BOCK® **HGX88e/3235-4**

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

Refrigerant: R452A

Subject:

Performance data

Application: Refrigeration & AC

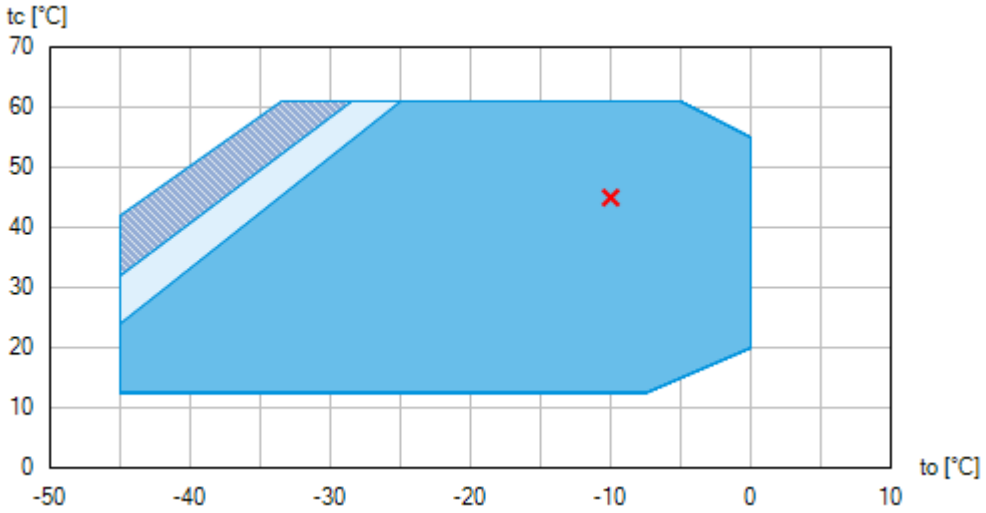
Refrigerant	R452A	Compressor refrigeration capacity	137.00 kW
Reference temperature	Dew point	Evaporator refrigeration capacity	137.00 kW
Power supply	50 Hz, 400 V	Power consumption	60.60 kW
Supply frequency	50 Hz	Current draw (400 V)	107.00 A
Evaporating temperature	-10.0 °C	Coefficient of performance (COP/EER)	2.26
Evaporating pressure (abs.)	*3.99 bar*	Condensing capacity	198.00 kW
Condensing temperature	45.0 °C	Mass flow	1.322 kg/s
Condensing pressure (abs.)	*19.83 bar*	Discharge end temperature	70.0 °C [1)]
Suction gas superheat	8 K		
Subcooling (outside cond.)	0 K		
Usable superheat	100%		

Preliminary capacity data.

1) 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.

Subject:

Operating limits



Unlimited application range

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

Supplementary cooling and 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).

Subject:

Technical data

Number of cylinders / Bore / Stroke	8 / 87 mm / 68 mm
Displacement 50/60 Hz (1450/1740 ¹/min)	281,30 / 337,60 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)]	135.0 A
Max. power consumption [2)]	79.2 kW
Starting current (rotor blocked) [2)]	466.0 / 657.0 A
Motor protection	INT69 G
Protection terminal box	IP 65
Weight	459 kg
Frequency range [3)]	25 - 60 Hz
Max. permissible overpressure (g) (LP/HP) [4)]	19 / 28 bar
Connection suction line SV	76 mm - 3 1/8 "
Connection discharge line DV	54 mm - 2 1/8 "
Lubrication	Oil pump
Oil type R134a, R404A, R407A/C/F, R448A, R449A, R450A, R513A	BOCKlub E55
Oil type R22	BOCKlub A46
Oil charge	9,6 Ltr.
Oil sump heater	230 V - 1 - 50/60 Hz, 200 W
Dimensions Length / Width / Height	943 / 648 / 656 mm
Sound power level L_{WA} [5)]	90 dB(A) @ -35 °C / +40 °C
	86 dB(A) @ -10 °C / +45 °C
Sound pressure level L_{pA} [5)]	76 dB(A) @ -35 °C / +40 °C
	72 dB(A) @ -10 °C / +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

Subject:

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.

Subject:

Performance data table

Application: Refrigeration & AC
Reference temperature: Dew point
Supply frequency: 50 Hz
Voltage: 400 V
Suction gas superheat: 8 K
Subcooling (outside cond.): 0 K

