THE HEART OF FRESHNESS

R410A // HERMETIC

SCROLL COMPRESSORS

Improved Performance

ORBIT

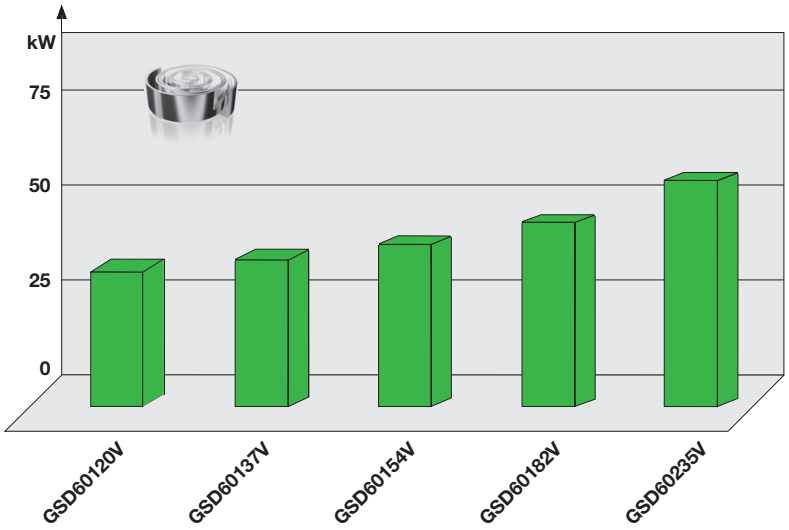
50 Hz // ESP-130-8

The ORBIT Series

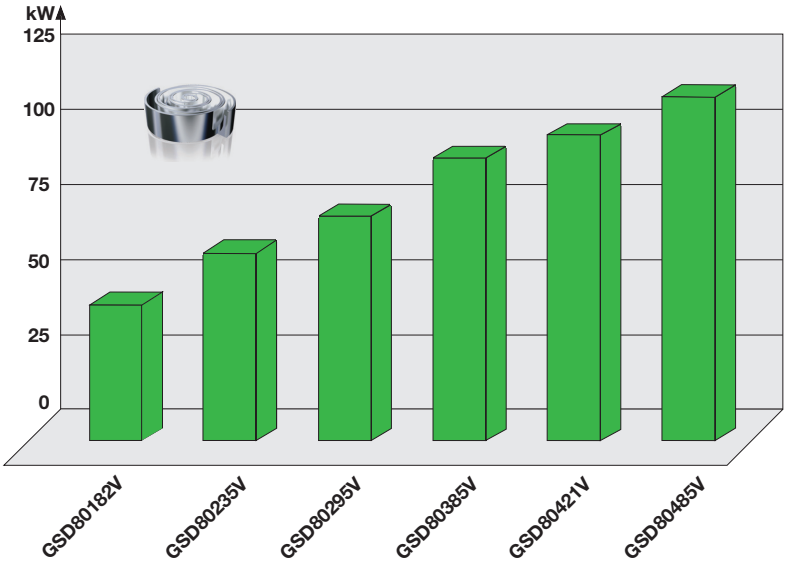
The scroll compressors of the ORBIT series for R410A have been developed especially for both air conditioning and reversible heat pumps. They are characterized by high efficiency, smooth running and reliability. With respect to the typical seasonal operating mode of A/C applications – primarily in part load operation – special focus has been put on low energy consumption also at reduced condensing temperatures.

Moreover the compressor design has been optimized for low sound emissions, achieving the lowest level in its class. The ORBIT series also weighs less than the competitive models, as the diameter is more than 2 cm less. Nevertheless, the ORBIT series geometry, as it relates to fitting locations and mounting configuration, matches the competitors' layout.

