Single
Packs

SECOP

Single Pack BD1.4F-VSD-HD 12/24V DC PM

Single pack code number: **195B3443**

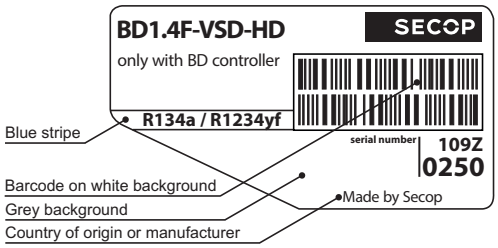
Position	Title	Code	Amount
1	Compressor BD1.4F VSD-HD	109Z0250	1
2	Electronic unit BD	101M2131	1
3	Bolt joint for one compressor | M6 | ø16mm	118-1917	1

Secop GmbH • Lise-Meitner-Straße 29 • 24941 Flensburg, Germany • Tel: +49 461 4941 0 • **www.secop.com**

Secop accepts no responsibility for possible errors in catalogs, brochures, and other printed material. Secop reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary to specifications already agreed. All trademarks in this material are the property of the respective companies. Secop and the Secop logotype are trademarks of Secop GmbH. All rights reserved.

BD1.4F-VSD-HD
Direct Current Compressor
R134a, R1234yf
12/24V DC

TOOL4COOL®



General

Code number (without electronic unit)	109Z0250
Electronic unit - Variable Speed	101N2130, 30 pcs: 101N2131
Compressors on pallet	180

Application

Application		LBP/MBP/HBP
Evaporating temperature	°C	-30 to 15
Voltage range	VDC	9.6 - 17 / 19 - 34
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:			
HD (Heavy Duty) version of the BD1.4F-VSD which can handle extreme vibrations.			

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		permanet magnet, brushless DC
Speed	rpm	variable speed
Resistance, all 3 windings (25°C)	mΩ	210

Design

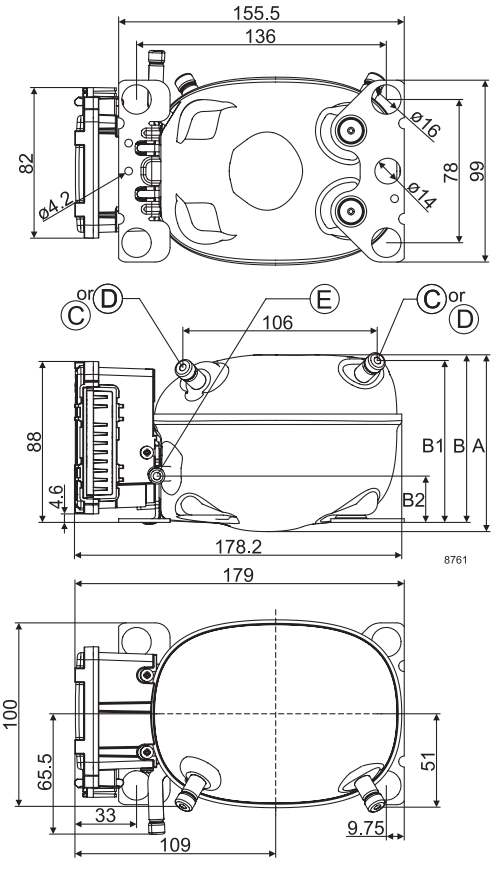
Displacement	cm^3	1.41
Oil quantity (type)	cm^3	75 (polyolester)
Maximum refrigerant charge	g	70
Free gas volume in compressor	cm^3	500
Weight - Compressor/Electronic unit	kg	2.1 / 0.11

Standard battery protection settings (refer to 101N2130 *Instructions* for optional settings)

Voltage (0.1 steps)				Min. value	Default	Max. value
12V	± 0.3V DC, all values	Cut out	VDC	9.6	10.4	17
		Cut in diff.	VDC	0.5	1.3	10
24V	± 0.3V DC, all values	Cut out	VDC	19	21.3	27
		Cut in diff.	VDC	0.5	1.3	10

Dimensions

Height	mm	A	96.25
		B	91.25
		B1	88.00
		B2	25.20
Suction connector	location/I.D. mm | angle	C	6.2 | 25°
	material | comment		Cu-plated steel | Al cap
Process connector	location/I.D. mm | angle	D	6.2 | 25°
	material | comment		Cu-plated steel | Al cap
Discharge connector	location/I.D. mm | angle	E	5.0 | 0°
	material | comment		Cu-plated steel | Al cap
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20



