Johnson Controls

HITACHI
Air conditioning solutions

air

Johnson Controls - Hitachi Air Conditioning

HEAD QUARTER
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www.hitachi-hvac.co

CERTIFICATION

ISO 9000 series
Shimizu Air Conditioning Headquarters,
Commercial-Use Air Conditioning Business Division,
Johnson Controls – Hitachi Air Conditioning
JQA-1084 obtained in November 1995

ISO 14000 series
Shimizu Business Office,
Johnson Controls – Hitachi Air Conditioning
EC97J1107 obtained in October 1997

GB/T28001-2011 / OHSAS18001:2007
Johnson Controls0-Hitachi Wanbao Compressor (Guangzhou) Co., Ltd.
Initial Issue Date: April 30, 2006
[Certificate No. 15918S20003R4M]

GB/T19001-2016 / ISO9001:2015
Johnson Controls0-Hitachi Wanbao Compressor (Guangzhou) Co., Ltd.
Initial Issue Date: July 8, 2004
[Certificate No. 15918Q20011R6M]

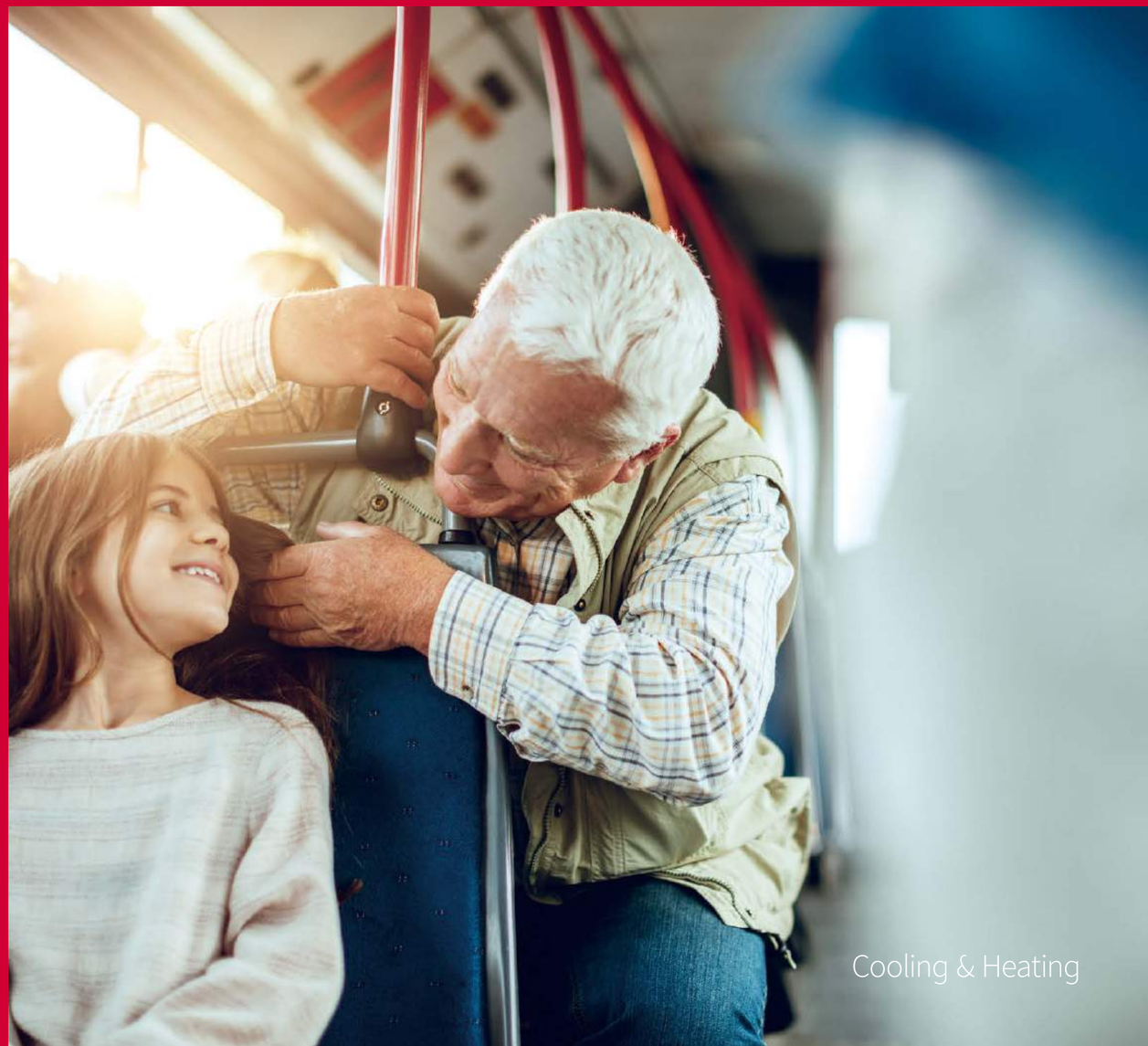
GB/T24001-2016 / ISO14001:2015
Johnson Controls0-Hitachi Wanbao Compressor (Guangzhou) Co., Ltd.
Initial Issue Date: April 30, 2006
[Certificate No. 15918E20005R4M]

HR-E604R

HITACHI

Scroll Compressors

For Transport Air Conditioning Application



Exclusive Design For Transport Air Conditioning

- Compact size & lightweight
- Low noise & low vibration
- High reliability & quality
- High efficiency thanks to advanced technology

History

1960

1966
Started supply of reciprocating compressors for railway air conditioners.

1970

1980

1983
Started production of the world's first scroll compressor for packaged air conditioners.

1987
Started production of the world's first scroll compressor for railway air conditioners.

1990

2000

2008
Started supply of scroll compressor for all-electric bus air conditioners.

2010

Used in more than 30 countries

Shinkansen (Bullet train) / High-speed train / Commuter / Metro / Tram / Monorail / All-electric bus / Local train

ADVANTAGES

COMPACT SIZE AND LIGHTWEIGHT

* C series

Downsizing of HAVC unit

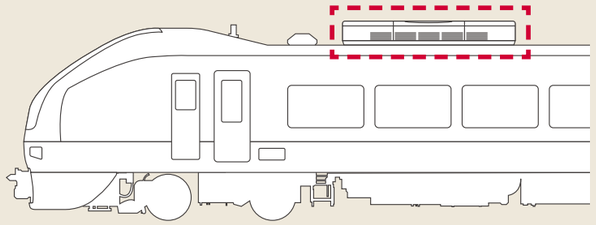
HVAC with Hitachi horizontal compressor C series

HVAC with Hitachi vertical compressor equivalent capacity of C series

Low profile HVAC unit is optimum approach for rooftop application.

