HGX56e/850-4

Engine: 380-420V Y/YY -3- 50Hz PW

Refrigerant: R134a

Subject:

BOCK colour the world of tomorrow

Performance data

Refrigerant	R134a	Compressor refrigeration capacity	40.70 kW
Reference temperature	Dew point	Evaporator refrigeration capacity	40.70 kW
Frequency and voltage	50 Hz / 400 V	Power consumption	12.10 kW
Evaporating temperature	5.0 °C	Current draw (400 V)	21.50 A
Evaporating pressure (abs.)	*3.50 bar*	Coefficient of performance (COP/EER)	3.34
Condensing temperature	50.0 °C	Condensing capacity	52.90 kW
Condensing pressure (abs.)	*13.17 bar*	Mass flow	0.285 kg/s
Suction gas temperature	20 °C	Discharge end temperature	79.0 °C 2)
Subcooling (outside cond.)	0 K		
Usable superheat	100%		

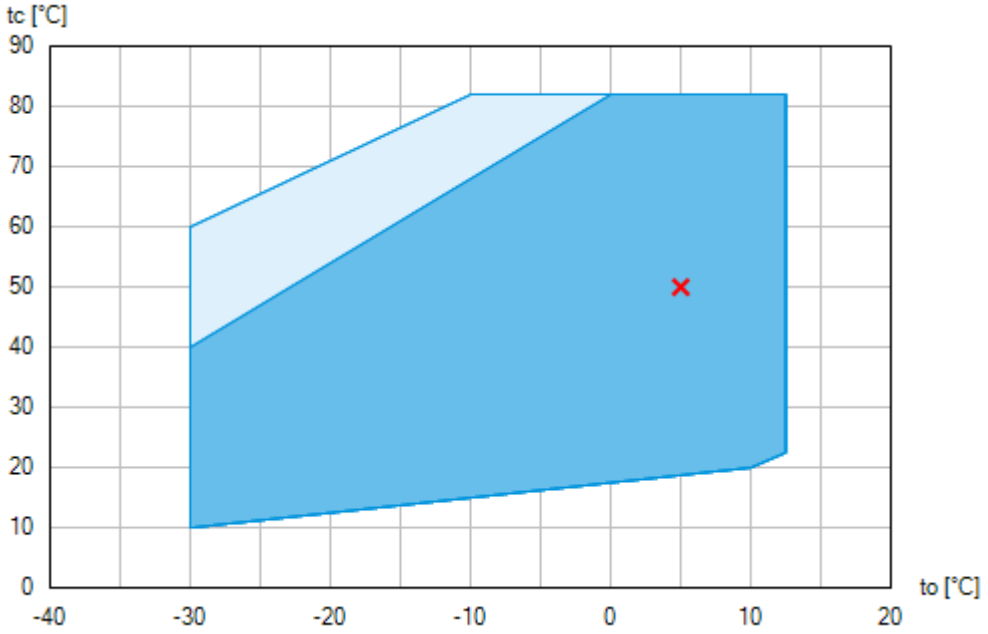
Preliminary capacity data.

1) Selection and operation of compressors with external frequency inverter (third-party product):
For the released frequency range of the Bock compressor, see technical data or at min./max. cooling capacity.
The maximum permissible working current of the compressor ($I_{max,comp}$) (see technical data) must not be exceeded. If abnormal vibrations occur in the system, the affected frequency ranges has to be blanked out in the frequency converter accordingly.
The maximum output current of the frequency converter must be greater than $I_{max,comp}$. For a safe start of the compressor, the frequency converter, for applications with low pressure refrigerants HP up to 28 bar, must be able to supply a short-term overload of min. 140% of $I_{max,comp}$ for min. 3 seconds. For applications with high pressure refrigerants (e.g. CO_2) a value of min. 160% of $I_{max,comp}$ for min. 3 sec has to be supplied.
Carry out all designs and installations in accordance with local safety regulations and common regulations (e.g. VDE), as well as the specifications of the frequency inverter manufacturer.

