Singolo
Imballi

# Single Pack BD35F 12/24V DC PM

Codice Imballo Singolo: **195B4757**

| Posizione | Titolo | Codice | Quantità |
|---|---|---|---|
| 1 | Compressor BD35F | 101Z0200 | 1 |
| 2 | PLBD standard 3G_101N0242_IP | 101X0243 | 1 |
| 3 | Bolt joint for one compressor \| M6 \| ø16mm | 118-1917 | 1 |

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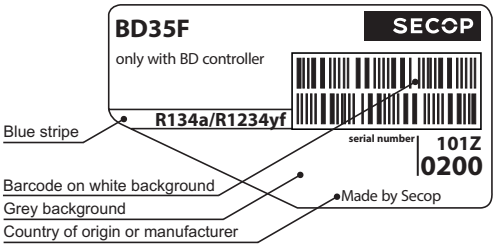
# BD35F
# Direct Current Compressor
# R134a, R1234yf
# 12/24V DC, 10-45V DC Solar
# & 100-240V AC 50/60Hz

TOOL4COOL®

**General**

| | | Approvals R134a | Approvals R134a/R1234yf |
|---|---|---|---|
| Code number (without electronic units) | 101Z0200 | | |
| Electronic unit 12/24V DC - Standard | 101N0242, 30 pcs: 101N0243 | – | – |
| Electronic unit 12/24V DC - AEO | 101N0340, 30 pcs: 101N0341 | VDE | UL |
| Electronic unit 10-45V DC - Solar | 101N0420, 30 pcs: 101N0421 | VDE | – |
| Electronic unit 12/24V DC & 100-240V AC 50/60Hz | 101N0510, 28 pcs: 101N0511 | VDE | UL |
| Electronic unit 12/24V DC - Automotive | 101N0680, 30 pcs: 101N0681 | – | UL / CB |
| Compressors on pallet | 150 | | |

Approval mark




**Application**

| | | |
|---|---|---|
| Application | | LBP/MBP/HBP |
| Evaporating temperature | °C | -30 to 0 (10) |
| Voltage range DC | VDC | 9.6 - 17 / 21.3 - 31.5 |
| Voltage range AC | V/Hz | 100 - 240 / 50/60 |
| Voltage range for solar applications | VDC | 10 - 45 |
| Max. condensing temperature continuous (short) | °C | 60 (70) |
| Max. winding temperature continuous (short) | °C | 125 (135) |

**Cooling requirements**

| Application | LBP | MBP | HBP |
|---|---|---|---|
| 32°C | S | S | S |
| 38°C | S | S | S |
| 43°C | S | S | S |
| Remarks on application: Fan cooling $F_1$ depending on application and speed. | | | |

S = Static cooling normally sufficient
O = Oil cooling
$F_1$ = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
$F_2$ = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

**Motor**

| | | |
|---|---|---|
| Motor type | | variable speed |
| Resistance, all 3 windings (25°C) | Ω | 2.2 |

**Design**

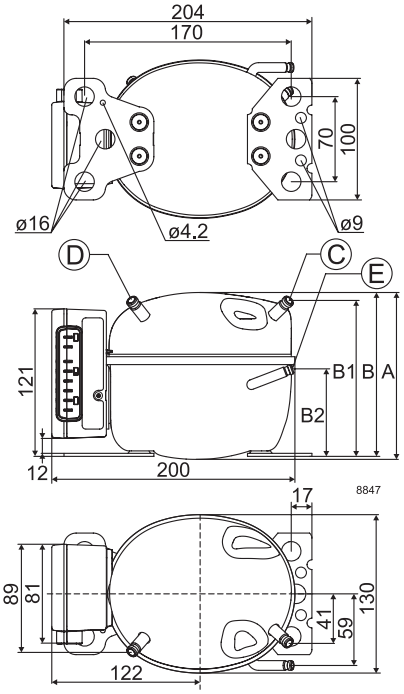
| | | |
|---|---|---|
| Displacement | $cm^3$ | 2.00 |
| Oil quantity (type) | $cm^3$ | 150 (polyolester) |
| Maximum refrigerant charge | g | 300 |
| Free gas volume in compressor | $cm^3$ | 870 |
| Weight - Compressor/Electronic unit | kg | 4.3 / 0.19 (Standard) |