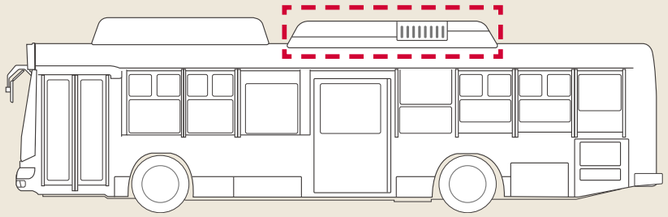
For railway air conditioning

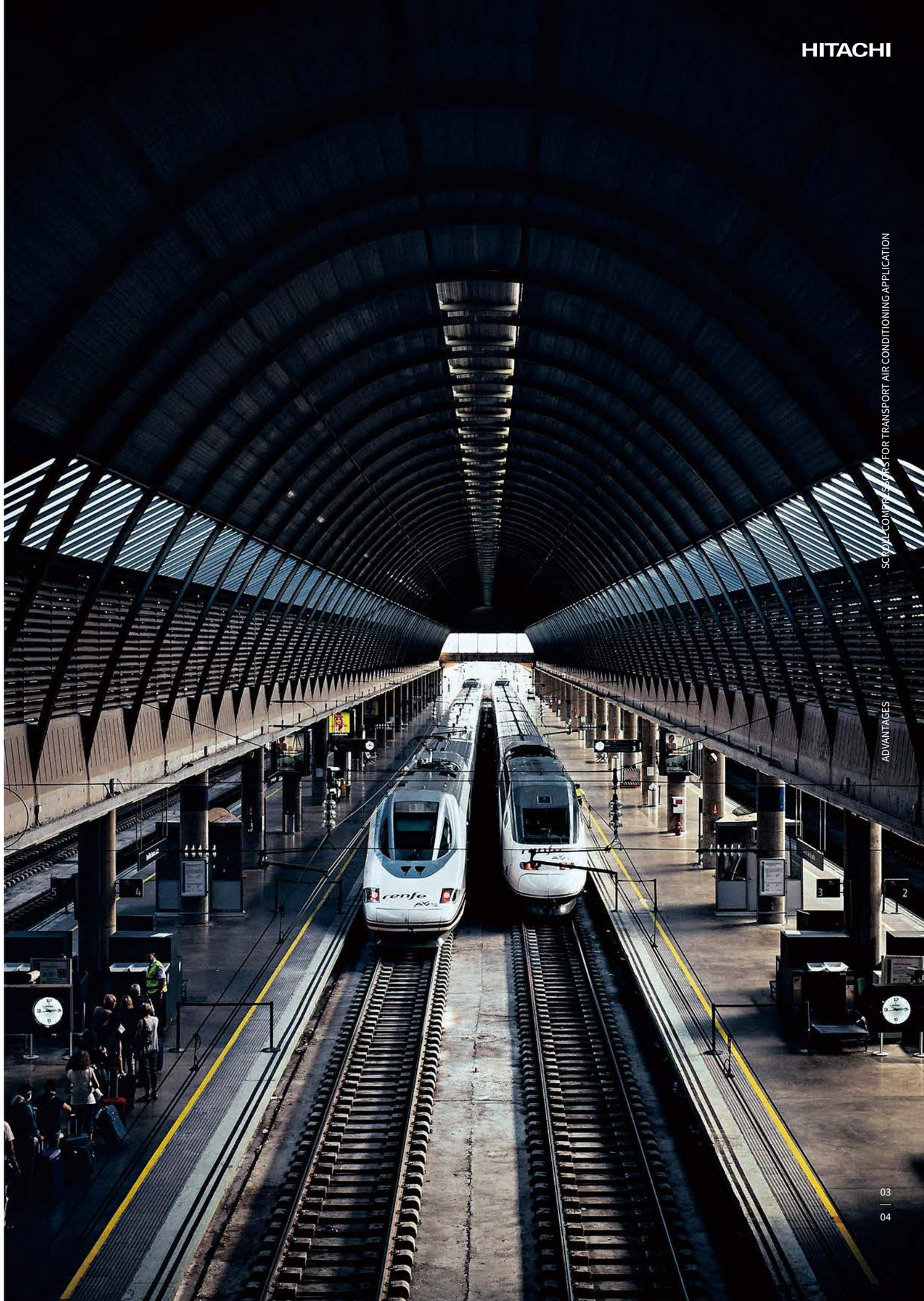
Space-saving HVAC is suitable for Metro, LRT, and the bus.



For hybrid/all-electric bus air conditioning

Light weight HVAC can realize power-saving of the bus itself.





