



THE HEART OF FRESHNESS

R410A // HERMETIC

SCROLL COMPRESSORS

ORBIT SERIES



60 Hz // ESP-135-6

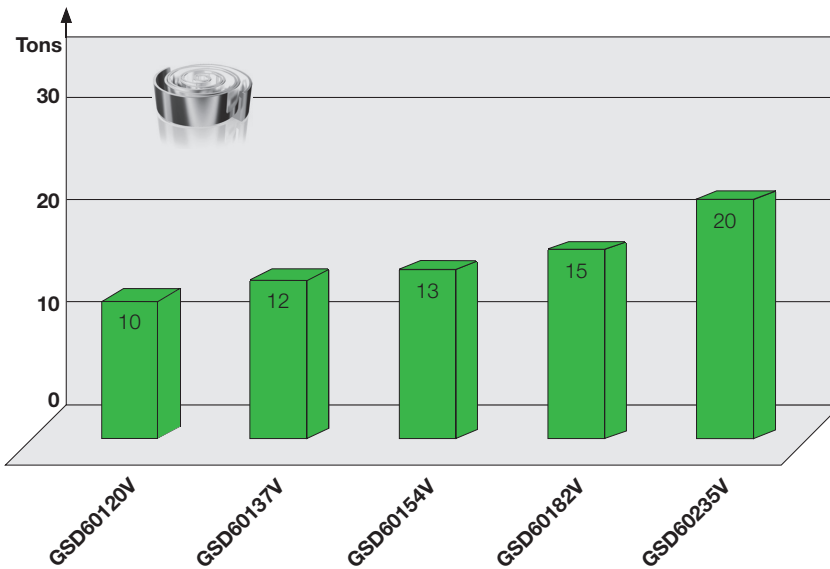


The ORBIT Series

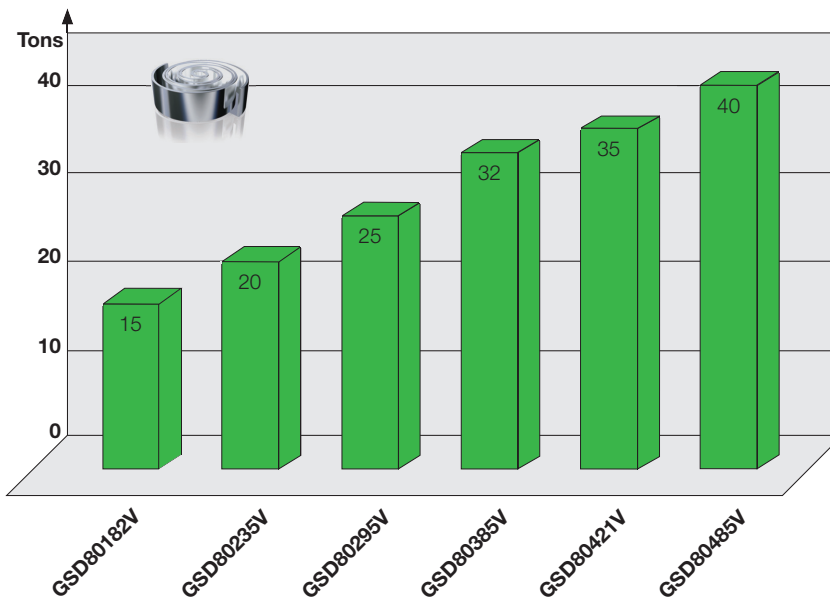
The scroll compressors of the ORBIT series for R410A have been developed especially for both air conditioning and reversible heat pumps. They are characterized by high efficiency, smooth running and reliability. With respect to the typical seasonal operating mode of A/C applications – primarily in part 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 ARI 540 conditions

Energy efficiency and part load behaviour

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

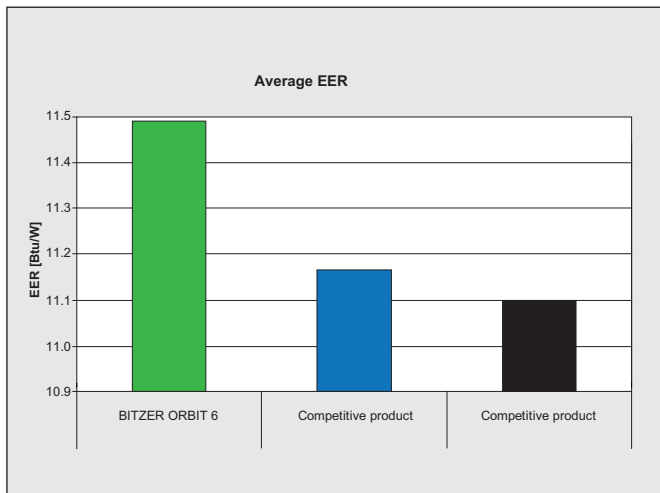
“BITZER ORBIT 8” standard series – optimized for operation at medium to high condensing temperatures, e. g. for systems with air-cooled condenser and for heat pumps.

“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.