The ORBIT 6 capacity range*



The ORBIT 8 capacity range*



* based on EN 12900 conditions (+5/50°C)

Energy efficiency and part load behaviour

With respect to the efficiency requirements of different applications, two compressor families with identical displacements have been developed:

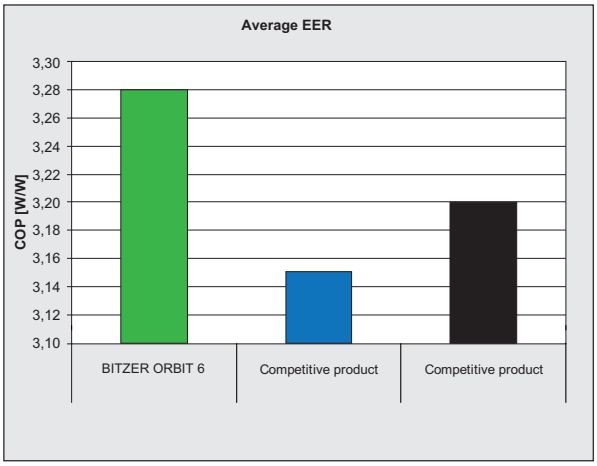
“BITZER ORBIT 8” standard series – optimized for operation at medium to high condensing temperatures, e. g. for systems with air-cooled condenser and for heat pumps.

“BITZER ORBIT 8 Boreal” series – optimized for operation at low to medium condensing temperatures. This generally affects systems with water-cooled condenser or evaporatively cooled, and air-cooled systems in cooler climates.

BITZER sets a new standard in scroll compressors with optimization technology that results in superior ESEER in both air-cooled and water-cooled applications. Up to 15% better than competitive models.

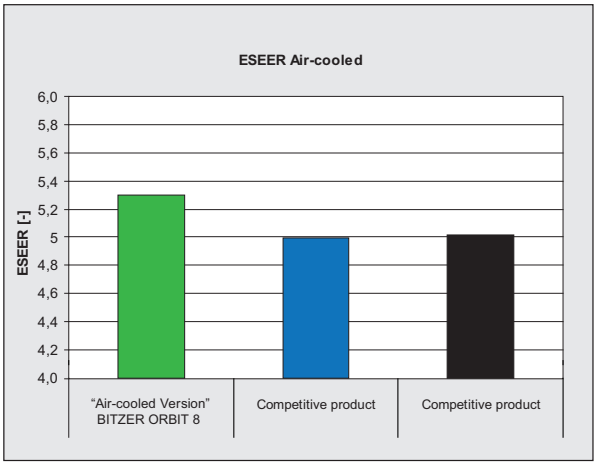
“BITZER ORBIT 6” series – optimized for smaller capacity systems at medium to high condensing temperatures. Ideal for unitary heat pumps and air conditioning, or as part of an uneven tandem with larger ORBIT 8 compressors in chillers and/or reversible systems.

ORBIT 6: Up to 3% higher full-load efficiency



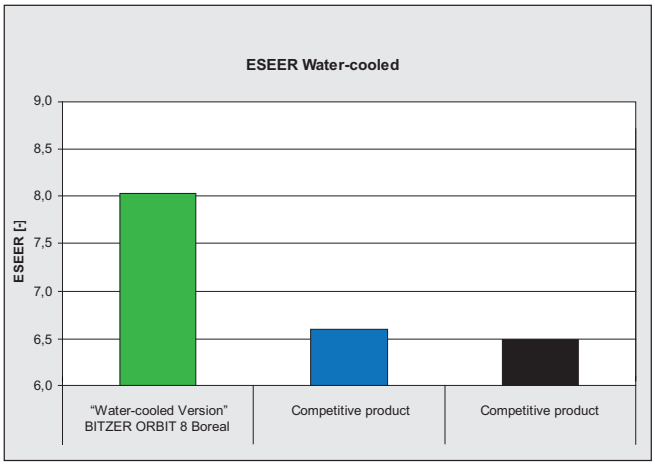
According to EN 12900

ORBIT 8: Up to 5% better ESEER



ESEER: European Seasonal Energy Efficiency Ratio

ORBIT 8 Boreal: Up to 15% better ESEER



ESEER: European Seasonal Energy Efficiency Ratio

Calculation based on multi compressor compound

The unique technical features

- ❑ Large standard application diagram
  Ideally suited to both air conditioning and heat-pumps
  - Expanded to higher evaporation temperatures for telecom and data center applications
- ❑ High energy efficiency at part and full load
  - Optimized for lowest annual operating costs
  - Especially high EER, ESEER / IPLV and SCOP values
- ❑ Low sound levels
  - Optimized design for lowest sound levels in its capacity class
- ❑ Isolated sump design enables BITZER Advanced Header Technology (BAHT) piping and unique compounding options like fixed and variable speed tandems
- ❑ Especially low oil carry over rate
- ❑ Very efficient high power factor motors
  Significantly lower operating amps than with common motor design
- ❑ Integrated PTC motor protection
- ❑ Expanded capability
  - Direct rail mounting (no spacers required)
  - Even and uneven Tandems with common piping (no restrictor washers required)*
- ❑ Operation with frequency inverter from 35 to 75 Hz**
  - Customer selectable drive

Scope of standard delivery

Built-in motor (for voltages see “Technical data”), electronic motor protection, stub tubes for brazed connections (or threaded connections for Rotalock valves and adaptors for GSD8 series), integrated discharge check valve, oil sight glass, oil service port, terminal box with enclosure class IP54, polyvinyl ether oil charge, nitrogen holding charge.

