



THE HEART OF FRESHNESS

HERMETIC

SCROLL COMPRESSORS

ORBIT+ // ORBIT FIT



Higher Efficiency

50 Hz // 60 Hz // ESP-134-1

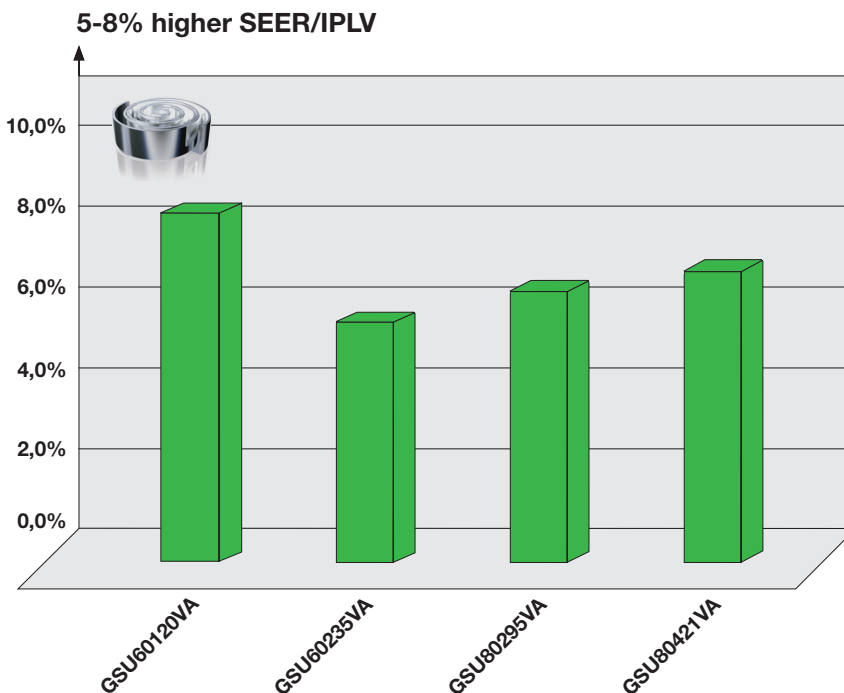
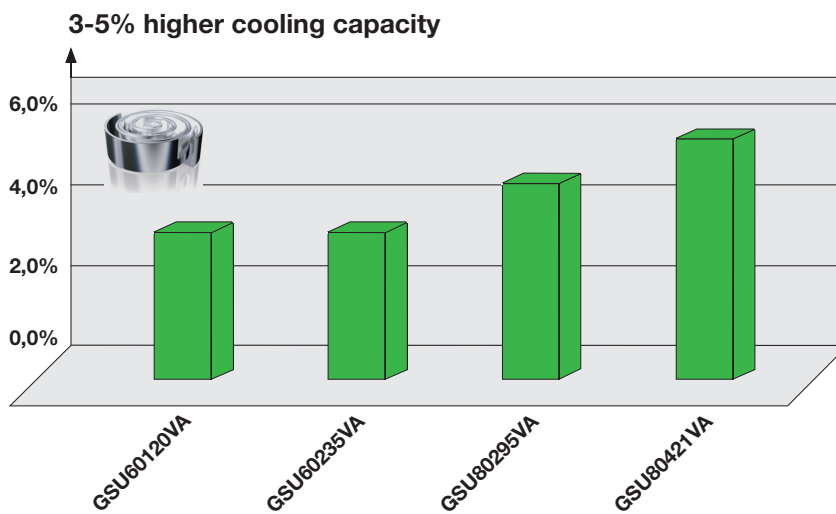
New series with LSPM motor – ORBIT+

BITZER has developed the new ORBIT+ series featuring the line start permanent magnet motor technology (LSPM) in order to address the new needs of the scroll chiller market in terms of efficiency. From January 2018 (Tier 1) and 2021 (Tier 2) on, air conditioning chillers must meet the requirements of the EU Ecodesign Regulation 2016/2281. For placing a product on the market, the Minimum Energy Performance Standards (MEPS) must be complied with and declared by the manufacturer. In its new ORBIT+ series BITZER has already implemented the necessary measures at an early stage in order to comply with or even exceed these efficiency criteria.

