

## **BD150F**

*Extending the Compressor Range for Mobile Refrigeration*



The BD150F compressor is designed for use in vans, small trucks etc. It extends the application range of refrigerated transportation by increasing the capacity of Danfoss Compressors' BD series. The extension was triggered by the EU directive on active refrigeration for food transportation, particularly frozen goods, fish etc.

The new compressor makes it easier to comply with legal requirements and thus keep the refrigeration chain unbroken, even in traditionally weak links such as transportation for shops and supermarkets, supplies for hotels, restaurants etc.

The BD150F is a wide voltage range type, allowing mains operation overnight. In the daytime, 12/24V operation is established with a DC/AC inverter. This combination enables a carrier to become a distributor of smaller amounts of frozen goods - without having to invest in a refrigerated truck.

The design of the BD150F is based on Danfoss Compressors' long-term and unique experience with DC mobile refrigeration. This foundation secures stable and safe operation of any refrigeration unit, also under severe road conditions.

### Data Sheet

#### General

|  |               |
|--|---------------|
| Compressor                                 | <b>BD150F</b> |
| Code number: Comp. without electronic unit | 102G4784      |
| Code number: Electronic unit               | 105N4220      |

#### Application

|                                |  |
|--------------------------------|--|
| Application                    | LBP  |
| Evaporating temperature range  | °C -35 to -10  |
| Voltage range                  | 160-254V AC /50-60Hz<br>250-350V DC<br>with power inverter for mobile use 12/24V DC (see page 4) |
| Starting characteristics       | HST  |
| Max. ambient temperature       | °C 43  |
| Comp. cooling at ambient temp. | 32°C S<br>38°C S<br>43°C S   |

#### Features

|             |     |  |
|-------------|-----|--|
| Speed range | rpm | 2000 - 4000  |
| Protections |     | current, voltage, speed, temperature   |
| Usage       |     | <ul style="list-style-type: none"> <li>mobile refrigeration, designed for use in vans, small trucks, etc.</li> <li>active refrigeration for food transportation</li> <li>expanded 230V AC range / DC input for 300V DC supply</li> </ul> |

#### Design

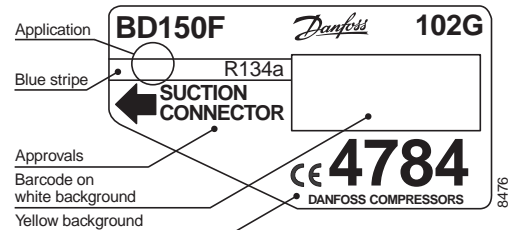
|                                    |                 |         |
|------------------------------------|-----------------|---------|
| Displacement                       | cm <sup>3</sup> | 6.49    |
| Oil quantity                       | cm <sup>3</sup> | 180     |
| Maximum refrigerant charge         | g               | 400     |
| Free gas vol. in compressor        | cm <sup>3</sup> | 1790    |
| Weight: Compressor/Electronic unit | kg              | 7.9/0.6 |

#### Motor

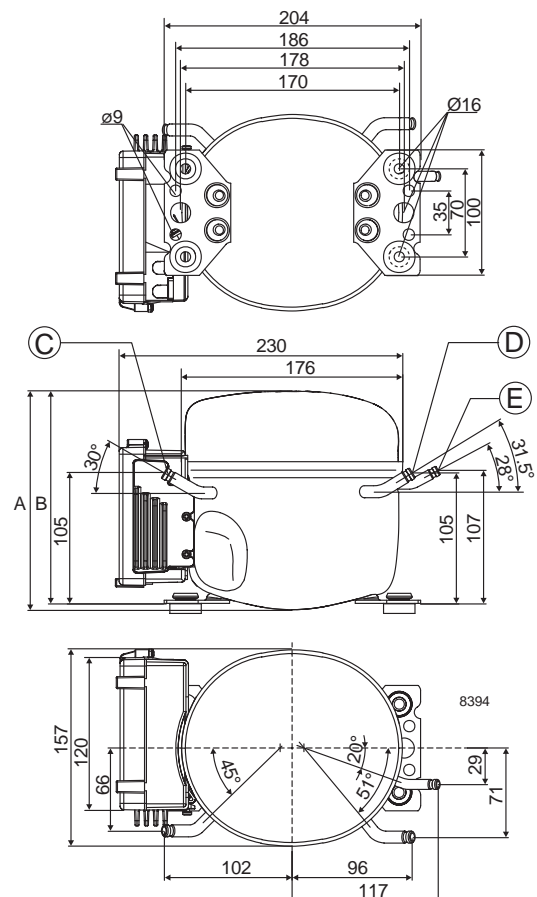
|                                    |   |                             |
|------------------------------------|---|-----------------------------|
| Motor type                         |   | permanent magnet            |
| LRA (rated after 4 sec. UL984) HST | A | electronic cut-off          |
| Cut-in current HST                 | A | 6                           |
| Resistance, all 3 windings (25°C)  | Ω | 14.0                        |
| Approvals                          |   | EN 60335-2-34 with Annex AA |

