 32.9 × 26.0 × 0.04 in<br><b>105.952</b> 35.4 × 31.5 × 0.04 in |     | <b>149.943</b> Round nozzle (∅ 1.97 in)  |
|  | <b>107.256</b> Angled nozzle, push-fit (a × b)<br>shank length 3.94 × 6.3, ∅ 1.92 in   |   | <b>150.096</b> Air inlet reduction valve   |
|  | <b>105.961</b> Wide slot nozzle, push-fit (a × b)<br>1.77 × 0.47 in, length 13.8 in<br><b>107.258</b> 2.76 × 0.39 in   |  | <b>150.195</b> Heater tube (∅ 1.97 in) with protection tube for LHS 41S<br><b>150.196</b> Heater tube (∅ 1.97 in) with protection tube for LHS 41L |
|  | <b>106.057</b> Wide slot nozzle, push-fit (a × b)<br>3.94 × 0.16 in<br><b>106.060</b> 5.91 × 0.24 in<br><b>107.270</b> 5.91 × 0.47 in<br><b>106.061</b> 11.8 × 0.24 in                               |  |  |
|  | <b>107.331</b> Hinged reflector, push-fit (d × b)<br>2.76 × 2.76 in  |  |  |
|  | <b>107.340</b> Shell reflector, push-fit<br>(a × b × c) 1.77 × 9.84 × 2.79 in  |  |  |
|  | <b>107.327</b> Sieve reflector, push-fit (a × b)<br>2.76 × 2.95 in<br><b>107.333</b> 4.33 × 5.91 in  |  |  |
|  | <b>107.330</b> Hinged reflector, push-fit (d × b)<br>4.92 × 0.87 in  |  |  |
|  | <b>106.127</b> Sieve reflector "Douche", push-fit<br>∅ 2.56 in   |  |  |



## Accessories

### LHS 61S & LE 5000 HT (∅ 2.44 in)

|   |  |
|---|--|
|    | <b>125.317</b> Flange connector, push-fit<br>a = 3.54 in   |
|    | <b>113.351</b> Extension tube, push-fit<br>(a × b) 10.82 × ∅ 2.44 inch   |
|    | <b>107.247</b> Extension nozzle, push-fit (a × b)<br>7.87 × 1.57 in  |
|   | Tubular nozzle, push-fit (a × b × c)<br><b>105.907</b> 13.9 × 8.03 × 0.18 in<br><b>105.919</b> 18.0 × 12.0 × 0.12 in<br><b>107.253</b> 27.6 × 21.7 × 0.07 in<br><b>114.136</b> 31.3 × 25.8 × 0.06 in<br><b>105.906</b> 43.3 × 39.4 × 0.16 in   |
|  | <b>127.062</b> Nozzle adapter ∅ 2.44 in, ∅ 2.36 in,<br>length 4.33 in, to connect with blow-off<br>nozzle  |
|  | <b>107.265</b> Angled nozzle, push-fit (a × b)<br>shank length 4.72 × 4.53, ∅ 2.44 in  |
|  | <b>107.245</b> Round nozzle, push-fit<br>d = 1.58 in   |
|  | Shell reflector, push-fit (a × b × c)<br><b>107.342</b> 1.97 × 15.7 × 3.15 in<br><b>106.174</b> 2.56 × 15.7 × 3.74 in<br><b>106.175</b> 3.15 × 15.7 × 3.15 in  |
|  | Wide slot nozzle, push-fit (a × b)<br><b>107.260</b> 3.35 × 0.59 in<br><b>107.259</b> 5.91 × 0.47 in<br><b>105.977</b> 7.87 × 0.35 in<br><b>107.263</b> 9.84 × 0.47 in, with sieve insert<br><b>107.262</b> 11.8 × 0.16 in<br><b>105.992</b> 15.7 × 0.16 in<br><b>105.991</b> 19.7 × 0.16 in |
|  | Sieve reflector, push-fit (a × b)<br><b>106.143</b> 1.77 × 2.95 in<br><b>107.329</b> 2.76 × 2.95 in<br><b>107.336</b> 4.33 × 5.98 in   |
|  | <b>149.624</b> Protection tube adapter for LHS 61S   |

## Accessories

### LHS 61S & LE 5000 HT (∅ 2.44 in)

|   |   |
|---|---|
|   | <b>107.335</b> Sieve reflector "Douche", push-fit<br>∅ 5.9 in |
|   | <b>133.517</b> * Thermocouple holder                          |
|   | <b>144.039</b> * Compressed air connection                    |
|  | <b>143.575</b> * Adapter plate LHS 61S instead<br>LE 5000     |





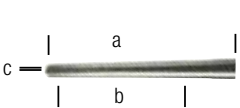
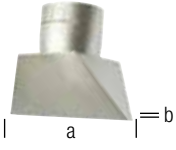
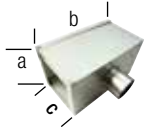




\* = Only for LHS 61S

Utilizing precisely controlled hot air to shrink PE sleeves on cans.



## Accessories

### LHS 61L & LE 10000 HT (∅ 3.62 in)

|   |  |
|---|--|
|    | <b>125.318</b> Flange connector, push-fit<br>a = 4.72 in   |
|    | <b>107.244</b> Round nozzle, push-fit<br>d = 1.97 in   |
|    | <b>107.273</b> Extension nozzle, push-fit (a x b)<br>19.7 x 2.36 in  |
|    | <b>107.269</b> Angled nozzle, push-fit (a x b)<br>shank length 6.89 x 6.89 in  |
|    | <b>106.031</b> Tubular nozzle, push-fit (a x b x c)<br>39.4 x 31.5 x 0.08 in<br><b>106.035</b> 46.7 x 35.4 x 0.06 in<br><b>107.268</b> 50.7 x 39.4 x 0.06 in<br><b>106.033</b> 61.0 x 53.1 x 0.04 in   |
|  | <b>107.274</b> Wide slot nozzle, push-fit (a x b)<br>5.12 x 0.67 in<br><b>106.028</b> 8.66 x 0.47 in<br><b>107.272</b> 11.8 x 0.47 in<br><b>106.018</b> 15.7 x 0.39 in<br><b>106.024</b> 19.7 x 0.28 in<br><b>107.267</b> 19.7 x 0.59 in<br><b>106.023</b> 23.6 x 0.16 in<br><b>106.026</b> 23.6 x 0.35 in |
|  | <b>107.341</b> Shell reflector, push-fit (a x b x c)<br>6.30 x 14.6 x 8.3 outside / 6.2 inside   |
|  | <b>107.276</b> Sieve reflector "Douche", push-fit<br>∅ 10.2 in   |
|  | <b>133.517 *</b> Thermocouple holder   |
|  | <b>144.039 *</b> Compressed air connection   |
|  | <b>149.629</b> Protection tube adapter for LHS 61L   |

\* = Only for LHS 61L

### Accessories LHS 91 (∅ 6.34 in)

|   |  |
|---|--|
|    | <b>125.319</b> Flange connector, push-fit<br>a = 7.56 in   |
|    | <b>107.230</b> Round nozzle, push-fit<br>d = 3.94 in   |
|    | <b>107.233</b> Extension nozzle, push-fit (a x b)<br>15.75 x 3.94 in   |
|  | <b>107.235</b> Wide slot nozzle, push-fit (a x b)<br>19.7 x 0.59 in<br><b>107.234</b> 47.2 x 0.39 in<br><b>105.856</b> 63.0 x 0.32 in<br><b>105.859</b> 78.7 x 0.39 in |



## Accessories LHS 210

|   |  |  |  |
|---|--|--|--|
|    | <b>125.316</b> Flange connector, push-fit<br>a = 2.44 in   |    | <b>161.643</b> Inlet flange kit, Ø 1.50 in                   |
|    | <b>107.251</b> Extension nozzle, push-fit<br>(a × b)<br>8.27 × 1.44 in   |    | <b>161.646</b> Gasket housing                                |
|    | <b>107.003</b> Round nozzle, push-fit<br>Ø 0.47 in<br><b>107.002</b> Ø 0.47 in with screw terminal                                       |    | <b>161.832</b> Thermocouple with holder<br>for LHS 210 SF    |
|    | <b>107.261</b> Wide slot nozzle, push-fit (a × b)<br>2.76 × 0.157 in<br><b>108.078</b> 3.94 × 0.157 in<br><b>105.982</b> 5.91 × 0.157 in |    | <b>161.854</b> Thermocouple with holder<br>for LHS 210 DF    |
|  | <b>107.308</b> Sieve reflector, push-fit (a × b)<br>1.38 × 1.97 in<br><b>107.309</b> 0.79 × 1.38 in                                      |  | <b>161.856</b> Nozzle adapter to Ø 1.44 in<br>for LHS 210 DF |
|  | <b>107.314</b> Spoon reflector, push-fit (a × b)<br>0.98 × 1.18 in   |  |  |
|  | <b>107.319</b> Sieve reflector "Douche", push-fit<br>Ø 2.56 in   |  |  |
|  | <b>106.132</b> Shell reflector, push-fit<br>(a × b × c)<br>5.91 × 1.02 × 1.73 in   |  |  |
|  | <b>149.942</b> Round nozzle (Ø 1.45 in)  |  |  |
|  | <b>106.956</b> Thermocouple with plug,<br>3.28 ft cable  |  |  |
|  | Thermocouple extension<br>cable with plug and connection<br><b>106.958</b> 6.56 ft<br><b>106.960</b> 13.1 ft<br><b>106.962</b> 32.8 ft   |  |  |
|  | <b>123.039</b> CSS – Controller<br><b>137.720</b> E5CC – Controller  |  |  |