**Standard battery protection settings** (refer to electronic unit *Instructions* for optional settings)

| Voltage | | 12V | 24V |
|---|---|---|---|
| Cut out | VDC | 10.4 | 22.8 |
| Cut in | VDC | 11.7 | 24.2 |

**Dimensions**

| | | | |
|---|---|---|---|
| Height | mm | A | 137 |
| | | B | 135 |
| | | B1 | 128 |
| | | B2 | 73 |
| Suction connector | location/I.D. mm \| angle | C | 6.2 \| 40° |
| | material \| comment | | Cu-plated steel \| Al cap |
| Process connector | location/I.D. mm \| angle | D | 6.2 \| 45° |
| | material \| comment | | Cu-plated steel \| Al cap |
| Discharge connector | location/I.D. mm \| angle | E | 5.0 \| 21° |
| | material \| comment | | Cu-plated steel \| Al cap |
| Connector tolerance | I.D. mm | | ±0.09, on 5.0 +0.12/+0.20 |
| Remarks: | | | |



# Performance Data with Refrigerant R134a

**Capacity (EN 12900 Household/CECOMAF)** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 16.0 | 23.8 | 26.7 | 32.9 | 43.7 | 56.5 | 71.8 | 89.8 | 111 | 121 | 136 | |
| 2,500 | 18.8 | 29.9 | 33.9 | 41.9 | 55.4 | 71.1 | 89.8 | 112 | 139 | 152 | | |
| 3,000 | 22.4 | 32.9 | 37.1 | 46.1 | 62.5 | 82.2 | 106 | 133 | | | | |
| 3,500 | 27.0 | 35.9 | 40.2 | 50.3 | 69.8 | 93.9 | 122 | | | | | |

**Capacity (ASHRAE LBP)** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 20.0 | 29.8 | 33.4 | 41.2 | 54.6 | 70.6 | 89.7 | 112 | 139 | 152 | 169 | |
| 2,500 | 23.6 | 37.5 | 42.4 | 52.4 | 69.2 | 88.8 | 112 | 140 | 173 | 190 | | |
| 3,000 | 28.1 | 41.3 | 46.5 | 57.9 | 78.2 | 103 | 132 | 166 | | | | |
| 3,500 | 33.9 | 45.1 | 50.5 | 63.1 | 87.3 | 117 | 153 | | | | | |

**Power consumption** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 17.7 | 22.9 | 24.6 | 27.7 | 32.2 | 36.7 | 41.3 | 46.2 | 51.6 | 54.3 | 57.8 | |
| 2,500 | 22.1 | 29.7 | 32.0 | 36.3 | 42.4 | 48.1 | 53.8 | 59.7 | 66.1 | 69.1 | | |
| 3,000 | 29.3 | 34.6 | 36.7 | 41.2 | 48.7 | 56.5 | 64.5 | 72.0 | | | | |
| 3,500 | 34.5 | 41.3 | 43.8 | 48.9 | 57.3 | 66.2 | 75.4 | | | | | |

**Current consumption** (for 24V applications the following must be halfed) **A**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 1.4 | 1.9 | 2.0 | 2.3 | 2.7 | 3.1 | 3.4 | 3.8 | 4.3 | 4.5 | 4.8 | |
| 2,500 | 1.8 | 2.5 | 2.7 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 | 5.5 | 5.8 | | |
| 3,000 | 2.4 | 2.9 | 3.1 | 3.4 | 4.0 | 4.7 | 5.3 | 6.0 | | | | |
| 3,500 | 2.9 | 3.4 | 3.6 | 4.1 | 4.8 | 5.5 | 6.3 | | | | | |

**COP (EN 12900 Household/CECOMAF)** 12V DC, static cooling **W/W**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 0.90 | 1.04 | 1.09 | 1.19 | 1.36 | 1.54 | 1.74 | 1.94 | 2.15 | 2.24 | 2.35 | |
| 2,500 | 0.85 | 1.01 | 1.06 | 1.15 | 1.31 | 1.48 | 1.67 | 1.88 | 2.10 | 2.20 | | |
| 3,000 | 0.76 | 0.95 | 1.01 | 1.12 | 1.28 | 1.45 | 1.64 | 1.85 | | | | |
| 3,500 | 0.78 | 0.87 | 0.92 | 1.03 | 1.22 | 1.42 | 1.62 | | | | | |