#### Dimensions

|  |                  |   |                 |
|--|------------------|---|-----------------|
| Height                                     | mm               | A | 173             |
|  |                  | B | 169             |
| Suction connector                          | location/I.D. mm | C | 6.2 ±0.09       |
| Process connector                          | location/I.D. mm | D | 6.2 ±0.09       |
| Discharge connector                        | location/I.D. mm | E | 5.0 +0.12/+0.20 |
| Compressors on a pallet (without el. unit) | pcs.             |   | 125             |



- S = Static cooling normally sufficient
- O = Oil cooling
- F<sub>1</sub> = Fan cooling 1.5 m/s  
(compressor compartment temperature equal to ambient temperature)
- F<sub>2</sub> = Fan cooling 3.0 m/s necessary



**Capacity (EN 12900/CECOMAF)**

| rpm \ °C | -35  | -30  | -25  | -23.3 | -20 | -15 | -10 |
|----------|------|------|------|-------|-----|-----|-----|
| 2,000    | 47.5 | 66.2 | 90.0 | 99.3  | 120 | 156 | 199 |
| 2,500    | 56.3 | 80.7 | 111  | 122   | 147 | 192 | 245 |
| 3,000    | 64.2 | 92.8 | 128  | 141   | 171 | 222 | 284 |
| 4,000    | 78.3 | 111  | 153  | 170   | 205 | 269 | 345 |

**watt**
**Capacity (ASHRAE)**

| rpm \ °C | -35  | -30  | -25 | -23.3 | -20 | -15 | -10 |
|----------|------|------|-----|-------|-----|-----|-----|
| 2,000    | 58.6 | 81.7 | 111 | 123   | 148 | 192 | 246 |
| 2,500    | 69.3 | 99.5 | 137 | 151   | 182 | 237 | 302 |
| 3,000    | 79.1 | 114  | 158 | 175   | 211 | 274 | 350 |
| 4,000    | 96.6 | 137  | 189 | 210   | 253 | 332 | 427 |

**watt**
**Power consumption**

| rpm \ °C | -35  | -30  | -25  | -23.3 | -20  | -15 | -10 |
|----------|------|------|------|-------|------|-----|-----|
| 2,000    | 51.8 | 64.6 | 78.3 | 83.3  | 93.1 | 109 | 125 |
| 2,500    | 63.0 | 79.8 | 97.6 | 104   | 116  | 136 | 156 |
| 3,000    | 74.2 | 94.2 | 115  | 123   | 137  | 161 | 185 |
| 4,000    | 96.2 | 120  | 146  | 155   | 174  | 203 | 235 |

**watt**
**Current consumption**

| rpm \ °C | -35  | -30  | -25  | -23.3 | -20  | -15  | -10  |
|----------|------|------|------|-------|------|------|------|
| 2,000    | 0.49 | 0.63 | 0.74 | 0.78  | 0.85 | 0.96 | 1.10 |
| 2,500    | 0.59 | 0.70 | 0.84 | 0.90  | 1.00 | 1.12 | 1.32 |
| 3,000    | 0.69 | 0.80 | 0.95 | 1.02  | 1.14 | 1.35 | 1.55 |
| 4,000    | 0.84 | 1.05 | 1.24 | 1.31  | 1.45 | 1.67 | 1.90 |