## Accessories LHS 410

|   |  |  |  |
|---|--|--|--|
|    | <b>107.254</b> Flange connector, push-fit<br>a = 2.76 in   |     | <b>107.330</b> Hinged reflector, push-fit (d × b)<br>4.92 × 0.87 in  |
|    | <b>122.332</b> Nozzle adapter, push-fit (a × b)<br>from (a) Ø 1.97 in to (b) Ø 2.44 in<br><b>122.924</b> from (a) Ø 1.97 in to (b) Ø 1.46 in   |     | <b>106.127</b> Sieve reflector "Douche", push-fit<br>Ø 2.56 in   |
|    | <b>107.255</b> Extension nozzle, push-fit (a × b)<br>6.29 × 1.44 in  |     | <b>149.943</b> Round nozzle, Ø 1.97 in   |
|     | <b>105.950</b> Tubular nozzle, push-fit (a × b × c)<br>18.1 × 11.8 × 0.08 in<br><b>107.257</b> 23.2 × 16.5 × 0.07 in<br><b>105.955</b> 32.9 × 26.0 × 0.04 in<br><b>105.952</b> 35.4 × 31.5 × 0.04 in |     | <b>106.956</b> Thermocouple with plug,<br>3.28 ft cable  |
|  | <b>107.256</b> Angled nozzle, push-fit (a × b)<br>shank length 3.94 × 6.3, Ø 1.92 in   |  | Thermocouple extension<br>cable with plug and connection<br><b>106.958</b> 6.56 ft<br><b>106.960</b> 13.1 ft<br><b>106.962</b> 32.8 ft |
|  | <b>105.961</b> Wide slot nozzle, push-fit (a × b)<br>1.77 × 0.47 in, length 13.8 in<br><b>107.258</b> 2.76 × 0.39 in   |   | <b>123.039</b> CSS – Controller<br><b>137.720</b> E5CC – Controller  |
|  | <b>106.057</b> Wide slot nozzle, push-fit (a × b)<br>3.94 × 0.16 in<br><b>106.060</b> 5.91 × 0.24 in<br><b>107.270</b> 5.91 × 0.47 in<br><b>106.061</b> 11.8 × 0.24 in                               |   | <b>161.645</b> Inlet flange kit, Ø 1.50 in<br><b>161.644</b> Inlet flange kit, Ø 2.36 in   |
|  | <b>107.331</b> Hinged reflector, push-fit (d × b)<br>2.76 × 2.76 in  |   | <b>161.647</b> Gasket housing  |
|  | <b>107.340</b> Shell reflector, push-fit<br>(a × b × c)<br>1.77 × 9.84 × 2.79 in   |   | <b>161.833</b> Thermocouple with holder<br>for LHS 410 SF  |
|  | <b>107.327</b> Sieve reflector, push-fit (a × b)<br>2.76 × 2.95 in<br><b>107.333</b> 4.33 × 5.91 in  |   | <b>161.855</b> Thermocouple with holder<br>for LHS 410 DF  |
|   |  |   | <b>161.857</b> Nozzle adapter to Ø 1.97 in<br>for LHS 410 DF   |

# Save Energy with Leister.

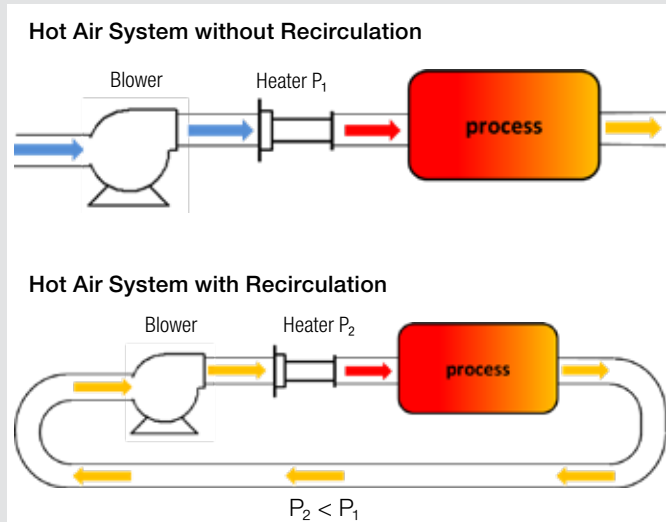
Large amounts of energy and with that, money, can be saved by recycling hot air. Leister has customized solutions for combining air heaters and blowers which are suitable for recycling hot air thanks to a design made to withstand high temperatures.

## Hot Air Recycling Saves Energy and Costs

In order to heat a defined volume of air (air flow) to the desired temperature, a certain amount of energy needs to be present. The greater the difference in temperatures  $\Delta T$  between the air inlet and the air outlet, the more energy that is needed. The  $\Delta T$  is reduced by operating with hot air recirculation. That saves energy and costs.

To 'recycle' the hot air from the process, both the blower and the air heater have to withstand the high temperatures at the air inlet side. LEISTER's double-flange air heaters, types LE 5000 DF-R and LE 10000 DF-R (page 46/47), and the RBR blower (page 54) provide the solution. Air with a temperature of up to 662°F can be moved, reheated and recirculated without a problem.

When accessories such as insulated hoses, high-temperature seals and various flanges are added, systems with air heaters and blowers become perfectly supplemented for recycling applications.



### Sample calculation:

To heat 141 cfm of air flow to a desired temperature of  $T_2 = 932^\circ\text{F}$ , different outputs are required, depending on the air inlet temperature  $T_1$ .

|                           |    |         |   |
|---------------------------|----|---------|---|
| $T_1 = 68^\circ\text{F}$  | -> | 38.7 kW |   |
| $T_1 = 320^\circ\text{F}$ | -> | 27.4 kW | Savings: 29.2 % compared with 68°F  |
| $T_1 = 662^\circ\text{F}$ | -> | 12.1 kW | Savings: 68.7 % compared with 68°F<br>Savings: 55.8 % compared with 320°F |

These differences also match the potential savings in energy. The energy savings are 159 600 kWh per year when the recirculation mode is used and the inlet temperature is 662°F, instead of working with ambient air at 68°F (in 24-hour operation, for 250 working days).

**Annual energy consumption at  $T_1 = 68^\circ\text{F} > 232\,200\text{ kWh}$ .**  
**Annual energy consumption at  $T_1 = 662^\circ\text{F} > 72\,600\text{ kWh}$ ,**  
**Savings = 159 600 kWh**

If the price of electricity (commercial, large consumers) is \$ 0.15 / kWh, the potential savings per year is nearly \$ 24K just from using DF-R type double-flange air heaters. Based on a 24-hour operation, 250 days per year,  $T_1 = 662^\circ\text{F}$  instead of 68°F and  $T_2 = 932^\circ\text{F}$  and 141 cfm air flow.



Hot-air system for hot air recirculation.

# LE 10 000 DF-C “Clean Air Heater”.

The “Clean Air Heater” is the next step in completing the double-flange product range. This air heater is suitable for industries with stringent requirements for “clean” environments such as: food and beverage, medical, pharmaceutical, cosmetics and electronics manufacturing. The LE 10 000 DF-C was developed using the newest standards for clean production defined by the European Hygienic Engineering & Design Group (EHEDG). The Clean Air Heater’s design minimizes particle emission and is exclusively manufactured using nontoxic materials.

Air heater

## LE 10 000 DF-C



### Technical data

#### LE 10 000 DF-C

|   |      |        |      |  |      |
|---|------|--------|------|--|------|
| Easy to integrate into existing air systems |      |        |      |  | •    |
| Suitable for recycling air                  |      |        |      |  | •    |
| Simple and safe fixture options             |      |        |      |  | •    |
| No integrated power electronics             |      |        |      |  | •    |
| Max. air outlet temperature                 | °F   |        |      |  | 1202 |
| Min. air flow                               | scfm | 4.5 kW | 11.3 |  |      |
|   |      | 5.5 kW | 14.8 |  |      |
|   |      | 8.0 kW | 21.5 |  |      |
|   |      | 11 kW  | 29.6 |  |      |
|   |      | 17 kW  | 45.9 |  |      |
| Max. air inlet temperature                  | °F   |        |      |  | 302  |
| Max. ambient temperature                    | °F   |        |      |  | 212  |
| Weight including cable                      | lbs  |        |      |  | 9    |

Conformity mark



Protection class I



Minimum quantity of air at air inlet temperature of 68°F at 100% heating power  
scfm = standard cubic feet per minute according to STP

|                       |                    |                |                |                |                |                |
|-----------------------|--------------------|----------------|----------------|----------------|----------------|----------------|
| Voltage               | V ~                | 3 × 230        | 3 × 230        | 3 × 400        | 3 × 400        | 3 × 400        |
| Power consumption kW  |                    | 8.0            | 10             | 5.5            | 11             | 17             |
| <b>LE 10 000 DF-C</b> | <b>Article no.</b> | <b>146.288</b> | <b>146.916</b> | <b>147.323</b> | <b>147.324</b> | <b>147.325</b> |

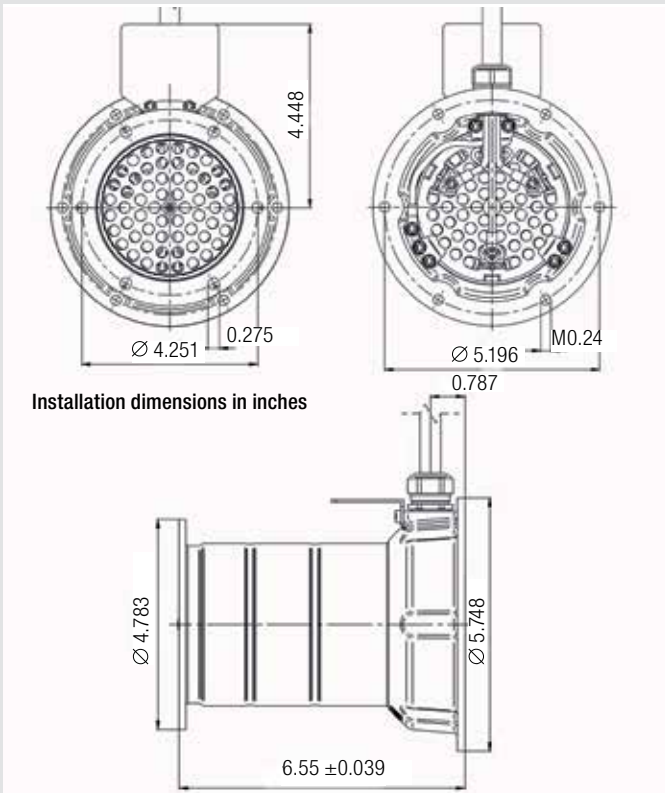
|                       |                    |                |                |                |
|-----------------------|--------------------|----------------|----------------|----------------|
| Voltage               | V ~                | 3 × 480        | 3 × 480        | 3 × 480        |
| Power consumption kW  |                    | 4.5            | 8.0            | 10             |
| <b>LE 10 000 DF-C</b> | <b>Article no.</b> | <b>153.783</b> | <b>154.088</b> | <b>154.276</b> |

Additional versions available on request

#### LE 5000 DF / LE 10 000 DF product portfolio

| Product              | Type                  | Power range        | Max. inlet temperature | Max. outlet temperature |
|----------------------|-----------------------|--------------------|------------------------|-------------------------|
| <b>Standard</b>      | LE 5000 DF            | 4.5 – 7.5 kW       | 302° F                 | 1292° F                 |
|                      | LE 10 000 DF          | 5.5 – 17 kW        | 302° F                 | 1202° F<br>1652° F      |
| <b>Recirculation</b> | LE 5000 DF-R          | 4.5 – 8 kW         | 662° F                 | 1292° F                 |
|                      | LE 10 000 DF-R        | 5.5 – 17 kW        | 662° F                 | 1202° F<br>1652° F      |
| <b>Clean</b>         | <b>LE 10 000 DF-C</b> | <b>5.5 – 17 kW</b> | <b>302° F</b>          | <b>1202° F*</b>         |

\* Max. temperature for applications in food production according to material certification 400°C / 752 °F (ask Leister Customer Support team for details)