**COP (ASHRAE LBP)** 12V DC, static cooling **W/W**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 1.13 | 1.30 | 1.36 | 1.49 | 1.70 | 1.93 | 2.18 | 2.44 | 2.70 | 2.81 | 2.95 | |
| 2,500 | 1.07 | 1.26 | 1.33 | 1.45 | 1.64 | 1.86 | 2.10 | 2.36 | 2.64 | 2.77 | | |
| 3,000 | 0.96 | 1.19 | 1.27 | 1.41 | 1.61 | 1.83 | 2.06 | 2.32 | | | | |
| 3,500 | 0.98 | 1.09 | 1.15 | 1.29 | 1.53 | 1.78 | 2.03 | | | | | |

| **Test conditions with electronic units** | **101N0242 101N0680** | **EN 12900/CECOMAF** | **ASHRAE LBP** |
|---|---|---|---|
| Condensing temperature | | 55°C | 54.4°C |
| Ambient temperature | | 32°C | 32°C |
| Suction gas temperature | | 32°C | 32°C |
| Liquid temperature | | no subcooling | 32°C |

| **Accessories for BD35F** | | **Code number** |
|---|---|---|
| Bolt joint for one comp. | Ø:16 mm | 118-1917 |
| Bolt joint in quantities | Ø:16 mm | 118-1918 |
| Snap-on in quantities | Ø:16 mm | 118-1919 |
| Remote kit (without cable) | | 105N9210 |
| Secop Gateway | | 105N9518 |
| DC usage: Automobile fuse, DIN 7258 | 12V: 15A \| 24V: 7.5 A | Not deliverable from Secop |
| DC usage: Main switch | min. 20A | |
| AC usage: Fuse, 100-240V | | |
| AC usage: Main switch | min. 6A | |

**Compressor speed**

| Electronit unit<br>Code number | Resistor (R1) [Ω]<br>calculated values | Motor speed<br>[rpm] |
|---|---|---|
| **101N0242 101N0510 101N0680** | 0 | 2,000 |
| | 277 | 2,500 |
| | 692 | 3,000 |
| | 1523 | 3,500 |
| **101N0340 101N0420 with AEO** | 0 | AEO |
| | 173 | 2,000 |
| | 450 | 2,500 |
| | 865 | 3,000 |
| | 1696 | 3,500 |

In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

**Wire dimensions DC**

| Size Cross section [mm²] | Size AWG [Gauge] | Max. length* 12V operation [m] | Max. length* 12V operation [ft.] | Max. length* 24V operation [m] | Max. length* 24V operation [ft.] |
|---|---|---|---|---|---|
| 2.5 | 12 | 2.5 | 8 | 5 | 16 |
| 4 | 12 | 4 | 13 | 8 | 26 |
| 6 | 10 | 6 | 20 | 12 | 39 |
| 10 | 8 | 10 | 33 | 20 | 66 |