The LSPM motor takes the compressor efficiency to a new level and increases the seasonal performance. The technology combines the efficiency of a permanent magnet motor with the

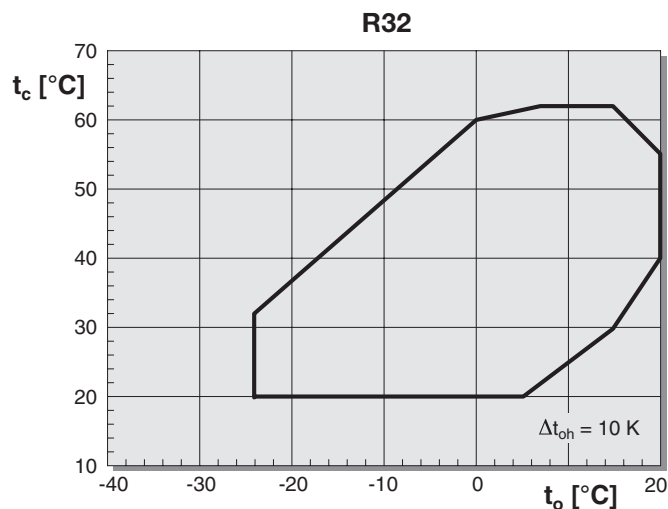
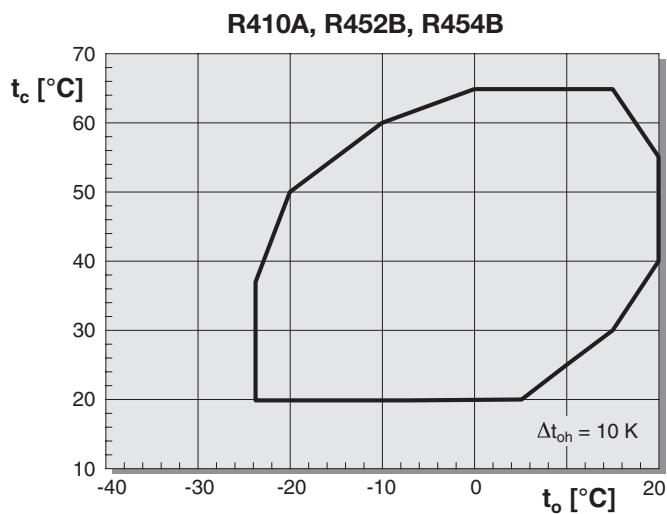
robustness and easy use of an asynchronous motor. The rotor of a LSPM motor synchronizes with the operating frequency and rotor induction losses become zero. Increased efficiency over the complete working range of the motor is achieved. The LSPM motor can either be connected directly to the power supply system or be operated with a frequency inverter.

Due to this intelligent improvement, the new ORBIT+ series helps to fulfil the EU Ecodesign requirements without making changes to the chiller platform necessary. Whereas the cooling capacity is increased by 3-5% in air- and water-cooled systems, the seasonal performance (SEER/IPLV) is increased even by 5-8%. A high seasonal performance reduces the TEWI (Total Equivalent Warming Impact) and operating costs and thus minimizes the A/C industry's contribution to global warming.



SEER: Seasonal Energy Efficiency Ratio according to EN 14825
 IPLV: Integrated Part Load Value according to AHRI550/590

Application limits for ORBIT+



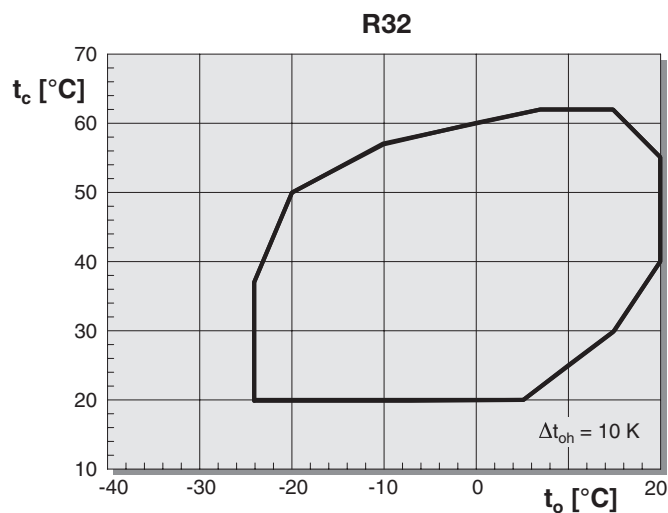
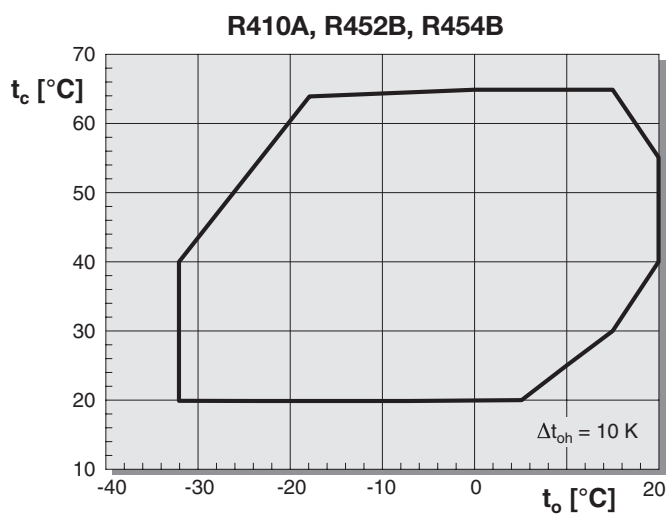
t_o Evaporating temperature [°C]
 t_c Condensing temperature [°C]
 Δt_{oh} Suction gas superheat [K]

New series for economiser operation – ORBIT FIT

BITZER's new Flexible Injection Technology (FIT) enables economised operation in a whole new class of scroll HVAC systems with both today's and tomorrow's refrigerants. System designers can realize up to 15% additional cooling capacity, and around 5% increase in full load efficiency in cooling only systems. And, in reversible and heat pump applications, the benefits can more than double.