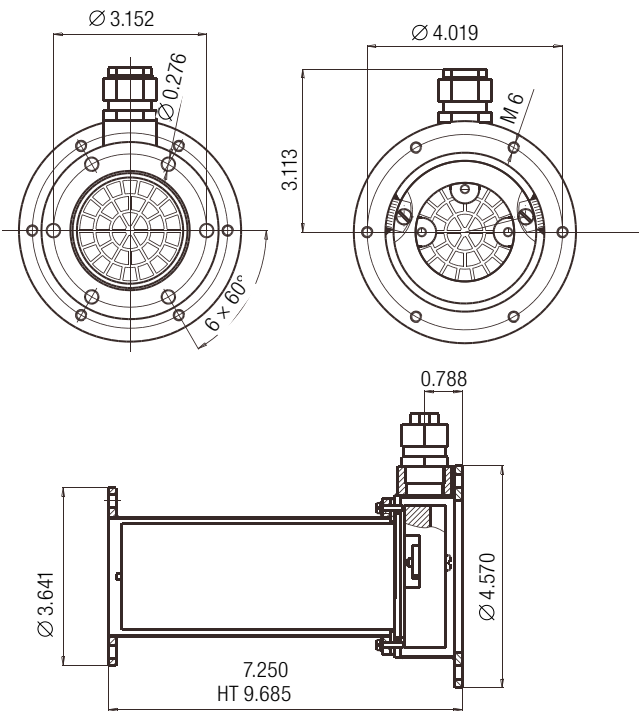
Air heater

LE 5000 DF-R / DF / DF HT



LE 5000 DF-R

Installation dimensions in inches



| Technical data                              |       | LE 5000 DF-R | LE 5000 DF | LE 5000 DF HT |       |
|---|-------|--------------|------------|---------------|-------|
| <b>LE 5000 DF</b>                           |       |              |            |               |       |
| Easy to integrate into existing air systems |       | •            | •          | •             |       |
| Suitable for recycling air                  |       | •            | •          | •             |       |
| Simple and safe fixture options             |       | •            | •          | •             |       |
| No integrated power electronics             |       | •            | •          | •             |       |
| Max. air outlet temperature                 | °F    | 1292         | 1292       | 1652          |       |
| Min. air flow                               | scfm  | 4.5 kW       | 11.3       | 11.3          |       |
|   |       | 6.5 kW       | 16.2       | 16.2          |       |
|   |       | 7.0 kW       |            |               | 13.41 |
|   |       | 7.5 kW       | 18.7       | 18.7          | 14.13 |
|   |       | 8.0 kW       | 19.4       | 19.4          |       |
|   | 11 kW |              |            | 20.48         |       |
| Max. air inlet temperature                  | °F    | 662          | 302        | 302           |       |
| Max. ambient temperature                    | °F    | 392          | 212        | 212           |       |
| Weight including cable                      | lbs   | 4            | 6          | 7             |       |

|                    |    |    |    |
|--------------------|----|----|----|
| Conformity mark    | CE | CE | UL |
| Protection class I |    | ⊕  |    |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power  
 scfm = standard cubic feet per minute according to STP

Optional temperature regulation

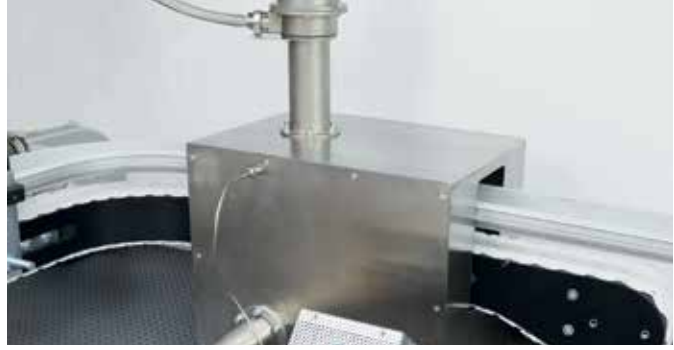
With CSS (CSS EASY) and Solid state relay (p 58 - 59)

| Voltage                   | V ~ | 3 × 200 | 3 × 230 | 3 × 400 | 3 × 400 | 3 × 400 | 3 × 400 |
|---------------------------|-----|---------|---------|---------|---------|---------|---------|
| Power consumption kW      |     | 7.0     | 8.0     | 4.5     | 6.5     | 7.5     | 11      |
| LE 5000 DF-R Article no.  |     | 146.793 | 146.480 | 146.794 | 146.795 |         |         |
| LE 5000 DF Article no.    |     | 116.067 | 117.551 |         | 114.240 |         |         |
| LE 5000 DF* Article no.   |     |         | 128.879 | 127.872 |         |         |         |
| LE 5000 DF HT Article no. |     | 151.676 |         |         |         | 147.334 | 147.820 |

\*sealed

Additional versions available on request

Energy efficient hot-air recycling  
with LE 5000 DF-R air heater  
on a shrink tunnel.



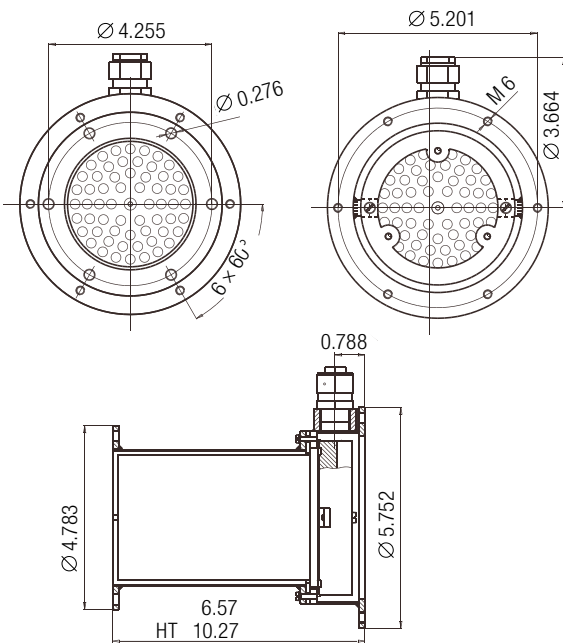
Air heater

LE 10000 DF-R / DF / DF HT / DF-R HT



LE 10 000 DF-R

Installation dimensions in inches



| Technical data                              |          | LE 10 000 DF-R | LE 10 000 DF-R HT | LE 10 000 DF | LE 10 000 DF HT |
|---|----------|----------------|-------------------|--------------|-----------------|
| LE 10 000 DF                                |          |                |                   |              |                 |
| Easy to integrate into existing air systems |          | •              | •                 | •            | •               |
| Suitable for recycling air                  |          | •              | •                 | •            | •               |
| Simple and safe fixture options             |          | •              | •                 | •            | •               |
| No integrated power electronics             |          | •              | •                 | •            | •               |
| Max. air outlet temperature                 | °F       | 1202           | 1652              | 1202         | 1652            |
| Min. air flow                               | NI/min   | 5.5 kW         | 14.8              | 14.8         | 14.8            |
|   |          | 8.0 kW         | 21.5              | 21.5         | 21.5            |
|   |          | 11 kW          | 29.6              | 29.6         | 29.6            |
|   |          | 16 kW          | 43.1              | 43.1         | 43.1            |
|   |          | 17 kW          | 45.9              | 45.9         | 45.9            |
|   | 15 kW HT |                | 28.3              |              | 28.3            |
| Max. air inlet temperature                  | °F       | 662            | 662               | 302          | 302             |
| Max. ambient temperature                    | °F       | 392            | 392               | 212          | 212             |
| Weight including cable                      | lbs      | 6              | 7                 | 8            | 9               |

|                    |    |    |    |    |
|--------------------|----|----|----|----|
| Conformity mark    | CE | CE | UL | us |
| Protection class I |    |    |    |    |

Minimum quantity of air at air inlet temperature of 68°F at 100% heating power  
scfm = standard cubic feet per minute according to STP

Optional temperature regulation

With CSS (CSS EASY) and Solid state relay (p 58 - 59)

| Voltage           | V ~         | 3 × 400 | 3 × 400 | 3 × 400 | 3 × 480 | 3 × 480 |
|-------------------|-------------|---------|---------|---------|---------|---------|
| Power consumption | kW          | 5.5     | 11      | 17      | 8.0     | 16      |
| LE 10 000 DF-R    | Article no. | 146.796 | 146.479 | 146.797 | 146.942 | 146.946 |
| LE 10 000 DF      | Article no. | 115.571 | 114.555 | 116.135 | 117.276 | 117.759 |
| LE 10 000 DF*     | Article no. |         |         | 130.865 |         |         |







| Voltage           | V ~         | 3 × 400 | 3 × 480 |
|-------------------|-------------|---------|---------|
| Power consumption | kW          | 15      | 15      |
| LE 10 000 DF-R HT | Article no. | 146.850 |         |
| LE 10 000 DF HT   | Article no. | 116.056 | 117.313 |

\*sealed

Additional versions available on request



## Accessories LE 5000 DF

|   |   |
|---|---|
|    | <b>152.371</b> Inlet flange Ø 2.4 inch (60 mm)  |
|    | <b>152.372</b> Outlet flange Ø 2.44 (62 mm)   |
|    | <b>152.905</b> Outlet flange Ø 3.6 / 2.4 x 0.12 inch (92.5 / 60.7 x 3 mm)                 |
|   | <b>152.441</b> Sealing inlet<br><b>152.443</b> Sealing outlet                             |
|  | <b>152.520</b> Adapter<br>Ø 2.4 inch (60 mm) (inside) to<br>Ø 3.5 inch (90 mm) (outside)  |
|  | <b>152.522</b> Adapter<br>Ø 2.44 inch (62 mm) (inside) to<br>Ø 3.6 inch (92 mm) (outside) |

## Accessories LE 10000 DF

|  |   |
|--|---|
|    | <b>152.373</b> Inlet flange Ø 3.5 inch (90 mm)  |
|    | <b>152.374</b> Outlet flange Ø 3.6 inch (92 mm)   |
|    | <b>152.906</b> Outlet flange Ø 4.8 / 3.5 x 0.12 inch (121.5 / 89.5 x 3 mm)                |
|   | <b>152.442</b> Sealing inlet<br><b>152.444</b> Sealing outlet                             |
|  | <b>152.521</b> Adapter<br>Ø 3.5 inch (90 mm) (inside) to<br>Ø 3.6 inch (60 mm) (outside)  |
|  | <b>152.523</b> Adapter<br>Ø 3.6 inch (92 mm) (inside) to<br>Ø 2.44 inch (62 mm) (outside) |

56

The inlet sides special design and materials allow for high air inlet temperatures.

The electrical supply's functioning and safety are guaranteed even under extreme conditions.

The new double-flange air heaters are manufactured using Leister's well-known high quality standards.

### High degree of manufacturing quality



photos: Type LE 5000 DF-R

### High quality temperature resistant cable



### Robust structural design



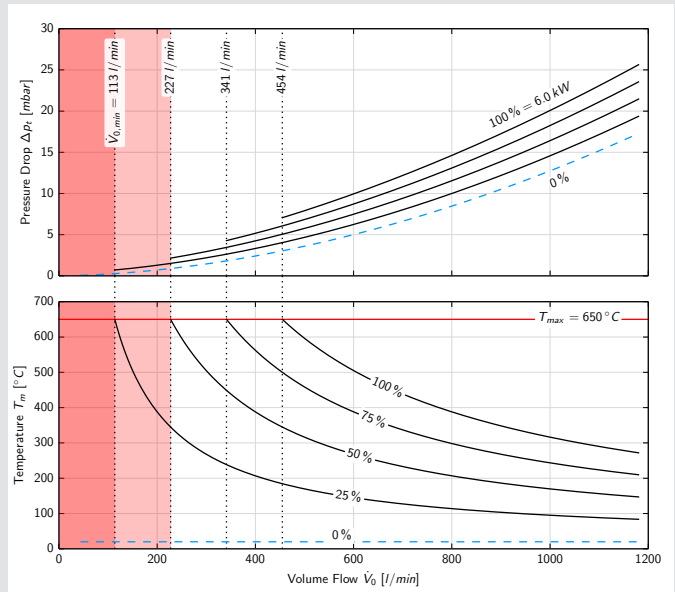
# Designing hot-air systems correctly.