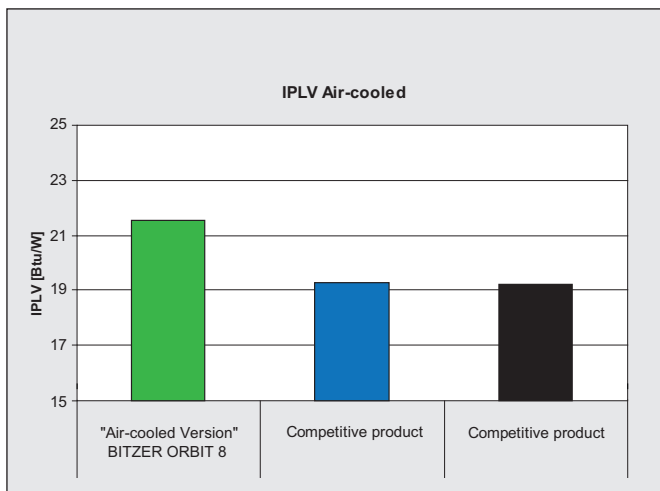
“BITZER ORBIT 6” series – optimized for smaller capacity systems at medium to high condensing temperatures. Ideal for unitary heat pumps and air conditioning, or as part of an uneven tandem with larger ORBIT 8 compressors in chillers and/or reversible systems.

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



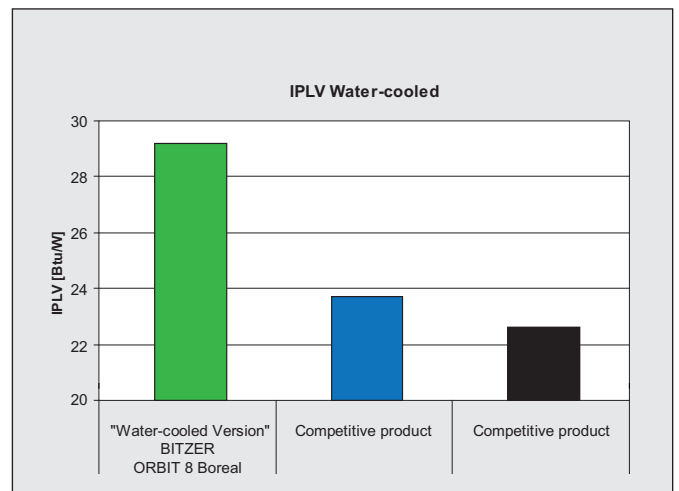
According to ARI 540

ORBIT 8: Up to 5% better IPLV



IPLV: Integrated Part Load Value according to ARI 550/590

ORBIT 8 Boreal: Up to 15% better IPLV



IPLV: Integrated Part Load Value according to ARI 550/590

Calculation based on multi compressor compound



The unique technical features

- ❑ Large standard application diagram
Ideally suited to both air conditioning and heat-pumps
- ❑ 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
- ❑ Even temperature distribution across scroll wraps achieved by patented design
- ❑ 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**

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, holding gas charge.

Accessories (optional)

Band type crankcase heater, discharge gas temperature sensor, anti-vibration mountings with sleeves, Rotalock adaptors, Rotalock shut-off valves, Rotalock pipe adaptors, BITZER Advanced Header Technology piping packages.

Maximum Applied Pressure Limits

ORBIT 6:

Low pressure side: 480 psig
High pressure side: 650 psig

ORBIT 8:

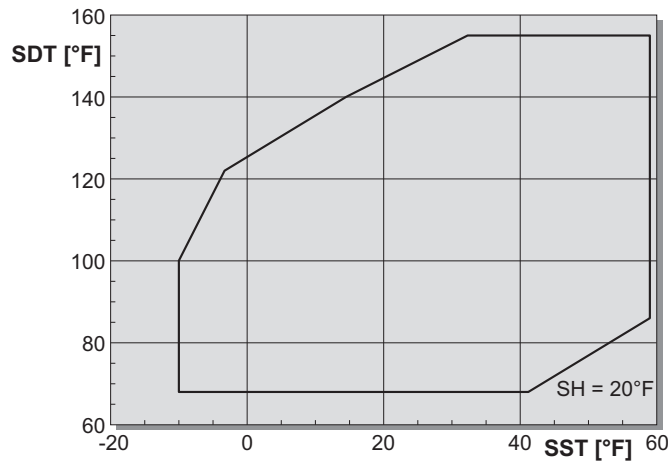
Low pressure side: 450 psig
High pressure side: 650 psig