Notes regarding capacity data:
When compressor is operated with frequency inverter the capacity data is calculated out of the 50Hz-data and is intended as an assistance to determine the capacity data at different frequencies. Deviations cannot be excluded.

2) The stated value of the discharge end temperature is a mere calculated value. Additional cooling and heat dissipation are not considered. Deviations (particularly in deep freezing applications) from the real measured discharge temperature during operation are possible.

Operating limits



Unlimited application range

Supplementary cooling or reduced suction gas temperature (Δtoh<20K)

Compressor operation is possible within the limits shown on the diagrams of application. Please note the coloured areas. Compressor application limits should not be chosen for design purposes or continuous operation. Axis values refer to dew point (saturated vapour line).

Technical data

Number of cylinders / Bore / Stroke	6 / 60 mm / 50 mm
Displacement 50/60 Hz (1450/1740 ¹/min)	73,80 / 88,60 m³/h
Voltage [1)]	380-420V Y/YY -3- 50Hz PW
	440-480V Y/YY -3- 60Hz PW
Winding divided into	50% / 50%
Max. working current [2)]	32.6 A
Max. power consumption [2)]	19.7 kW
Starting current (rotor blocked) [2)]	101.0 / 174.0 A
Motor protection	INT69 G
Protection terminal box	IP 66
Weight	194 kg
Frequency range [3)]	25 - 70 Hz
Max. permissible overpressure (g) (LP/HP) [4)]	19 / 28 bar
Connection suction line SV	54 mm - 2 1/8 "
Connection discharge line DV	35 mm - 1 3/8 "
Lubrication	Oil pump
Oil type R134a, R404A, R407A/C/F, R448A, R449A, R450A, R513A	BOCKlub E55
Oil type R22	BOCKlub A46
Oil charge	3,2 Ltr.
Oil sump heater	230 V - 1 - 50/60 Hz, 160 W
Dimensions Length / Width / Height	740 / 436 / 429 mm
Sound power level L_{WA} [5)]	83 db(A) @ -35/+40 °C
	79 db(A) @ -10/+45 °C
Sound pressure level L_{pA} [5)]	69 db(A) @ -35/+40 °C
	66 db(A) @ -10/+45 °C

1) Tolerance (± 10%) relates to the mean value of the voltage range. Other voltages and current types on request

All data are based on voltage rms values

PW = part winding, motors for part winding starting
(no start unloaders required)
Designs for Y/D on request

2) - The stated value for the max. power consumption is valid for the adjusted power supply.

- Starting current (rotor blocked):
  - Part winding (PW) motors: Winding 1 / Winding 1+2
  - Delta/Star (Δ/Y) motors: Δ / Y
- Take account of the max. operating current / max. power consumption for designing motor contractors, feed lines, fuses and motor protection switches. Motor contractors: Consumption category AC3.

3) The maximum permissible working current of the compressor (Imax) must not be exceeded. Take account of the guidelines for use of frequency inverter (see compressor assembly instruction or selection software).

4) LP = Low pressure
HP = High pressure

5) Declared dual-number noise emission values are in accordance with ISO 4871. The corresponding uncertainty to the sound power level is K_{WA} = 2,5 dB and to the sound pressure level is K_{pA} = 2,5 dB. The values are valid for 50 Hz with the refrigerant R404A at the standard rating points according to EN 12900.
   - A-weighted sound power level L_{WA} (re 1 pW), in decibel. To determine the values, measurement methods of the ISO 3740 standard with accuracy class 2 or higher were used .
   - A-weighted sound pressure level L_{pA} (re 20 µPa), in decibel. The values are calculated from the sound power level in accordance with ISO 11203: $L_{pA} = L_{WA} - Q_2$ at a distance of d = 1m to the reference box.