Knowledge of the physical properties of all the components used is essential for the correct design of hot air equipment and systems. Two values are of particular importance to the user: Pressure loss depending on air flow and Temperature depending on air flow. Both values are additionally dependent on the heating output of the air heater.

With the construction of a unique measurement system, LEISTER has laid the foundations for the correct physical specification of these interrelationships. For this, systematic measurements across the entire area of utilization of the air heaters and a calculation of the models with the aid of dimensionless key indicators is necessary. As a result, the interconnections of pressure loss, volumetric flow and temperature can be displayed in relation to standard conditions.



Leister measurement apparatus.



Example of pressure loss and temperature curves for an LHS 61S SYSTEM (3 × 400 V / 6 kW) air heater.



Monitoring system



# LE 5000 HT-U & LE 5000 HT-S

Hot Air High Speed Side Sealing

Leister hot air side sealing

## LE 5000 HT-U & LE 5000 HT-S



LE 5000 HT-U



LE 5000 HT-S

Air Heaters  
Controllers

- Reduction of CO2 Footprint
- Factory Safety Requirements
- Operator Safety
- Energy Efficiency
- Process Reproducibility

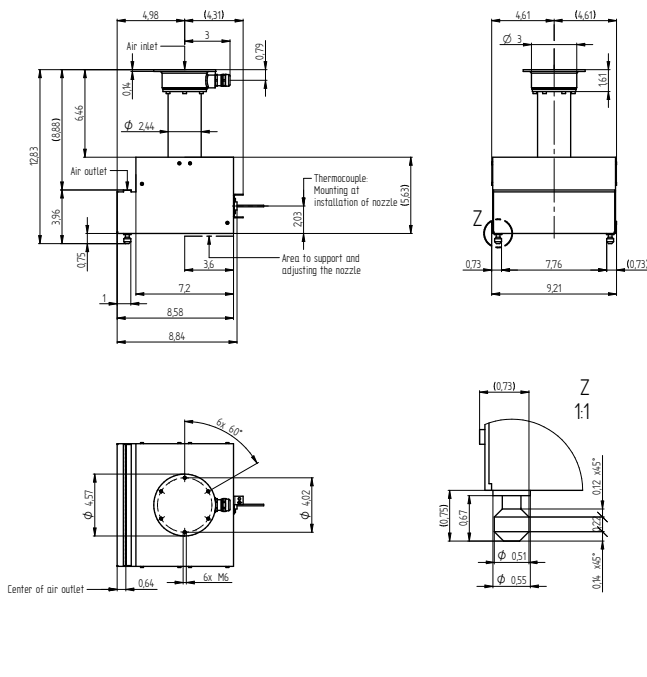
The hot air sealing unit for liquid packaging include two different units: The LE 5000 HT-U air heater has the hot air outlet on the upper side, while the LE 5000 HT-S blows the hot air downwards. The air outlet openings are designed precisely for welding the longitudinal seam in liquid packaging. Thanks to the great thermal insulation on the units, the maximum amount of energy is implemented in the weld seam.

The sealing unit arrives a production speed up to 2296.6 ft/min and operate with an air temperature at 1652 °F. The customer can control the sealing units very easy on temperatures and airflow, this makes the process much more precise than a process with gas flame.

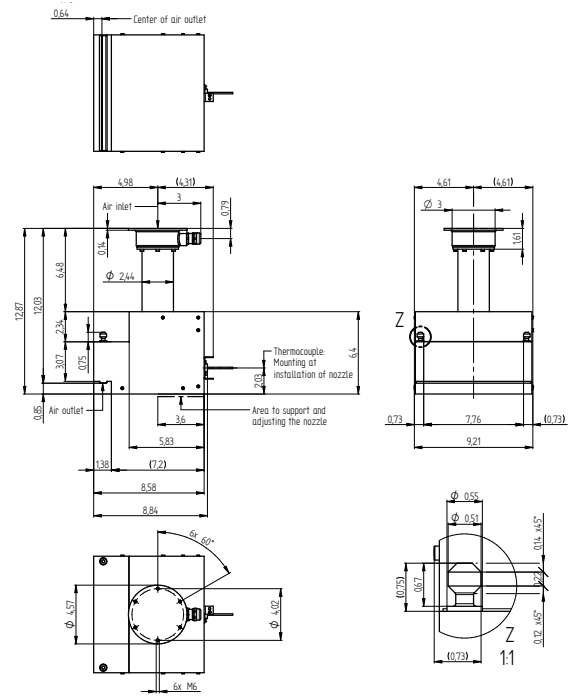


The Pre sealing units consist of 2 LE 5000 HT-U devices, which are used in the prefold section of the machine shown by Fortuna GmbH.

Installation dimensions in inches LE 5000 HT-U



Installation dimensions in inches LE 5000 HT-S



| Technical Data              | LE 5000 HT-U |         | LE 5000 HT-S |         |         |
|-----------------------------|--------------|---------|--------------|---------|---------|
| Voltage                     | V            | 3 x 200 | 3 x 400      | 3 x 200 | 3 x 400 |
| Frequency                   | Hz           | 50 / 60 | 50 / 60      | 50 / 60 | 50 / 60 |
| Power                       | kW           | 7       | 7.5          | 7       | 7.5     |
| Max. air outlet temperature | °F           | 1652    | 1652         | 1652    | 1652    |
| Max. air inlet temperature  | °F           | 176     | 176          | 176     | 176     |
| Max. ambient temperature    | °F           | 176     | 176          | 176     | 176     |
| Min. air volume (68 °F)     | cfm          | 14.12   | 14.12        | 14.12   | 14.12   |
| Max. static pressure        | psi          | 14.5    | 14.5         | 14.5    | 14.5    |
| Weight                      | lbs          | 19.84   | 19.84        | 19.84   | 19.84   |
| Mark of conformity          | CE           | CE      | CE           | CE      | CE      |
| Protection class I          | ⊕            | ⊕       | ⊕            | ⊕       | ⊕       |
| Article number              |              | 163.564 | 116.761      | 163.565 | 116.763 |



## Hot Air versus Gas Flame

**CO<sub>2</sub> Footprint:** To reduce the CO<sub>2</sub> footprint hot air offers the option to consume the power from renewable resources like wind power, solar power, etc. Gas cannot offer this benefit since it requires fossil resources.












**Factory Safety Requirements:** Using hot air eliminates all the costly safety requirements for gas.

**Operator Safety:** There is no open flame with hot air. Hot air systems are enclosed in organic fiber based ceramics and have a very low surface contact temperature even though the process operates at 1652 °F.

**Energy Requirement:** Typical energy consumption for a flame sealer with gas burners is appropriately 90 kW. Hot air systems also use approximately 90 kW.

**Process Reproducibility:** Setting up the machine for each type of board is much easier and more precise with electric heaters. The welding seam is much more precise.

## Accessories LE 5000 HT-U / LE 5000 HT-S

|   |   |  |   |
|---|---|--|---|
|  | <b>137.720</b> E5CC temperature controller, 100-240 V               |   | <b>107.287</b> Hose clip ø 1.49/2.36 in   |
|  | <b>159.220</b> Semiconductor relay, 3 x 600V/40A                    |   | <b>107.291</b> Hose connection adapter ø 2.44 in, 1 output  |
|  | <b>103.429</b> ROBUST, 3 x 230/400V 50Hz, 3 x 265/460V 60Hz         |   | <b>152.371</b> Inlet flange, ø 2.36 in  |
|  | <b>153.358</b> Frequency converter C200-012, 230V                   |   | <b>152.441</b> Gasket HT LE 5000 DF, inlet  |
|  | <b>166.237</b> Air hose ø 1.49 in, silicone, temperature-resistant  |  | Fastening<br><b>163.535</b> LE 5000 HT-U (2 units)<br><b>163.536</b> LE 5000 HT-S (2 units)<br><b>163.596</b> LE 5000 HT-U (3 units)<br><b>163.598</b> LE 5000 HT-S (3 units)<br><b>163.604</b> LE 5000 HT-U (4 units)<br><b>163.606</b> LE 5000 HT-S (4 units) |
|  | <b>107.354</b> Stainless steel filter, slidable to the suction side |  |   |

# Temperature regulators: The masters of precision.

Leister temperature regulators allow the air temperature of air heaters and hot-air blowers to be precisely regulated. These regulators are perfectly matched to our Leister devices and facilitate easy and fast installation. They include a digital display for target/actual temperature and two freely programmable alarm outputs.


Temperature controller **CSS EASY**      Temperature controller **CSS**      Temperature controller **E5CC**





| Technical Data                                | CSS EASY   | CSS   | E5CC  |
|---|--|---|---|
| Suitable for Leister air heaters              | LHS SYSTEM   | LHS SYSTEM, LE MINI SENSOR, Universally deployable temperature regulator                  | LE 5000/10 000 DF + SSR, LHS Classic + SSR, LE 5000/10 000 HT + SSR, MISTRAL              |
| Regulation type                               | PID  | PID   | PID   |
| Ready to use with preconfigured parameter set | •  | •<br>(for LHS SYSTEM, MISTRAL SYSTEM, HOTWIND SYSTEM, VULCAN SYSTEM)                      | •   |
| Accuracy                                      | > 0.2 % of scale value at 77 °F  | > 0.2 % of scale value at 77 °F   | > 0.2 % of scale value at 77 °F   |
| Switchover C° / F°                            | Configurable via keypad  | Configurable via keypad   | Configurable via keypad   |
| Temperature sensor / input                    | Type K / socket  | Type K, PT100, screw connectors   | Type K / PT100, screw connectors  |
| Alarm output                                  | 2 independently configurable alarms, Output at 2 floating relay contacts, 4-fold connector block                         | 2 independently configurable alarms, Output at 2 floating relay contacts, Screw connector | 2 independently configurable alarms, Output at 2 floating relay contacts, Screw connector |
| Connection to air heater                      | RJ-45 socket for Leister Control Cable (see accessories)   | Screw connectors  | Via SSR with PWM signal or 4-20mA   |
| Voltage                                       | 100 – 240 VAC, max. 8 VA   | 100 – 240 VAC, max. 8 VA  | 100 – 240 VAC, max. 8 VA  |
| Mains connection lead                         | 9.8 ft, with Euro plug   | Without lead, screw connectors  | Without lead, screw connectors  |
| Mechanics                                     | Regulator built into housing, ready to operate, can also be integrated into the front panel, with cut-out 2.64 × 2.64 in | Regulator for front panel integration, with cut-out 1.77 × 1.77 in                        | Regulator for front panel integration, with cut-out 1.77 × 1.77 in                        |
| Dimensions (L × W × H)                        | 6.9 × 2.8 × 2.8 in   | 4.3 × 1.9 × 1.9 in  | 2.6 × 1.9 × 1.9 in  |
| Weight (lbs)                                  | 0.99   | 0.44  | 2.20  |
| Conformity mark                               |  |   |   |
| Protection class II                           |  |   |   |
| Article no.                                   | 125.944  | 123.039   | 137.720   |