Accessories (optional)

Band type crankcase heater, discharge gas temperature switch (insertion and clamp-on types), anti-vibration mountings with sleeves, Rotalock adaptors, Rotalock shut-off valves, Rotalock pipe adapters, BITZER Advanced Header Technology piping packages and mounting rail kits.

Explanation of model designation

Example

G S D 8 0 1 8 2 V A B 4

Scroll series

G S **D** 8 0 1 8 2 V A B 4

D for R410A

G S D **8** 0 1 8 2 V A B 4

Family

G S D 8 **0 1 8 2** V A B 4

Cooling capacity in kBtu/h according to ARI 540

G S D 8 0 1 8 2 **V** A B 4

Polyvinyl ether oil charge

G S D 8 0 1 8 2 V **A** B 4

A = for air-cooled systems
W = for water-cooled systems

G S D 8 0 1 8 2 V A **B** 4

B = Direct brazing connections
R = Rotalock connections

G S D 8 0 1 8 2 V A B **4**

Motor code
2 = 200 V/3/50 Hz, 208/230 V/3/60 Hz
3 = 380 V/3/60 Hz
4 = 400 V/3/50 Hz, 460 V/3/60 Hz
5 = 500 V/3/50 Hz, 575 V/3/60 Hz
6 = 380 V/3/50 Hz

Maximum Applied Pressure Limits

ORBIT 6:

Low pressure side:	33.3 bar
High pressure side:	45 bar

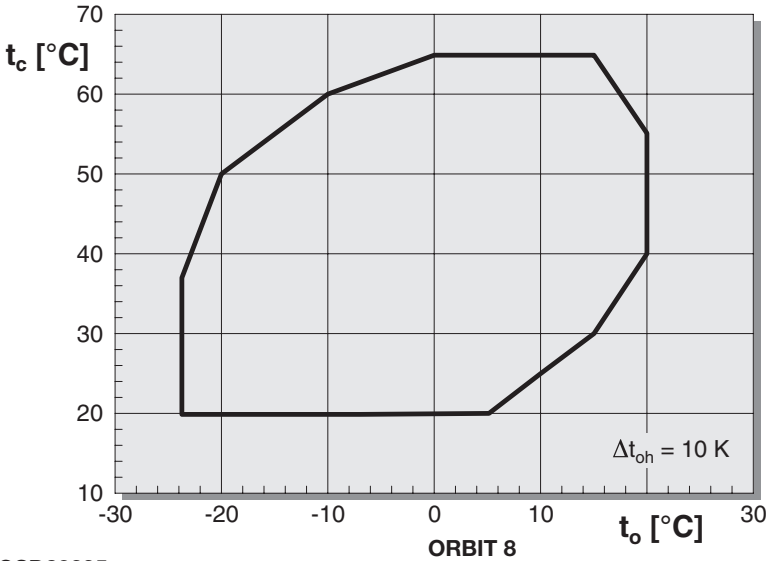
ORBIT 8:

Low pressure side:	31 bar
High pressure side:	45 bar

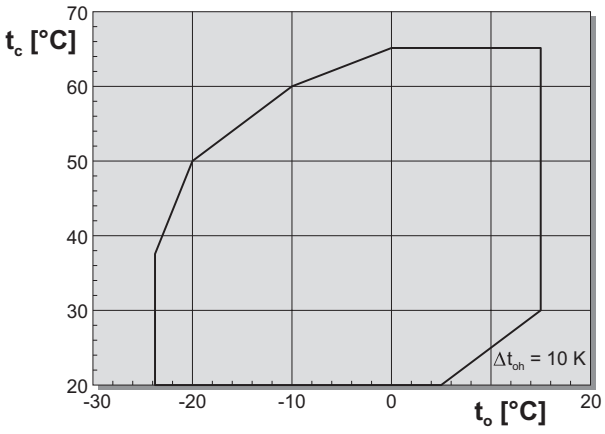
* when used with BITZER Advanced Header Technology
** varies by size, contact BITZER for application guidance