BITZER's ORBIT FIT maintains current mounting and connecting locations, allowing designers the option of utilizing BITZER Advanced Header Technology (BAHT) and even variable speed drives to create systems targeted to their budget, value and life-cycle customers, and with reduced manufacturing complexity.

Extended application limits for ORBIT FIT



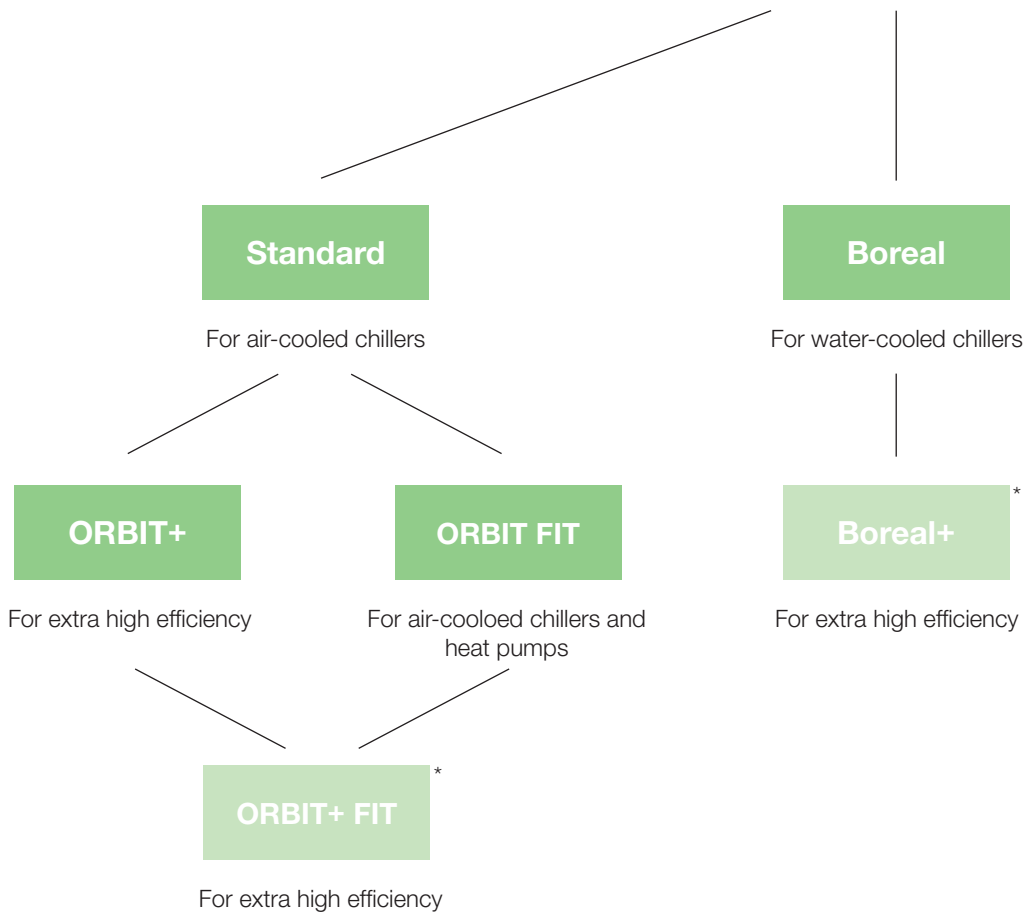
t_o Evaporating temperature [°C]
 t_c Condensing temperature [°C]
 Δt_{oh} Suction gas superheat [K]

Tentative data

Product overview

The ORBIT 6 + 8 platform

- ❑ Optimised for refrigerants R410A, R452B, R454B, R32
- ❑ Suitable for a wide speed range of 35-75 Hz
- ❑ Available in several tandem and trio configurations



* available soon

Explanation of model designation

Example

G	S	D	8	0295	V	A	B	4	3
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Model
G: Scroll

Series
6: 6 Series
8: 8 Series

Oil charge
N: None
V: PVE
Y: POE

Connection
B: Direct brazing connection
R: Rotalock connections

Motor protection
Customized

Refrigerant/Motor
D: HFC – R410A
U: ORBIT+ (LSPM)

Application optimisation
A: for air-cooled systems
W: for water-cooled systems

Configuration
S: Standard
E: Economiser

Cooling capacity in kBTu/h according to ARI 540
0120 (10t)
0137 (12t)
0154 (13t)
0182 (15t)
0235 (20t)
0295 (25t)
0385 (32t)
0421 (35t)
0485 (40t)

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



Performance data - 50 Hz

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. For Economiser operation no subcooling at the Economiser inlet and 5 K temperature difference at the heat exchanger. 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.