# Controllers and interfaces: The clever combination.

## Accessories CSS EASY / CSS

|   |  |
|---|--|
|  | <b>144.030</b> System Interface cable<br>3.3 ft<br><b>144.028</b> 9.8 ft<br><b>144.026</b> 16.4 ft<br>One end single wires, one end RJ45 |
|   | <b>106.956</b> Thermocouple with plug,<br>3.28 ft cable  |
|   | Thermocouple extension<br>cable with plug and connection<br><b>106.958</b> 6.56 ft<br><b>106.960</b> 13.1 ft<br><b>106.962</b> 32.8 ft   |

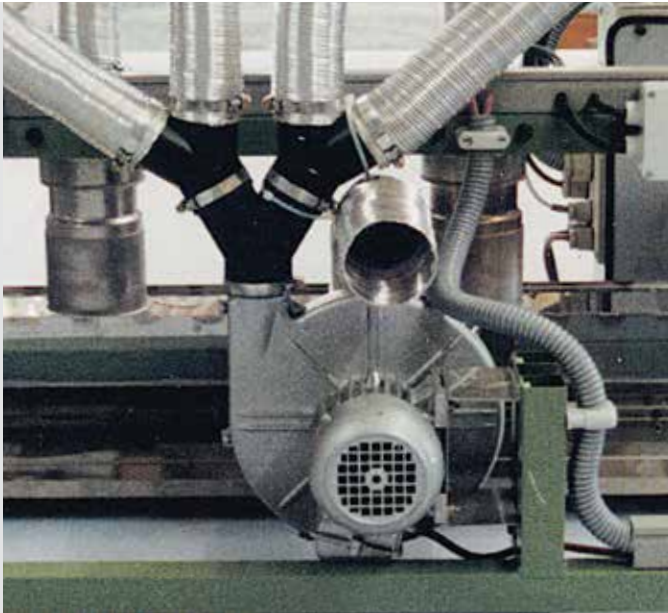
## Accessories Solid state relay

|   |   |
|---|---|
|  | <b>159.220</b> Solid state relay 3 × 600 V / 40 A<br>Input: PWM |
|   | Solid state relay 1 × 230 V / 15 A<br>Input: PWM                |
|  | <b>133.540</b> Solid state relay 1 × 230 V / 15 A<br>Input: PWM |

Air Heaters  
Controllers







## Blowers / Frequency Converters

|                      |         |
|----------------------|---------|
| RBR                  | 62      |
| SILENCE              | 63      |
| ASO                  | 64      |
| ROBUST               | 65      |
| AIRPACK              | 66      |
| MONO                 | 67      |
| Accessories          | 68 / 69 |
| Frequency Converters | 70      |
| Conversion table     | 71      |



# Radial Blower Recirculation RBR: The recycling specialist.

Because of its design, the RBR medium pressure blower can withstand air temperatures of up to 662°F (on the inlet side), making it especially suitable for hot air recycling. By combining the DF-R double-flange air heaters and other accessories, hot-air systems can be constructed to recover and recycle the hot air from the manufacturing process, which can potentially save significant amounts of energy and costs.

Medium pressure blower

## RBR



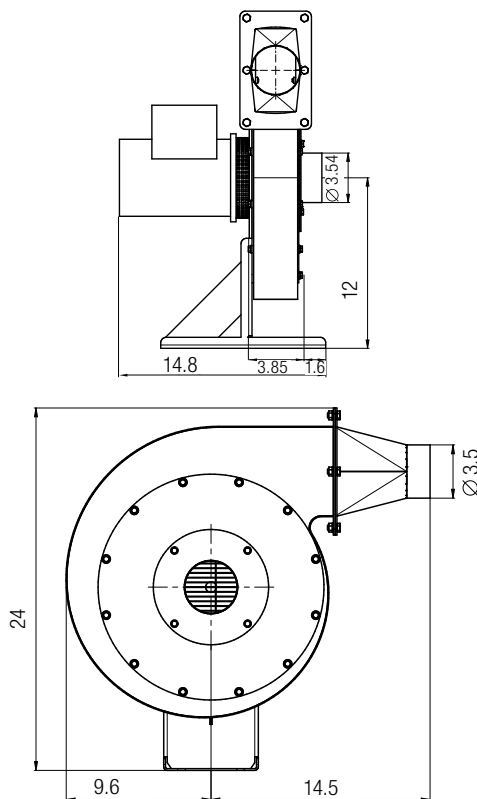
### Technical data RBR

Design: radial blower

|                                      |        |       |       |
|--------------------------------------|--------|-------|-------|
| Frequency                            | Hz     | 50    | 60    |
| Air flow (68 °F)                     | cfm    | 593   | 706   |
| Static pressure                      | psi    | 0.25  | 0.36  |
| Max. ambient temperature             | °F     | 140   | 140   |
| Max. air inlet temperature           | °F     | 662   | 662   |
| Noise emission level                 | dB(A)  | 61    | 61    |
| Environmental protection (IEC 60529) |        | IP 54 | IP 54 |
| Outside diameter air inlet           | inches | Ø 3.5 | Ø 3.5 |
| Outside diameter air outlet          | inches | Ø 3.5 | Ø 3.5 |
| Weight                               | lbs    | 42    | 42    |
| Conformity mark                      |        | CE    | CE    |
| Protection class I                   |        | ⊕     | ⊕     |

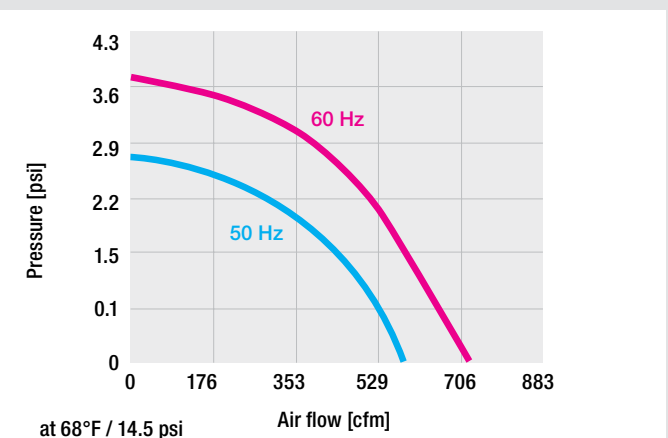
Can be controlled with frequency converter (page 62), 20 – 60 Hz

### Installation dimensions in inch



|                      |                    |                |
|----------------------|--------------------|----------------|
| Voltage              | V ~ 50 Hz          | 3 x 230 / 400  |
|                      | V ~ 60 Hz          | 3 x 277 / 480  |
| Power consumption    | W                  | 550 / 660      |
| <b>Without cable</b> | <b>Article no.</b> | <b>156.049</b> |

Additional versions available on request



at 68°F / 14.5 psi

Accessories  

# SILENCE: The quieter option.

No blower, no air! In industrial processes one blower can often supply several air heaters in parallel. Our durable and maintenance-free blowers are a result of uncompromising quality standards and decades of experience. SILENCE, Leister's mid-range blower, is very quiet during operation at 61 dB(A). Developed to withstand operating conditions with air intake temperatures of 212 to 392 °F, the SILENCE blower delivers optimum and effortless performance in ambient temperatures up to 167 °F.

Medium pressure blower

## SILENCE



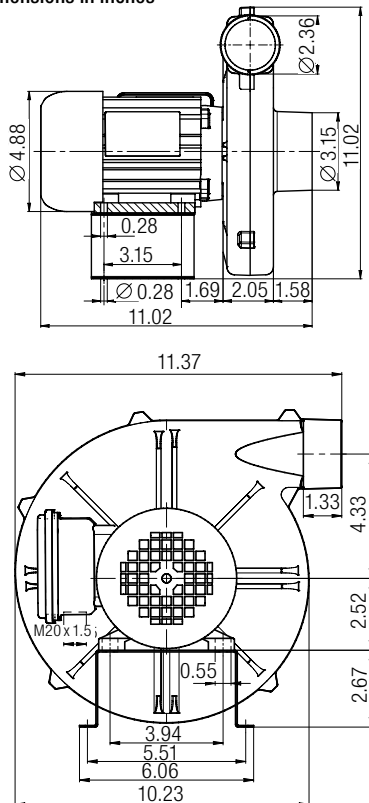
### Technical data SILENCE

Design: Radial Blower

|                                      |        |              |              |
|--------------------------------------|--------|--------------|--------------|
| Frequency                            | Hz     | 50           | 60           |
| Air flow (68 °F)                     | cfm    | 166          | 212          |
| Static pressure                      | psi    | 0.15         | 0.20         |
| Max. ambient temperature             | °F     | 167          | 167          |
| Max. air inlet temperature           | °F     | 392          | 392          |
| Noise emission level                 | dB(A)  | 61           | 61           |
| Environmental protection (IEC 60529) |        | IP 54        | IP 54        |
| Outside diameter air inlet           | inches | Ø 3.15       | Ø 3.15       |
| Outside diameter air outlet          | inches | Ø 2.36       | Ø 2.36       |
| Weight                               | lbs    | 20           | 20           |
| Conformity mark                      |        | CE (ErP n/a) | CE (ErP n/a) |
| Protection class I                   |        | ⊕            | ⊕            |

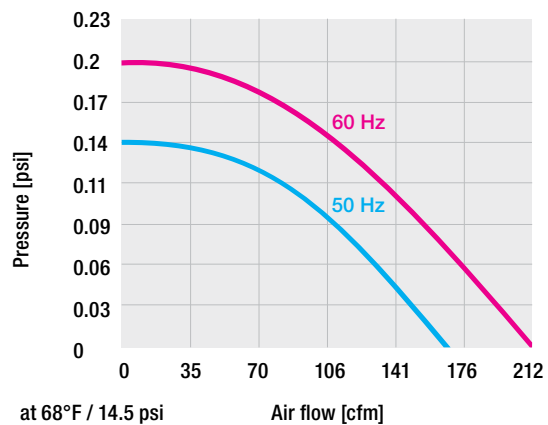
Can be controlled with frequency converter (page 62), 20 – 80 Hz

### Installation dimensions in inches



|                                  |                    |                |                |
|----------------------------------|--------------------|----------------|----------------|
| Voltage                          | V ~ 50 Hz          | 1 x 230        | 3 x 230 / 400  |
|                                  | V ~ 60 Hz          |                | 3 x 440 – 480  |
| Power consumption                | W                  | 250            | 250            |
| <b>Without cable</b>             | <b>Article no.</b> |                | <b>103.507</b> |
| <b>9.84 ft cable / Euro plug</b> | <b>Article no.</b> | <b>103.510</b> |                |

Additional versions available on request



Accessories



# ASO: The air flow giant.

At 60 Hz, the ASO blower delivers 560 cfm. When used with the appropriate accessories, the ASO medium pressure blower can supply several Leister air heaters in parallel.