* when used with BITZER Advanced Header Technology

** varies by size, contact BITZER for application guidance

Application limits

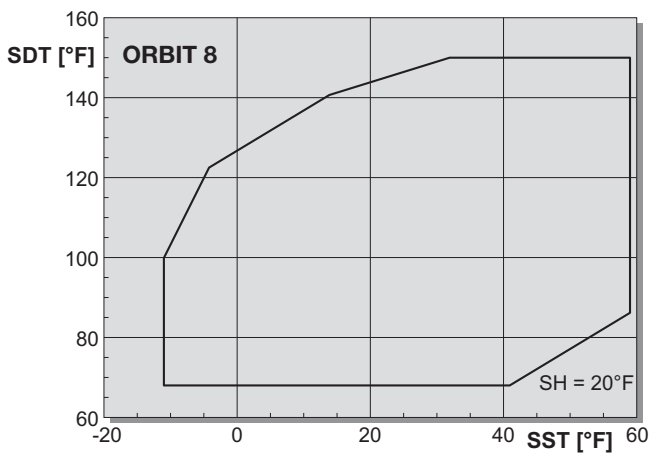
ORBIT 6: GSD60120..GSD60182



ORBIT 6: GSD60235

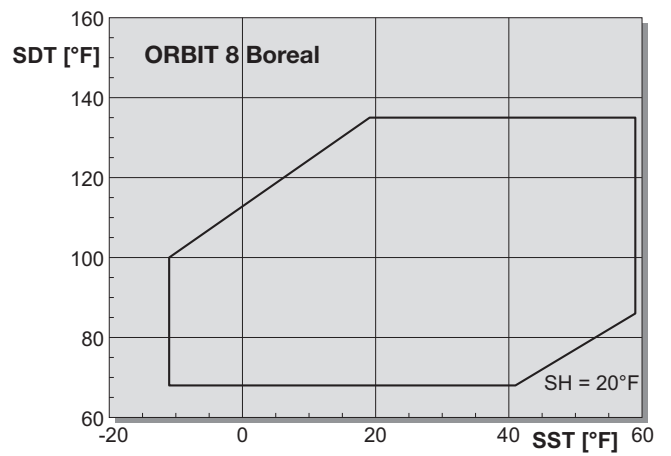
ORBIT 8

for air-cooled systems and reversible chillers



ORBIT 8

Boreal for systems with low condensing temperature



SST Saturated suction temp. (°F)
 SH Suction superheat (°F)
 SDT Saturated discharge temp. (°F)



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

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 and reversible chillers

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 = 208/230 V/3/60 Hz, 200 V/3/50 Hz

3 = 380 V/3/60 Hz

4 = 460 V/3/60 Hz, 400 V/3/50 Hz

5 = 575 V/3/60 Hz, 500 V/3/50 Hz

6 = 380 V/3/50 Hz

Performance data

Performance data are based on the latest edition of ARI 540 and 60 Hz operation – running-in period 72 hours.

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

ORBIT 6

Performance data 60 Hz

based on 20°F suction superheat and 15°F subcooling.