Performance data table

Application: Refrigeration & AC
Reference temperature: Dew point
Compressor frequency: 50 Hz [1)]
Voltage: 400 V
Suction gas temperature: 20 °C
Subcooling (outside cond.): 0 K

tc [°C]	to [°C]									
		10.0	**5.0**	**0.0**	**-5.0**	**-10.0**	**-15.0**	**-20.0**	**-25.0**	**-30.0**
30.0	Q [W] P [kW] I [A]	65200 8.80 17.40	53900 8.74 17.30	43900 8.49 17.10	35300 8.08 16.60	28000 7.52 16.00	21700 6.86 15.30	16500 6.11 14.60	12300 5.30 13.80	8870 4.45 13.10
35.0	Q [W] P [kW] I [A]	61300 9.92 18.70	50600 9.69 18.40	41200 9.27 17.90	33100 8.70 17.30	26200 8.00 16.50	20300 7.20 15.70	15400 6.33 14.80	11400 5.41 13.90	8110 4.48 13.10
40.0	Q [W] P [kW] I [A]	57400 10.90 20.00	47300 10.50 19.50	38500 9.99 18.80	30900 9.27 17.90	24300 8.43 17.00	18800 7.50 16.00	14200 6.51 15.00	10400 5.48 14.00	7330 4.45 13.10
45.0	Q [W] P [kW] I [A]	53500 12.00 21.30	44000 11.40 20.50	35800 10.60 19.60	28600 9.78 18.50	22500 8.80 17.40	17400 7.74 16.20	13000 6.63 15.10	9440 5.51 14.00	6530 4.38 13.00
50.0	Q [W] P [kW] I [A]	49600 12.90 22.60	40700 12.10 21.50	33000 11.20 20.40	26400 10.20 19.10	20700 9.11 17.80	15900 7.93 16.40	11900 6.71 15.20	8470 5.47 14.00	5720 4.26 12.90
55.0	Q [W] P [kW] I [A]	45700 13.80 23.80	37500 12.80 22.50	30300 11.80 21.10	24200 10.60 19.60	18900 9.37 18.10	14400 8.06 16.60	10700 6.72 15.20	7500 5.39 13.90	4900 4.08 12.80
60.0	Q [W] P [kW] I [A]	41800 14.60 24.90	34200 13.50 23.40	27600 12.30 21.70	21900 10.90 20.00	17100 9.57 18.30	13000 8.13 16.70	9440 6.68 15.20	6520 5.24 13.80	4060 3.85 12.60
65.0	Q [W] P [kW] I [A]	37900 15.40 26.00	30900 14.10 24.20	24900 12.70 22.30	19700 11.20 20.30	15200 9.70 18.40	11500 8.14 16.70	8240 6.58 15.10	5530 5.04 13.60	
70.0	Q [W] P [kW] I [A]	34100 16.00 27.00	27700 14.60 24.90	22200 13.00 22.70	17500 11.40 20.60	13400 9.77 18.50	9960 8.09 16.60	7050 6.41 14.90		

Preliminary capacity data.

Supplementary cooling or reduced suction gas temperature (Δtoh<20K)

to Evaporating temperature
tc Condensing temperature
Q Compressor refrigeration capacity
P Power consumption
I Current draw

1) Selection and operation of compressors with external frequency inverter (third-party product):
For the released frequency range of the Bock compressor, see technical data or at min./max. cooling capacity.
The maximum permissible working current of the compressor ($I_{max,comp}$) (see technical data) must not be exceeded. If abnormal vibrations occur in the system, the affected frequency ranges has to be blanked out in the frequency converter accordingly.
The maximum output current of the frequency converter must be greater than $I_{max,comp}$. For a safe start of the compressor, the frequency converter, for applications with low pressure refrigerants HP up to 28 bar, must be able to supply a short-term overload of min. 140% of $I_{max,comp}$ for min. 3 seconds. For applications with high pressure refrigerants (e.g. CO_2) a value of min. 160% of $I_{max,comp}$ for min. 3 sec has to be supplied.
Carry out all designs and installations in accordance with local safety regulations and common regulations (e.g. VDE), as well as the specifications of the frequency inverter manufacturer.