Performance Data with Refrigerant R134a

Capacity (EN 12900 Household/CECOMAF), R134a 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		9	11	15	22	31	42	54	68	75	84	101
3,000	9	16	19	26	37	51	67	85	105	115	128	152
3,500	10	20	23	31	45	61	80	101	124	135	150	178
4,000	12	23	27	36	52	71	92	116	142	155	172	203

Capacity (ASHRAE LBP), R134a 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		12	14	19	28	39	52	68	85	93	105	126
3,000	11	20	24	32	47	64	83	106	131	143	159	190
3,500	13	24	29	38	56	76	99	125	154	168	186	222
4,000	15	29	34	45	65	88	114	144	177	193	214	254

Power consumption, R134a 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		16	17	19	22	25	29	34	39	41	44	50
3,000	19	24	26	29	34	39	45	50	56	59	62	68
3,500	23	29	31	35	41	47	53	59	65	68	71	78
4,000	27	34	36	41	48	55	61	68	75	77	81	87

Current consumption, R134a (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		1.25	1.33	1.48	1.74	2.02	2.33	2.66	3.02	3.18	3.40	3.81
3,000	1.49	1.84	1.96	2.20	2.59	2.99	3.40	3.84	4.29	4.49	4.75	5.24
3,500	1.77	2.19	2.34	2.62	3.07	3.53	4.00	4.48	4.98	5.20	5.49	6.01
4,000	2.09	2.58	2.75	3.08	3.59	4.11	4.64	5.17	5.71	5.95	6.26	6.82

COP (EN 12900 Household/CECOMAF), R134a 12V DC, static cooling **W/W**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		0.59	0.66	0.81	1.03	1.24	1.43	1.60	1.76	1.82	1.90	2.03
3,000	0.45	0.67	0.74	0.89	1.10	1.30	1.50	1.69	1.88	1.96	2.06	2.24
3,500	0.46	0.68	0.75	0.89	1.10	1.30	1.51	1.70	1.90	1.99	2.10	2.29
4,000	0.45	0.68	0.75	0.89	1.09	1.30	1.50	1.70	1.91	2.00	2.12	2.32

COP (ASHRAE LBP), R134a 12V DC, static cooling **W/W**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		0.74	0.83	1.01	1.29	1.55	1.79	2.01	2.21	2.29	2.39	2.56
3,000	0.57	0.84	0.93	1.11	1.37	1.62	1.87	2.12	2.35	2.46	2.59	2.82
3,500	0.58	0.85	0.94	1.11	1.37	1.62	1.87	2.12	2.37	2.48	2.63	2.88
4,000	0.58	0.85	0.94	1.11	1.36	1.61	1.87	2.12	2.38	2.5	2.65	2.92

Operational errors (TOOL4COOL® or LED flashes)

Error code or LED flashes	Error type Can be read out in the software **TOOL4COOL®**
6	**Thermostat failure** (If the NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
5	**Thermal cut-out of electronic unit** (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** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 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 loads the electronic unit with more than $0.65A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