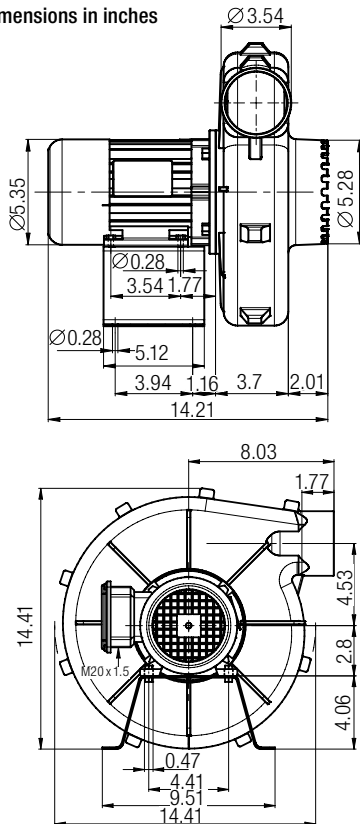
## Medium pressure blower

### ASO



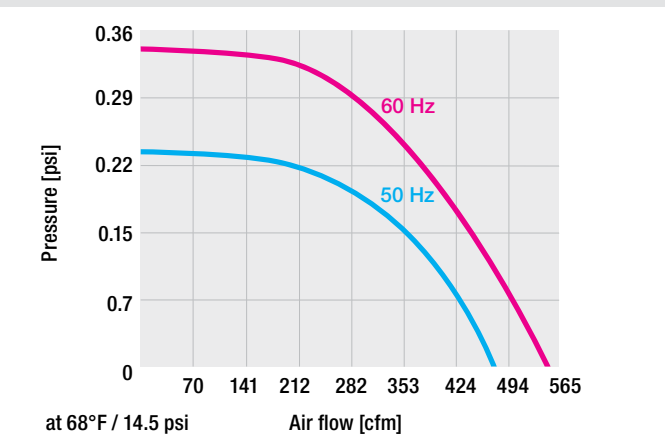
| Technical data ASO   |        |        |        |
|--|--------|--------|--------|
| Design: radial blower  |        |        |        |
| Frequency  | Hz     | 50     | 60     |
| Air flow (68 °F)   | cfm    | 476    | 560    |
| Static pressure  | psi    | 0.23   | 0.35   |
| Max. ambient temperature   | °F     | 140    | 140    |
| Max. air inlet temperature                                       | °F     | 392    | 392    |
| Noise emission level   | dB(A)  | 70     | 70     |
| Environmental protection (IEC 60529)                             |        | IP 54  | IP 54  |
| Outside diameter air inlet                                       | inches | Ø 5.28 | Ø 5.28 |
| Outside diameter air outlet                                      | inches | Ø 3.54 | Ø 3.54 |
| Weight   | lbs    | 33     | 33     |
| Conformity mark  |        | CE     | CE     |
| Protection class I   |        | ⊕      | ⊕      |
| Can be controlled with frequency converter (page 62), 20 – 60 Hz |        |        |        |

### Installation dimensions in inches



|                            |                    |                |                |
|----------------------------|--------------------|----------------|----------------|
| Voltage                    | V ~ 50 Hz          | 1 x 230        | 3 x 230 / 400  |
|                            | V ~ 60 Hz          |                | 3 x 440 – 480  |
| Power consumption          | W                  | 550            | 550            |
| <b>Without cable</b>       | <b>Article no.</b> |                | <b>103.527</b> |
| <b>9.84 ft / Euro plug</b> | <b>Article no.</b> | <b>103.530</b> |                |

Additional versions available on request.



Accessories  

# ROBUST: The name speaks for itself.

The ROBUST blower combines a compact design with enormous power. Thanks to efficient sound insulation, the ROBUST high pressure blower is very quiet. It can be installed in all orientations and is virtually indestructible, even under extreme conditions and continuous operation.

High pressure blower

## ROBUST



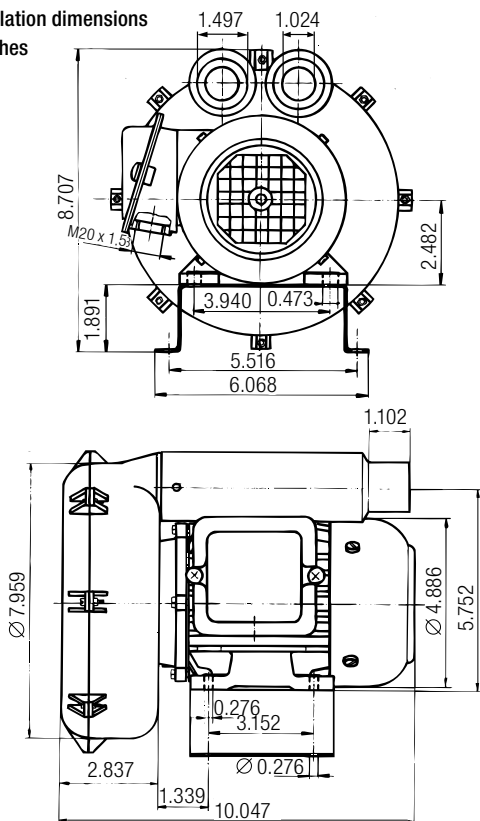
### Technical data ROBUST

Design: Side Channel Blower

|                                      |        |       |       |
|--------------------------------------|--------|-------|-------|
| Frequency                            | Hz     | 50    | 60    |
| Air flow (68 °F)                     | cfm    | 42    | 46    |
| Static pressure                      | psi    | 1.16  | 1.52  |
| Max. ambient temperature             | °F     | 140   | 140   |
| Max. air inlet temperature           | °F     | 140   | 140   |
| Noise emission level                 | dB(A)  | 62    | 62    |
| Environmental protection (IEC 60529) |        | IP 54 | IP 54 |
| Outside diameter air inlet           | inches | Ø 1.5 | Ø 1.5 |
| Outside diameter air outlet          | inches | Ø 1.5 | Ø 1.5 |
| Weight                               | lbs    | 18    | 18    |
| Conformity mark                      |        | CE    | CE    |
| Protection class I                   |        | ⊕     | ⊕     |

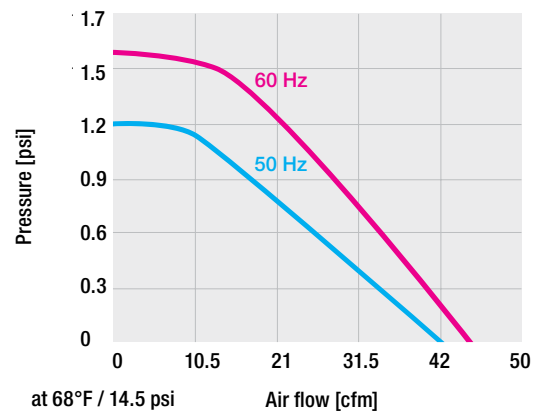
Can be controlled with frequency converter (page 62), 20 – 60 Hz

### Installation dimensions in inches



|                                  |                    |                |                |                |
|----------------------------------|--------------------|----------------|----------------|----------------|
| Voltage                          | V ~ 50 Hz          | 1× 120         | 1× 230         | 3 × 230 / 400  |
|                                  | V ~ 60 Hz          |                |                | 3 × 440 – 480  |
| Power consumption                | W                  | 250            | 250            | 250            |
| <b>Without cable</b>             | <b>Article no.</b> | <b>103.434</b> |                | <b>103.429</b> |
| <b>9.84 ft cable / Euro plug</b> | <b>Article no.</b> |                | <b>103.432</b> |                |

Additional versions available on request



Accessories



# AIRPACK: The full pressure provider.

If high pressure is required, the AIRPACK is the answer! It is used wherever large air volumes at high pressure are required. Its impressive power means it can supply several Leister air heaters in parallel. The AIRPACK delivers sufficient pressure to efficiently supply Leister blow-off nozzles.

High pressure blower

## AIRPACK



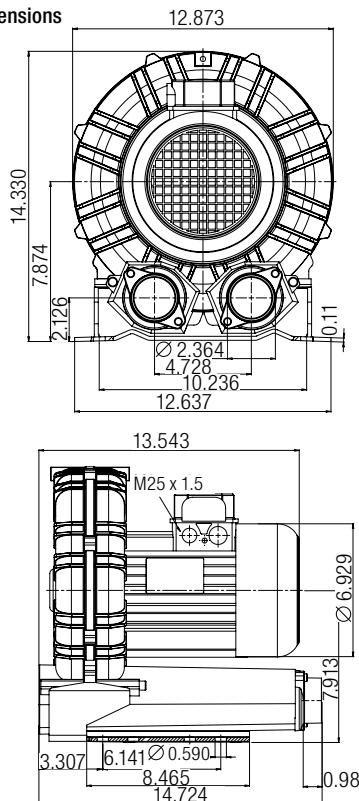
### Technical data AIRPACK

Design: Side Channel Blower

|                                      |        |        |        |
|--------------------------------------|--------|--------|--------|
| Frequency                            | Hz     | 50     | 60     |
| Air flow (68 °F)                     | cfm    | 138    | 159    |
| Static pressure                      | psi    | 4.35   | 4.35   |
| Max. ambient temperature             | °F     | 104    | 104    |
| Max. air inlet temperature           | °F     | 104    | 104    |
| Noise emission level                 | dB (A) | 73     | 73     |
| Environmental protection (IEC 60529) |        | IP 54  | IP 54  |
| Outside diameter air inlet           | inches | Ø 2.36 | Ø 2.36 |
| Outside diameter air outlet          | inches | Ø 2.36 | Ø 2.36 |
| Weight                               | lbs    | 57     | 57     |
| Conformity mark                      |        | CE     | CE     |
| Protection class I                   |        | ⊕      | ⊕      |

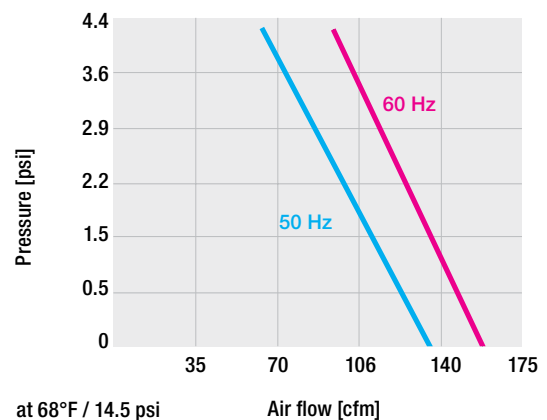
Can be controlled with FC (page 62), 20 – 60 Hz

### Installation dimensions in inches



|                      |                    |                |
|----------------------|--------------------|----------------|
| Voltage              | V ~ 50 Hz          | 3 x 230 / 400  |
|                      | V ~ 60 Hz          | 3 x 440 – 480  |
| Power consumption    | W                  | 2200           |
| <b>Without cable</b> | <b>Article no.</b> | <b>119.358</b> |

Additional versions available on request



Accessories 61

# MONO: Compact with high performance.

Despite its compact design, the MONO<sup>6</sup> SYSTEM high pressure blower continues to impress due to its high air volume of up to 21.2 cfm. One of its new features, is the ability to adjust the air volume, either on the device itself, via the “e-drive” operating unit, or through the external interface. As a result, the blower can be adapted perfectly to suit every application. With its maintenance-free, brushless motor, the blower is ideal for continuous operation.