Application limits

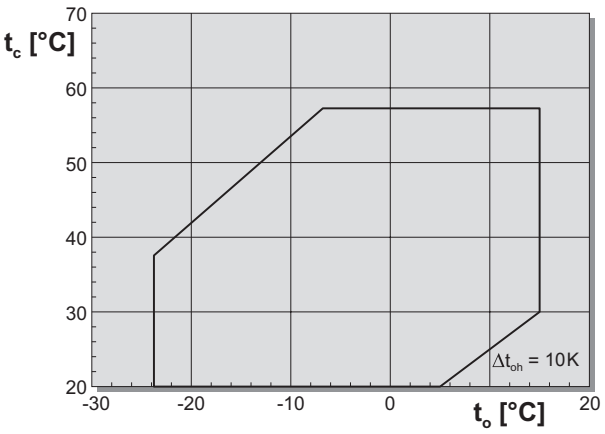
ORBIT 6
ORBIT 8: GSD80295 .. GSD80485
for air-cooled systems and reversible chillers



ORBIT 8: GSD80182 & GSD80235
for air-cooled systems and reversible chillers



ORBIT 8
Boreal for systems with low condensing temperature



t_o Evaporating temperature [°C]
t_c Condensing temperature [°C]
Δt_{oh} Suction gas superheat [K]

Performance data

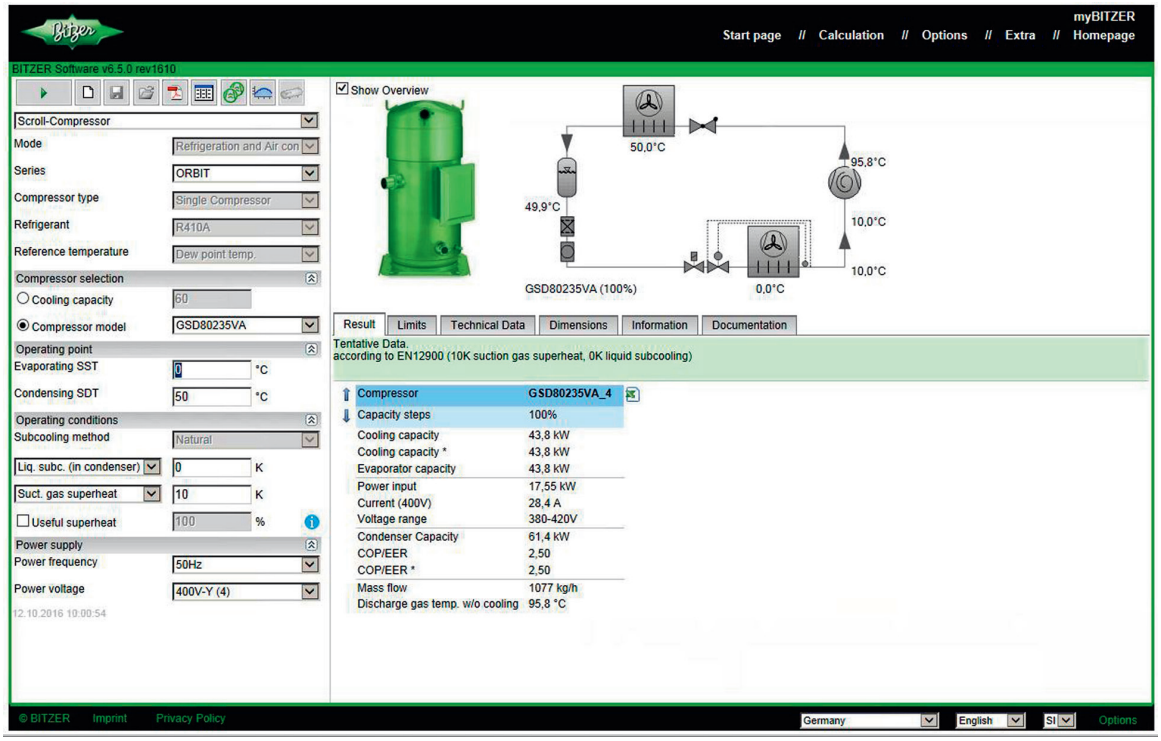
BITZER SOFTWARE

The BITZER SOFTWARE is available in many languages as download for Windows or online version. It is compatible with all browsers and always up to date. The program is ideal for tablets and smartphones.