Compressor type	SDT °F	↓	Cooling capacity Q_o [Btu/h]										Power consumption P_e [kW]	
			Saturated suction temperature °F											
			55	50	45	40	35	30	25	20	15	10	5	0
GSD60120VAB	80	Q	185500	168800	153300	138900	125600	113200	101800	91200	81500	72500	64300	
		P	6.38	6.34	6.31	6.29	6.27	6.24	6.21	6.18	6.14	6.08	6.01	
	100	Q	182800	166600	151600	137700	124700	112700	101600	91300	81700	72900	64800	57400
		P	8.01	7.90	7.81	7.74	7.69	7.64	7.61	7.58	7.55	7.52	7.49	7.45
	115	Q	166600	151800	138100	125300	113500	102500	92300	82800	74100	66000	58500	51600
		P	9.44	9.30	9.19	9.10	9.04	8.99	8.95	8.93	8.92	8.91	8.91	8.91
130	Q	149700	136400	124000	112500	101800	91800	82600	74000	66100	58700			
	P	11.14	10.98	10.85	10.76	10.68	10.64	10.62	10.61	10.62	10.65			
150	Q	124800	113600	103200	93500	84500	76100							
	P	13.88	13.71	13.57	13.48	13.42	13.39							
GSD60137VAB	80	Q	205300	187500	170900	155500	141200	127900	115600	104200	93600	83900	74900	
		P	7.47	7.30	7.16	7.05	6.95	6.88	6.81	6.75	6.70	6.65	6.59	
	100	Q	201000	183800	167700	152700	138800	125900	114000	102900	92600	83100	74300	66200
		P	9.05	8.90	8.78	8.69	8.61	8.55	8.50	8.46	8.42	8.38	8.33	8.28
	115	Q	183900	167900	153100	139300	126500	114600	103600	93400	83900	75200	67100	59700
		P	10.47	10.36	10.27	10.20	10.15	10.10	10.07	10.04	10.01	9.97	9.93	9.87
130	Q	166200	151600	138000	125400	113600	102800	92700	83300	74700	66700			
	P	12.27	12.18	12.12	12.07	12.04	12.01	11.98	11.96	11.93	11.90			
150	Q	140100	127400	115600	104700	94500	85100							
	P	15.31	15.25	15.22	15.19	15.17	15.15							
GSD60154VAB	80	Q	231100	211000	192200	174800	158700	143700	129800	116900	105100	94100	84000	
		P	8.39	8.19	8.02	7.88	7.77	7.68	7.61	7.55	7.49	7.44	7.38	
	100	Q	227300	207700	189400	172400	156600	142000	128400	115800	104200	93500	83600	74400
		P	10.15	9.97	9.82	9.71	9.62	9.55	9.50	9.45	9.41	9.37	9.32	9.26
	115	Q	208300	190100	173200	157500	143000	129400	116900	105300	94600	84700	75500	67100
		P	11.73	11.59	11.48	11.40	11.33	11.29	11.25	11.22	11.19	11.15	11.10	11.03
130	Q	188700	172000	156600	142200	128900	116500	105000	94400	84600	75500			
	P	13.72	13.62	13.54	13.48	13.44	13.41	13.39	13.36	13.33	13.29			
150	Q	160200	145800	132300	119900	108300	97500							
	P	17.11	17.04	16.99	16.96	16.94	16.92							
GSD60182VAB	80	Q	271200	247800	226100	205900	187000	169600	153300	138200	124200	111200	99200	
		P	9.71	9.54	9.40	9.28	9.17	9.07	8.98	8.89	8.81	8.72	8.64	
	100	Q	268800	245800	224400	204500	185900	168600	152600	137600	123700	110700	98600	87400
		P	11.82	11.68	11.55	11.44	11.35	11.27	11.19	11.13	11.06	10.99	10.92	10.84
	115	Q	246700	225400	205500	187000	169700	153600	138600	124500	111400	99100	87600	76800
		P	13.77	13.65	13.55	13.47	13.39	13.33	13.27	13.21	13.16	13.10	13.03	12.95
130	Q	223000	203500	185200	168200	152200	137300	123300	110100	97700	85900			
	P	16.18	16.09	16.01	15.94	15.89	15.84	15.79	15.74	15.69	15.63			
150	Q	188500	171700	155900	141200	127300	114200							
	P	20.15	20.09	20.03	19.99	19.95	19.91							
GSD60235VAB	80	Q	348100	318000	290100	264100	240000	217600	196800	177500	159600	143000	127700	
		P	13.39	12.88	12.48	12.19	11.98	11.84	11.75	11.69	11.64	11.58	11.49	
	100	Q	341900	312500	285200	259800	236200	214200	193900	175000	157600	141500	126600	112800
		P	16.09	15.62	15.26	15.01	14.84	14.73	14.67	14.63	14.61	14.57	14.51	14.40
	115	Q	313100	285900	260600	237100	215300	195100	176400	159000	143000	128200	114600	102000
		P	18.33	17.97	17.71	17.54	17.43	17.37	17.35	17.33	17.31	17.26	17.17	17.01
130	Q	283700	258800	235600	214100	194200	175800	158700	142900	128400	115000			
	P	21.25	20.98	20.80	20.69	20.63	20.60	20.59	20.57	20.53	20.45			
150	Q	241100	219500	199500	181000	163800	147900							
	P	26.34	26.16	26.04	25.98	25.95	25.93							

Tentative data

Part load performance data and performance data for individual input data and 50 Hz operation see BITZER Software.



ORBIT 8 ①

Performance data 60 Hz

based on 20°F suction superheat and 15°F subcooling.

Compressor type	SDT °F		Cooling capacity		Q_o [Btu/h]		Power consumption		P_e [kW]	
			Saturated suction temperature °F							
			55	45	35	25	20	15	10	0
R410A										
optimized for air-cooled systems and reversible chillers										
GSD80182VA	100	Q	275300	229000	189000	154600	139200	125100	112000	88800
		P	11,72	11,88	12,00	12,11	12,16	12,22	12,28	12,42
	115	Q	249900	207200	170400	138700	124700	111700	99700	
		P	14,47	14,60	14,72	14,85	14,92	15,00	15,09	
	130	Q	221900	183300	150000	121500	108900			
		P	17,82	17,96	18,11	18,28	18,38			
GSD80235VA	100	Q	367500	305600	252100	206100	185600	166700	149300	118400
		P	15,63	15,83	16,00	16,14	16,21	16,29	16,37	16,56
	115	Q	333600	276500	227300	185000	166200	148900	132900	
		P	19,29	19,47	19,63	19,80	19,89	20,00	20,12	
	130	Q	296200	244600	200200	162100	145200			
		P	23,76	23,94	24,14	24,37	24,51			
GSD80295VA	100	Q	435400	363000	300400	246300	222100	199700	179000	142100
		P	19,25	19,11	19,04	19,02	19,02	19,02	19,03	19,04
	115	Q	397200	330300	272400	222400	200200	179500	160500	
		P	23,19	23,10	23,08	23,10	23,13	23,16	23,19	
	130	Q	355200	294300	241600	196300	176100			
		P	28,12	28,09	28,13	28,22	28,28			
GSD80385VA	100	Q	568800	473400	391300	320800	289400	260600	233900	187000
		P	24,65	24,26	24,03	23,90	23,86	23,83	23,80	23,73
	115	Q	519700	431500	355500	290300	261400	234700	210100	
		P	29,22	28,95	28,81	28,74	28,72	28,70	28,68	
	130	Q	466900	386600	317500	258200	231900			
		P	35,00	34,83	34,75	34,72	34,71			
GSD80421VA	100	Q	623400	518500	428200	350800	316400	284700	255500	204000
		P	27,05	26,72	26,56	26,52	26,53	26,53	26,54	26,50
	115	Q	569300	471800	388000	316200	284400	255200	228200	
		P	32,33	32,10	32,02	32,03	32,04	32,05	32,05	
	130	Q	508700	420000	343900	278900	250100			
		P	38,91	38,78	38,77	38,81	38,82			
GSD80485VA	100	Q	696300	580200	480000	393900	355600	320300	287700	230100
		P	30,16	30,08	29,95	29,80	29,72	29,66	29,60	29,54
	115	Q	633100	526300	434400	355500	320500	288300	258600	
		P	36,34	36,20	36,05	35,93	35,88	35,86	35,86	
	130	Q	563200	467200	384600	314000	282700			
		P	43,88	43,74	43,64	43,62	43,64			

