BOCK® **HGX88e/2400-4**

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

Refrigerant: R513A

Subject:

Performance data

Application: Refrigeration & AC

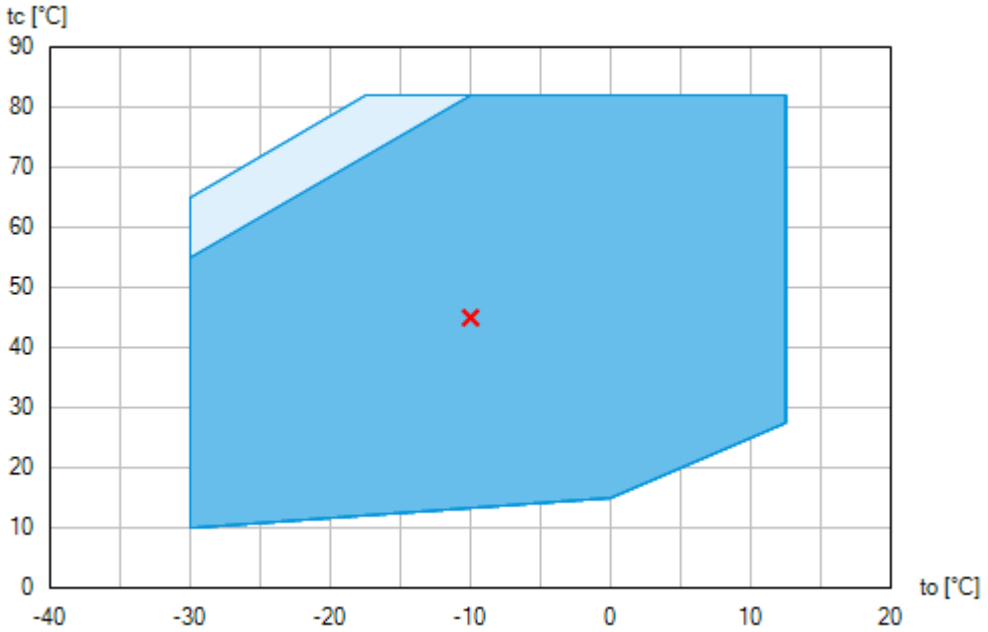
Refrigerant	R513A		Compressor refrigeration capacity	64.00 kW
Reference temperature	Dew point		Evaporator refrigeration capacity	64.00 kW
Power supply	50 Hz, 400 V		Power consumption	27.30 kW
Supply frequency	50 Hz		Current draw (400 V)	55.70 A
Evaporating temperature	-10.0 °C		Coefficient of performance (COP/EER)	2.35
Evaporating pressure (abs.)	*2.23 bar*		Condensing capacity	91.30 kW
Condensing temperature	45.0 °C		Mass flow	0.546 kg/s
Condensing pressure (abs.)	*12.17 bar*		Discharge end temperature	67.3 °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)

