Single
Packs

SECOP

Single Pack BDN45F 12/24V DC PM

Single pack code number: **195B3446**

Position	Title	Code	Amount
1	Compressor BDN45F	109Z0400	1
2	Electronic unit - Leisure BD	101N2741	1
3	Bolt joint for one compressor | M5 | ø17.5mm	118-1960	1

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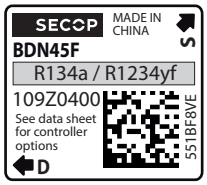
BDN45F
Direct Current Compressor
R134a, R1234yf
12/24V DC

TOOL4COOL®



Approvals and warning label

General

Code number (without electronic unit)	109Z0400
Electronic unit - Leisure	101N2740, 40 pcs: 101N2741
Compressors on pallet	240

Approvals

UL / CB

Application

Application range		LBP/MBP
Voltage range	VDC	9.6 - 17 / 19 - 34

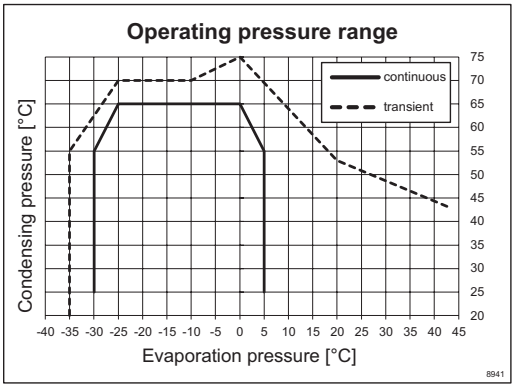
Cooling requirements

Application	LBP	MBP
32°C / 38°C / 43°C	S	S

S = Static cooling normally sufficient
Note: In case fan cooling is used:
condenser => fan => electronic => compressor

Absolute maximum ratings

Machine compartment temperature for compressor operation	°C	-10 to 50
Max. compressor tilt angle for temporary operation		±30°
Operating pressure range		see diagram to the right
Any levels of stress exceeding the absolute maximum value of machine compartment temperature range or operating pressure range or tilt angle may damage the device. Prolonged exposure to stress above the recommended operating conditions may also affect the device's reliability.		



Motor

Motor type		permanet magnet, brushless DC
Speed	rpm	variable speed
Resistance, each of the three windings (25°C)	Ω	3.1

Design

Displacement	cm^3	1.42
Oil quantity (type)	cm^3	53 (polyolester)
Maximum refrigerant charge	g	70
Free gas volume in compressor	cm^3	472
Weight - Compressor/Electronic unit	kg	1.37 / 0.14

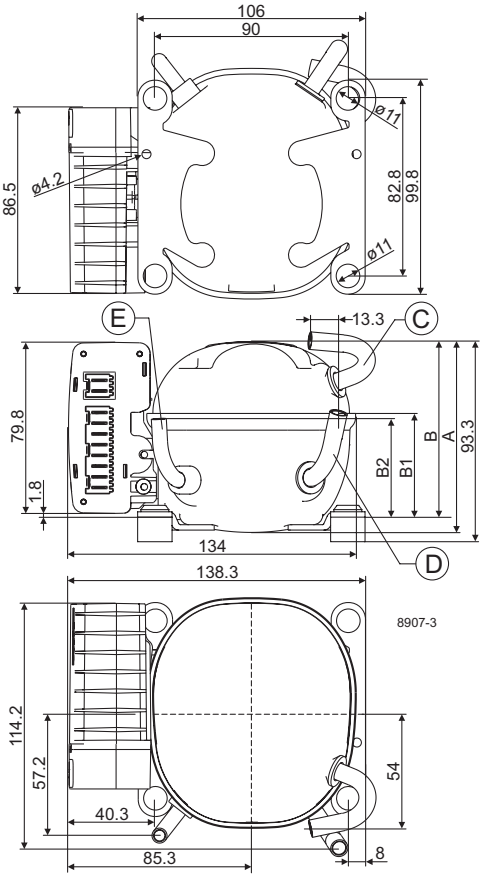
Standard battery protection settings

Voltage (0.1 steps)				Default	Min. value	Max. value
12V	± 0.3V DC, all values	Cut out level	VDC	10.4	9.6	17
24V	± 0.3V DC, all values	Cut out level	VDC	22.8	19	32
	Battery cut-in difference		VDC	1.3	0.5	10