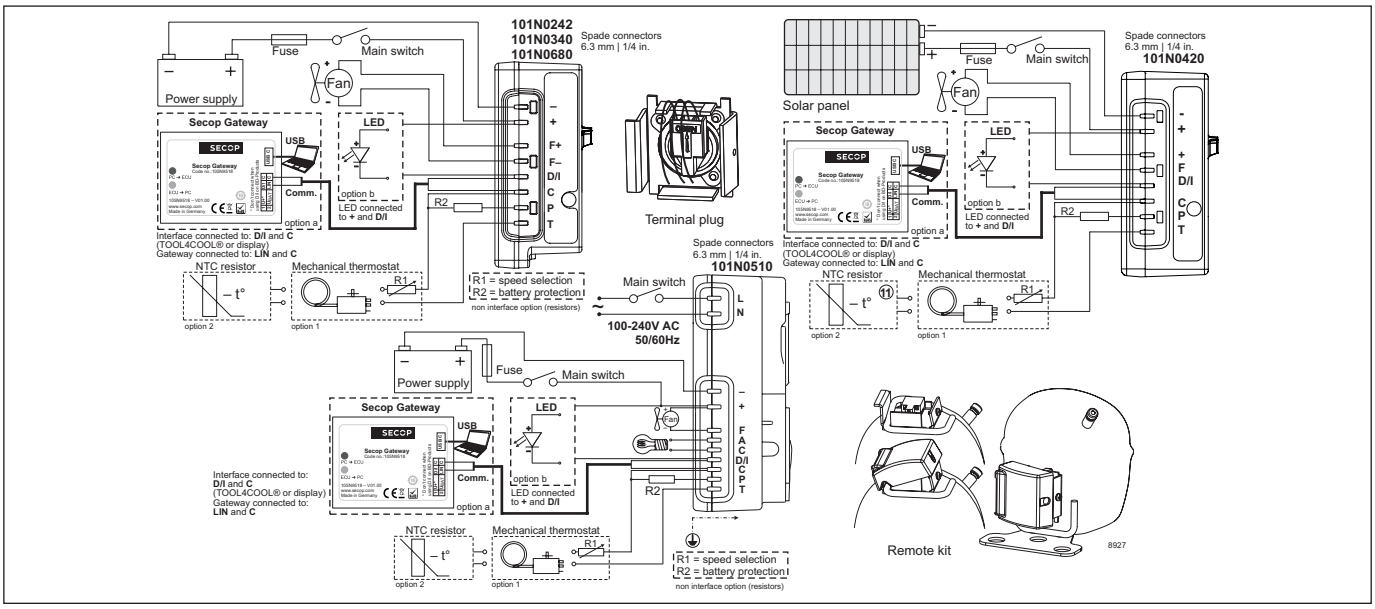
*Length between battery and electronic unit

**Wire dimensions AC**

Cross section min. 0.75 mm² or AWG 18

**Operational errors**

| Error code or LED flashes | Error type<br>Can be read out in the software **TOOL4COOL®** |
|---|---|
| 6 | **Thermostat failure**<br>(If the NTC thermistor is short-circuit or has no connection). |
| 5 | **Thermal cut-out of electronic unit**<br>(If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot). |
| 4 | **Minimum motor speed error**<br>(If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm). |
| 3 | **Motor start error**<br>(The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)). |
| 2 | **Too many start attempts or fan over current**<br>(Too many compressor or fan starts in short time or fan current higher than 0.5$A_{avg}$). |
| 1 | **Battery protection cut-out**<br>(The voltage is outside the cut-out setting). |



# Performance Data with Refrigerant R1234yf

**Capacity (EN 12900 Household/CECOMAF)** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 17.0 | 24.8 | 27.8 | 34.2 | 45.1 | 57.7 | 72.0 | 87.9 | 106 | 114 | 125 | |
| 2,500 | 18.5 | 29.6 | 33.8 | 42.6 | 57.3 | 73.8 | 92.0 | 111.8 | 133 | 143 | | |
| 3,000 | 25.5 | 35.4 | 39.2 | 47.6 | 62.6 | 80.6 | 102 | 127 | | | | |
| 3,500 | 30.3 | 39.3 | 43.4 | 52.6 | 69.9 | 91.1 | 116 | | | | | |

**Capacity (ASHRAE LBP)** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 22.1 | 32.3 | 36.2 | 44.5 | 58.7 | 75.1 | 93.6 | 114 | 137 | 148 | 163 | |
| 2,500 | 24.1 | 38.5 | 44.0 | 55.3 | 74.4 | 95.7 | 119 | 145 | 173 | 186 | | |
| 3,000 | 33.5 | 46.3 | 51.4 | 62.3 | 81.8 | 105 | 133 | 165 | | | | |
| 3,500 | 39.4 | 51.3 | 56.6 | 68.7 | 91.3 | 119 | 152 | | | | | |

**Power consumption** 12V DC, static cooling **watt**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 19.2 | 24.1 | 25.7 | 28.8 | 33.3 | 37.8 | 42.3 | 46.8 | 51.4 | 53.4 | 56.1 | |
| 2,500 | 24.0 | 31.4 | 33.7 | 38.1 | 44.4 | 50.3 | 55.8 | 61.0 | 66.0 | 68.2 | | |
| 3,000 | 32.6 | 37.0 | 38.9 | 42.9 | 49.7 | 57.1 | 64.5 | 71.5 | | | | |
| 3,500 | 38.7 | 44.8 | 47.1 | 51.8 | 59.5 | 67.5 | 75.8 | | | | | |

