



**Subject:**

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**Performance data**

**Application: Refrigeration & AC**

|                                    |                  |                                      |                       |
|------------------------------------|------------------|--------------------------------------|-----------------------|
| Refrigerant                        | R452A            | Compressor refrigeration capacity    | 117.00 kW             |
| Reference temperature              | Dew point        | Evaporator refrigeration capacity    | 117.00 kW             |
| Power supply                       | 50 Hz, 400 V     | Power consumption                    | 51.40 kW              |
| Supply frequency                   | 50 Hz            | Current draw (400 V)                 | 93.10 A               |
| Evaporating temperature            | -10.0 °C         | Coefficient of performance (COP/EER) | 2.27                  |
| <i>Evaporating pressure (abs.)</i> | <i>3.99 bar</i>  | Condensing capacity                  | 169.00 kW             |
| Condensing temperature             | 45.0 °C          | Mass flow                            | 1.127 kg/s            |
| <i>Condensing pressure (abs.)</i>  | <i>19.83 bar</i> | Discharge end temperature            | 69.8 °C <sup>1)</sup> |
| Suction gas superheat              | 8 K              |                                      |                       |
| Subcooling (outside cond.)         | 0 K              |                                      |                       |
| Usable superheat                   | 100%             |                                      |                       |

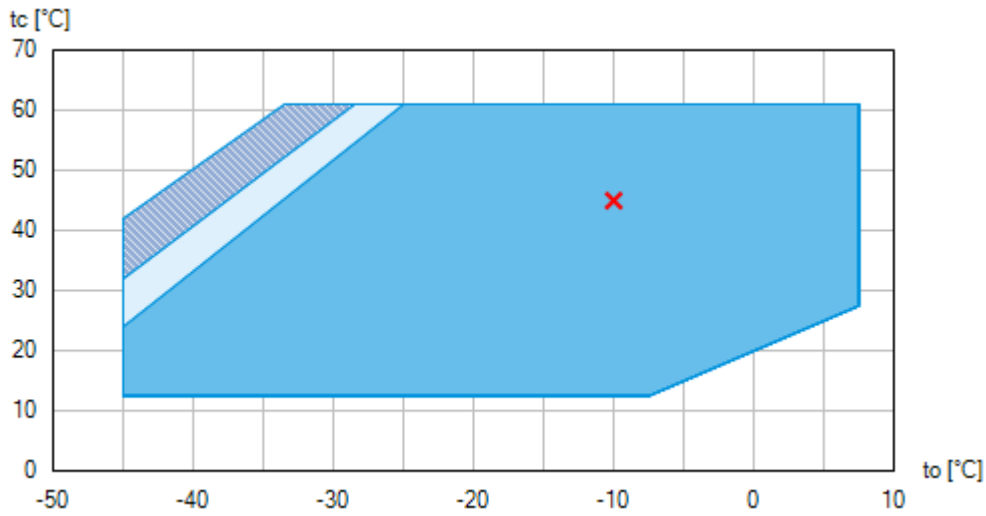
*Preliminary capacity data.*




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- 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:**

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### Operating limits



-  Unlimited application range
-  Supplementary cooling or reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )
-  Supplementary cooling and reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )

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).

**BOCK® HGX88e/2735-4 S**

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

Refrigerant: R452A

**Subject:****Technical data**

|  |                                   |
|--|-----------------------------------|
| Number of cylinders / Bore / Stroke                          | 8 / 80 mm / 68 mm                 |
| Displacement 50/60 Hz (1450/1740 <sup>1</sup> /min)          | 237,90 / 285,50 m <sup>3</sup> /h |
| Voltage <sup>1)</sup>  | 380-420V Y/YY -3- 50Hz PW         |
|  | 440-480V Y/YY -3- 60Hz PW         |
| Winding divided into   | 50% / 50%                         |
| Max. working current <sup>2)</sup>                           | 136.0 A                           |
| Max. power consumption <sup>2)</sup>                         | 80.0 kW                           |
| Starting current (rotor blocked) <sup>2)</sup>               | 466.0 / 657.0 A                   |
| Motor protection   | INT69 G                           |
| Protection terminal box                                      | IP 65                             |
| Weight   | 464 kg                            |
| Frequency range <sup>3)</sup>                                | 25 - 60 Hz                        |
| Max. permissible overpressure (g) (LP/HP) <sup>4)</sup>      | 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 <sub>WA</sub> <sup>5)</sup>              | 89 dB(A) @ -35 °C / +40 °C        |
|  | 86 dB(A) @ -10 °C / +45 °C        |
|  | 87 dB(A) @ +5 °C / +50 °C         |
| Sound pressure level L <sub>pA</sub> <sup>5)</sup>           | 75 dB(A) @ -35 °C / +40 °C        |
|  | 72 dB(A) @ -10 °C / +45 °C        |
|  | 73 dB(A) @ +5 °C / +50 °C         |