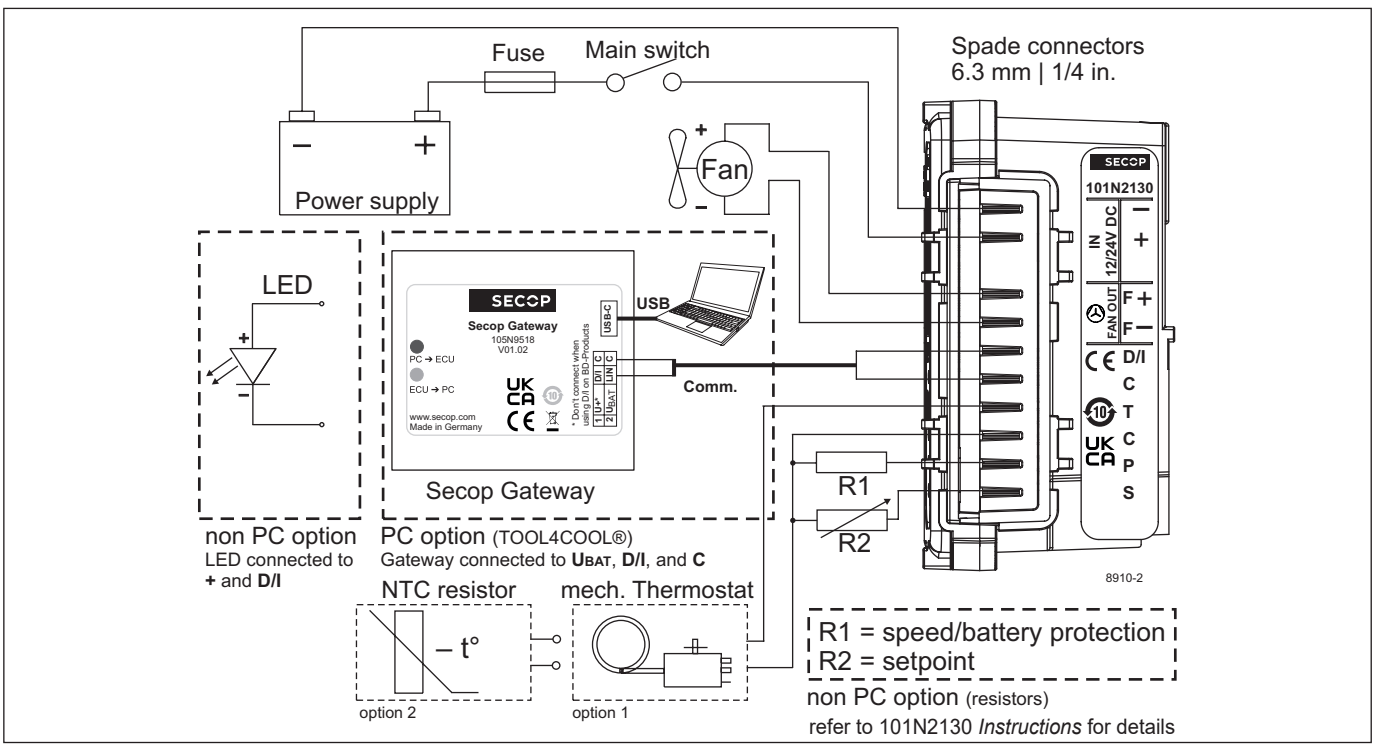
Wire Dimensions DC

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

Accessories for BD1.4F-VSD-HD		Code number
Bolt joint for one compressor	Ø:16 mm	118-1917
Bolt joint in quantities	Ø:16 mm	118-1918
Snap-on in quantities	Ø:16 mm	118-1919
Terminal cover for electronic unit		105N9120
Automoblie fuse DIN 7258	12V: 15A 24V: 15A	Not deliverable from Secop
Main switch	min. 20A	

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), R1234yf 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		10	12	16	23	32	42	53	65	70	78	91
3,000	10	17	21	27	39	52	67	83	100	108	118	137
3,500	11	20	24	32	45	60	78	97	118	128	141	166
4,000	13	24	29	38	54	71	91	111	134	144	158	182

Capacity (ASHRAE LBP), R1234yf 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		13	15	21	30	42	55	69	85	92	102	120
3,000	13	23	27	35	50	68	87	108	130	141	155	180
3,500	14	26	31	41	58	78	101	126	154	167	184	217
4,000	17	32	38	50	70	93	118	145	174	188	206	239

Power consumption, R1234yf 12V DC, static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		17	18	20	23	27	30	34	38	40	42	46
3,000	22	27	28	31	36	41	46	51	55	57	60	64
3,500	26	31	33	37	43	49	54	59	64	67	69	74
4,000	30	37	40	44	51	57	63	68	74	76	78	83

Current consumption, R1234yf (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		1.39	1.47	1.62	1.88	2.14	2.41	2.69	2.97	3.09	3.25	3.53
3,000	1.66	2.02	2.15	2.39	2.76	3.13	3.50	3.86	4.22	4.38	4.58	4.93
3,500	1.98	2.40	2.54	2.82	3.24	3.66	4.08	4.50	4.92	5.11	5.34	5.76
4,000	2.34	2.83	3.00	3.32	3.81	4.28	4.75	5.20	5.64	5.83	6.06	6.47

COP (EN 12900 Household/CECOMAF), R1234yf 12V DC, static cooling **W/W**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		0.58	0.65	0.79	1.00	1.20	1.38	1.55	1.70	1.76	1.84	1.97
3,000	0.44	0.66	0.73	0.87	1.07	1.26	1.45	1.63	1.81	1.89	1.98	2.15
3,500	0.42	0.64	0.71	0.84	1.05	1.25	1.44	1.64	1.84	1.93	2.04	2.24
4,000	0.43	0.66	0.73	0.86	1.06	1.25	1.44	1.63	1.82	1.90	2.01	2.20