ORBIT 6

Technical data/Performance data - 50 Hz

ORBIT+

Compressor type	Displacement 50 Hz m ³ /h	Oil charge ① dm ³	Weight kg	Cooling capacity Q _o t _o /t _c 5°C/50°C kW			COP t _o /t _c 5°C/50°C W/W			Motor connection ②	Electrical data ③		
				R410A	R454B ④	R32 ④	R410A	R454B ④	R32 ④		max. operat. amps (MOA) Amp.	max. power consumption kW	Starting current LRA Amp.
GSU60120VAB	19,8	2,7	82,7	27,45	26,75	30,20	3,45	3,62	3,51	380..420 V/3/50 Hz 440..480 V/3/60 Hz	18,3	11,8	123
GSU60137VAB	22,2	2,7	82,7	30,85	30,00	33,90	3,50	3,66	3,48		20,5	13,1	138
GSU60154VAB	24,8	2,7	82,7	34,60	33,70	38,15	3,48	3,65	3,54		22,7	14,6	145
GSU60182VAB	29,2	2,7	82,7	40,80	39,55	45,20	3,44	3,58	3,57		27,4	16,7	172
GSU60235VAB	37,6	2,7	83,7	53,10	51,60	58,70	3,34	3,49	3,45		40,1	23,3	211

ORBIT FIT

Compressor type	Displacement 50 Hz m ³ /h	Oil charge ① dm ³	Weight kg	Cooling capacity Q _o t _o /t _c 5°C/50°C kW			COP t _o /t _c 5°C/50°C W/W			Motor connection ②	Electrical data ③		
				R410A	R454B ④	R32 ④	R410A	R454B ④	R32 ④		max. operat. amps (MOA) Amp.	max. power consumption kW	Starting current LRA Amp.
GED60120VAB	19,8	2,7	82	33,10	31,45	35,45	3,74	3,87	3,73	380..420 V/3/50 Hz 440..480 V/3/60 Hz	21,4	12,9	138
GED60137VAB	22,2	2,7	82	36,75	35,05	39,55	3,72	3,95	3,73		23,7	14,3	172
GED60154VAB	24,8	2,7	82	41,20	39,10	44,25	3,76	3,89	3,75		26,4	15,9	211
GED60182VAB	29,2	2,7	82	47,65	45,35	51,90	3,76	3,80	3,76		30,9	18,3	211
GED60235VAB	37,6	2,7	83	60,20	57,90	66,10	3,63	3,65	3,60		41,6	24,9	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 (MOA) and the max. power consumption must be considered ("Electrical data").
Contactors: operational category AC3.

④ Low GWP refrigerants belonging to the safety group A2L, according to ISO 817.
Follow all applicable national and local regulations. See BITZER Refrigerant Report A-501 for more information.

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

Pipe connections:
DL: 22 mm/7/8 inch
SL: 35 mm/1 3/8 inch

Further performance data see BITZER SOFTWARE.

Tentative data

ORBIT 8

Technical data/Performance data - 50 Hz

ORBIT+

Compressor type ③	Displacement 50 Hz m ³ /h	Oil charge ① dm ³	Weight kg	Cooling capacity Q _o t _o /t _c 5°C/50°C kW			COP t _o /t _c 5°C/50°C W/W			Motor connection ②	Electrical data ③		Starting current LRA Amp.
				R410A	R454B④	R32④	R410A	R454B④	R32④		max. operat. amps (MOA) Amp.	max. power consumption kW	

optimized for air-cooled systems and reversible chillers (EN 12900)

GSU80295VA(B/R)	48,3	5,5	143,5	67,00	64,90	73,70	3,33	3,48	3,47	380...420 V/3/50 Hz 440...480 V/3/60 Hz	45,3	29,0	210
GSU80385VA(B/R)	61,8	5,5	145,5	87,90	86,20	96,80	3,34	3,53	3,45		64,3	37,3	326
GSU80421VA(B/R)	67,6	5,5	144,5	94,90	92,00	105,00	3,34	3,48	3,48		69,7	40,6	326
GSU80485VA(B/R)	77,2	5,5	161,5	107,00	104,00	118,00	3,34	3,49	3,39		72,4	46,4	295

ORBIT FIT

Compressor type ③	Displacement 50 Hz m ³ /h	Oil charge ① dm ³	Weight kg	Cooling capacity Q _o t _o /t _c 5°C/50°C kW			COP t _o /t _c 5°C/50°C W/W			Motor connection ②	Electrical data ③		Starting current LRA Amp.
				R410A	R454B④	R32④	R410A	R454B④	R32④		max. operat. amps (MOA) Amp.	max. power consumption kW	

optimized for air-cooled systems and reversible chillers (EN 12900)