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**Subject:**

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- 1) Tolerance ( $\pm 10\%$ ) 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 ( $\Delta/Y$ ) motors:  $\Delta / Y$- 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 ( $I_{max}$ ) 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  $\mu$ Pa), 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  $d = 1$  m to the reference box.

# BOCK® HGX88e/2735-4 S

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

Refrigerant: R452A



## 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]<br>P [kW]<br>I [A] |                           |                           |                          |                          |                          |                         |                         |                         |                         |                         |  |
| 15.0    | Q [W]<br>P [kW]<br>I [A] |                           | 229000<br>33.60<br>69.80  | 188000<br>33.10<br>69.20 | 153000<br>31.90<br>67.80 | 122000<br>30.20<br>65.70 | 96000<br>28.00<br>63.20 | 74300<br>25.40<br>60.30 | 56300<br>22.50<br>57.20 | 41600<br>19.50<br>54.20 | 29800<br>16.50<br>51.20 |  |
| 20.0    | Q [W]<br>P [kW]<br>I [A] | 261000<br>38.50<br>75.90  | 216000<br>38.00<br>75.20  | 177000<br>36.80<br>73.70 | 143000<br>34.90<br>71.40 | 114000<br>32.50<br>68.50 | 89100<br>29.80<br>65.30 | 68400<br>26.70<br>61.80 | 51200<br>23.40<br>58.20 | 37100<br>20.10<br>54.70 | 25700<br>16.70<br>51.40 |  |
| 25.0    | Q [W]<br>P [kW]<br>I [A] | 245000<br>43.40<br>82.30  | 203000<br>42.10<br>80.60  | 166000<br>40.20<br>78.00 | 134000<br>37.70<br>74.80 | 106000<br>34.70<br>71.10 | 82100<br>31.40<br>67.20 | 62500<br>27.90<br>63.10 | 46200<br>24.20<br>59.00 | 32800<br>20.50<br>55.10 | 22000<br>16.90<br>51.60 |  |
| 30.0    | Q [W]<br>P [kW]<br>I [A] | 230000<br>48.10<br>88.60  | 189000<br>46.00<br>85.80  | 154000<br>43.40<br>82.20 | 124000<br>40.20<br>78.10 | 97100<br>36.70<br>73.60  | 75100<br>32.80<br>68.90 | 56700<br>28.80<br>64.20 | 41400<br>24.80<br>59.60 | 28800<br>20.70<br>55.40 | 18500<br>16.80<br>51.60 |  |
| 35.0    | Q [W]<br>P [kW]<br>I [A] | 214000<br>52.50<br>94.70  | 175000<br>49.70<br>90.70  | 142000<br>46.30<br>86.10 | 113000<br>42.50<br>81.10 | 88600<br>38.40<br>75.70  | 68100<br>34.10<br>70.40 | 51000<br>29.60<br>65.10 | 36700<br>25.20<br>60.10 | 25000<br>20.80<br>55.50 | 15500<br>16.70<br>51.40 |  |
| 40.0    | Q [W]<br>P [kW]<br>I [A] | 197000<br>56.60<br>101.00 | 161000<br>53.00<br>95.40  | 130000<br>49.00<br>89.80 | 103000<br>44.60<br>83.80 | 80000<br>39.90<br>77.70  | 61100<br>35.10<br>71.60 | 45300<br>30.20<br>65.80 | 32300<br>25.40<br>60.30 | 21500<br>20.80<br>55.40 | 12700<br>16.40<br>51.10 |  |
| 45.0    | Q [W]<br>P [kW]<br>I [A] | 180000<br>60.40<br>106.00 | 146000<br>56.10<br>99.80  | 117000<br>51.40<br>93.10 | 92000<br>46.40<br>86.30  | 71300<br>41.20<br>79.30  | 54000<br>35.90<br>72.60 | 39700<br>30.60<br>66.20 | 28000<br>25.50<br>60.40 | 18300<br>20.50<br>55.20 |                         |  |
| 50.0    | Q [W]<br>P [kW]<br>I [A] | 162000<br>63.90<br>112.00 | 131000<br>58.90<br>104.00 | 104000<br>53.60<br>96.20 | 81300<br>48.00<br>88.40  | 62500<br>42.20<br>80.70  | 47000<br>36.50<br>73.30 | 34300<br>30.80<br>66.50 | 23900<br>25.30<br>60.20 | 15400<br>20.10<br>54.80 |                         |  |
| 55.0    | Q [W]<br>P [kW]<br>I [A] | 144000<br>67.10<br>116.00 | 115000<br>61.40<br>108.00 | 90600<br>55.40<br>98.80  | 70400<br>49.30<br>90.20  | 53700<br>43.00<br>81.70  | 40100<br>36.80<br>73.80 | 29000<br>30.80<br>66.40 | 20000<br>25.00<br>59.90 |                         |                         |  |
| 60.0    | Q [W]<br>P [kW]<br>I [A] | 125000<br>70.00<br>121.00 | 98900<br>63.60<br>111.00  | 77200<br>57.00<br>102.00 | 59300<br>50.30<br>91.60  | 44800<br>43.60<br>82.50  | 33100<br>37.00<br>73.90 | 23700<br>30.50<br>66.20 |                         |                         |                         |  |