The BITZER SOFTWARE covers:

- Performance data at freely selectable operating conditions
- All relevant technical data
- Calculation results and individually designed performance tables for compressors
- Seasonal calculation
- Parallel compounds
- Available accessories and their selection
- Compressor drawings
- All relevant technical documents
- More BITZER products

www.bitzer-software.com



Performance data

Performance data are based on the European Standard EN 12900 and 50 Hz operation with 10 K suction gas superheat – running-in period 72 hours.

All data do **not** include liquid subcooling. Based on EN 12900 the rated cooling capacity and efficiency (COP) show therefore lower values in comparison to data based on 5 or 8.3 K subcooling. For further information see Refrigerant Report (A-501).

ORBIT 6
Technical data / Performance data

Compressor type	Displacement 50 Hz m^3/h	Oil charge ① dm^3	Weight kg	R410A Cooling capacity Q_o t_o/t_c 5°C/50°C kW	R410A COP t_o/t_c 5°C/50°C W/W	Electrical data Motor connection ②	Electrical data max. operat. amps (MOA) Amp. ③	Electrical data max. power consumption kW ③	Electrical data Starting current LRA Amp. ④
GSD60120VAB	19,8	2,7	82	26,8	3,28	380..420 V/3/50 Hz 440..480 V/3/60 Hz	21,3	12,3	123
GSD60137VAB	22,2	2,7	82	30,0	3,26		24,1	13,9	138
GSD60154VAB	24,8	2,7	82	34,0	3,30		25,7	15,5	145
GSD60182VAB	29,2	2,7	82	39,8	3,32		30,2	17,9	172
GSD60235VAB	37,6	2,7	83	51,3	3,23		39,9	24,0	211

① Charged with polyvinyl ether BVC32.

② Other voltages and electrical supplies upon request.

③ For the selection of contactors, cables and fuses the max. operating amps 400 V/3/50 Hz.
Conversion factors:
380 V = 0,95x 420 V = 1,05x
See also ③.

GSD60120VAB .. GSD60235VAB:
Oil heater (option)
90 W, 115 V/230 V/460 V/575 V.

Pipe connections:
DL: 22 mm / 7/8 inch
SL: 35 mm / 13/8 inch

Further performance data see BITZER SOFTWARE.

Tentative data

ORBIT 8
Technical data / Performance data

Compressor type ③	Displacement 50 Hz m³/h	Oil charge ① dm³	Weight ② kg	R410A Cooling capacity Q_o t_o/t_c 5°C/50°C kW	R410A COP t_o/t_c 5°C/50°C W/W	Electrical data Motor connection ③	max. operat. amps (MOA) Amp. ④	max. power consumption kW ④	Starting current LRA Amp. ⑤
optimized for air-cooled systems and reversible chillers (EN 12900)									
GSD80182VA(B/R)	29,0	5,5	145	39,0	2,98	380..420 V/3/50 Hz 440..480 V/3/60 Hz	33	20	154
GSD80235VA(B/R)	38,6	5,5	148	52,0	2,98		44	26	210
GSD80295VA(B/R)	48,3	5,5	142	64,9	3,17		53	32	210
GSD80385VA(B/R)	61,8	5,5	144	85,6	3,18		66	39	287
GSD80421VA(B/R)	67,6	5,5	143	91,4	3,16		76	44	267
GSD80485VA(B/R)	77,2	5,5	160	104,4	3,19		81	49	295

Compressor type ③	Displacement 50 Hz m³/h	Oil charge ① dm³	Weight ② kg	R410A Cooling capacity Q_o t_o/t_c 5°C/38°C kW	R410A COP t_o/t_c 5°C/38°C W/W	Electrical data Motor connection ④	max. operat. amps (MOA) Amp. ⑤	max. power consumption kW ⑤	Starting current LRA Amp. ⑥
optimized for systems with low condensing temperature (EN 12900)									
GSD80235VW(B/R)	38,6	5,5	148	63,1	4,96	380..420 V/3/50 Hz 440..480 V/3/60 Hz	38	22	210
GSD80295VW(B/R)	48,3	5,5	142	76,2	4,97		46	28	210
GSD80385VW(B/R)	61,8	5,5	144	97,4	4,95		58	34	230
GSD80421VW(B/R)	67,6	5,5	143	107,6	4,87		67	39	267
GSD80485VW(B/R)	77,2	5,5	160	122,9	4,87		75	44	287

① Charged with polyvinyl ether BVC32.