① optimized for air-cooled systems and reversible chillers

Part load performance data and performance data for individual input data and 50 Hz operation see BITZER Software.

ORBIT 8 Boreal ②

Performance data 60 Hz

based on 20°F suction superheat and 15°F subcooling.

Compressor type	SDT °F		Cooling capacity Q_o [Btu/h]				Power consumption P_e [kW]			
			Saturated suction temperature °F							
			55	45	35	25	20	15	10	0
R410A										
optimized for systems with low condensing temperature										
GSD80235VW	85	Q	392500	329000	273700	225400	203500	183100	163900	129000
		P	12.24	12.42	12.68	12.96	13.09	13.20	13.28	13.32
	100	Q	363400	303900	252000	206600	186000	166800	148700	115600
		P	14.97	15.27	15.62	15.97	16.12	16.24	16.33	16.37
	115	Q	332400	276800	228300	186000	166800	148900	132000	101300
		P	18.51	18.90	19.32	19.70	19.85	19.97	20.05	20.05
GSD80295VW	85	Q	473700	396300	329000	270400	244000	219400	196300	154600
		P	14.05	14.52	14.97	15.39	15.59	15.77	15.94	16.24
	100	Q	436100	364400	301900	247400	222700	199700	178100	138700
		P	17.74	18.28	18.78	19.25	19.47	19.67	19.86	20.19
	115	Q	397200	331100	273400	222800	199900	178400	158100	120900
		P	22.33	22.93	23.50	24.02	24.26	24.48	24.69	25.06
GSD80385VW	85	Q	607400	508600	422600	347800	314200	282700	253400	200200
		P	18.65	18.87	19.21	19.62	19.83	20.02	20.20	20.48
	100	Q	560600	468400	388100	318000	286400	256800	229100	178600
		P	23.04	23.47	23.97	24.47	24.69	24.89	25.06	25.26
	115	Q	510000	424600	350200	285200	255800	228300	202400	155300
		P	28.71	29.31	29.91	30.44	30.65	30.83	30.96	31.03
GSD80421VW	85	Q	680700	566400	468100	384100	347000	312900	281700	227300
		P	20.54	20.94	21.32	21.71	21.90	22.10	22.31	22.73
	100	Q	622400	516800	426000	348300	314000	282500	253500	203000
		P	25.34	25.90	26.41	26.87	27.09	27.30	27.51	27.91
	115	Q	564600	467100	383200	311400	279700	250500	223700	176800
		P	31.36	32.08	32.69	33.21	33.44	33.66	33.86	34.22
GSD80485VW	85	Q	764700	636000	525200	430500	388700	350300	315000	253600
		P	22.51	23.47	24.09	24.50	24.66	24.80	24.95	25.31
	100	Q	695400	578200	477300	391000	352800	317600	285400	229000
		P	28.29	29.19	29.78	30.18	30.34	30.50	30.67	31.11
	115	Q	628100	521300	429200	350400	315400	283200	253700	201700
		P	35.32	36.20	36.80	37.24	37.44	37.65	37.88	38.47

② optimized for systems with low condensing temperature

Part load performance data and performance data for individual input data and 50 Hz operation see BITZER Software.



ORBIT 6 Technical data

Compressor type	Displacement 60 Hz CFM	Oil charge ① fl.oz	Weight lbs	Pipe connections		Motor connection ②	Electrical data		
				DL Discharge line inch	SL Suction line inch		max. operat. amps (MOA) Amp. ③	max. power consumption kW ③	Starting current LRA Amp. ④
GSD60120VAB	14.1	91	195	7/8	1 3/8	440..480 V/3/60 Hz 380..420 V/3/50 Hz	21.9	14.6	122
GSD60137VAB	15.8	91	195	7/8	1 3/8		24.3	16.4	137
GSD60154VAB	17.6	91	195	7/8	1 3/8		26.3	18.3	145
GSD60182VAB	20.8	91	195	7/8	1 3/8		31.7	21.5	180
GSD60235VAB	26.7	91	198	7/8	1 3/8		40,7	28.2	191

① Charged with polyvinyl ether BVC32.