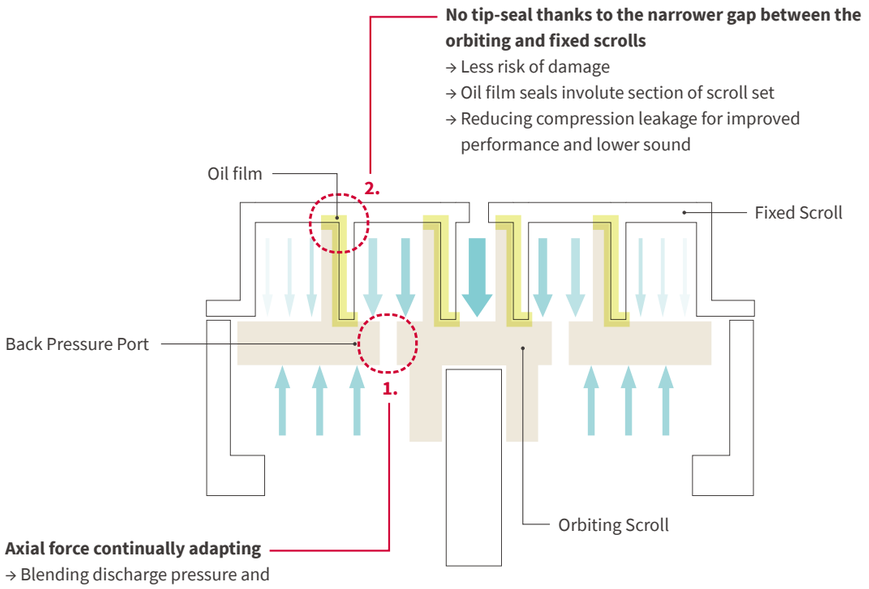
ADVANTAGES

HIGH RELIABILITY & COMFORTABLE OPERATION

Merits of Hitachi Pioneering High-Side Pressure Design • High reliability • Low noise and low vibration • High performance

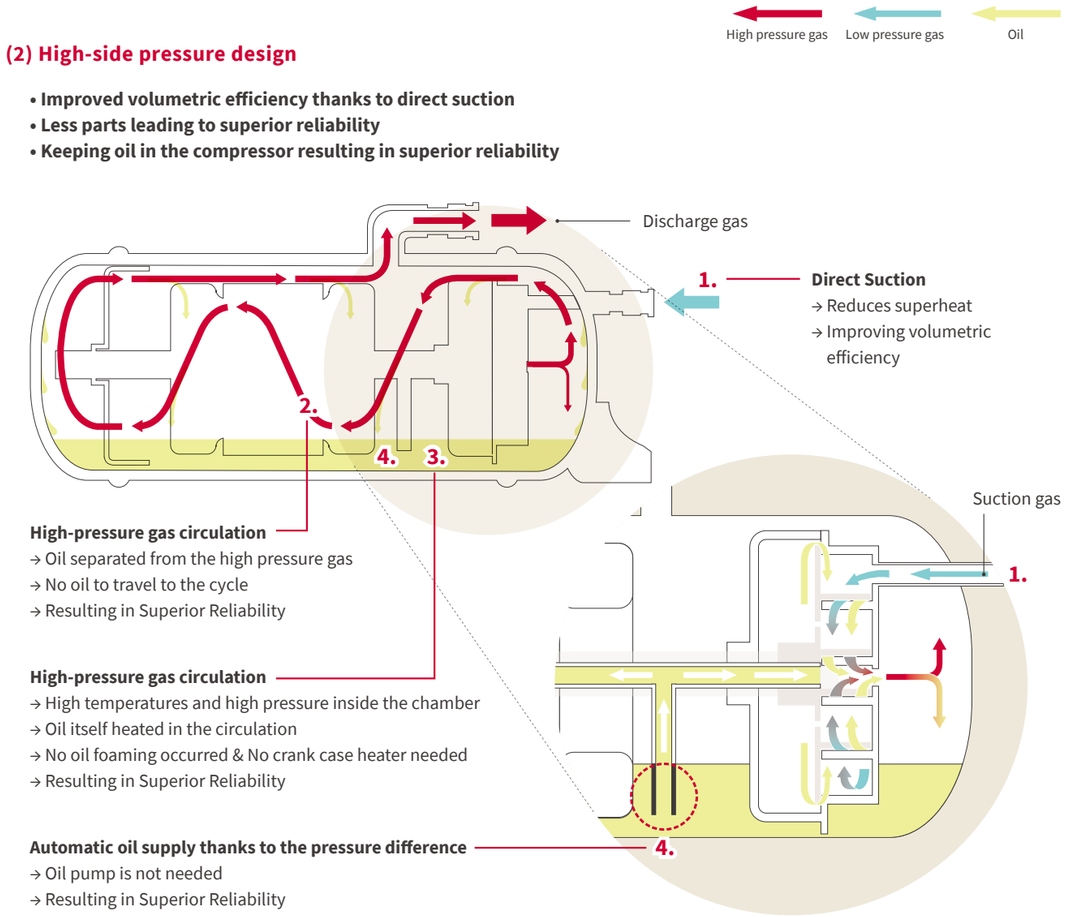
(1) A simple structure leading to fewer superfluous parts

- **Damage is abated, improving reliability**
- **Compressor efficiency is improved**

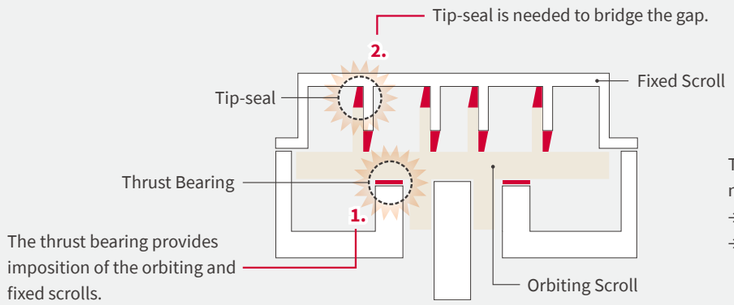


(2) High-side pressure design

- **Improved volumetric efficiency thanks to direct suction**
- **Less parts leading to superior reliability**
- **Keeping oil in the compressor resulting in superior reliability**



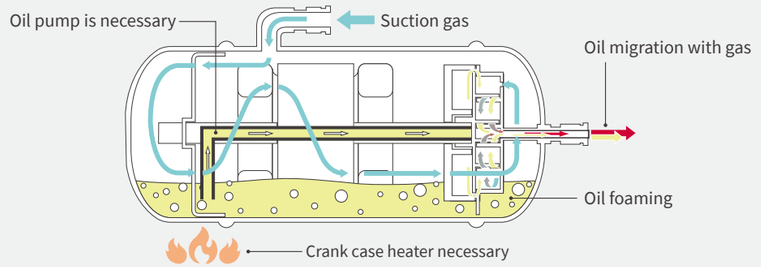
Low-side pressure design (Thrust Bearing System)



There are many sliding components, making for a complex structure.
→ Damage occurs easily
→ Gaps form easily, resulting in degradation of compression efficiency

Low-side pressure design

After starting, pressure and temperature decreases and refrigerant bubbles come over from the oil.