② Weight without shut-off valves.

③ Other voltages and electrical supplies upon request.

④ For the selection of contactors, cables and fuses the max. operating amps (MOA) and the max. power consumption must be considered ("Electrical data").
Contactors: operational category AC3.

⑤ Data based on mean value
400 V/3/50 Hz.
Conversion factors:
380 V = 0.95x 420 V = 1.05x
See also ④.

GSD80182V..GSD80485V:
Oil heater (option)
140 W, 115 V/230 V/460 V/575 V.

Pipe connections:
Version "B" – direct brazing connections (ODS):
DL: 35 mm / 1 3/8 inch, SL: 41,28 mm / 1 5/8 inch

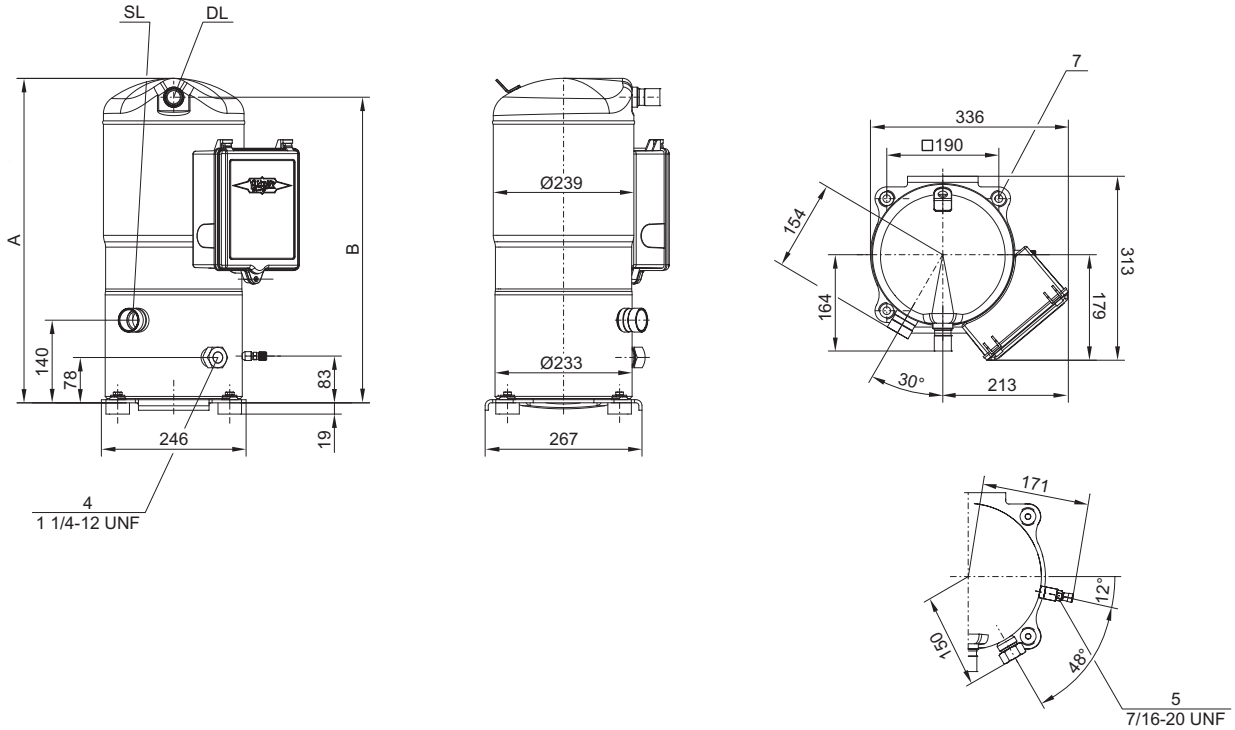
Version "R" – connection thread:
DL: 1 3/4 – 12 UNF, SL: 2 1/4 – 12 UNF

Further performance data see BITZER SOFTWARE.