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 / 75 mm / 68 mm
Displacement 50/60 Hz (1450/1740 ¹/min)	209,1 / 250,9 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)]	101.0 A
Max. power consumption [2)]	59.5 kW
Starting current (rotor blocked) [2)]	385.0 / 543.0 A
Motor protection	INT69 G
Protection terminal box	IP 65
Weight	452 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)]	89 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]										
		10.0	**5.0**	**0.0**	**-5.0**	**-10.0**	**-15.0**	**-20.0**	**-25.0**	**-30.0**	**-35.0**
10.0	Q [W] P [kW] I [A]									39400 13.90 41.80	
15.0	Q [W] P [kW] I [A]			152000 20.50 48.10	124000 20.30 47.90	99200 19.70 47.30	78700 18.70 46.20	61500 17.40 44.90	47600 15.80 43.50	36500 14.20 42.10	
20.0	Q [W] P [kW] I [A]		175000 22.70 50.50	145000 22.70 50.50	118000 22.20 49.90	94000 21.20 48.80	74200 19.80 47.40	57700 18.10 45.70	44200 16.40 44.00	33400 14.60 42.40	
25.0	Q [W] P [kW] I [A]	201000 25.30 53.40	167000 25.40 53.60	137000 24.90 53.00	111000 24.00 51.90	88500 22.50 50.30	69500 20.80 48.40	53600 18.90 46.50	40700 16.90 44.50	30300 14.90 42.70	
30.0	Q [W] P [kW] I [A]	190000 28.40 57.10	158000 28.00 56.70	129000 27.10 55.50	104000 25.70 53.80	82600 23.90 51.80	64500 21.80 49.50	49400 19.60 47.20	37100 17.30 44.90	27200 15.10 42.90	
35.0	Q [W] P [kW] I [A]	179000 31.40 60.90	148000 30.50 59.80	121000 29.10 58.00	96800 27.30 55.80	76600 25.10 53.20	59400 22.70 50.50	45200 20.20 47.80	33500 17.70 45.30	24200 15.30 43.10	
40.0	Q [W] P [kW] I [A]	168000 34.30 64.70	138000 32.90 62.90	112000 31.00 60.40	89400 28.80 57.60	70300 26.20 54.50	54200 23.50 51.40	40900 20.80 48.40	30000 18.10 45.60	21300 15.50 43.20	
45.0	Q [W] P [kW] I [A]	156000 37.00 68.40	128000 35.10 65.80	103000 32.80 62.70	81900 30.10 59.30	64000 27.30 55.70	49000 24.20 52.20	36600 21.20 48.90	26600 18.30 45.80	18700 15.50 43.30	
50.0	Q [W] P [kW] I [A]	144000 39.50 71.90	117000 37.20 68.60	93800 34.40 64.90	74200 31.40 60.90	57600 28.10 56.80	43800 24.80 52.90	32500 21.50 49.20	23400 18.40 46.00	16300 15.50 43.20	
55.0	Q [W] P [kW] I [A]	131000 41.90 75.30	106000 39.10 71.30	84600 35.90 66.90	66500 32.40 62.30	51300 28.90 57.70	38800 25.30 53.40	28600 21.70 49.40	20500 18.40 45.90	14200 15.30 43.10	
60.0	Q [W] P [kW] I [A]	118000 44.10 78.40	94900 40.80 73.70	75300 37.10 68.60	58800 33.30 63.40	45100 29.40 58.40	34000 25.50 53.70	25000 21.80 49.40	17900 18.20 45.80	12400 15.00 42.80	
65.0	Q [W] P [kW] I [A]	106000 46.00 81.20	83900 42.20 75.80	66100 38.20 70.10	51300 34.00 64.40	39100 29.80 58.90	29300 25.60 53.80	21600 21.60 49.30	15600 17.90 45.50	11100 14.50 42.40	
70.0	Q [W] P [kW] I [A]	92200 47.80 83.70	73000 43.50 77.60	57000 39.10 71.30	43900 34.50 65.00	33400 29.90 59.10	25000 25.50 53.70	18600 21.30 48.90	13700 17.40 45.00		
75.0	Q [W] P [kW] I [A]	79300 49.20 85.90	62100 44.50 79.10	48000 39.70 72.10	36800 34.80 65.40	27900 29.90 59.00	21000 25.20 53.30	15900 20.70 48.40			

Subject:

80.0	Q [W] P [kW] I [A]	66400 50.40 87.70	51300 45.30 80.20	39300 40.00 72.60	29900 34.80 65.40	22700 29.60 58.60	17400 24.60 52.70			

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

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)]

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)]

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

Subject:

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

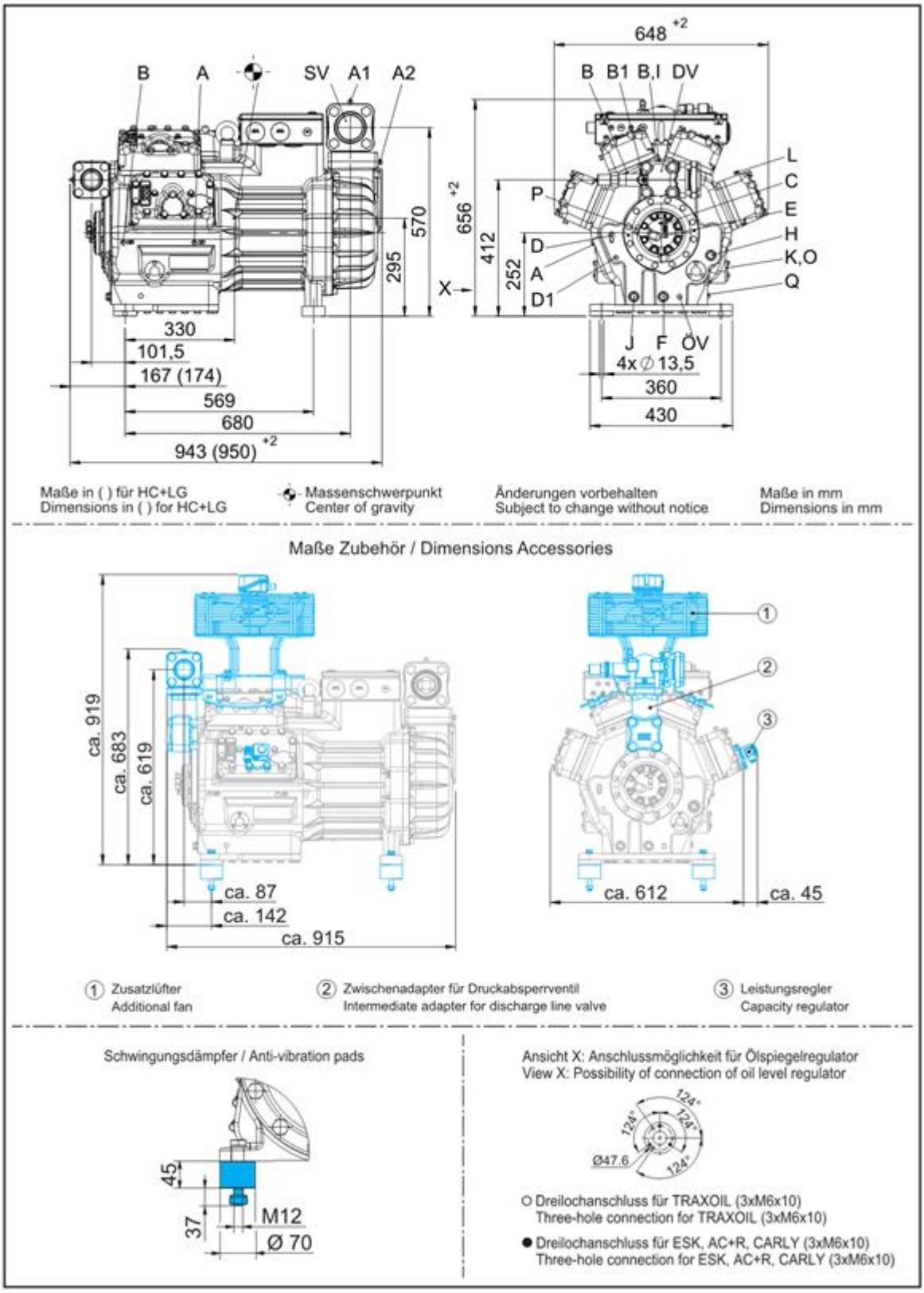
2) Capacity regulator premounted, control unit enclosed

3) Mounted

4) Enclosure

Subject:

Dimensions and connections



Subject to change without notice

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	3 x M 6
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