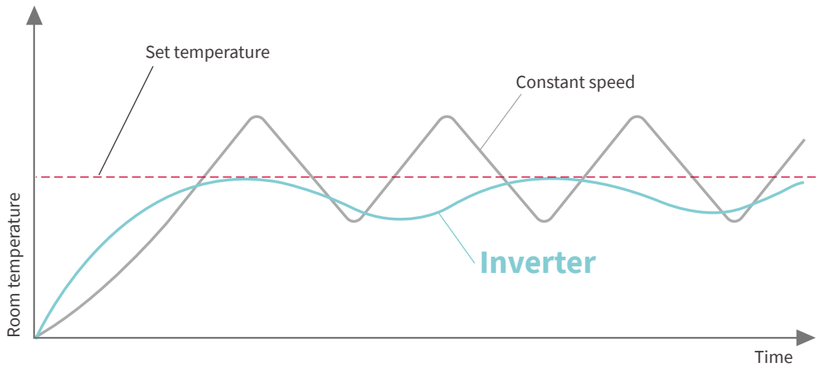
ADVANTAGES

ADVANTAGE WITH INVERTER CONTROL

Comfort & energy-saving

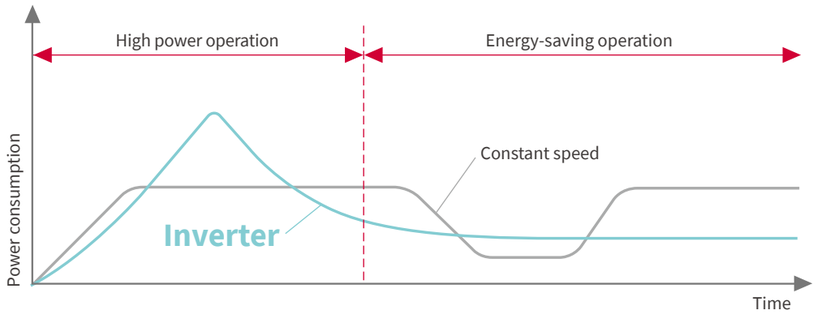
Precise temperature control

Inverter control can maintain a comfortable temperature without ON/OFF operation or step control.



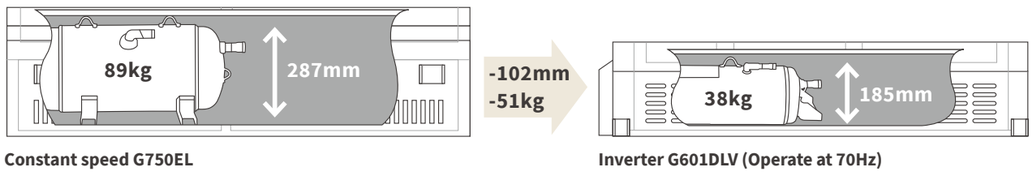
Energy-saving at low load conditions

Inverter can achieve energy-saving without ON/OFF operation.



Downsized HVAC by operating at high frequency

Operation at high frequency enables large capacity to downsized HVAC.

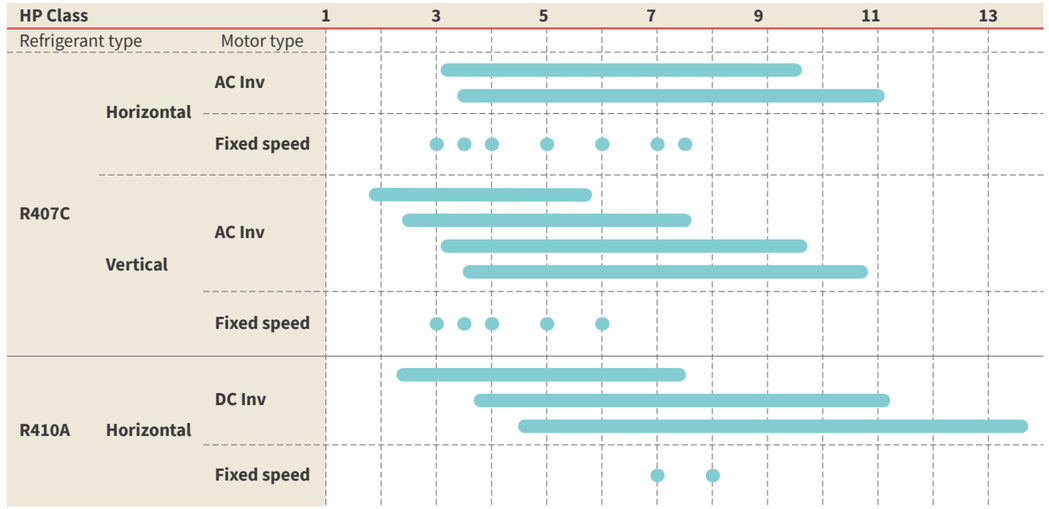


Constant speed G750EL | **Inverter G601DLV (Operate at 70Hz)**

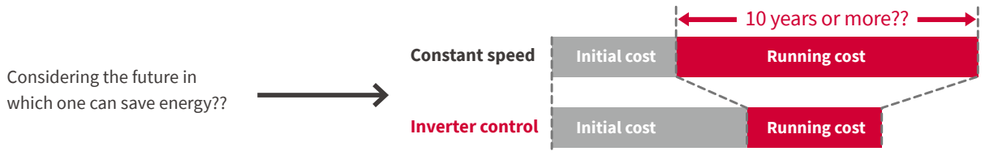
Platform design

Enables HVAC standardization by its capacity control.