GED80295VA(B/R)	48,3	5,5	142,7	78,8	74,2	84,0	3,59	3,64	3,59	380...420 V/3/50 Hz 440...480 V/3/60 Hz	53,7	32,2	326
GED80385VA(B/R)	61,8	5,5	144,7	103,1	97,9	110,5	3,59	3,69	3,61		70,6	41,3	326
GED80421VA(B/R)	67,6	5,5	145,7	109,7	104,3	118,9	3,57	3,64	3,60		77,2	44,7	295
GED80485VA(B/R)	77,2	5,5	160,7	125,8	119,0	134,6	3,60	3,72	3,57		87,5	50,8	295

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 (MOA) and the max. power consumption must be considered ("Electrical data").
Contactors: operational category AC3.

④ Low GWP refrigerants belonging to the safety group A2L, according to ISO 817.
Follow all applicable national and local regulations. See BITZER Refrigerant Report A-501 for more information.

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

Pipe connections:
Version "B" – direct brazing connections (ODS):
DL: 35 mm/1³/₈ inch, SL: 41,28 mm/1⁵/₈ inch

Version "R" – connection thread:
DL: 1³/₄ – 12 UNF, SL: 2¹/₄ – 12 UNF

Further performance data see BITZER SOFTWARE.

Tentative data



Performance data - 60 Hz

Performance data are based on the latest edition of AHRI540 and 60 Hz operation with 20°F suction gas superheat and 15°F subcooling – running-in period 72 hours.

Saturated suction and discharge temperatures correspond to "dew point" conditions (saturated vapor).

For Economiser operation data based on 18 °F temperature difference at the heat exchanger and 15 °F subcooling in the condenser.

ORBIT 6

Technical data/Performance data - 60 Hz

ORBIT+

Compressor type	Displacement 60 Hz CFH	Oil charge ① fl.oz	Weight lbs	Cooling capacity Q _o SST/SDT 45°F/130°F kBtu/h			EER SST/SDT 45°F/130°F Btu/W			Motor connection ②	Electrical data ③		
				R410A	R454B ④	R32 ④	R410A	R454B ④	R32 ④		max. operat. amps (MOA) Amp.	max. power consumption kW	Starting current LRA Amp.
				GSU60120VAB	14.1	91	182.5	127.30	121.90		138.40	11.91	12.27
GSU60137VAB	15.8	91	182.5	141.90	136.10	154.30	12.02	12.36	12.08	20.9	15.4	137	
GSU60154VAB	17.6	91	182.5	159.10	152.40	173.50	11.94	12.31	12.34	23.1	17.0	145	
GSU60182VAB	20.8	91	182.5	189.50	181.10	207.80	11.94	12.22	12.63	27.5	19.9	180	
GSU60235VAB	26.7	91	184.5	244.50	234.40	266.60	11.65	11.97	12.15	39.4	27.2	211	

ORBIT FIT

Compressor type	Displacement 60 Hz CFH	Oil charge ① fl.oz	Weight lbs	Cooling capacity Q _o SST/SDT 45°F/130°F kBtu/h			EER SST/SDT 45°F/130°F Btu/W			Motor connection ②	Electrical data ③		
				R410A	R454B ④	R32 ④	R410A	R454B ④	R32 ④		max. operat. amps (MOA) Amp.	max. power consumption kW	Starting current LRA Amp.
				GED60120VAB	14.1	91	181	139.5	132.6		150.7	12.20	12.71
GED60137VAB	15.8	91	181	155.2	147.5	167.4	12.12	12.81	12.46	23.5	16.5	180	
GED60154VAB	17.6	91	181	175.0	164.0	187.1	12.27	12.54	12.52	26.1	18.3	211	
GED60182VAB	20.8	91	181	205.2	192.7	221.5	12.24	12.26	12.54	31.4	21.4	211	
GED60235VAB	26.7	91	183	257.9	246.4	282.8	11.93	11.90	12.08	41.4	28.8	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 (MOA) and the max. power consumption must be considered ("Electrical data").
Contactors: operational category AC3.

④ Low GWP refrigerants belonging to the safety group A2L, according to ISO 817. Follow all applicable national and local regulations. See BITZER Refrigerant Report A-501 for more information.

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

Pipe connections:
DL: 7/8 inch
SL: 1 3/8 inch

Further performance data see BITZER SOFTWARE.

