

## BD35F-HD.2 Heavy Duty Direct Current Compressor R134a, R1234yf, 12/24V DC



### General

Code number (without electronic units)	101Z0216
Electronic unit 12/24V DC - Standard	101N0242, 30 pcs: 101N0243
Electronic unit 12/24V DC - Automotive	101N0680, 30 pcs: 101N0681
Compressors on pallet	150

### Approvals

R134a	R134a/R1234yf
-	-
-	UL / CB



### Application

Application	LBP/MBP/HBP
Evaporating temperature °C	-30 to 0 (10)
Voltage range VDC	9.6 - 17 / 21.3 - 31.5
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<sub>1</sub> depending on application and speed.

**HD (Heavy Duty) version of the BD35F which can handle extreme vibrations.**

**New generation with optimized noise level during rough vehicle motions.**

### Motor

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

### Design

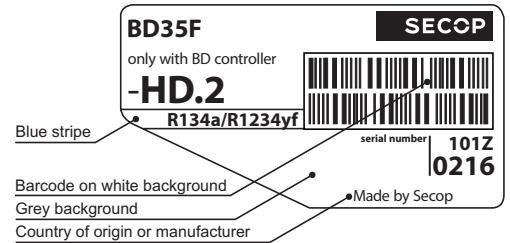
Displacement cm <sup>3</sup>	2.00
Oil quantity (type) cm <sup>3</sup>	150 (polyolester)
Maximum refrigerant charge g	300
Free gas volume in compressor cm <sup>3</sup>	870
Weight - Compressor/Electronic unit kg	4.3/0.19

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

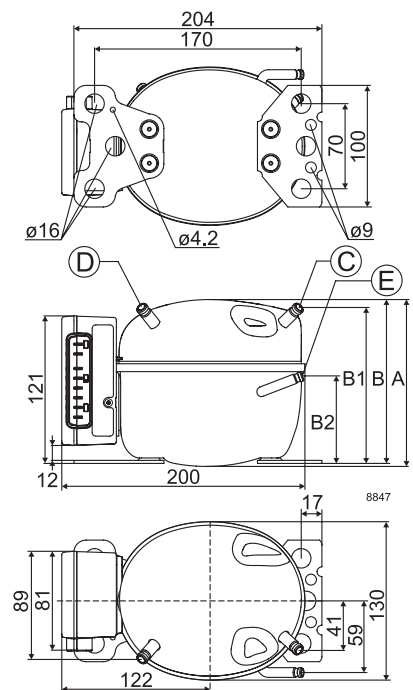
Voltage	12V	24V
Cut out VDC	10.4	22.8
Cut in VDC	11.7	24.2

### 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:		



- 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
- SG = Suction gas cooling normally sufficient
- = not applicable in this area



# 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					

Compressor speed		
Electronit unit	Resistor (R1) [Ω]	Motor speed
Code number	calculated values	[rpm]
101N0242 101N0680	0	2,000
	277	2,500
	692	3,000
	1523	3,500

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					

Wire dimensions					
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

Current consumption (for 24V applications the following must be halved)												
12V DC, static cooling											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					

\*Length between battery and electronic unit

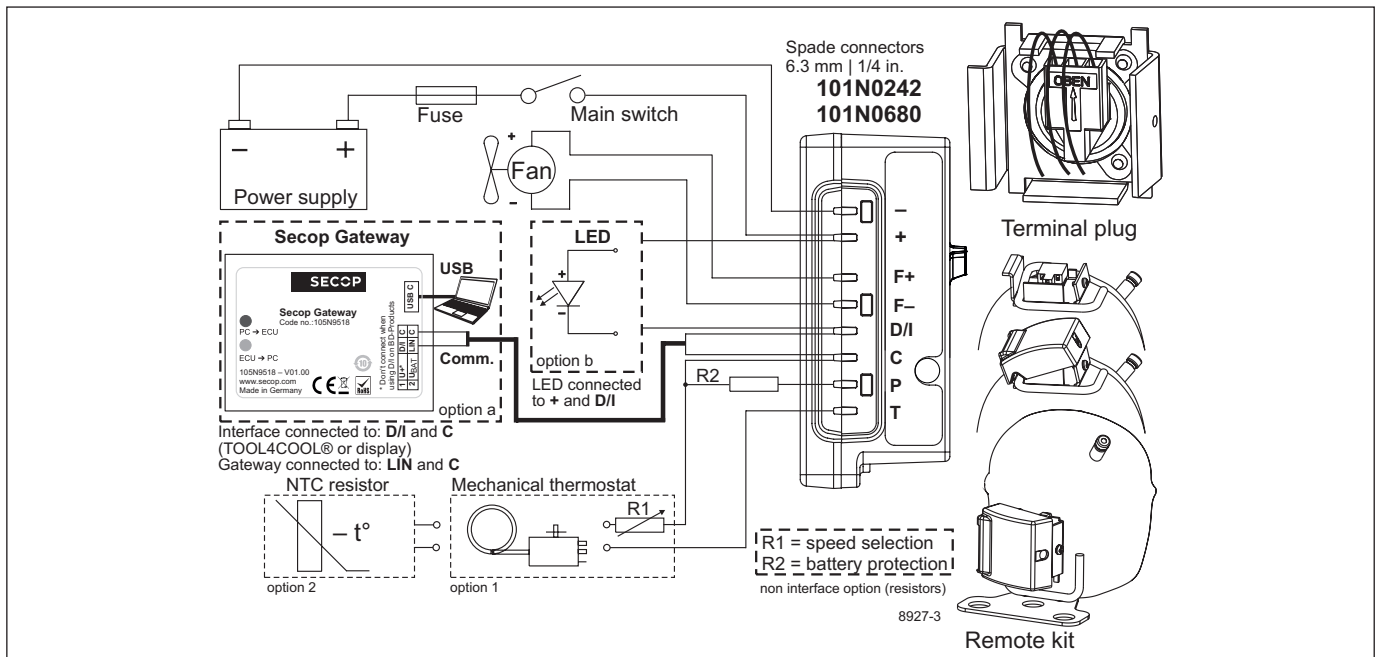
COP (EN 12900 Household/CECOMAF)												
12V DC, static cooling											W/W	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	0.90	1.04	1.09	1.19	1.36	1.54	1.74	1.94	2.15	2.24	2.35	
2,500	0.85	1.01	1.06	1.15	1.31	1.48	1.67	1.88	2.10	2.20		
3,000	0.76	0.95	1.01	1.12	1.28	1.45	1.64	1.85				
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					