Nominal Rating



Saving running cost by operating at high frequency



MODEL NOMENCLATURE

(SMZ): Shimizu Japan
(GC): Guangzhou China

G	30	0	D	L	V	–	47	D	T	C

Refrigerant
G: R407C

Nominal rating (HP)
30: 3HP
40: 4HP...

Development No.
0, 1, 2, ...

Type of body
D: Ø160
G: Ø190
E: Ø235

Direction
L: Horizontal
H: Vertical

Type of motor
V: AC Inverter

Additional specification
C: CE mark + IP65
P: IP65
G: Guangzhou model

Application
T: Transportation

Power supply
A, B, C, D, H:
Refer to the general data table

Displacement
cm^3/rev

C	A	47	T	L	A	G	–	D	2	P	E	1

Type of body
C/D: Ø160
G: Ø190

Development history
A, B, C, ...

Displacement
cm^3/rev

Application
T: Transportation

Direction
L: Horizontal

Type of motor
A: (SMZ)Fixed speed with protector
(GC)Fixed speed
C:(SMZ) Fixed speed without protector
D: DC inverter motor
V: AC Inverter motor

Origin marking
G: Guangzhou model

Refrigerant
1: R407C 2:R410A 3:R134a

Additional specification
E: CE approval
C: Name plate for Chinese market

Additional specification (outside)
P: IP65
K: With Gas injection
S: Without Gas injection

Power supply frequency
1: 50/60Hz common or inverter
2: 50Hz
3: 60Hz

Power supply voltage
C, D:
Refer to the general data table

GENERAL DATA

Shimizu - Japan production (R407C)

Model			CA47TLA-D2PE1	CA56TLA-D2PE1	CA64TLA-D1PE1	CA80TLA-D1PE1	G500DL-80HTC	G600DL-90HTP
Series			CA	CA	CA	CA	C	C
Horizontal / Vertical			Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Chamber size		(ϕ)	160	160	160	160	160	160
Motor Type			Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Nominal Rating		(HP)	3	3.5	4	5	5	6
Displacement		$cm^3/rev.$	47	56	64	80	80	90
		m^3/h	8.2	9.7	11.1	13.9	13.9	15.7
Power supply	Phase	ϕ	3	3	3	3	3	3
	Voltage	V	380-415	380-415	380-415/460	380-415/460	230	230
	Frequency	Hz	50	50	50/60	50/60	60	60
Rated Performance	Cooling	kW	8.00	9.50	10.90	13.50	16.30	18.30
	Capacity	BTU/h	27297	32415	37192	46064	55618	62442
	Power Input	kW	2.90	3.40	3.90	4.90	6.00	6.80
	COP	W/W	2.76	2.79	2.79	2.76	2.72	2.69
Test Condition			B	B	B	B	B	B
CE			Yes	Yes	Yes	Yes	Yes	No
Weight (including oil)		kg	35	35	35	35	35	35
		lb	77.18	77.18	77.18	77.18	77.18	77.18

Model			G501DLV-64DTP	G501DLV-64ATP	GA120TLA-D2PE1	G700GL-120CTP	G750EL-128DTC	G750EL-128CTP
Series			C	C	GA	GA	E	E
Horizontal / Vertical			Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Chamber size		(ϕ)	160	160	190	190	235	235
Motor Type			AC inv	AC inv	Fixed	Fixed	Fixed	Fixed
Nominal Rating		(HP)	5	5	7	7	7.5	7.5
Displacement		$cm^3/rev.$	64	64	120	120	128	128
		m^3/h	13.3*	13.3*	20.9	20.9	22.3	22.3
Power supply	Phase	ϕ	3	3	3	3	3	3
	Voltage	V	380-415	200-220	380-415	380-400	380-415	380-400
	Frequency	Hz	60-100	60-100	50	60	50	60
Rated Performance	Cooling	kW	13.10	13.10	20.80	25.10	22.10	25.90
	Capacity	BTU/h	44699	44699	70973	85645	75408	88374
	Power Input	kW	4.70	4.70	6.80	8.30	7.20	8.60
	COP	W/W	2.79	2.79	3.06	3.02	3.07	3.01
Test Condition			B	B	B	B	B	B
CE			No	No	Yes	No	Yes	No
Weight (including oil)		kg	37	37	64	64	89	89
		lb	81.59	81.59	141.12	141.12	196.25	196.25

Shimizu - Japan production (R134a)

Model			CA47TLA-D2PE3	CA56TLA-D2PE3	GA120TLA-D2PE3	GA120TLC-C3PC3
Series			CA	CA	GA	GA
Horizontal / Vertical			Horizontal	Horizontal	Horizontal	Horizontal
Chamber size		(ϕ)	160	160	190	190
Motor Type			Fixed	Fixed	Fixed	Fixed
Nominal Rating		(HP)	2	2.5	5	5
Displacement		$cm^3/rev.$	47	56	120	120
		m^3/h	8.2	9.7	20.9	20.9
Power supply	Phase	ϕ	3	3	3	3
	Voltage	V	380-415	380-415	380-415	380-400
	Frequency	Hz	50	50	50	60
Rated Performance	Cooling	kW	5.50	6.50	14.50	17.00
	Capacity	BTU/h	18767	22179	49476	58006
	Power Input	kW	1.90	2.20	4.70	5.50
	COP	W/W	2.89	2.95	3.09	3.09
Test Condition			A	A	A	A
CE			Yes	Yes	Yes	No
Weight (including oil)		kg	35	35	64	64
		lb	77.18	77.18	141.12	141.12

Testing condition

A	Evaporating temp	7.2 °C
	Condensing temp	54.4 °C
	Suction gas temperature	18.3 °C
	Expansion valve inlet temp	46.1 °C
	Ambient temperature	35.0 °C
	Frequency	50 Hz
	Rotation speed (AC/DC inv)	60 Hz
	Compressor cooling	-