Tentative data

ORBIT 8
Technical data/Performance data - 60 Hz
ORBIT+

Compressor type ③	Displacement 60 Hz CFH	Oil charge ① fl.oz	Weight lbs	Cooling capacity Q_o SST/SDT 45°F/130°F kBtu/h			EER SST/SDT 45°F/130°F Btu/W			Motor connection ②	Electrical data ③		Starting current LRA Amp.
				R410A	R454B④	R32④	R410A	R454B④	R32④		max. operat. amps (MOA) Amp.	max. power consumption kW	

optimized for air-cooled systems and reversible chillers (AHRI)

GSD80295VA(B/R)	34	194	316.3	311.10	297.40	341.30	11.46	11.79	12.20	380..420 V/3/50 Hz 440..480 V/3/60 Hz	47.4	34.8	212
GSD80385VA(B/R)	44	194	320.3	401.70	388.80	438.70	11.45	11.84	12.15		64.4	44.5	316
GSD80421VA(B/R)	48	194	319.3	434.70	414.80	473.50	11.47	11.81	12.09		70.1	48.4	316
GSD80485VA(B/R)	55	194	355.3	496.10	474.20	536.40	11.46	11.80	11.72		75.6	55.6	298

ORBIT FIT

Compressor type ③	Displacement 60 Hz CFH	Oil charge ① fl.oz	Weight lbs	Cooling capacity Q_o SST/SDT 45°F/130°F kBtu/h			EER SST/SDT 45°F/130°F Btu/W			Motor connection ②	Electrical data ③		Starting current LRA Amp.
				R410A	R454B④	R32④	R410A	R454B④	R32④		max. operat. amps (MOA) Amp.	max. power consumption kW	

optimized for air-cooled systems and reversible chillers (AHRI)

GED80295VA(B/R)	34	194	314.5	336.5	312.2	357.9	11.73	11.70	11.95	380..420 V/3/50 Hz 440..480 V/3/60 Hz	54.1	37.6	316
GED80385VA(B/R)	44	194	318.5	435.9	410.8	464.3	11.70	11.83	12.02		70.4	48.1	316
GED80421VA(B/R)	48	194	322.5	467.0	436.2	498.1	11.63	11.71	11.85		78.1	52.4	298
GED80485VA(B/R)	55	194	353.5	532.3	500.1	566.1	11.65	12.03	11.85		89.4	59.9	298

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 (MOA) and the max. power consumption must be considered ("Electrical data").
 Contactors: operational category AC3.

④ Low GWP refrigerants belonging to the safety group A2L, according to ISO 817.
 Follow all applicable national and local regulations. See BITZER Refrigerant Report A-501 for more information.

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

Pipe connections:
 Version "B" – direct brazing connections (ODS):
 DL: 13/8 inch, SL: 15/8 inch