COP (ASHRAE LBP), R1234yf 12V DC, static cooling **W/W**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000		0.75	0.85	1.03	1.3	1.56	1.81	2.03	2.24	2.33	2.44	2.62
3,000	0.59	0.86	0.95	1.13	1.39	1.65	1.9	2.14	2.38	2.48	2.61	2.84
3,500	0.55	0.83	0.92	1.09	1.36	1.62	1.88	2.14	2.40	2.52	2.67	2.94
4,000	0.58	0.86	0.95	1.13	1.38	1.63	1.88	2.13	2.38	2.49	2.63	2.90

Operational errors (TOOL4COOL® or LED flashes)

Error code or LED flashes	Error type Can be read out in the software **TOOL4COOL®**
6	**Thermostat failure** (If the NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
5	**Thermal cut-out of electronic unit** (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** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 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 loads the electronic unit with more than $0.65A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

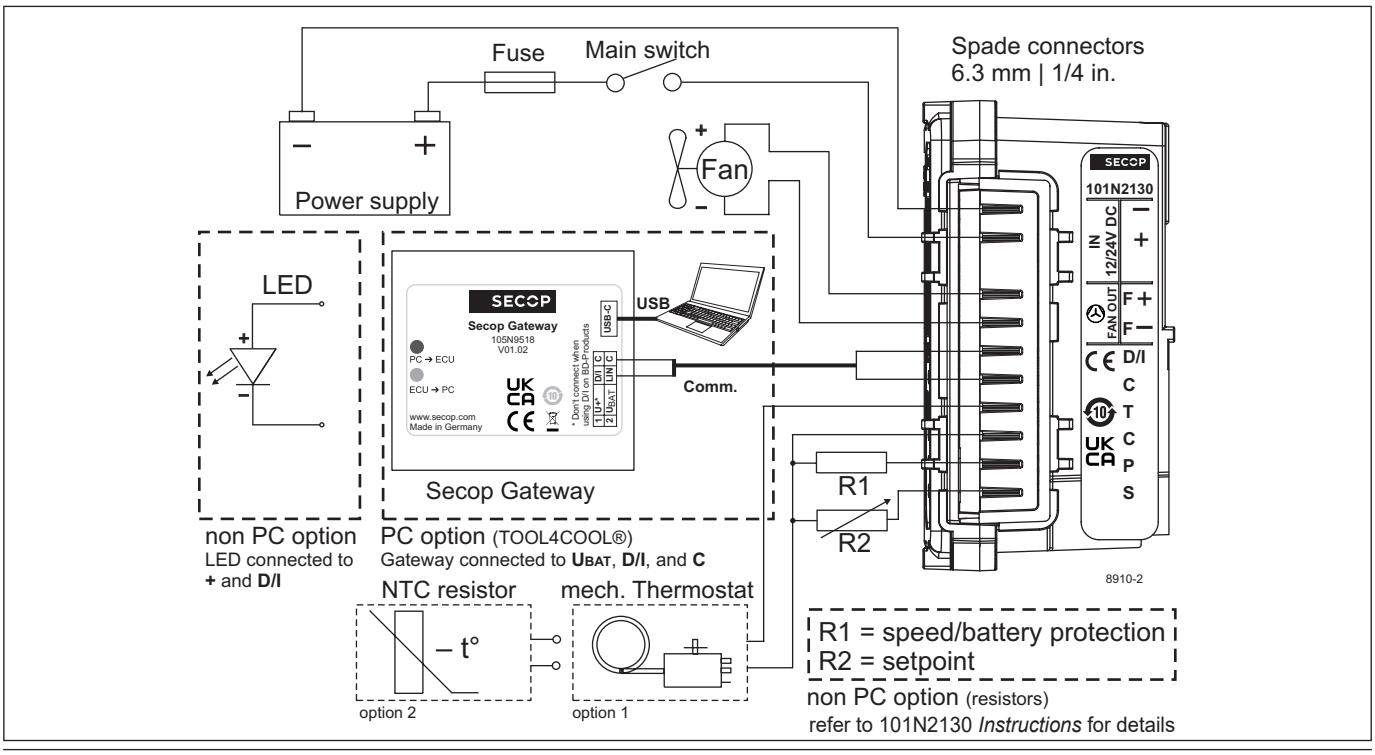
Wire Dimensions DC

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 BD1.4F-VSD-HD		Code number
Bolt joint for one compressor	Ø:16 mm	118-1917
Bolt joint in quantities	Ø:16 mm	118-1918
Snap-on in quantities	Ø:16 mm	118-1919
Terminal cover for electronic unit		105N9120
Automoblie fuse DIN 7258	12V: 15A 24V: 15A	Not deliverable from Secop
Main switch	min. 20A	