**Current consumption (for 24V applications the following must be halfed)** **A**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 1.6 | 2.0 | 2.1 | 2.4 | 2.8 | 3.1 | 3.5 | 3.9 | 4.3 | 4.5 | 4.7 | |
| 2,500 | 2.0 | 2.6 | 2.8 | 3.2 | 3.7 | 4.2 | 4.6 | 5.1 | 5.5 | 5.7 | | |
| 3,000 | 2.7 | 3.1 | 3.2 | 3.6 | 4.1 | 4.8 | 5.4 | 6.0 | | | | |
| 3,500 | 3.2 | 3.7 | 3.9 | 4.3 | 5.0 | 5.6 | 6.3 | | | | | |

**COP (EN 12900 Household/CECOMAF)** 12V DC, static cooling **W/W**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 0.88 | 1.03 | 1.08 | 1.19 | 1.35 | 1.52 | 1.69 | 1.87 | 2.04 | 2.11 | 2.21 | |
| 2,500 | 0.77 | 0.94 | 1.00 | 1.11 | 1.28 | 1.46 | 1.64 | 1.82 | 2.00 | 2.08 | | |
| 3,000 | 0.78 | 0.95 | 1.01 | 1.11 | 1.25 | 1.41 | 1.57 | 1.77 | | | | |
| 3,500 | 0.78 | 0.88 | 0.92 | 1.01 | 1.17 | 1.34 | 1.52 | | | | | |

**COP (ASHRAE LBP)** 12V DC, static cooling **W/W**

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,000 | 1.15 | 1.34 | 1.41 | 1.55 | 1.76 | 1.99 | 2.21 | 2.45 | 2.68 | 2.78 | 2.90 | |
| 2,500 | 1.00 | 1.23 | 1.30 | 1.45 | 1.67 | 1.90 | 2.14 | 2.38 | 2.62 | 2.73 | | |
| 3,000 | 1.03 | 1.25 | 1.32 | 1.45 | 1.65 | 1.84 | 2.06 | 2.31 | | | | |
| 3,500 | 1.02 | 1.15 | 1.20 | 1.33 | 1.54 | 1.76 | 2.00 | | | | | |

| **Test conditions with electronic units** | | **EN 12900/CECOMAF** | **ASHRAE LBP** |
|---|---|---|---|
| Condensing temperature | **101N0242 101N0680** | 55°C | 54.4°C |
| Ambient temperature | | 32°C | 32°C |
| Suction gas temperature | | 32°C | 32°C |
| Liquid temperature | | no subcooling | 32°C |

| **Accessories for BD35F** | | | **Code number** |
|---|---|---|---|
| Bolt joint for one comp. | | Ø:16 mm | 118-1917 |
| Bolt joint in quantities | | Ø:16 mm | 118-1918 |
| Snap-on in quantities | | Ø:16 mm | 118-1919 |
| Remote kit (without cable) | | | 105N9210 |
| Secop Gateway | | | 105N9518 |
| DC usage: | Automobile fuse, DIN 7258 | 12V: 15A \| 24V: 7.5 A | Not deliverable from Secop |
| | Main switch | min. 20A | |
| AC usage: | Fuse, 100-240V | | |
| | Main switch | min. 6A | |

**Compressor speed**

| Electronit unit<br>Code number | Resistor (R1) [Ω]<br>calculated values | Motor speed<br>[rpm] |
|---|---|---|
| **101N0242 101N0510 101N0680** | 0 | 2,000 |
| | 277 | 2,500 |
| | 692 | 3,000 |
| | 1523 | 3,500 |
| **101N0340 101N0420 with AEO** | 0 | AEO |
| | 173 | 2,000 |
| | 450 | 2,500 |
| | 865 | 3,000 |
| | 1696 | 3,500 |

In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

**Wire dimensions DC**

| **Size** | | **Max. length* 12V operation** | | **Max. length* 24V operation** | |
|---|---|---|---|---|---|
| **Cross section** | **AWG** | | | | |
| [mm²] | [Gauge] | [m] | [ft.] | [m] | [ft.] |
| 2.5 | 12 | 2.5 | 8 | 5 | 16 |
| 4 | 12 | 4 | 13 | 8 | 26 |
| 6 | 10 | 6 | 20 | 12 | 39 |
| 10 | 8 | 10 | 33 | 20 | 66 |