B	Evaporating temp	7.2 °C
	Condensing temp	54.4 °C
	Liquid temperature	21.7 °C
	Return gas temperature	44.4 °C
	Ambient temperature	35.0 °C
	Frequency	50 Hz
	*Rotation speed (AC inv)	60 Hz
	Compressor cooling	-

Guangzhou - China production (R407C)

Model			G401DL-64DTG	G501DL-80DTG	G500DL-80BTG	G601DL-90DTG	G500DLV-80DTG	G601DLV-90DTG
Series			G	G	G	G	G	G
Horizontal / Vertical			Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Chamber size		(ϕ)	160	160	160	160	160	160
Motor Type			Fixed	Fixed	Fixed	Fixed	AC inv	AC inv
Nominal Rating		(HP)	4	5	5	6	5	6
Displacement		$cm^3/rev.$	64	80	80	90	80	90
		m^3/h	11.1	13.9	13.9	15.7	13.9	15.7
Power supply	Phase	ϕ	3	3	3	3	3	3
	Voltage	V	380-415/440	380-415/440	220	380-415/440	380-415/440	380-415/440
	Frequency	Hz	50/60	50/60	50/60	50/60	30-90	30-90
Rated Performance	Cooling	kW	11.96	14.83	14.83	16.80	17.80	20.10
	Capacity	BTU/h	40800	50570	50570	57300	60700	68700
	Power Input	kW	3.86	4.78	4.91	5.60	5.74	6.70
	COP	W/W	3.10	3.10	3.00	3.00	3.10	3.00
Test Condition			A	A	A	A	A	A
CE			No	No	No	No	No	No
Weight (including oil)		kg	35	35	35	35	37	38
		lb	77.18	77.18	77.18	77.18	81.59	83.79

Model			G303DH-47DTG	G353DH-56DTG	G403DH-64DTG	G503DH-80DTG	G603DH-90DTG	G303DHV-47DTG	G403DHV-64DTG	G503DHV-80DTG	G604DHV-90DTG
Series			G	G	G	G	G	G	G	G	G
Horizontal / Vertical			Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical
Chamber size		(ϕ)	160	160	160	160	160	160	160	160	160
Motor Type			Fixed	Fixed	Fixed	Fixed	Fixed	AC inv	AC inv	AC inv	AC inv
Nominal Rating		(HP)	3	3.5	4	5	6	3	4	5	6
Displacement		$cm^3/rev.$	47	56	64	80	90	47	64	80	90
		m^3/h	8.18	9.75	11.14	13.92	15.66	8.18	11.14	13.92	15.66
Power supply	Phase	ϕ	3	3	3	3	3	3	3	3	3
	Voltage	V	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440
	Frequency	Hz	50/60	50/60	50/60	50/60	50/60	30-90	30-90	30-90	30-90
Rated Performance	Cooling	kW	8.91	10.71	12.06	15.40	17.30	10.70	14.04	17.80	20.10
	Capacity	BTU/h	30390	36530	41130	52520	59000	36490	47880	60710	68700
	Power Input	kW	2.78	3.35	3.77	4.78	5.58	3.45	4.53	5.74	6.70
	COP	W/W	3.20	3.20	3.20	3.20	3.10	3.10	3.10	3.10	3.00
Test Condition			A	A	A	A	A	A	A	A	A
CE			No	No	No	No	No	No	No	No	No
Weight (including oil)		kg	34	34	34	35	36	36	36	37	37
		lb	74.97	74.97	74.97	77.18	79.38	79.38	79.38	81.59	81.59

Guangzhou - China production (R410A)

Model			DA65TLAG-D1S2	DA80TLAG-D1S2	DA42TLDG-D1S2	DA65TLDG-D1S2	DA80TLDG-D1S2
Series			DA	DA	DA	DA	DA
Horizontal / Vertical			Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Chamber size		(ϕ)	160	160	160	160	160
Motor Type			Fixed	Fixed	DC inv	DC inv	DC inv
Nominal Rating		(HP)	7	8	6	8	10
Displacement		$cm^3/rev.$	65	80	42	65	80
		m^3/h	11.3	13.9	7.3	11.3	13.9
Power supply	Phase	ϕ	3	3	3	3	3
	Voltage	V	380-415/440	380-415/440	380-415/440	380-415/440	380-415/440
	Frequency	Hz	50/60	50/60	30-90	30-90	30-90
Rated Performance	Cooling	kW	17.10	20.90	13.76	21.05	25.50
	Capacity	BTU/h	58320	71280	46930	71790	86960
	Power Input	kW	5.70	7.08	4.37	6.58	8.10
	COP	W/W	3.00	2.95	3.15	3.20	3.15
Test Condition			A	A	A	A	A
CE			No	No	No	No	No
Weight (including oil)		kg	38	43	32	39	41
		lb	83.79	94.82	70.56	86.00	90.41

Testing condition

A	Evaporating temp	7.2 °C
	Condensing temp	54.4 °C
	Suction gas temperature	18.3 °C
	Expansion valve inlet temp	46.1 °C
	Ambient temperature	35.0 °C
	Frequency	50 Hz
	Rotation speed (AC/DC inv)	60 Hz
	Compressor cooling	-

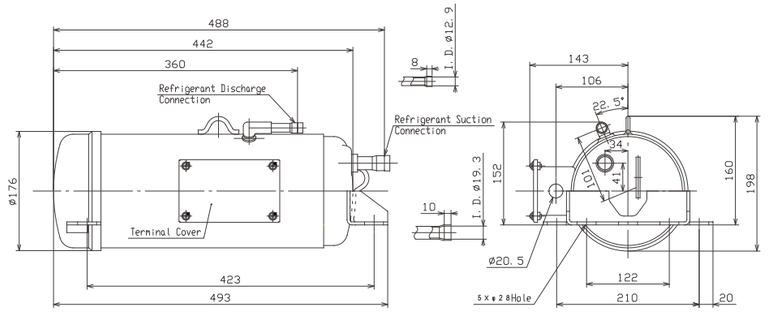
*Vertical tandem(multiple) use model is available on request.
*Heat pump model for cold district specification is available on request.