Preliminary capacity data.



Supplementary cooling or reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )



Supplementary cooling and reduced suction gas temperature ( $\Delta t_{oh} < 20K$ )

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**BOCK® HGX88e/2735-4 S**  
Engine: 380-420V Y/YY -3- 50Hz PW  
Refrigerant: R452A



**Subject:**

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*t<sub>o</sub>* Evaporating temperature  
*t<sub>c</sub>* Condensing temperature  
*Q* Compressor refrigeration capacity  
*P* Power consumption  
*I* Current draw

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# BOCK® HGX88e/2735-4 S

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

Refrigerant: R452A



## Subject:

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### 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 <sup>1)</sup>

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

Capacity regulator 110 V - 1 - 50/60 Hz, IP65  
1-3 capacity regulator = 75/50/25% residual capacity <sup>2)</sup>

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

Cylinder cover prepared for capacity regulator

Oil sump heater 230 V - 1 - 50/60 Hz, 200 W <sup>3)</sup>

Oil service valve <sup>3)</sup>

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 <sup>4)</sup>

Thermal protection thermostat per cylinder cover <sup>3)</sup>

Connection piece suction and discharge valve in welding design

Oil differential pressure sensor DELTA-P II 220-240 V - 1 - 50/60 Hz <sup>4)</sup>

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# BOCK® HGX88e/2735-4 S

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

Refrigerant: R452A



## Subject:

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Oil temperature sensor (Pt1000, for external evaluation) <sup>3)</sup>