② Other voltages and electrical supplies upon request.

③ For the selection of contactors, cables and fuses the rated load amps (RLA) and the max. power consumption must be considered ("Electrical data").

④ Data based on mean value
460 V/3/60 Hz.
See also ③.

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

ORBIT 8 Technical data

Compressor type ③	Displacement with 60 Hz CFM	Oil charge ① fl.oz	Weight ② lbs	Pipe connections ODS Version "B" ③		Connection thread Version "R" ③		Motor connection ④	Electrical data		
				DL Discharge line inch	SL Suction line inch	DL Discharge line inch	SL Suction line inch		Rated load amps (RLA) Amp. ⑤	max. power consumption kW ⑤	Starting current LRA (Amp.) Amp. ⑥

optimized for air-cooled systems and reversible chillers

GSD80182VA(B/R)	21	194	320	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF	440..480 V/3/60 Hz 380..420 V/3/50 Hz	27	24	155
GSD80235VA(B/R)	28	194	326	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		35	32	213
GSD80295VA(B/R)	34	194	333	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		41	37	212
GSD80385VA(B/R)	44	194	337	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		53	45	290
GSD80421VA(B/R)	48	194	336	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		51	50	280
GSD80485VA(B/R)	55	194	372	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		64	57	298

optimized for systems with low condensing temperature

GSD80235VW(B/R)	28	194	326	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF	440..480 V/3/60 Hz 380..420 V/3/50 Hz	34	26	213
GSD80295VW(B/R)	34	194	333	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		40	32	212
GSD80385VW(B/R)	44	194	337	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		49	41	241
GSD80421VW(B/R)	48	194	336	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		53	44	280
GSD80485VW(B/R)	55	194	373	1 3/8	1 5/8	1 3/4 – 12 UNF	2 1/4 – 12 UNF		56	50	290

① Charged with polyvinyl ether BVC32.

② Weight without shut-off valves.

③ B = Direct brazing connections
R = Rotalock connections

④ Other voltages and electrical supplies upon request.

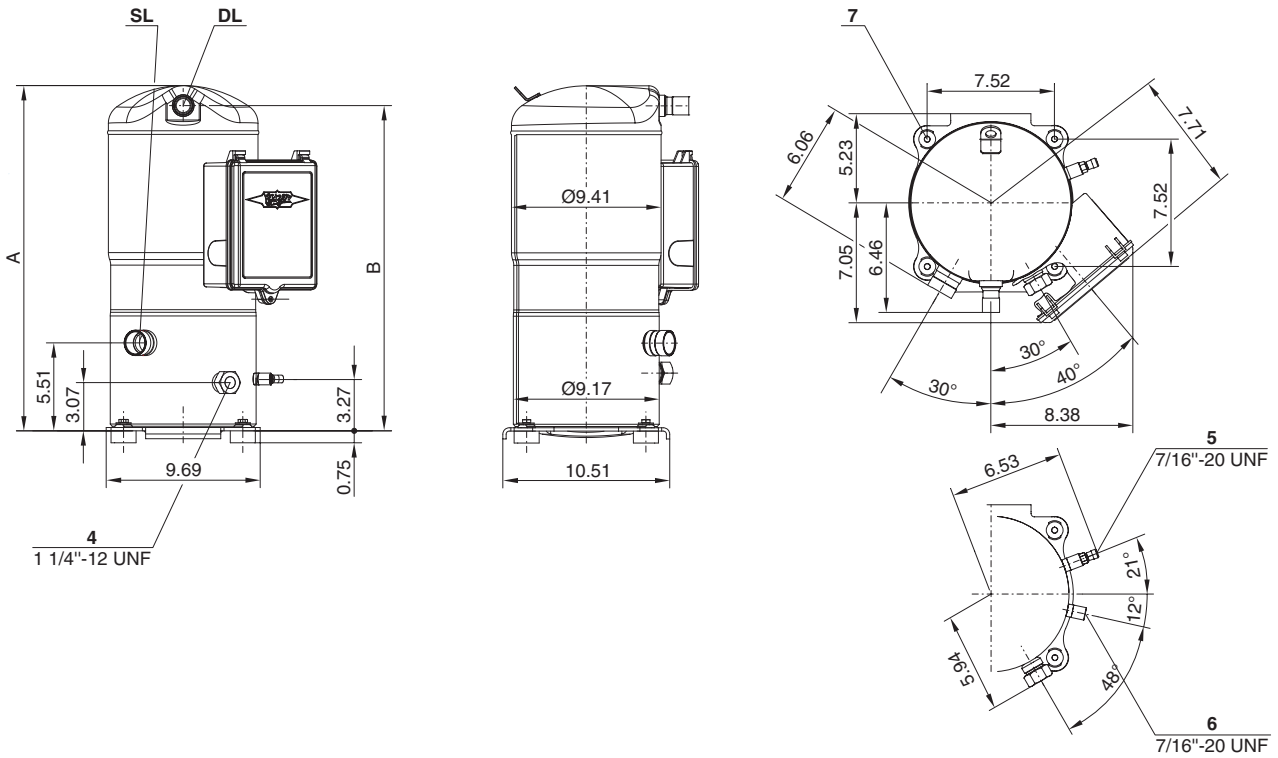
⑤ For the selection of contactors, cables and fuses the rated load amps (RLA) and the max. power consumption must be considered ("Electrical data").