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



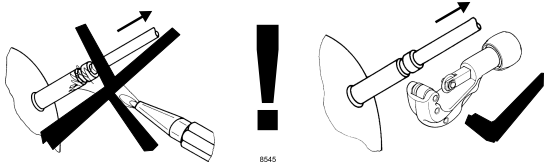
Secop accepts no responsibility for possible errors in catalogs, brochures, and other printed material. Secop reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary to specifications already agreed. All trademarks in this material are the property of the respective companies. Secop and the Secop logotype are trademarks of Secop GmbH. All rights reserved. **www.secop.com**

Keep electrical equipment clear from oil, chemicals, and water

BD Compressors

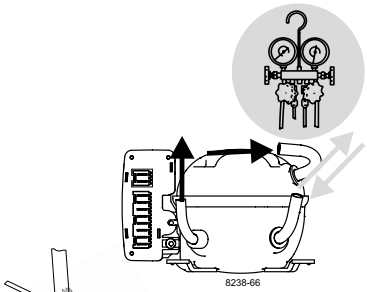
SECOP

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



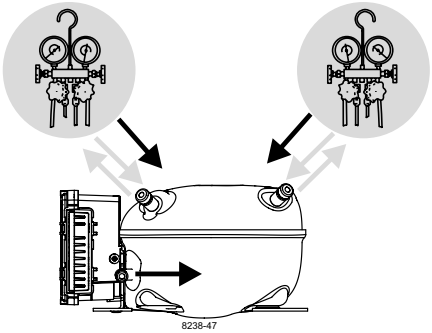
TOOL4COOL®

BD Nano

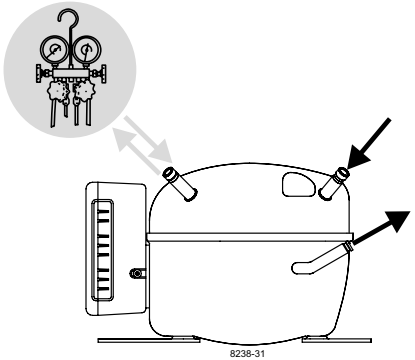


Do not heat up the bottom of the discharge connector directly.
Do not braze longer than 10 seconds and wait for 5 minutes for the next soldering attempt (Product Bulletin DES.N.101.M).

BD Micro



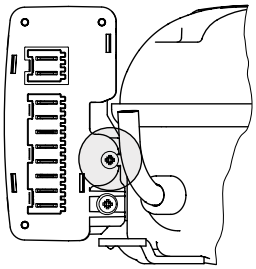
BD-P



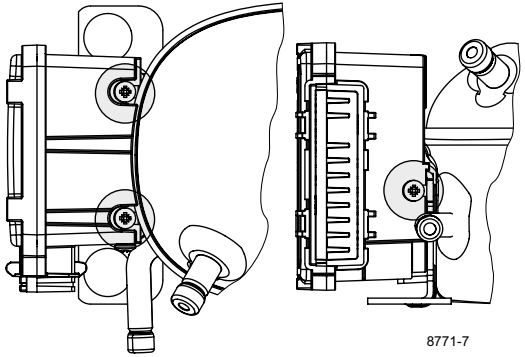
Dismantling, recycling, disposal: At the end of a compressor's lifecycle, proceed by separating and storing components according to their environmental impact. Parts that may cause pollution must be clearly identified and handled separately, ensuring appropriate disposal. Refrigerant gas must not be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

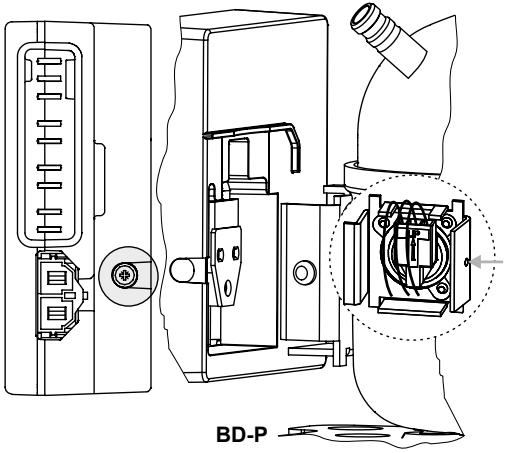
BD Compressors



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**