Hot gas temperature sensor (Pt1000, for external evaluation) <sup>3)</sup>

Thermal protection thermostat per cylinder cover

USB converter for INT69 G Diagnose and INT69 GTML Diagnose <sup>4)</sup>

Additional fan

230 V AC - 1 - 50 Hz, 97 W, IP44

230 V AC - 1 - 60 Hz, 128 W <sup>4)</sup>

Intermediate adapter for discharge line valve <sup>4)</sup>

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

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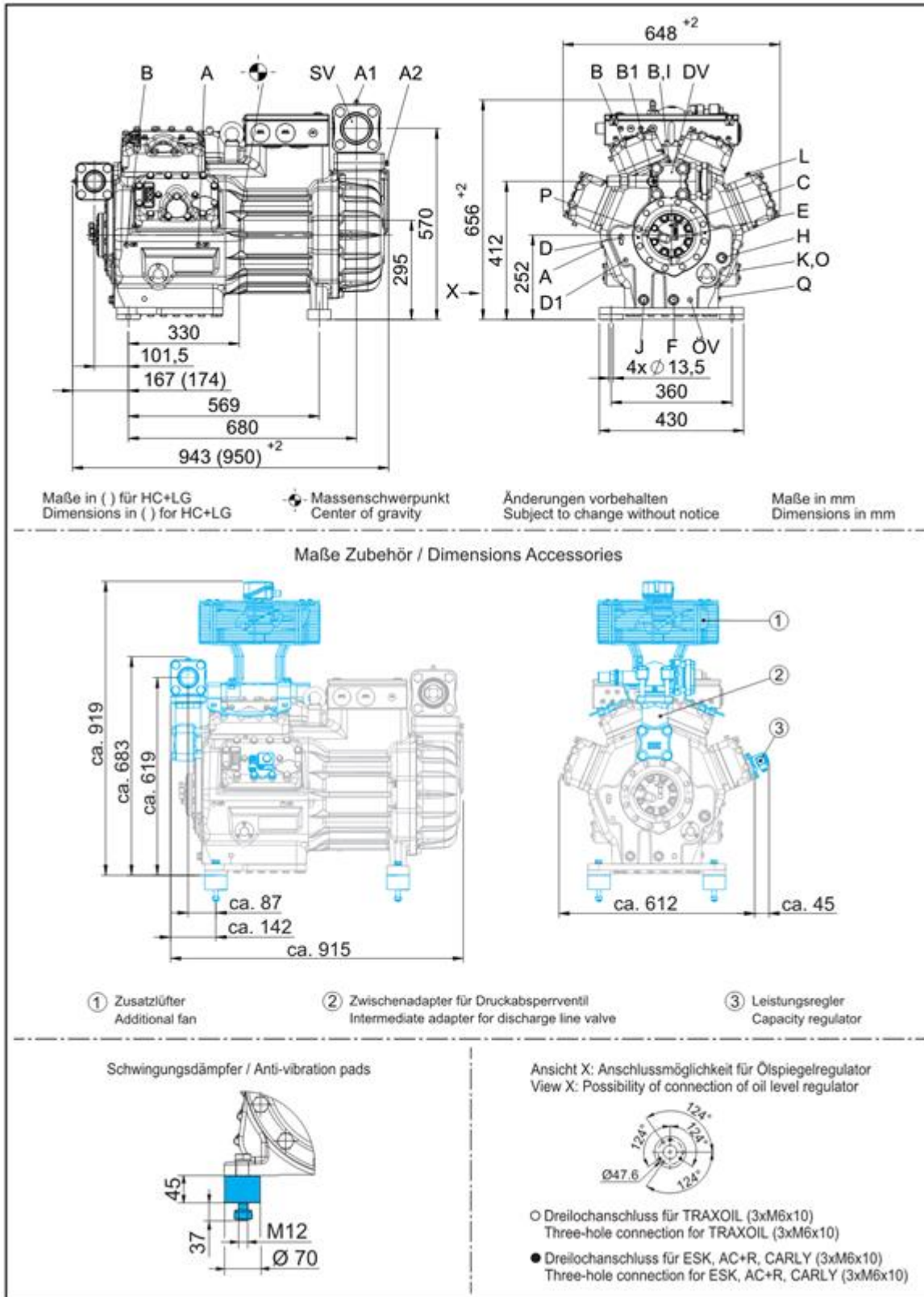
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**Subject:**

**Dimensions and connections**



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**BOCK® HGX88e/2735-4 S**

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

Refrigerant: R452A

**Subject:**

|    |  |                 |
|----|--|-----------------|
| SV | Suction line valve, tube $\varnothing$ <sup>1)</sup>   | 76 mm - 3 1/8 " |
| DV | Discharge line valve, tube $\varnothing$ <sup>1)</sup> | 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