Dimensions

Height	mm	A	89.0
		B	82.4
		B1	48.7
		B2	45.8
Suction connector	location/I.D. mm | angle	C	6.2 | 5°
	material | comment		Copper | Rubber plug
Process connector	location/I.D. mm | angle	D	6.2 | 77.9°
	material | comment		Copper | Rubber plug
Discharge connector	location/I.D. mm | angle	E	5.0 | 86.9°
	material | comment		Cu-plated steel | Rubber plug
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20

Remarks:
Please follow the brazing instructions on page 4 (Product Bulletin DES.N.101.M).



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
2,300	14.3	19.9	22.2	27.1	36.0	47.0	60.1	75.6	93.8
3,000	18.5	26.2	29.4	36.4	49.0	64.0	81.5	102	
4,000	25.2	36.6	41.2	50.9	67.6	86.5	107.4	129.9	
4,500	28.7	42.0	47.3	58.4	77.4	98.4	121.2		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	17.9	24.9	27.6	33.7	44.8	58.4	74.7	94.1	116.7
3,000	23.1	32.7	36.6	45.2	60.8	79.5	101.3	126.3	
4,000	31.4	45.5	51.1	63.1	83.8	107.3	133.3	161.4	
4,500	35.7	52.2	58.7	72.4	95.9	122.0	150.4		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	15.9	19.0	20.2	22.6	26.5	30.8	35.3	40.1	45.1
3,000	19.2	23.3	24.8	28.0	33.1	38.4	43.6	48.6	
4,000	25.1	31.3	33.5	37.9	44.7	51.4	57.6	62.9	
4,500	28.8	36.1	38.7	43.9	51.8	59.3	66.2		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	1.40	1.70	1.81	2.03	2.40	2.79	3.21	3.66	4.12
3,000	1.62	1.98	2.11	2.39	2.83	3.29	3.75	4.18	
4,000	2.10	2.61	2.79	3.15	3.71	4.26	4.77	5.21	
4,500	2.39	2.99	3.21	3.64	4.28	4.91	5.47		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	0.90	1.05	1.10	1.20	1.36	1.52	1.70	1.88	2.08
3,000	0.96	1.13	1.18	1.30	1.48	1.67	1.87	2.09	
4,000	1.00	1.17	1.23	1.34	1.51	1.68	1.86	2.06	
4,500	1.00	1.16	1.22	1.33	1.49	1.66	1.83		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	1.13	1.31	1.37	1.49	1.69	1.90	2.11	2.34	2.59
3,000	1.20	1.40	1.47	1.62	1.84	2.07	2.32	2.60	
4,000	1.25	1.45	1.53	1.66	1.87	2.09	2.31	2.56	
4,500	1.24	1.45	1.52	1.65	1.85	2.06	2.27		

Operational errors (TOOL4COOL® or LED flashes)

Error code or LED flashes	Error type Can be read out in the software **TOOL4COOL®**
7	**Communication error** (Communication of master controller stopped for 15 minutes (default))
6	**Thermostat failure** (If a NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
5	**Thermal cut-out of electronic unit** (PCB or machine compartment temperature exceeds minimum or maximum limits).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain min. speed at approximately 2,150 rpm).
3	**Motor start error** (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)).
2	**Fan over-current cut-out** (The fan is overloading the electronic unit).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