DIMENSIONAL DATA

SHIMIZU

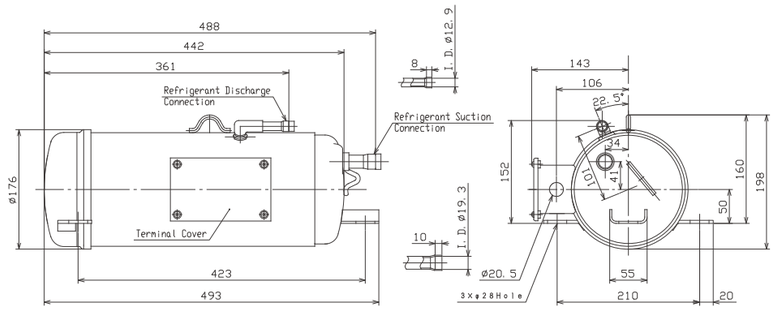
CA series

MODELS:
CA47TLA, CA56TLA,
CA64TLA, CA80TLA



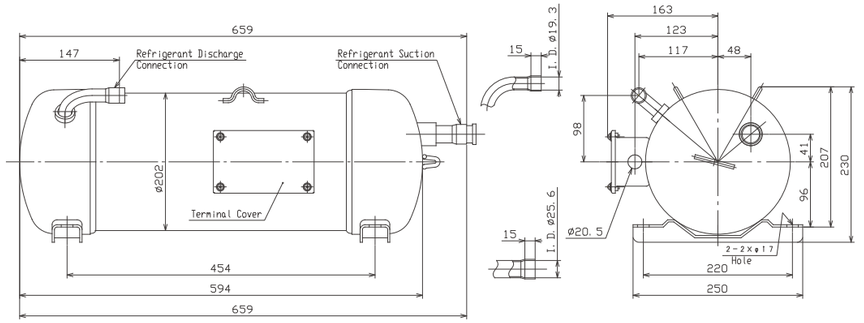
C series

MODELS:
G500DL, G600DL,
G501DLV



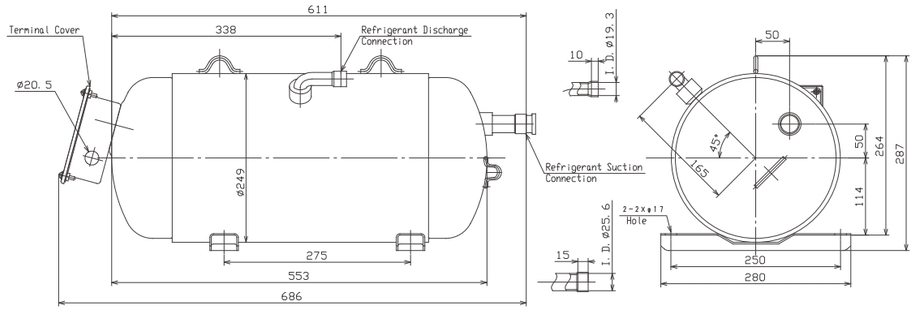
GA series

MODEL:
G700GL, GA120TL



E series

MODEL:
G750EL

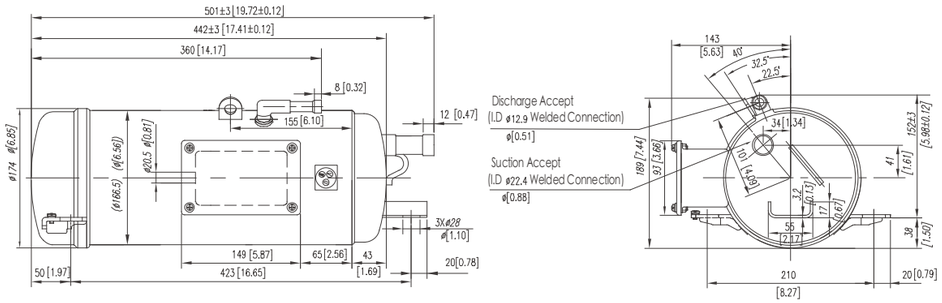


DIMENSIONAL DATA

GUANGZHOU

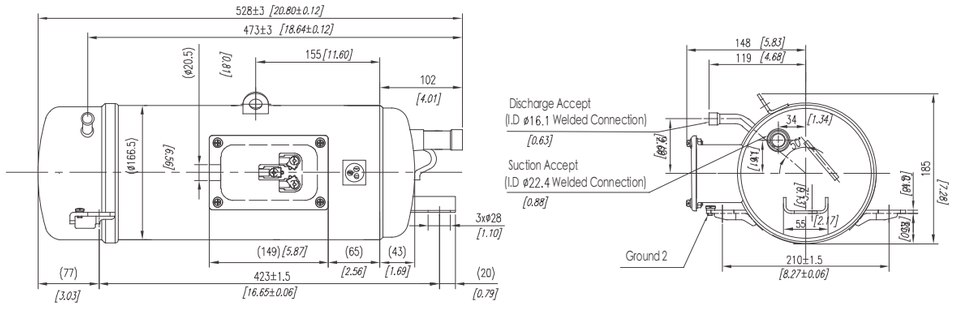
G series

MODELS:
G500DL-80BTG,
G500DLV-80DTG



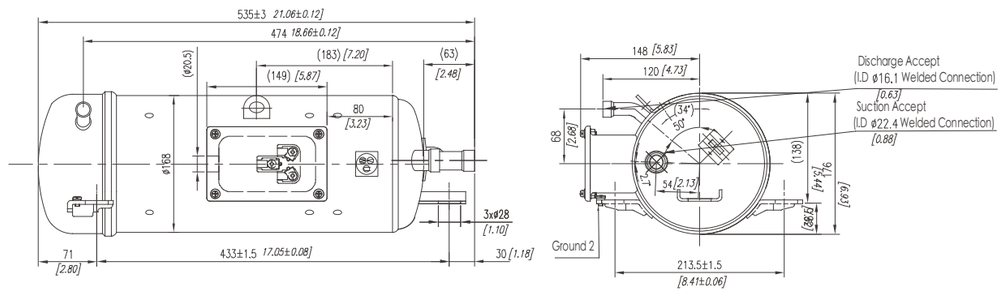
G series

MODELS:
G401DL-64DTG,
G501DL-80DTG,
G601DL(V)-90DTG



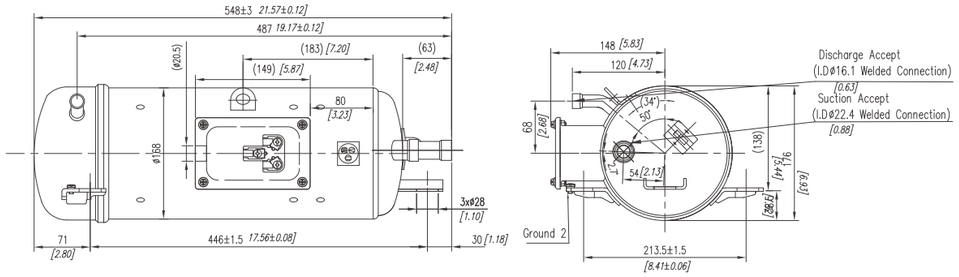
DA series

MODELS:
DA65TLAG,
DA65TLDG,
DA80TLDG



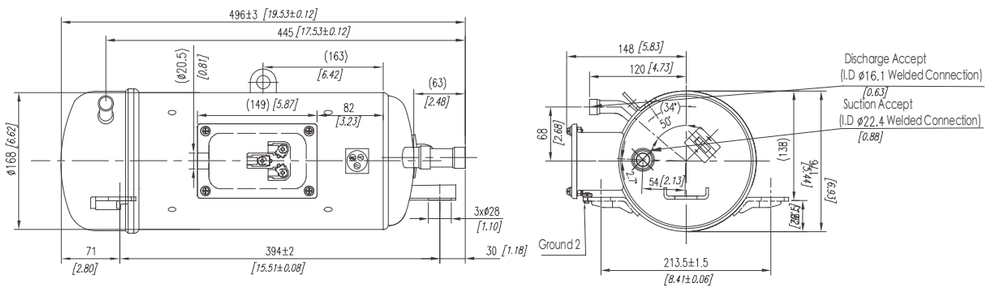
DA series