**A**
**COP (EN 12900/CECOMAF)**

| rpm \ °C | -35  | -30  | -25  | -23.3 | -20  | -15  | -10  |
|----------|------|------|------|-------|------|------|------|
| 2,000    | 0.92 | 1.03 | 1.15 | 1.19  | 1.28 | 1.43 | 1.59 |
| 2,500    | 0.89 | 1.01 | 1.13 | 1.18  | 1.27 | 1.41 | 1.57 |
| 3,000    | 0.87 | 0.99 | 1.11 | 1.15  | 1.24 | 1.38 | 1.53 |
| 4,000    | 0.81 | 0.93 | 1.05 | 1.09  | 1.18 | 1.32 | 1.47 |

**W/W**
**COP (ASHRAE)**

| rpm \ °C | -35  | -30  | -25  | -23.3 | -20  | -15  | -10  |
|----------|------|------|------|-------|------|------|------|
| 2,000    | 1.13 | 1.27 | 1.42 | 1.47  | 1.59 | 1.77 | 1.97 |
| 2,500    | 1.10 | 1.25 | 1.40 | 1.45  | 1.56 | 1.74 | 1.94 |
| 3,000    | 1.07 | 1.22 | 1.37 | 1.42  | 1.53 | 1.71 | 1.90 |
| 4,000    | 1.00 | 1.14 | 1.29 | 1.35  | 1.46 | 1.63 | 1.81 |

**W/W**

Test conditions

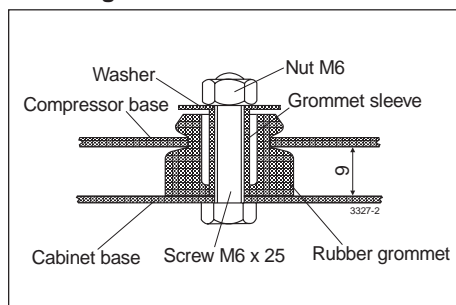
 Condensing temperature  
 Ambient and suction gas temp.  
 Liquid temperature  
 Static cooling, 220V 50Hz

 EN 12900/CECOMAF  
 55°C  
 32°C  
 55°C

 ASHRAE  
 55°C  
 32°C  
 32°C

**Application Advantage:**
**Adaptive control (AEO - Adaptive Energy Optimizer)**

By means of the adaptive energy optimizer the compressor capacity is automatically adapted to requirements, and thus the energy consumption of the compressor is considerably reduced.

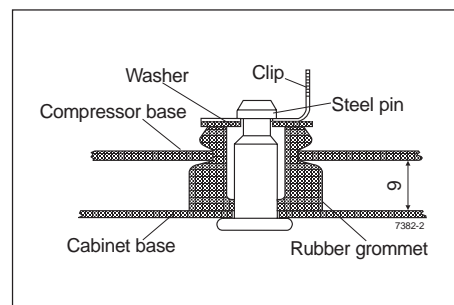
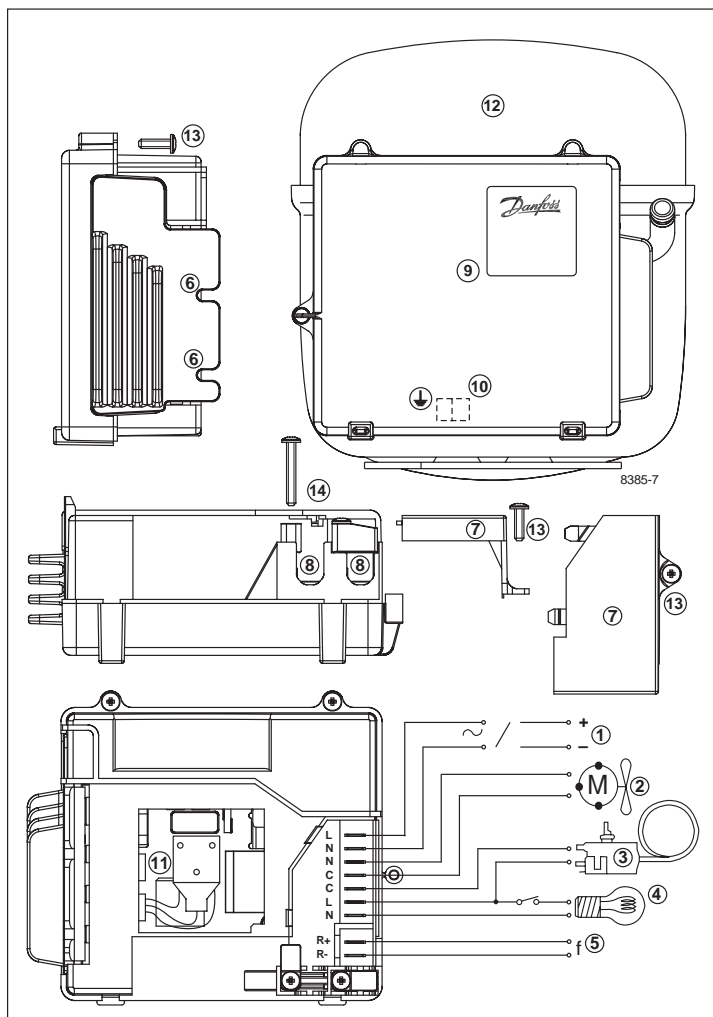
**Mounting accessories**