Wire Dimensions DC

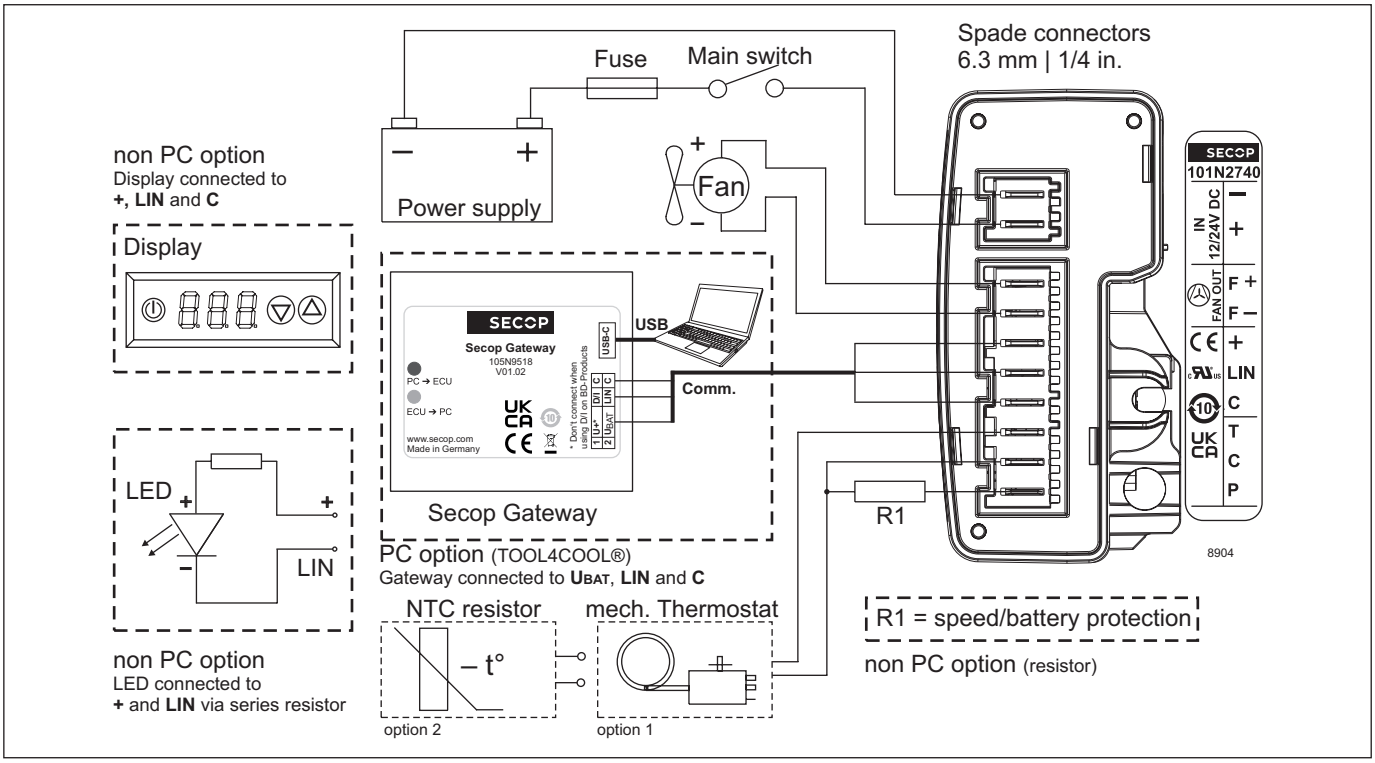
Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
2.5	12	2.5	8	5	16
4	12	4	13	8	26
6	10	6	20	12	39
10	8	10	33	20	66

*Length between battery and electronic unit

Accessories for BDN45F

Mounting	Code number
Bolt joint for one compressor	118-1960
Secop Gateway	105N9518

Test conditions	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



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
2,300	15.8	21.2	23.4	28.1	36.5	46.7	58.8	72.9	89.2
3,000	20.4	28.0	31.0	37.7	49.6	63.7	79.8	98.0	
4,000	27.8	39.0	43.4	52.7	68.5	86.1	105.1	125.3	
4,500	31.7	44.8	49.8	60.4	78.2	97.7	118.5		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	20.6	27.7	30.5	36.5	47.5	60.7	76.4	94.8	116.2
3,000	26.6	36.3	40.3	48.9	64.4	82.6	103.6	127.4	
4,000	36.1	50.6	56.3	68.3	88.7	111.5	136.4	162.9	
4,500	41.2	58.0	64.5	78.2	101.2	126.5	153.7		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	18.0	20.9	21.9	24.1	27.6	31.5	35.6	39.9	44.2
3,000	21.6	25.4	26.9	29.8	34.5	39.3	44.0	48.4	
4,000	28.3	34.1	36.2	40.3	46.6	52.6	58.1	62.7	
4,500	32.5	39.3	41.8	46.6	53.8	60.6	66.6		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	1.60	1.86	1.96	2.16	2.50	2.86	3.24	3.63	4.04
3,000	1.83	2.16	2.29	2.54	2.95	3.37	3.78	4.16	
4,000	2.37	2.85	3.02	3.35	3.87	4.36	4.81	5.19	
4,500	2.70	3.26	3.46	3.86	4.45	5.01	5.51		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	0.88	1.02	1.07	1.17	1.32	1.48	1.65	1.83	2.02
3,000	0.94	1.10	1.15	1.27	1.44	1.62	1.81	2.03	
4,000	0.98	1.14	1.20	1.31	1.47	1.64	1.81	2.00	
4,500	0.98	1.14	1.19	1.30	1.45	1.61	1.78		