## High pressure blower MONO<sup>6</sup> SYSTEM

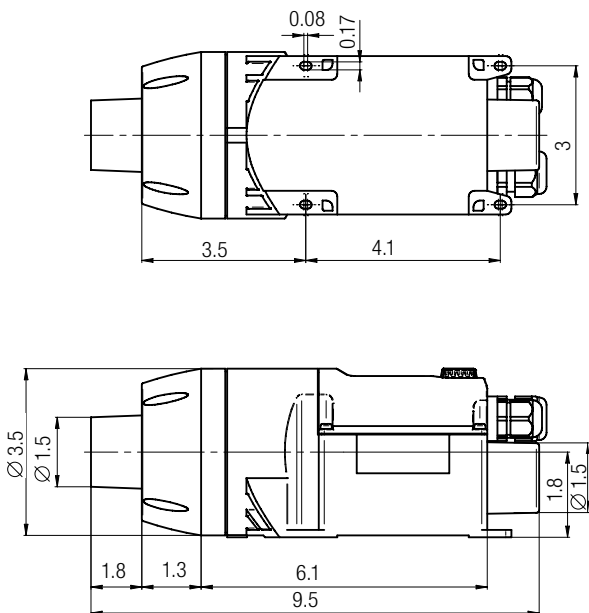


### Technical data

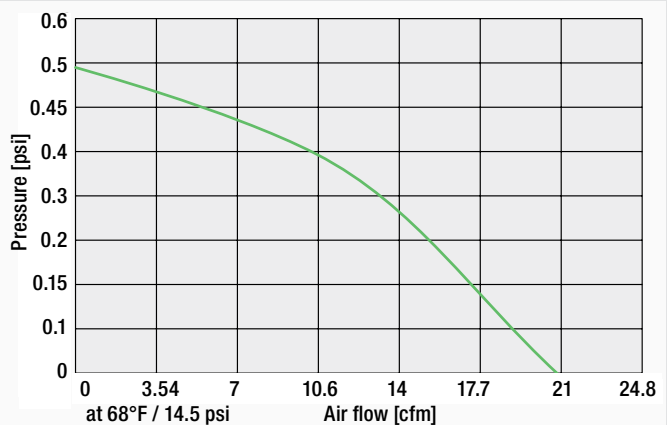
|                             |        |              |
|-----------------------------|--------|--------------|
| Frequency                   | Hz     | 50 / 60      |
| Air flow (68 °C)            | cfm    | 8.8 – 21.2   |
| Static pressure             | psi    | 0.52         |
| Max. ambient temperature    | °F     | 140          |
| Outside diameter air outlet | inches | Ø 1.5        |
| Weight with 9.84 ft cable   | lbs    | 2            |
| Conformity mark             |        | CE (ErP n/a) |
| Protection class II         |        | □            |

|                   |     |         |         |
|-------------------|-----|---------|---------|
| Voltage           | V ~ | 230     | 120     |
| Power consumption | W   | 120     | 120     |
| Article no.       |     | 146.702 | 149.638 |

### Installation dimensions in inches










- Adjustable air volume
- Compact and efficient
- “e-drive” operating unit
- Brushless motor
- Tool protection
- System interface
- Mounting tabs



Accessories



## Accessories SILENCE (Ø 2.36 in)




|   |  |
|---|--|
|    | <b>107.288</b> PVC air hose Ø 2.36 in  |
|    | <b>107.287</b> Hose clip for Ø 1.47 in and Ø 2.36 in air hose  |
|    | <b>107.240</b> Closing cap Ø 2.36 in attachable to hose connection adaptor 107.238 and 107.278   |
|    | <b>107.294</b> Stainless steel filter, push-fit on air intake  |
|   | <b>110.887</b> Motor capacitor 230 V   |
|  | <b>107.291</b> Hose connection adaptor made of PA with 1 air outlet for Ø 1.5 in hose, push-fit on air outlet                                      |
|  | <b>107.278</b> Hose connection adaptor made of PA, push-fit on air outlet  |
|  | <b>107.292</b> Hose connection adaptor made of PA with 2 air outlets for Ø 1.5 in hose, push-fit on air outlet                                     |
|  | <b>107.293</b> Hose connection adaptor, push-fit on adaptor 107.292  |
|  | <b>107.295</b> Manually-operated air flow adjuster<br>Size 8.43 x 3.46 x 5.24 in   |
|  | <b>107.296</b> Air flow off/on switch<br>The air flow is interrupted on command (pneumatic 72.5 psi) to the heaters.<br>Size 8.43 x 3.46 x 5.24 in |

Special nozzles available upon request. Leister does not provide any warranty for its products if using non-Leister blowers or accessories.

## Accessories ASO (Ø 3.54 in)

|   |   |
|---|---|
|   | <b>107.237</b> PVC air hose Ø 3.54 in                         |
|   | <b>107.236</b> Hose clip for Ø 3.54 in air hose               |
|   | <b>107.239</b> Stainless steel filter, push-fit on air intake |
|   | <b>111.771</b> Motor capacitor 230 V                          |
|  | <b>107.238</b> Hose connection adaptor made of PA, push-fit   |

## Accessories MONO (Ø 1.5 in)

|  |   |
|--|---|
|  | <b>153.245</b> Stainless steel filter kit (Ø 1.49 in), push-fit on air intake |
|  | <b>107.286</b> PVC air hose Ø 1.49 in   |
|  | <b>107.287</b> Hose clip for Ø 1.47 in and Ø 2.36 in air hose                 |

## Accessories RBR (Ø 3.54 in)

|  |   |
|--|---|
|  | Air hose HT, temperature resistant up to + 350 ° C, insulated                       |
| <b>152.439</b>   | Ø 2.36 inch, 78.74 inch   |
| <b>152.440</b>   | Ø 2.36 inch, 196.85 inch  |
| <b>155.419</b>   | Ø 3.54 inch, 78.74 inch   |
| <b>155.420</b>   | Ø 3.54 inch, 196.85 inch  |
|  | <b>152.518</b> Hose clip inside for Hose HT<br>Ø 2.36 inch bridge type 2.2 - 3 inch |
| <b>152.519</b>   | Hose clip outside for Hose HT<br>Ø 2.36 inch bridge type 3.3 - 4.1 inch             |
| <b>155.421</b>   | Hose clip inside for Hose HT<br>Ø 3.54 inch bridge type 3.7 - 4.5 inch              |
| <b>155.422</b>   | Hose clip outside for Hose HT<br>Ø 3.54 inch bridge type 4.9 - 5.7 inch             |

The combination of blow-off nozzles and blowers allows fast and efficient drying of beverage bottles.



## Accessories ROBUST (Ø 1.5 in)

|  |   |
|--|---|
|  | <b>113.859</b> PVC air hose Ø 0.55 in<br><b>107.350</b> PVC air hose Ø 0.75 in<br><b>107.286</b> PVC air hose Ø 1.50 in<br><b>166.237</b> Silicone air hose Ø 1.50 in, temperature resistant up to 482°F, |
|  | <b>107.290</b> Hose clip for Ø 0.75 in air hose   |
|  | <b>107.242</b> Closing cap Ø 0.75 in, attachable to hose connection adaptor 107.298   |
|  | <b>107.354</b> Stainless steel filter, push-fit on air intake   |
|  | <b>108.623</b> Motor capacitor 230 V~<br><b>104.017</b> Motor capacitor 120 V~  |
|  | <b>107.298</b> Hose connection adaptor made of PA, push-fit on ROBUST blower and adapter 107.293 for hose connection  |
|  | <b>107.281</b> Hose connection adaptor made of PA (Ø 1.5 in), 3 outputs, each 0.55 in   |
|  | <b>107.287</b> Hose clip for air hose Ø 1.5 in and Ø 2.36 in  |
|  | <b>107.241</b> Closing cap Ø 1.5 in, attachable to hose connection adaptor 107.292 and 107.293  |
|  | <b>107.293</b> Hose connection adaptor made of PA, push-fit   |
|  | <b>108.755</b> Hand operated air flow adjuster and on/off switch. Size 8.43 x 3.46 x 5.24 in  |
|  | <b>107.299</b> Air flow off/on switch<br>The air flow is interrupted on command (pneumatic 72.5 psi) to the heaters. Size 8.43 x 3.46 x 5.24 in   |

## Accessories AIRPACK (Ø 2.36 in)

|  |  |
|--|--|
|  | <b>107.287</b> Hose clip for air hose Ø 1.5 in and Ø 2.36 in   |
|  | <b>107.241</b> Closing cap Ø 1.5 in push-fit on hose connection adaptors 107.292 and 107.293   |
|  | <b>107.288</b> PVC air hose Ø 2.36 in  |
|  | <b>107.240</b> Closing cap Ø 2.36 in, push-fit on hose connection adaptors 107.278   |
|  | <b>107.291</b> Hose connection adaptor made of PA with 1 air outlet for Ø 2.36 in hose. Push-fit on air outlet   |
|  | <b>107.292</b> Hose connection adaptor made of PA with 2 air outlets for Ø 1.5 in hose. Push-fit on air outlet   |
|  | <b>107.278</b> Hose connection adaptor made of PA, Push-fit on air outlet  |
|  | <b>110.895</b> Stainless steel filter, push-fit on air intake  |
|  | Blow-off nozzle, push-fit<br>Outlet opening adjustable 0.039 - 0.217 in<br>a = 11.81 in<br>a = 19.69 in<br>Connector Ø 2.36 in<br><b>125.907</b><br><b>125.908</b> |

Special nozzles available upon request  
Leister does not provide any warranty for its products if using non-Leister blowers or accessories.

# Frequency converters: More power for your blower.

Because air volume and heating performance can be set independently, precisely and reproducibly from each other, the C 200-012 and C 200-034 frequency converters can improve your hot-air processes. The C 200-012 and C 200-034 give the blowers the flexibility to adjust the air volume up or down.