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

Test conditions with electronic unit		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-HD.2		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
Automobile fuse, DIN 7258	12V: 15A   24V: 7.5 A	Not deliverable
Main switch	min. 20A	from Secop



# 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 halved)												
											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)												
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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
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Ambient temperature		32°C	32°C
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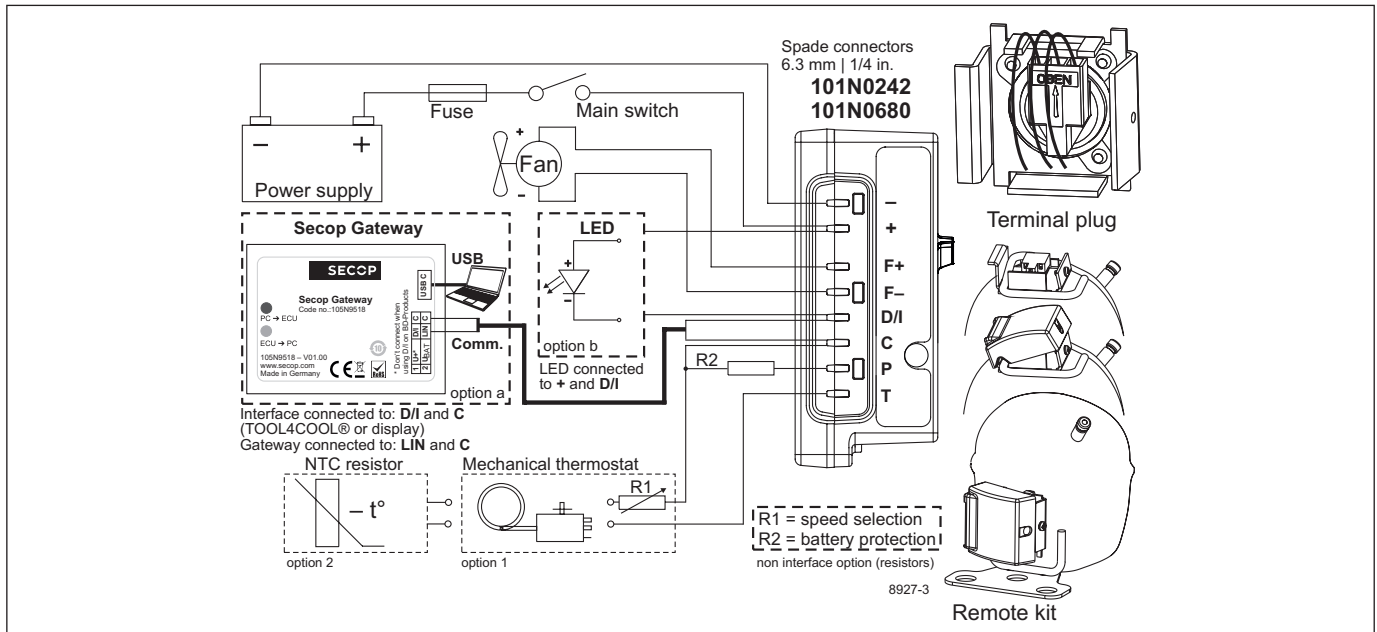
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\*Length between battery and electronic unit

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Error code or LED flashes	Error type
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1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).



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