Notes regarding capacity data:
When compressor is operated with frequency inverter the capacity data is calculated out of the 50Hz-data and is intended as an assistance to determine the capacity data at different frequencies. Deviations cannot be excluded.

Scope of supply

Semi-hermetic six-cylinder reciprocating compressor with drive motor
Single-section compressor housing with hermetically integrated electric motor

Winding protection with PTC resistor sensors and electronic trigger unit INT69 G
115-230 V AC, 50/60 Hz, IP00

Rear bearing flange prepared for oil differential pressure sensor DELTA-P II

Oil pump

Possibility of connection of oil level controllers ESK, AC+R or CARLY

Possibility of connection of oil level controllers Traxoil [1)]

Possibility for connection of oil pressure safety switch MP54

Oil charge:
HG: **BOCK**lub A46
HGX: **BOCK**lub E55

Sight glass

Pressure relief valve

Suction and discharge line valve

Inert gas charge

4 anti-vibration pads enclosed

Accessories

Start unloader by means of a ESS (Electronic Soft Start), 400 V - 3 - 50/60 Hz, IP20 (Connection clamps IP00) for installation in switch cabinet [2)]

(Digital) capacity regulator DCR14 230 V - 1 - 50/60 Hz, IP65
possible equippment see 09900-DGbF Capacity regulator 09900-DGbF

Cylinder cover prepared for digital capacity regulator

Oil sump heater 230 V - 1 - 50/60 Hz, 160 W

Thermal protection thermostat per cylinder cover

Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50/60 Hz [2)]

Connection piece suction and discharge valve in welding design

Oil pressure safety switch MP54 230 V - 1 - 50/60 Hz, IP20 [2)]

USB converter for INT69 G Diagnose [2)]

Oil temperature sensor (Pt1000, for external evaluation)

INT69 G Diagnose 115-230 V AC, 50/60 Hz, IP00 (INT69 G not applicable)

DP-Modbus Gateway 115-230 V AC, 50/60 Hz, IP00 including adapter cable [2)]

Modbus-LAN Gateway 230 V AC, 50/60 Hz, IP00 [2)]

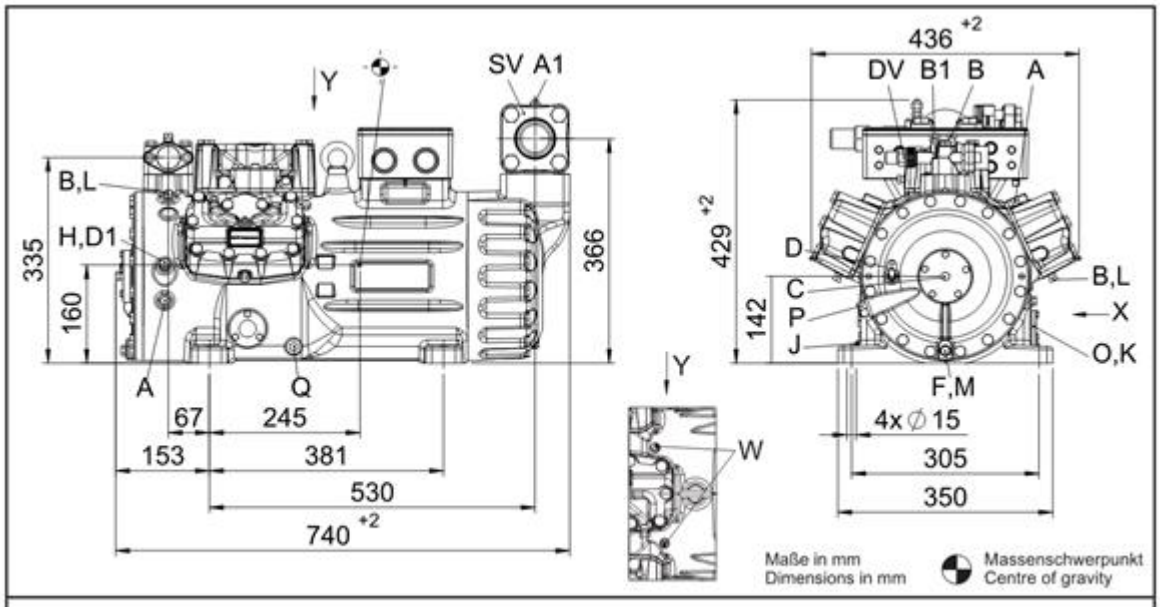
Additional fan
230 V AC - 1 - 50 Hz, 97 W, IP44
230 V AC - 1 - 60 Hz, 128 W [2)]