tc [°C]	to [°C]										
		0.0	**-5.0**	**-10.0**	**-15.0**	**-20.0**	**-25.0**	**-30.0**	**-35.0**	**-40.0**	**-45.0**
10.0	Q [W] P [kW] I [A]										
15.0	Q [W] P [kW] I [A]		269000 39.40 77.00	221000 38.90 76.30	180000 37.50 74.60	144000 35.40 71.90	113000 32.70 68.70	87400 29.60 65.10	66100 26.20 61.20	48800 22.70 57.40	34700 19.10 53.80
20.0	Q [W] P [kW] I [A]	307000 45.30 84.80	254000 44.70 84.00	208000 43.20 82.00	169000 41.00 79.10	134000 38.20 75.40	105000 34.80 71.30	80500 31.10 66.90	60200 27.30 62.40	43600 23.30 58.10	30100 19.40 54.10
25.0	Q [W] P [kW] I [A]	289000 51.30 93.00	239000 49.70 90.80	195000 47.30 87.50	157000 44.30 83.40	125000 40.70 78.70	96600 36.70 73.60	73500 32.50 68.40	54300 28.10 63.30	38600 23.80 58.50	25700 19.50 54.20
30.0	Q [W] P [kW] I [A]	270000 56.90 101.00	222000 54.40 97.30	181000 51.10 92.70	145000 47.30 87.40	115000 43.00 81.70	88300 38.40 75.70	66600 33.60 69.80	48600 28.80 64.10	33800 24.00 58.80	21700 19.50 54.20
35.0	Q [W] P [kW] I [A]	251000 62.20 109.00	206000 58.70 104.00	167000 54.60 97.60	133000 50.00 91.10	104000 45.00 84.40	79900 39.80 77.50	59800 34.50 70.90	43100 29.20 64.60	29300 24.10 58.90	18000 19.30 54.00
40.0	Q [W] P [kW] I [A]	231000 67.10 116.00	189000 62.70 110.00	152000 57.70 103.00	121000 52.40 94.50	93800 46.70 86.70	71600 40.90 79.00	53000 35.10 71.70	37700 29.40 64.90	25100 24.00 58.80	14800 19.00 53.60
45.0	Q [W] P [kW] I [A]	211000 71.60 123.00	171000 66.30 115.00	137000 60.60 107.00	108000 54.50 97.50	83500 48.20 88.70	63200 41.80 80.20	46400 35.50 72.20	32600 29.50 64.90	21300 23.70 58.50	
50.0	Q [W] P [kW] I [A]	191000 75.80 129.00	154000 69.60 120.00	122000 63.10 110.00	95300 56.30 100.00	73200 49.40 90.30	55000 42.50 81.00	40000 35.70 72.40	27700 29.30 64.60	17700 23.20 58.00	
55.0	Q [W] P [kW] I [A]	169000 79.60 135.00	135000 72.60 124.00	107000 65.20 114.00	82500 57.80 103.00	62900 50.20 91.50	46800 42.80 81.50	33700 35.60 72.30	23100 28.80 64.10		
60.0	Q [W] P [kW] I [A]		117000 75.10 128.00	90700 67.10 116.00	69700 58.90 104.00	52500 50.80 92.30	38700 42.90 81.50	27600 35.30 71.80			

Preliminary capacity data.

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

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

Subject:

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

Subject:

Scope of supply

Semi-hermetic eight-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

Oil pump

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

Oil pump cover with screw-in option for oil differential pressure sensor DELTA-P II

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

Three sight glasses

Pressure relief valve

Suction and discharge line valve

Inert gas charge

Accessories

Capacitiy regulator 110 V - 1 - 50/60 Hz, IP65
1-3 capacity regulator = 75/50/25% residual capacity [2)]

Capacity regulator 230 V - 1 - 50/60 Hz, IP65
1-3 capacity regulator = 75/50/25% residual capacity [2)]

Cylinder cover prepared for capacity regulator

Oil sump heater 230 V - 1 - 50/60 Hz, 200 W [3)]

Oil service valve [3)]

INT69 GTML Diagnose 115-230 V AC, 50/60 Hz, IP00, including oil differential pressure sensor INT250G, thermal protection thermostat per cylinder covers, (INT69 G not applicable)

Oil pressure safety switch MP54 230 V - 1 - 50/60 Hz, IP20 [4)]

Thermal protection thermostat per cylinder cover [3)]

Connection piece suction and discharge valve in welding design

Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50/60 Hz [4)]

Subject:

Oil temperature sensor (Pt1000, for external evaluation) [3)]

Hot gas temperature sensor (Pt1000, for external evaluation) [3)]

Thermal protection thermostat per cylinder cover

USB converter for INT69 G Diagnose and INT69 GTML Diagnose [4)]

Additional fan
230 V AC - 1 - 50 Hz, 97 W, IP44
230 V AC - 1 - 60 Hz, 128 W [4)]

Intermediate adapter for discharge line valve [4)]

Step protection

4 anti-vibration pads enclosed

Special voltage and/or frequency (on request)