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5
2,300	1.15	1.33	1.39	1.52	1.72	1.93	2.15	2.38	2.63
3,000	1.23	1.43	1.50	1.64	1.87	2.10	2.36	2.63	
4,000	1.28	1.48	1.55	1.69	1.90	2.12	2.35	2.60	
4,500	1.27	1.47	1.54	1.68	1.88	2.09	2.31		

Operational errors (TOOL4COOL® or LED flashes)

Error code or LED flashes	Error type Can be read out in the software **TOOL4COOL®**
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Wire Dimensions DC

Size		Max. length* 12V operation		Max. length* 24V operation	
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4	12	4	13	8	26
6	10	6	20	12	39
10	8	10	33	20	66

*Length between battery and electronic unit

Accessories for BDN45F

Mounting	Code number
Bolt joint for one compressor	118-1960
Secop Gateway	105N9518

Test conditions	EN 12900 CECOMAF	ASHRAE LBP
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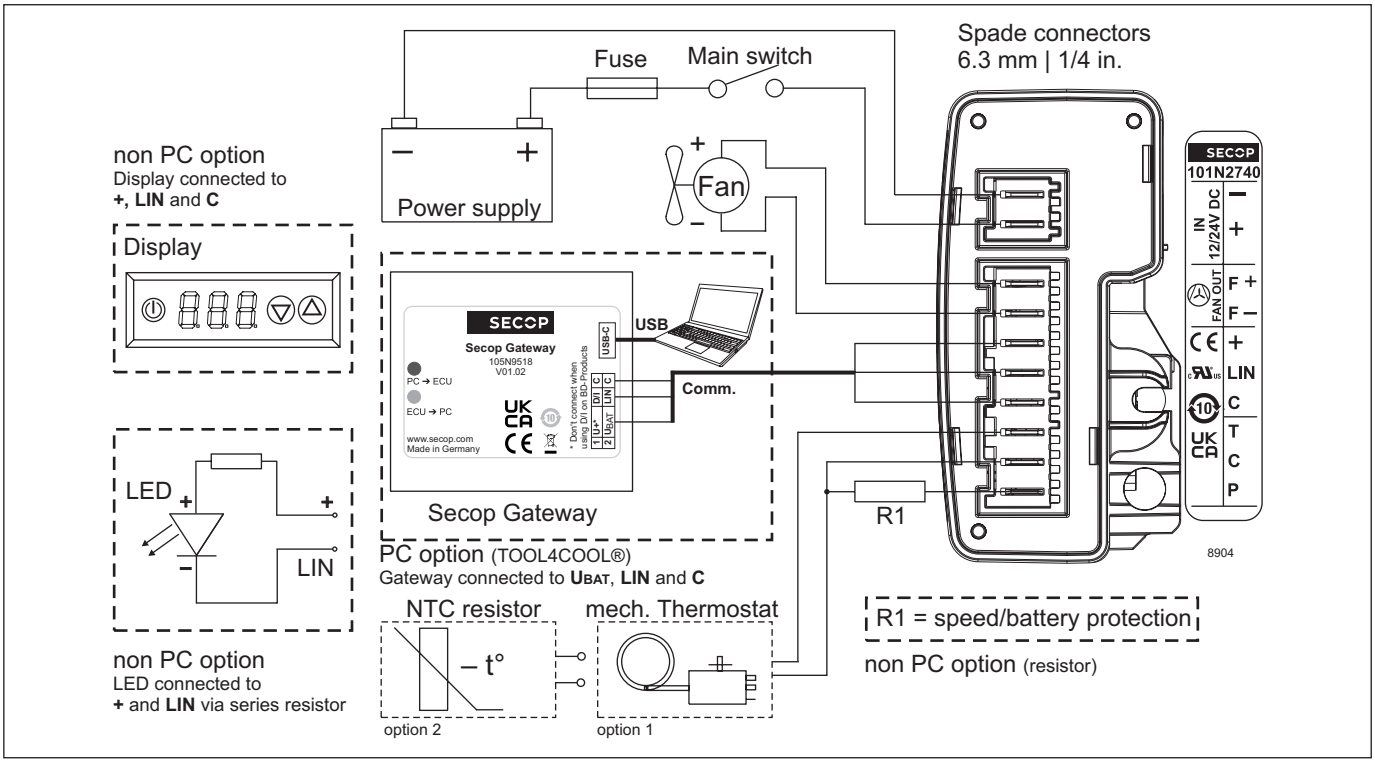
Ambient temperature	32°C	32°C
Suction gas temperature	32°C	32°C
Liquid temperature	no subcooling	32°C