## Frequency converter

### C 200-012

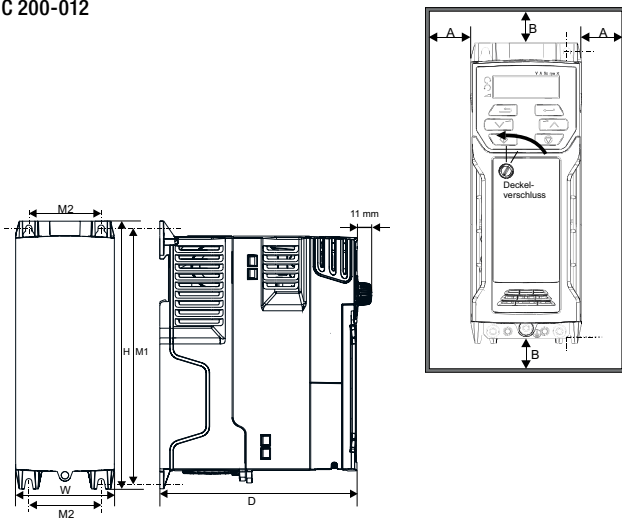


## Frequency converter

### C 200-034



## Installation dimensions in inches C 200-012



| Converter size | H    | W    | D    | M1   | M2   | ∅    | A    | B    |
|----------------|------|------|------|------|------|------|------|------|
|                | inch | inch | inch | inch | inch | inch | inch | inch |
| C 200-012      | 6.3  | 2.9  | 5.1  | 5.6  | 2.1  | 0.2  | 0    | 3.9  |
| C 200-034      | 8.9  | 3.5  | 6.3  | 8.5  | 2.8  | 0.2  | 0    | 3.9  |

## Technical data

|                                    |     | C 200-012     | C 200-034     |
|------------------------------------|-----|---------------|---------------|
| Input voltage                      | V   | 1 x 200 - 240 | 3 x 380 - 480 |
| Max. blower rated power            | W   | 750           | 2200          |
| Frequency                          | Hz  | 50 / 60       | 50 / 60       |
| Typical input current at full load | A   | 10.4          | 9.6           |
| Output rated power (100%)          | A   | 4.2           | 5.6           |
| Weight                             | lbs | 1.54          | 3.1           |
| Conformity mark                    |     | CE            | CE            |
| Approval mark                      |     | UL            | UL            |
| Protection class I                 |     | ⊕             | ⊕             |
| Article no.                        |     | 153.358       | 153.474       |

## Conversion table

|                 | metric |       | US -units |        | Comments   |
|-----------------|--------|-------|-----------|--------|--|
| Temperature     | 100    | °C    | 212       | °F     | $^{\circ}\text{F} = ^{\circ}\text{C} \cdot 1.8 + 32$ |
|                 | 20     | °C    | 68        | °F     |  |
|                 | 0      | °C    | 32        | °F     |  |
| Length          | 25.4   | mm    | 1         | in     |  |
|                 | 0.305  | m     | 1         | ft     |  |
| Weight          | 1      | kg    | 2.2       | lbs    |  |
|                 | 0.454  | kg    | 1.0       | lbs    |  |
| Air flow        | 28.3   | l/min | 1         | cfm    |  |
|                 | 100    | l/min | 3.53      | cfm    |  |
| Static pressure | 6.89   | kPa   | 1         | psi    | 1 kPa = 10 mbar                                      |
|                 | 1      | kPa   | 0.145     | psi    |  |
| Speed           | 0.305  | m/min | 1         | ft/min |  |
|                 | 1      | m/min | 3.28      | ft/min |  |
| Output          | 1      | kg/h  | 2.2       | lbs/h  |  |
|                 | 0.454  | kg/h  | 1         | lbs/h  |  |
| Energy          | 1      | kJ    | 0.948     | BTU    | (british thermal unit)                               |

## Useful formulas: Help yourself.

Most industrial processes require energy. Bringing energy into processes requires power and time. The following are some simple, basic calculations that can give first estimations on required heating power. Additional application tests are always recommended and supported by Leister.

The following formulas are meant as rules-of-thumb. They can be employed as first estimations to plan equipment. The calculated values serve as approximate values. Losses are not considered.

### Electric power, current and voltage

$$V = R * I$$

V = Voltage [V]  
R = Resistance [Ohm]

$$P = V * I$$

I = Current [A]  
P = Power [W]

#### Example single-phase:

V = 230V  
P = 1 kW (e.g. LHS 21S CLASSIC, 139.869)

$$I = \frac{1000}{230} = 4.35 [A] \quad \rightarrow \text{single-phase}$$

$$I = \frac{P}{V} \quad \rightarrow \text{single-phase}$$

$$I = \frac{P}{V * \sqrt{3}} \quad \rightarrow \text{three-phase}$$

#### Example three-phase:

V = 3 \* 400V  
P = 6 kW (e.g. LHS 61S SYSTEM, 3 x 400 V / 6 kW, 142.496)

$$I = \frac{6000}{400 * \sqrt{3}} = 8.66 [A] \quad \rightarrow \text{three-phase}$$

### Electrical output with voltage differences

$$P_{\text{act}} = \frac{V_{\text{act}}^2}{V_{\text{nom}}^2} * P_{\text{nom}}$$

$P_{\text{act}}$  = effective Power [W]  
 $P_{\text{nom}}$  = nominal Power [W]  
 $V_{\text{act}}$  = effective Voltage [V]  
 $V_{\text{nom}}$  = nominal Voltage [V]

#### Example:

$V_{\text{act}} = 200V$   
 $V_{\text{nom}} = 230V$   
 $P_{\text{nom}} = 1 \text{ kW}$  (e.g. LHS 21S CLASSIC, 139.869)

$$P_{200V} = \frac{200^2}{230^2} * 1000 = 756 [W]$$

Do not reduce voltage to control power with air heaters from the LHS PREMIUM or the LHS SYSTEM line!

## Heating power calculated from air flow and temperature difference

$$P = c_{air} * \frac{1}{60} * \dot{V} * \frac{1}{2.2} \rho_{air} * \frac{1}{1.8} * \Delta T$$

- $P$  = Power [kW]  
 $c_{air}$  = Heat capacity of air [kJ/kgK]  
 $\dot{V}$  = Air flow [cfm]  
 $\rho_{air}$  = Density of air [lbs/ft<sup>3</sup>]  
 $\Delta T$  = Temperature difference [°F]  
 $\frac{1}{60}$  = Conversion factors due to chosen units

Specific heat capacity of air  $c_{air}$ : 1.005 kJ/kgK  
 Density of air  $\rho_{air}$ : 0.075 lbs/ft<sup>3</sup>  
 (at 68°F and 14.7 psi)

### Example:

|                      |             |          |
|----------------------|-------------|----------|
| Air flow             | $\dot{V}$   | = 40 cfm |
| Temp. of environment | $T_{start}$ | = 75 °F  |
| Target temperature   | $T_{end}$   | = 900 °F |

$$P = 1.005 * \frac{1}{60} * 40 * \frac{1}{2.2} * 0.075 * \frac{1}{1.8} * (900 - 75) = 10.5 [kW]$$

10.5 kW is the power required to heat the air to the target temperature.

For estimating the needed heating power, please consider: Your process may also need energy for other wanted or unwanted effects (losses etc.).

## Heat loss via Isolation

$$\frac{Q}{t} = \lambda * 3.66 * \frac{A}{d} * \frac{1}{1.8} \Delta T = P$$

- $P$  = Power [W]  
 $Q$  = Heat energy [J]  
 $t$  = Time [s]  
 $\lambda$  = Heat transfer coefficient [W/m\*K]  
 $A$  = Surface [ft<sup>2</sup>]  
 $d$  = Thickness of wall [in]  
 $\Delta T$  = Temperature difference [°F]

### Example:

|                                   |                        |
|-----------------------------------|------------------------|
| Box made from Styrofoam           |                        |
| Dimensions (H*W*T)                | = 1.5 ft x 3 ft x 3 ft |
| Wall thickness of box             | = 2 in                 |
| T inside box                      | = 180 °F               |
| T outside box                     | = 0 °F                 |
| Heat conductivity for Styrofoam   | = 0.05 W/mK            |
| The surface of the box is         |                        |
| $A = 2 * (3 * 3) + 4 * (1.5 * 3)$ | = 36 ft <sup>2</sup>   |

$$P = 0.05 * 3.66 * \frac{36}{2} * \frac{1}{1.8} * 180 = 329 [W]$$

329 W are required to hold the temperature inside the box on 180 °F with an environment temperature of 0 °F.

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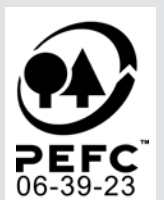
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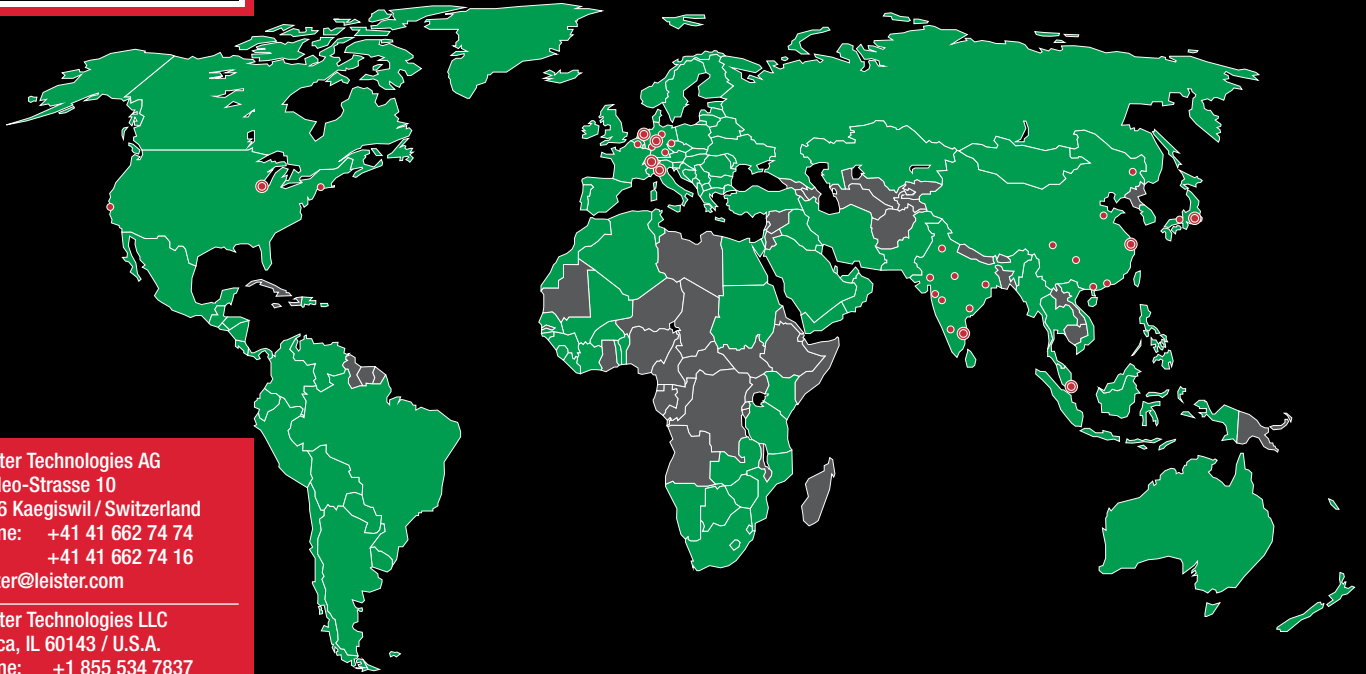
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