Version "R" – connection thread:
 DL: 13/4 – 12 UNF, SL: 21/4 – 12 UNF

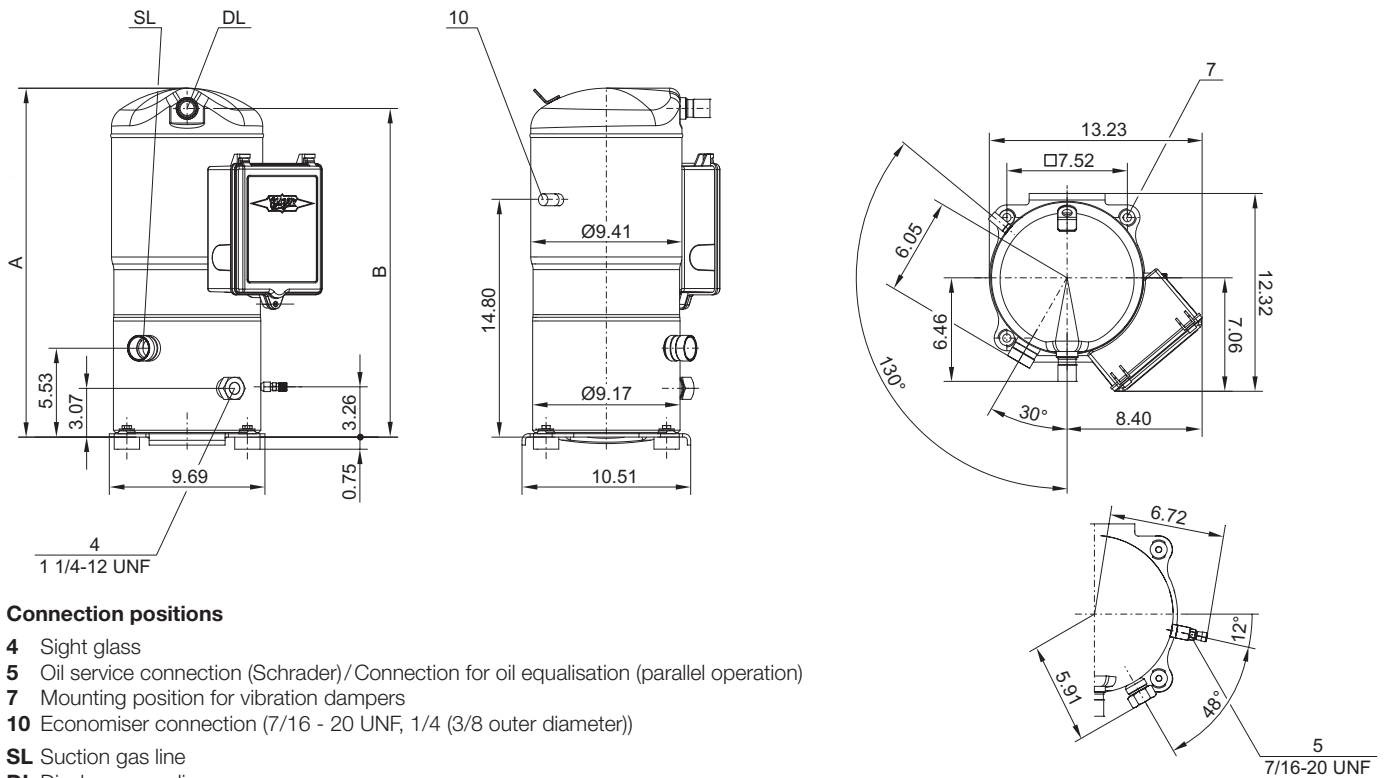
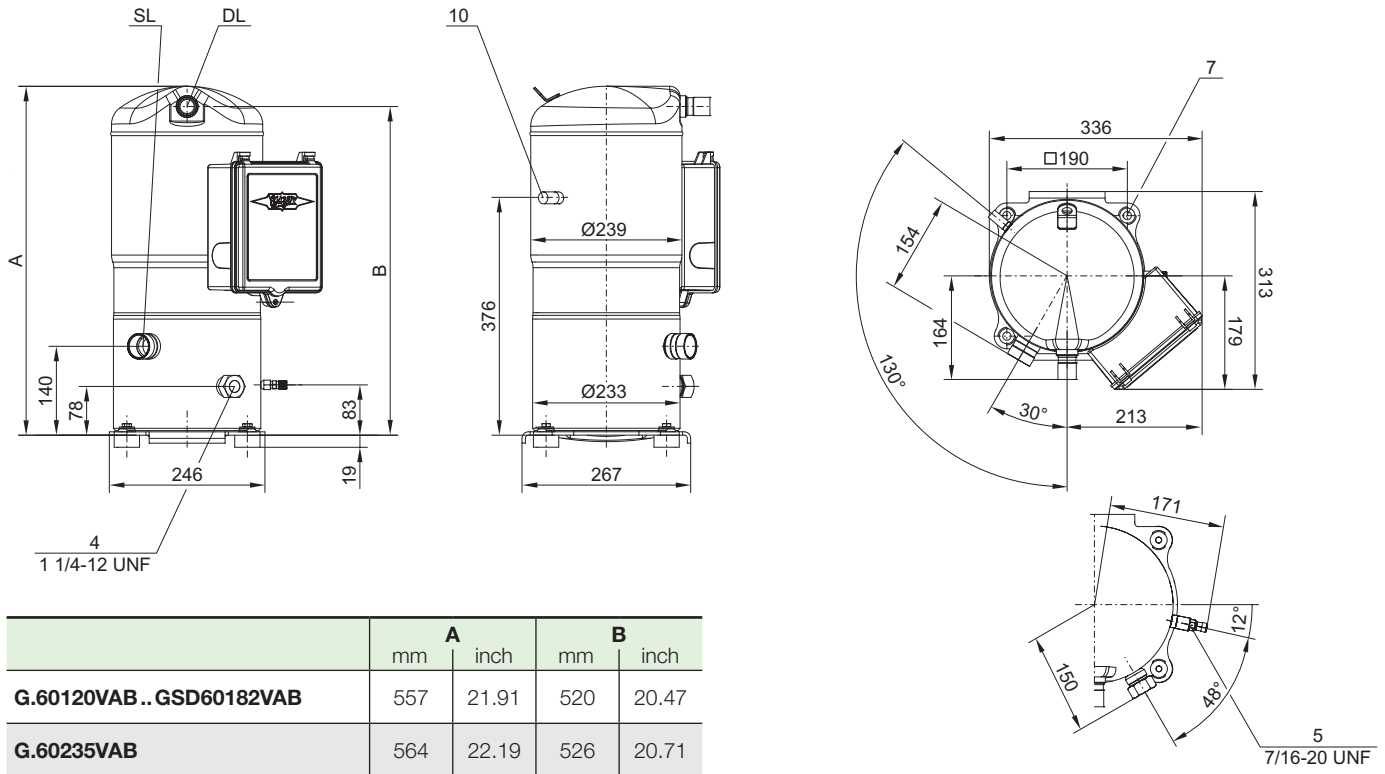
Further performance data see BITZER SOFTWARE.