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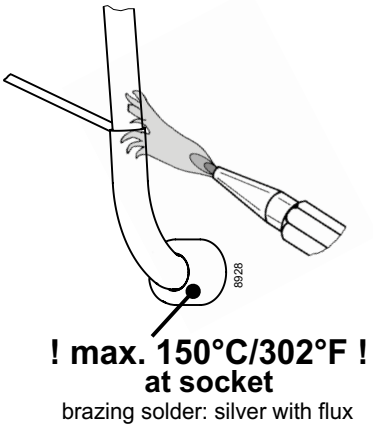
PRODUCT BULLETIN

SECOP

Brazing on BD Nano Discharge Connector (BDN45F, BDN50K, BDN45F-A, BDN50K-A, MB3CKV, and BDN-EV)

Secop BDN45F/-A, BDN50K/-A, MB3CKV, BDN-EV compressors use a special discharge connector element (see figure 2) that is directly connected to the discharge tube to optimize energy consumption.
This element is made from plastic and sensitive to high heat exposure.

When brazing a tube into the discharge connector (see figure 1) please ensure that the area with the discharge connector element never exceeds 150°C / 302°F.
Don't heat up the bottom of the connector directly.



Use a fork burner (see figure 3) and/or a damp cloth, if necessary. A protective plate can also serve to protect the discharge connector element from direct heat from a flame.
Do not braze longer than 10 seconds and wait for 5 minutes for the next soldering attempt.

Further information:
Product Bulletin – Brazing Technique for Compressor Connectors (DES.N.600.A1.02)

Fig.1 BDN45F discharge connector

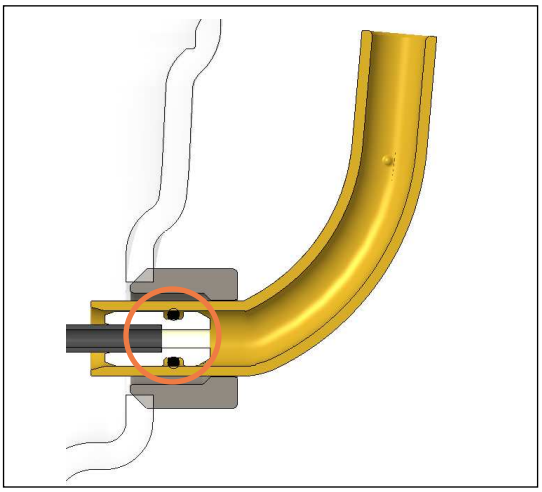


Fig.2 Discharge connector element

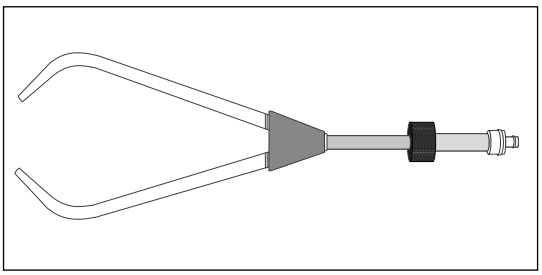


Fig.3 Fork burner

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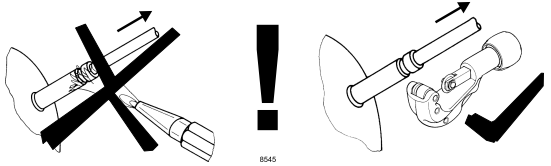
DES.N.101.M2.02 Produced by Secop GmbH, jb, 01.2025