Tentative data

Dimensional drawings

ORBIT 6



Connection positions

4 Sight glass
5 Oil service connection (Schrader) / Connection for oil equalisation (parallel operation)
7 Mounting position for vibration dampers

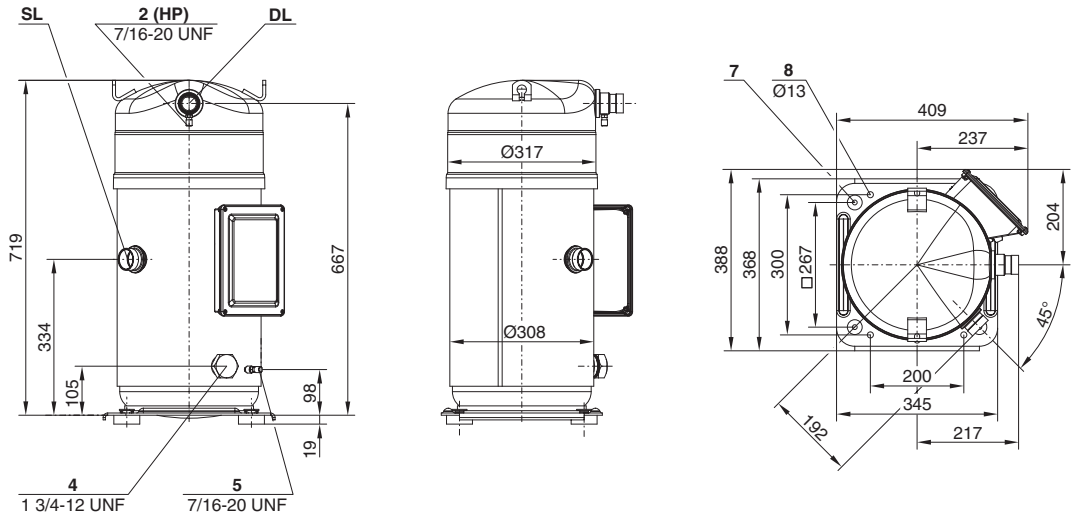
SL Suction gas line
DL Discharge gas line