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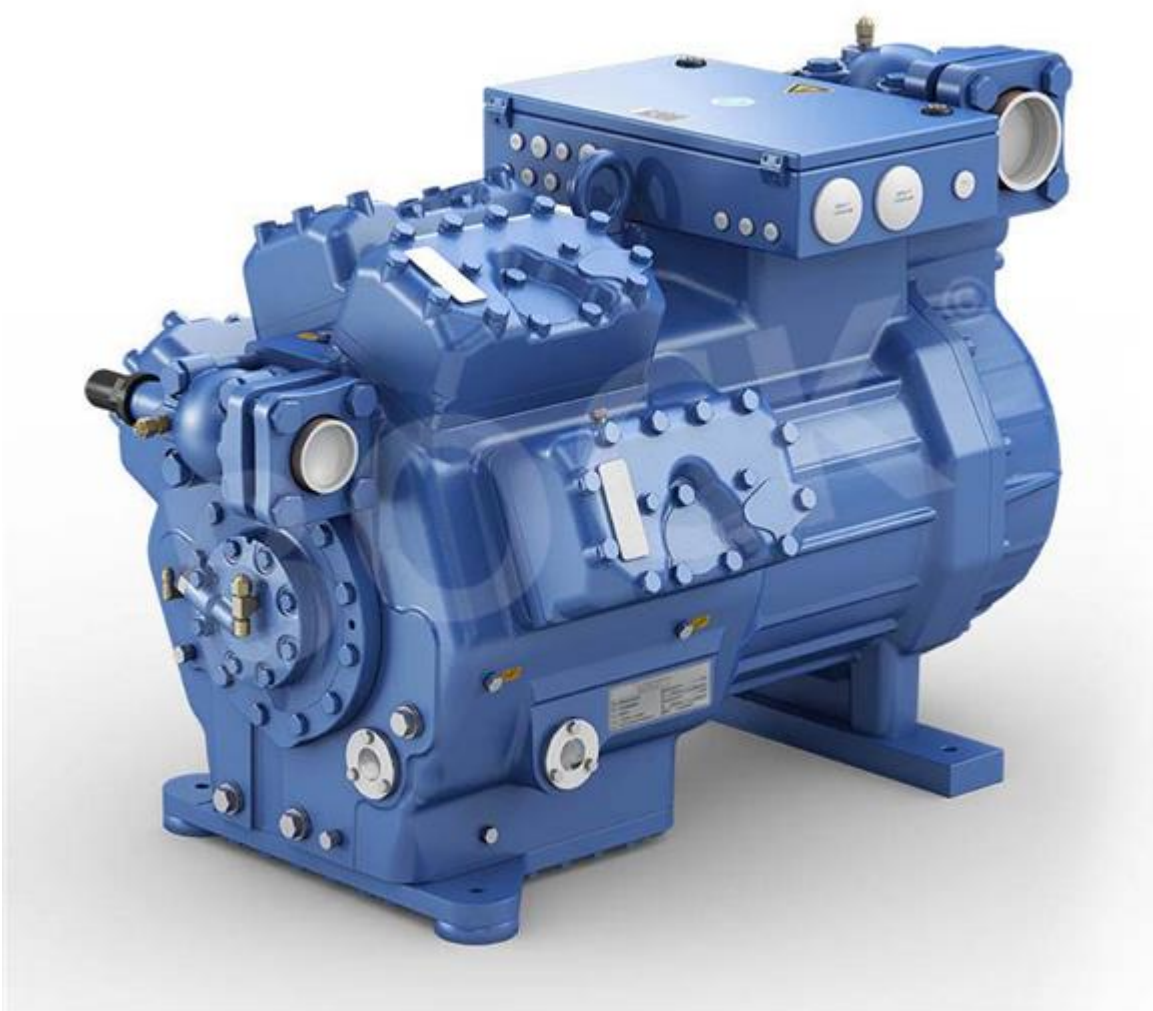
**BOCK® HGX88e/2735-4 S**  
Engine: 380-420V Y/YY -3- 50Hz PW  
Refrigerant: R452A



**Subject:**

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**Product photo**



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