**Bolt joint**

The mounting accessories for the BD150F are available in two versions, with bolt joint or snap-on joint.

Bolt joint for one compressor in a bag:  
118-1917

Bolt joint in quantities:  
118-1918

Snap-on in quantities:  
118-1919

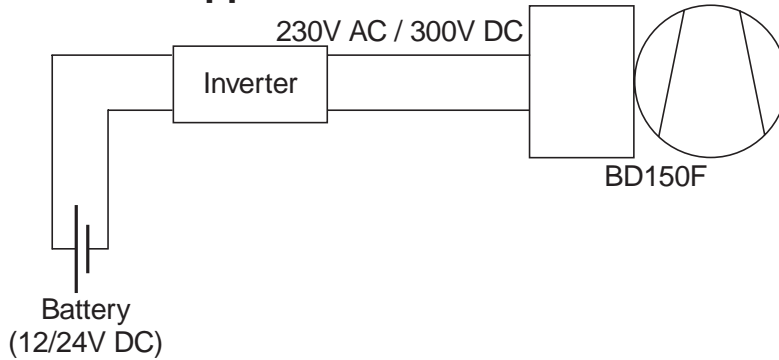

**Snap-on joint**

**Legend**

- |                                   |                                |
|-----------------------------------|--------------------------------|
| 1: 230V AC / 300V DC power supply | 8: Cord relief                 |
| 2: Fan connection                 | 9: Electronic unit             |
| 3: Thermostat connection          | 10: Earth connection           |
| 4: Light connection               | 11: Connector                  |
| 5: Signal input                   | 12: Compressor                 |
| 6: Mounting recesses              | 13: Screw 3.5 x 12 mm (3 pcs.) |
| 7: Cover                          | 14: Screw 3.5 x 25 mm (2 pcs.) |

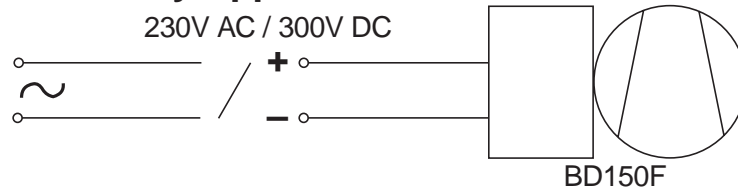
## Examples of Application:

**Note** - the inverter should be a 12/24V DC to 230V AC type, with a peak voltage of minimum 300V. Lower peak voltages will result in lower performance at high cooling capacity (continuous output power minimum 300W).

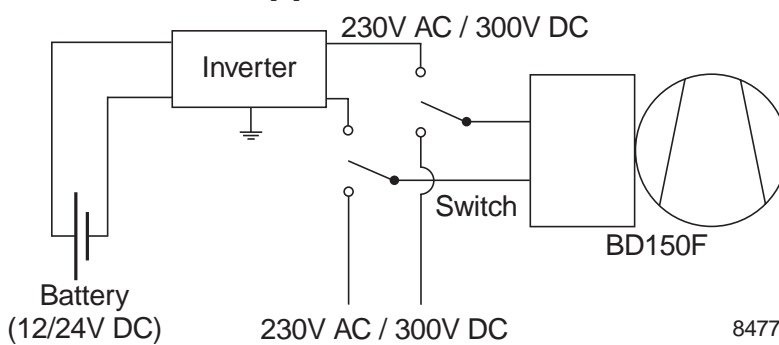
### Mobile Application



### Stationary Application



### Combined Application



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