1) Only with additional adapter possible

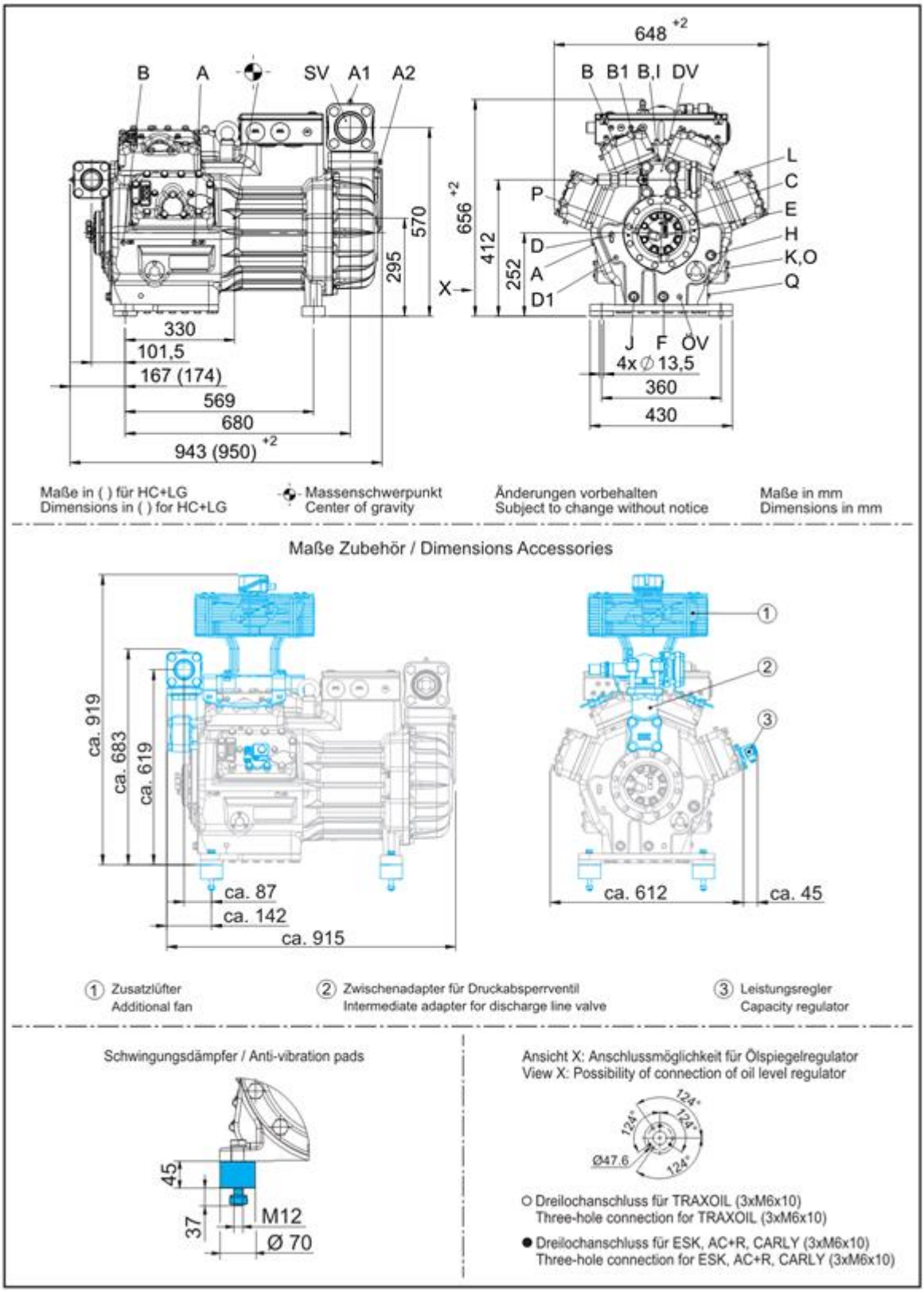
2) Capacity regulator premounted, control unit enclosed

3) Mounted

4) Enclosure

Subject:

Dimensions and connections



Subject:

SV	Suction line valve, tube ø [1]	76 mm - 3 1/8 "
DV	Discharge line valve, tube ø [1]	54 mm - 2 1/8 "
A	Connection suction side, not lockable	1/8 " NPTF
A1	Connection suction side, lockable	7/16 " UNF
A2	Connection suction side, not lockable	1/4 " NPTF
B	Connection discharge side, not lockable	1/8 " NPTF
B1	Connection discharge side, lockable	7/16 " UNF
C	Connection oil pressure safety switch OIL	7/16 " UNF
D	Connection oil pressure safety switch LP	7/16 " UNF
D1	Connection oil return from oil separator	1/4 " NPTF
E	Connection oil pressure gauge	7/16 " UNF
F	Oil drain	M 22 x 1.5
H	Oil charge plug	M 22 x 1.5
I	Connection hot gas temperature sensor	1/8 " NPTF
J	Connection oil sump heater	M 22 x 1.5
K	Sight glass	-
L	Connection thermal protection thermostat	1/8 " NPTF
O	Connection oil level regulator	3 x M 6
ÖV	Connection oil service valve	1/4 " NPTF
P	Connection oil differential pressure sensor	M 20 x 1.5
Q	Connection oil temperature sensor	1/8 " NPTF

1) Brazing connection

Subject:

Product photo