Keep electrical equipment clear from oil, chemicals, and water

BD Compressors

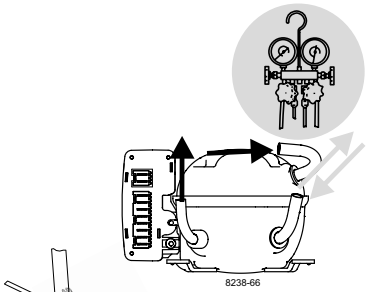
SECOP

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



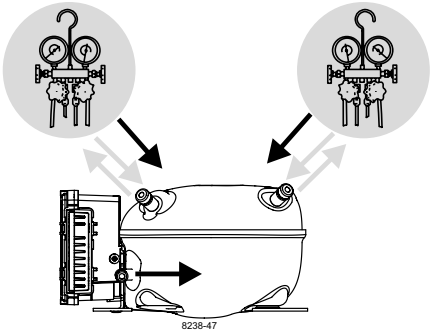
TOOL4COOL®

BD Nano

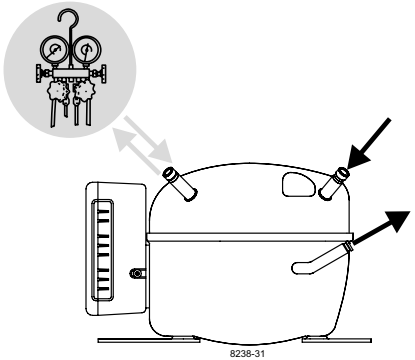


Do not heat up the bottom of the discharge connector directly.
Do not braze longer than 10 seconds and wait for 5 minutes for the next soldering attempt (Product Bulletin DES.N.101.M).

BD Micro



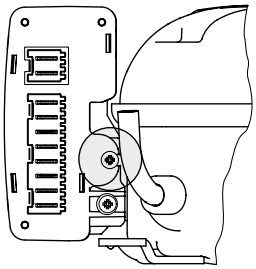
BD-P



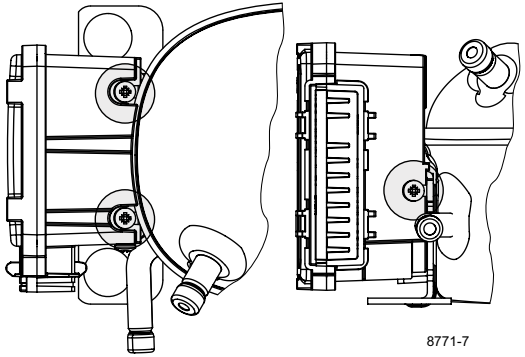
Dismantling, recycling, disposal: At the end of a compressor's lifecycle, proceed by separating and storing components according to their environmental impact. Parts that may cause pollution must be clearly identified and handled separately, ensuring appropriate disposal. Refrigerant gas must not be 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**

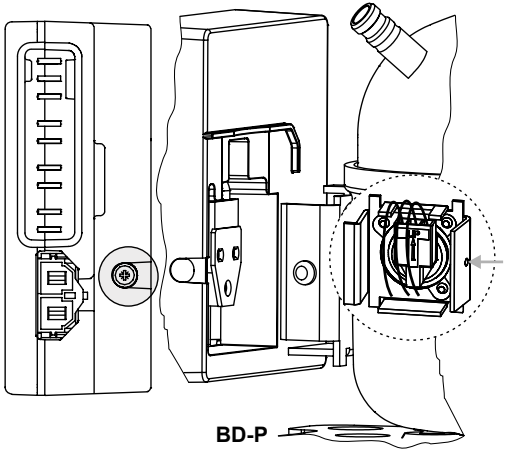
BD Compressors



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**