⑥ Data based on mean value
460 V/3/60 Hz.
See also ⑤.

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

Dimensional drawings

ORBIT 6



Connection positions

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

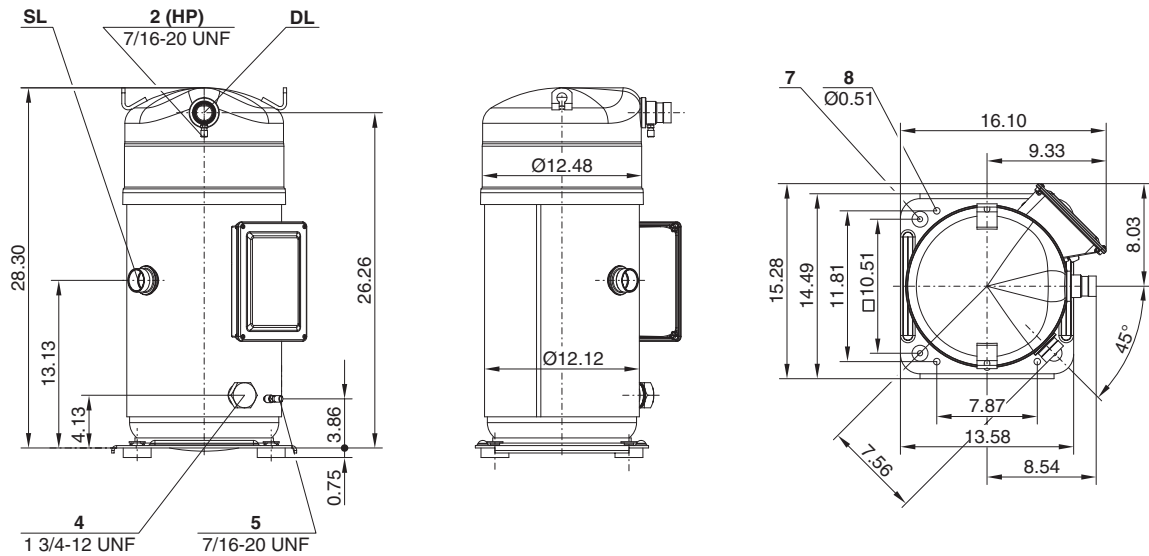
SL Suction gas line
DL Discharge gas line