	A mm	**B** mm
GSD60120VAB .. GSD60182VAB	552	520
GSD60235VAB	558	526

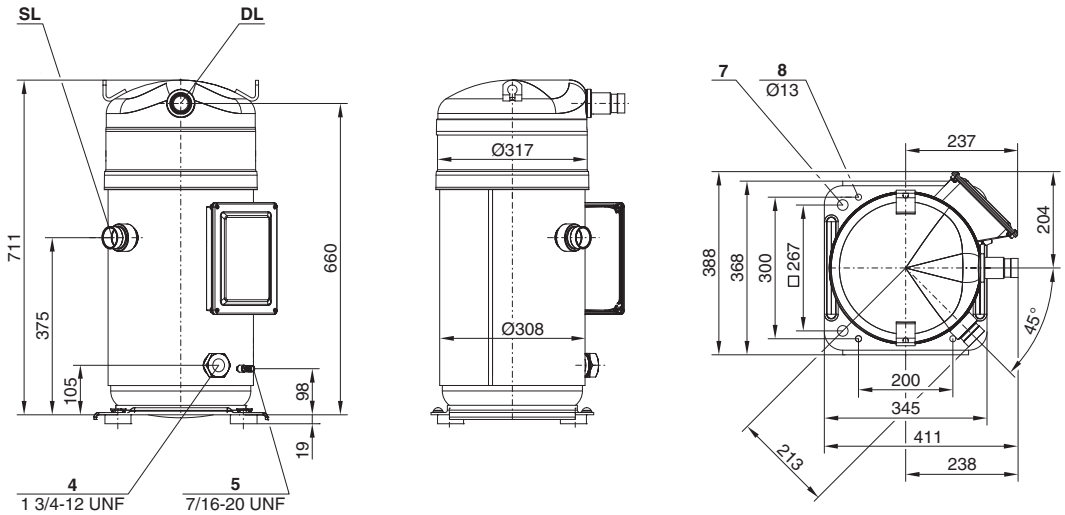
Dimensional drawings

ORBIT 8
with direct brazing connections

GSD80182V(A/W)B & GSD80235V(A/W)B



GSD80295V(A/W)B .. GSD80485V(A/W)B



Connection positions

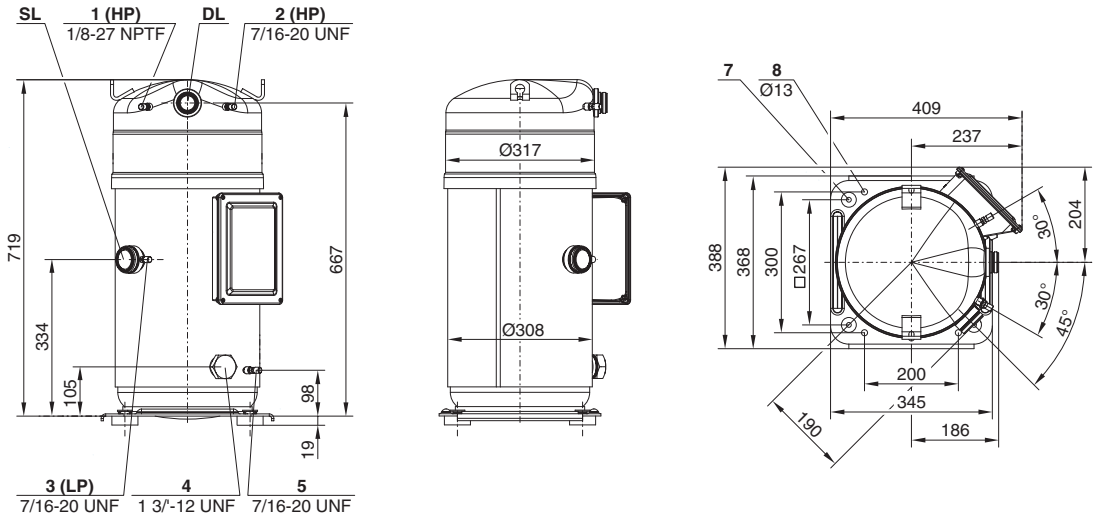
1 –
2 High pressure (HP) or discharge gas temperature sensor (Schrader)
3 –
4 Sight glass
5 Oil fill port (Schrader)
7 Mounting position for vibration dampers
8 Mounting position for Tandem and Trio fixing rails

SL Suction gas line
DL Discharge gas line

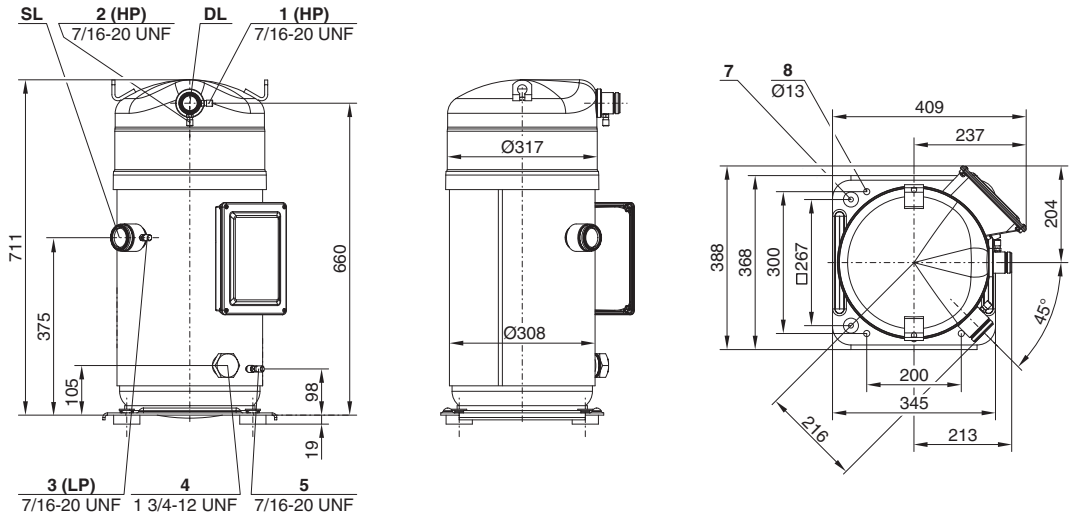
Dimensional drawings

ORBIT 8
with Rotalock connections

GSD80182V(A/W)R & GSD80235V(A/W)R



GSD80295V(A/W)R .. GSD80485V(A/W)R



Connection positions

1 High pressure connection (HP)
2 Discharge gas temperature sensor connection (Schrader)
3 Low pressure connection (LP)
4 Sight glass
5 Oil service connection (Schrader)
7 Mounting position for vibration dampers
8 Mounting position for Tandem and Trio fixing rails

SL Suction gas line
DL Discharge gas line

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