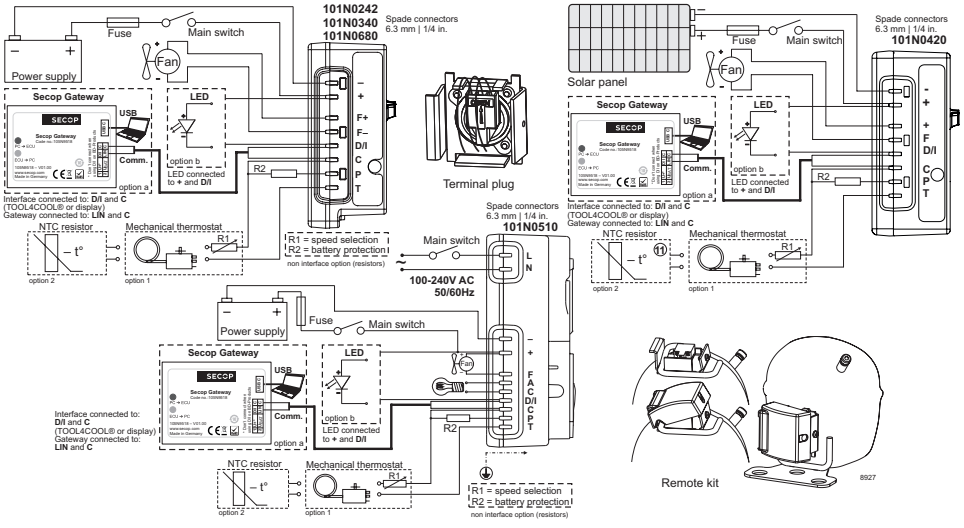
*Length between battery and electronic unit

**Wire dimensions AC**

Cross section min. 0.75 mm² or AWG 18

**Operational errors**

| **Error code or LED flashes** | **Error type**<br>Can be read out in the software **TOOL4COOL®** |
|---|---|
| **6** | **Thermostat failure**<br>(If the NTC thermistor is short-circuit or has no connection). |
| **5** | **Thermal cut-out of electronic unit**<br>(If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot). |
| **4** | **Minimum motor speed error**<br>(If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm). |
| **3** | **Motor start error**<br>(The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)). |
| **2** | **Too many start attempts or fan over current**<br>(Too many compressor or fan starts in short time or fan current higher than 0.5$A_{avg}$). |
| **1** | **Battery protection cut-out**<br>(The voltage is outside the cut-out setting). |

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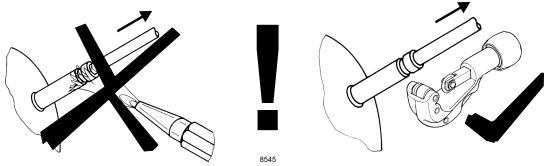
Keep electrical equipment clear from oil, chemicals, and water

# BD Compressors

SECOP

**Service/Repair – R290, R600a, R170, R1270, R1234yf** (applies to all flammable refrigerants)



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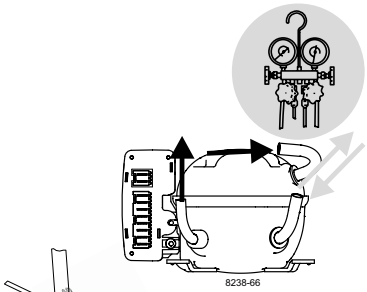
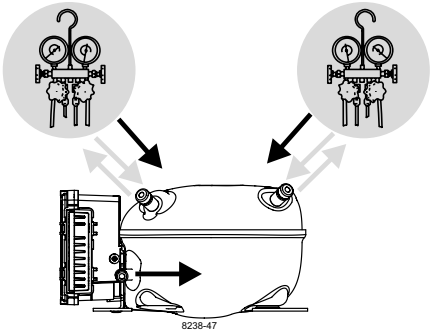
## BD Nano

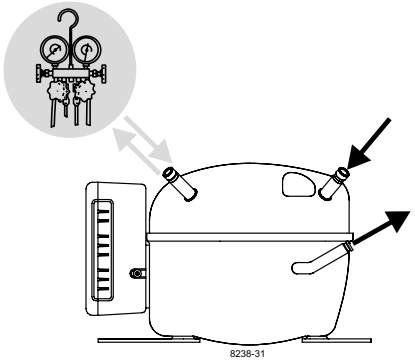



Do not heat up the bottom of the discharge connector directly.
Do not braze longer than 10 seconds and wait for 5 minutes for the next soldering attempt (Product Bulletin DES.N.101.M).