	A inch	B inch
GSD60120VAB..GSD60182VAB	21.73	20.47
GSD60235VAB	21.97	20.71

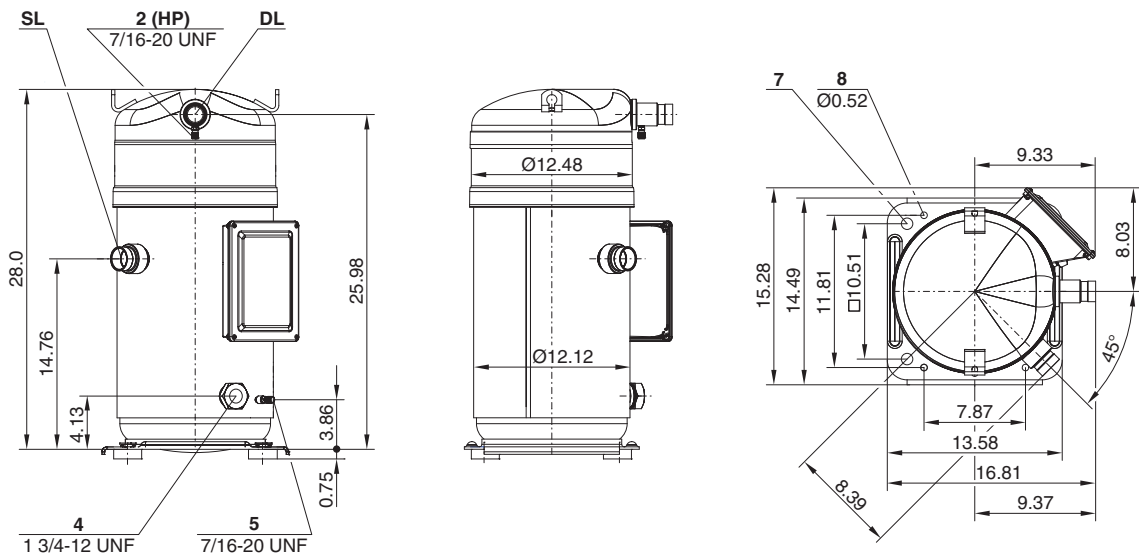
Dimensional drawings

ORBIT 8 with direct brazing connections

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



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



Connection positions

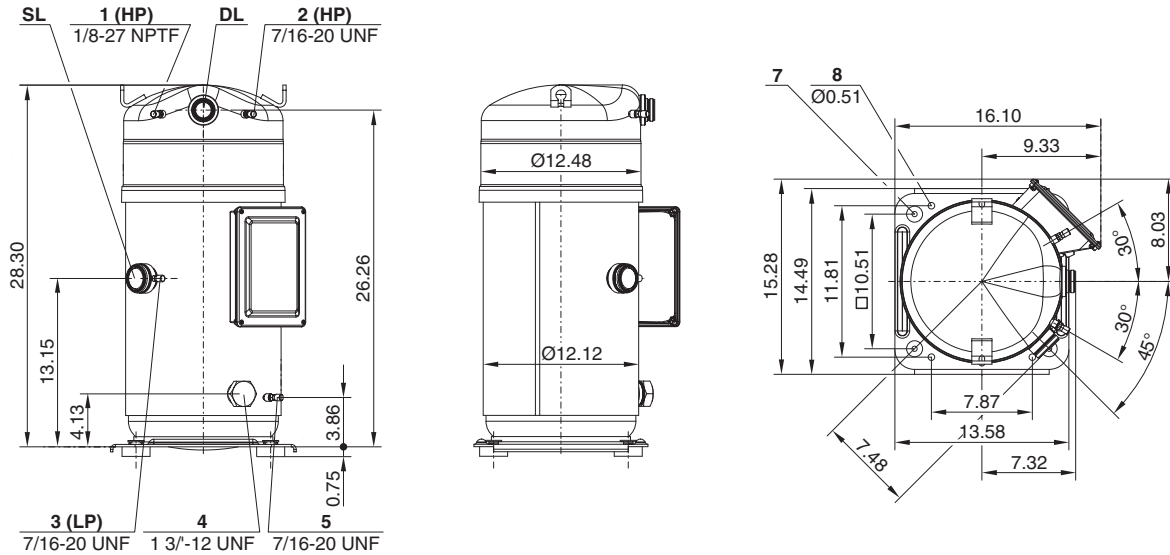
- 1 -
- 2 High pressure (HP) or discharge gas temperature sensor (Schrader)
- 3 -
- 4 Sight glass
- 5 Oil fill port (Schrader)
- 7 Mounting position for vibration dampers
- 8 Mounting position for Tandem and Trio fixing rails

SL Suction gas line
DL Discharge gas line

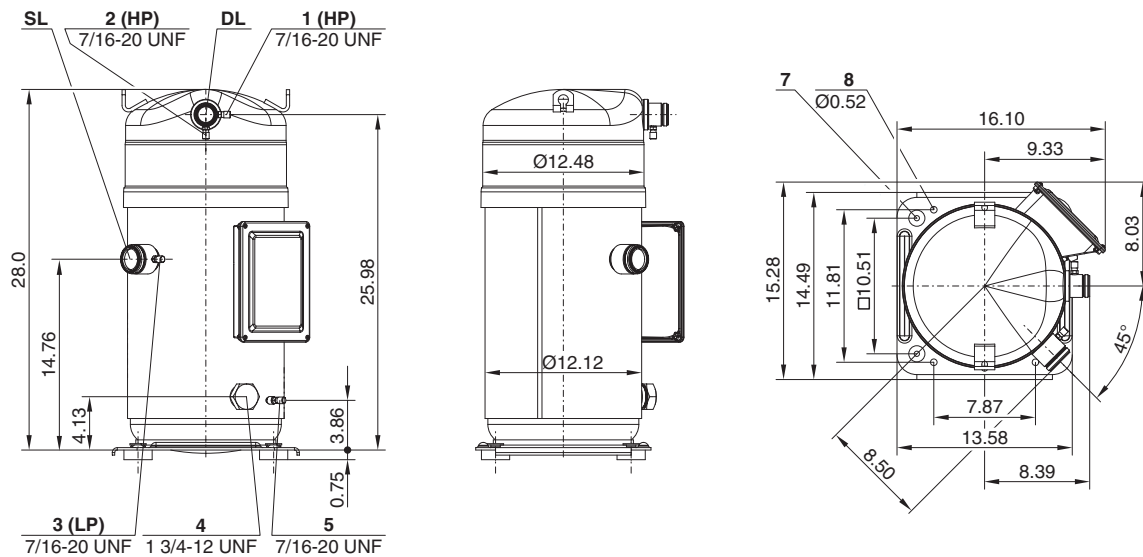
Dimensional drawings

ORBIT 8 with Rotalock connections

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



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



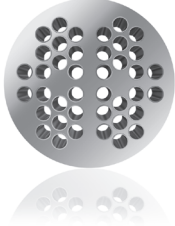
Connection positions

- 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

Notes

A large grid of green dots for taking notes, consisting of 20 columns and 30 rows.





BITZER Kühlmaschinenbau GmbH
Eschenbrünnelestraße 15 // 71065 Sindelfingen // Germany
Tel +49 [0]70 31 932-0 // Fax +49 [0]70 31 932-147
bitzer@bitzer.de // www.bitzer.de

Subject to change // 80171302 // 12.2014