Special voltage and/or frequency (on request)

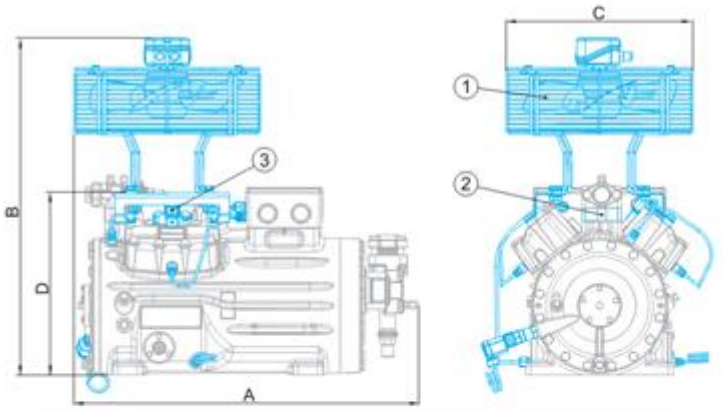
1) Only with additional adapter possible

2) Enclosure

Dimensions and connections



Maße Zubehör / Dimensions Accessories



① Zusatzlüfter
Additional fan

② Zwischenadapter für Druckabsperrventil
Intermediate adapter for discharge line valve

③ Leistungsregler
Capacity regulator

Typ / Type	A mm / inch	B mm / inch	C mm / inch	D mm / inch
HG12P	ca. 460	ca. 500	ca. 315	–
HG22e	ca. 525	ca. 610	ca. 380	–
HG34e	ca. 580	ca. 640	ca. 380	–
HG44e	ca. 710	ca. 685	ca. 380	368
HG56e	–	ca. 710	ca. 380	–
HG66e	ca. 820	ca. 800	ca. 380	–

Ansicht X: Anschlussmöglichkeit für Ölspiegelregulator
View X: Possibility of connection of oil level regulator

○ Dreilochanschluss für TRAXOIL (3xM6x10)
Three-hole connection for TRAXOIL (3xM6x10)

● Dreilochanschluss für ESK, AC+R, CARLY (3xM6x10)
Three-hole connection for ESK, AC+R, CARLY (3xM6x10)

SV	Suction line valve, tube ø [1)]	54 mm - 2 1/8 "
DV	Discharge line valve, tube ø [1)]	35 mm - 1 3/8 "
A	Connection suction side, not lockable	1/8 " NPTF
A1	Connection suction side, lockable	7/16 " UNF
B	Connection discharge side, not lockable	1/8 " NPTF
B1	Connection discharge side, lockable	7/16 " UNF
C	Connection oil pressure safety switch OIL	1/8 " NPTF
D	Connection oil pressure safety switch LP	7/16 " UNF
D1	Connection oil return from oil separator	1/4 " NPTF
F	Oil drain	M 12 x 1.5
H	Oil charge plug	1/4 " NPTF
J	Connection oil sump heater	3/8 " NPTF
K	Sight glass	3 x M 6
L	Connection thermal protection thermostat	1/8 " NPTF
M	Oil strainer	M 12 x 1.5
O	Connection oil level regulator	3 x M 6
P	Connection oil differential pressure sensor	M 20 x 1.5
Q	Connection oil temperature sensor	1/8" NPTF
W	Connection for refrigerant injection	2 x 1/8 " NPTF

1) Brazing connection

Product photo