## BD Micro



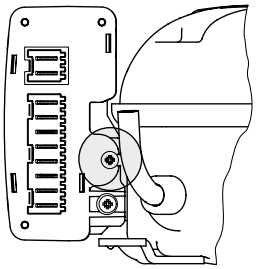

## BD-P



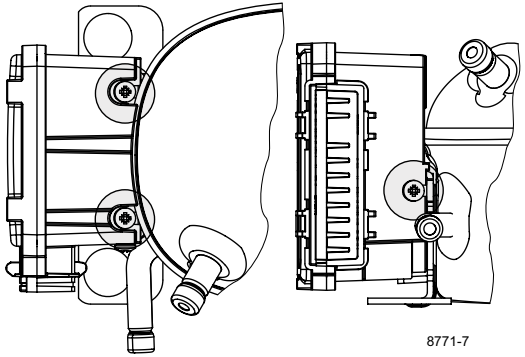

**Dismantling, recycling, disposal:** At the end of a compressor's lifecycle, proceed by separating and storing components according to their environmental impact. Parts that may cause pollution must be clearly identified and handled separately, ensuring appropriate disposal. Refrigerant gas must not be released into the environment and should be recovered by qualified operators. Compressor oil must also be collected separately. The compressor should be disposed of at specialized disposal centers in accordance with the applicable regulations. **Subject to modifications/alterations. www.secop.com**

Instructions for Electronic Units are available for download on **www.secop.com**

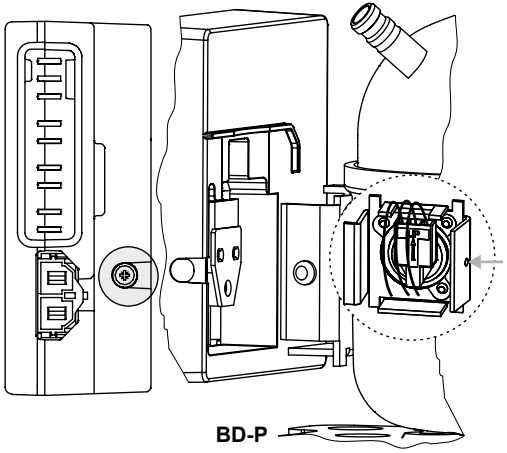
# BD Compressors



**BD Nano**




**BD Micro**



**BD-P**

**BD Nano**
Attach the electronic unit by pressing it linearly onto the compressor's Fusite® connector and bracket. The electronic unit must be mounted straight onto the compressor terminals. Ensure correct alignment before pressing it into place. Apply pressure until both screw heads snap into place. For high-vibration environments, the unit can optionally be secured with a third screw (marked in grey).

**BD Micro**
Attach the electronic unit by pressing it linearly onto the compressor's Fusite® connector and bracket. The electronic unit must be mounted straight onto the compressor terminals. Ensure correct alignment before pressing it into place. Secure it with at least two screws, either from the side or from above (marked in grey).

**BD-P**
The cable plug of the electronic unit is connected to the compressor's Fusite® connector. The electronic unit is then mounted onto the compressor bracket. First, the left side is attached; next, the right side is pressed sideways over the screw on the bracket (marked in grey). The unit snaps into place on the bracket and is now securely fixed to the compressor. An earth connection (via the compressor baseplate) can be used if required.

**Dismantling, recycling, disposal:** At the end of a compressor's lifecycle, proceed by separating and storing components according to their environmental impact. Parts that may cause pollution must be clearly identified and handled separately, ensuring appropriate disposal. Refrigerant gas must not be released into the environment and should be recovered by qualified operators. Compressor oil must also be collected separately. The compressor should be disposed of at specialized disposal centers in accordance with the applicable regulations. **Subject to modifications/alterations. www.secop.com**