Tentative data

Dimensional drawings

ORBIT 6 with economiser connection

GE.60120 .. GE.60235



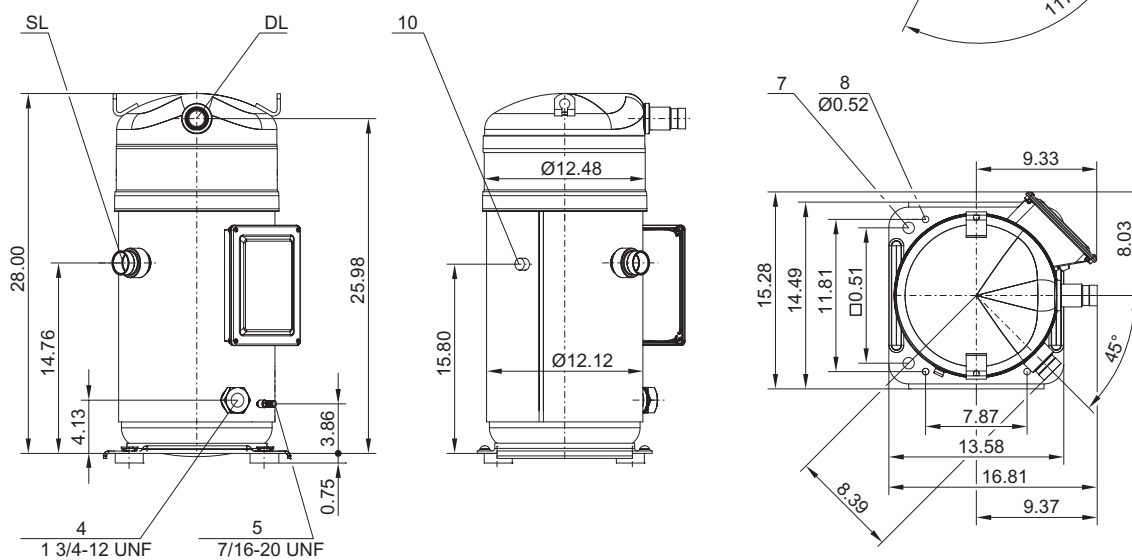
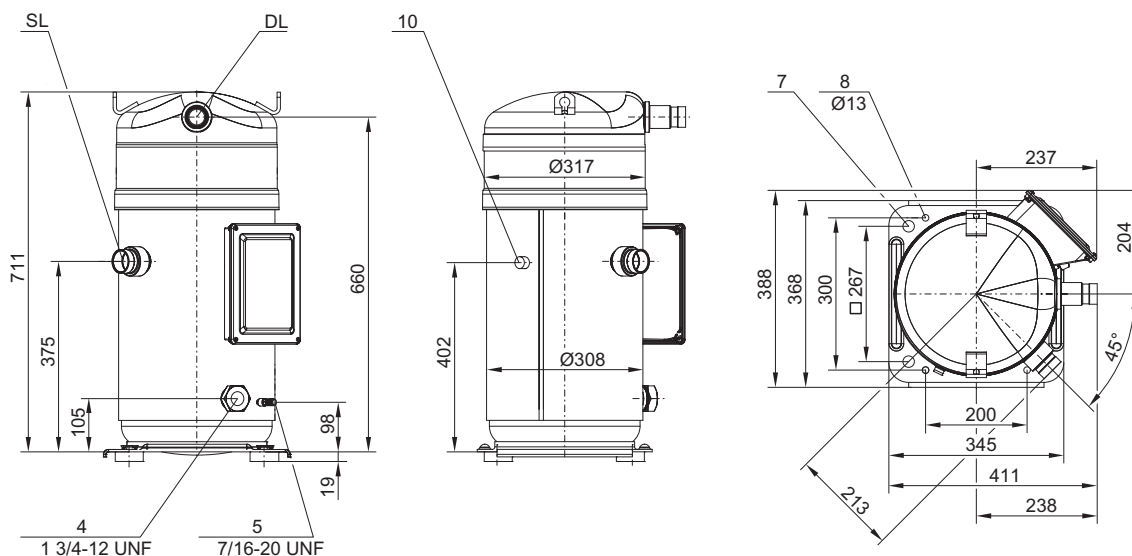
For dimensional drawings of standard versions see brochures ESP-130 and ESP-135.

Tentative data

Dimensional drawings

ORBIT 8 with economiser connection

GE.80295 .. GE.80485



Connection positions

- 4 Sight glass
- 5 Oil fill port (Schrader)
- 7 Mounting position for vibration dampers
- 8 Mounting position for Tandem and Trio fixing rails
- 10 Economiser connection (9/16 - 18 UNF, 3/8 (1/2 outer diameter))

SL Suction gas line
DL Discharge gas line

For dimensional drawings of standard versions see brochures ESP-130 and ESP-135.

Tentative data



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Subject to change // 80172701 // 02.2018