MODELS:
DA80TLAG



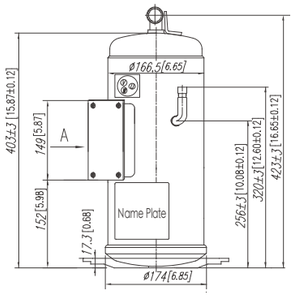
DA series

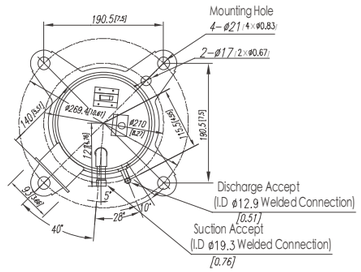
MODELS:
DA42TLDG



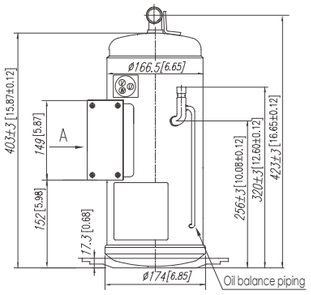
G series

MODELS:
G303DH(V)-47DTG,
G353DH-56DTG,
G403DH(V)-64DTG,
G503DH(V)-80DTG,
G603DH-90DTG



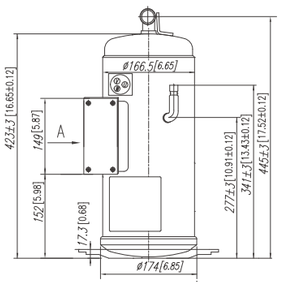


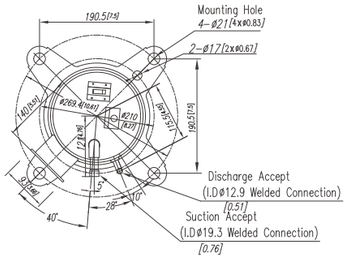
Tandem(multiple) use version



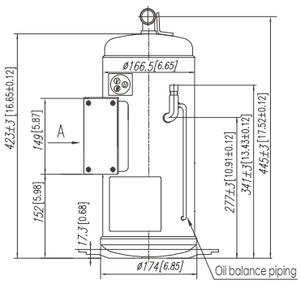
DA series

MODELS:
G604DHV-90DTG





Tandem(multiple) use version

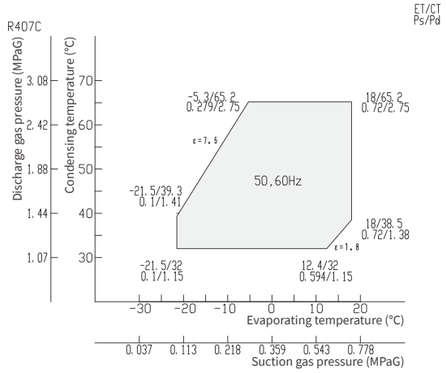


WORKING RANGE

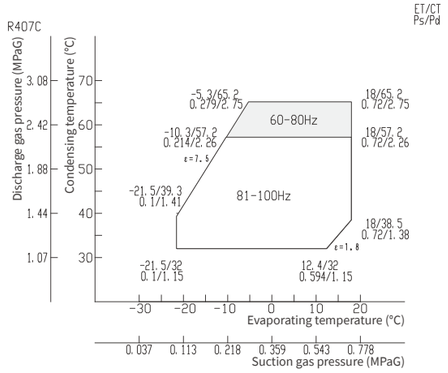
***Pressure is relative (gauge) pressure.**
***Pressure Ratio ε (The absolute Pressure basis)**
ε=(Discharge Port Pressure) / (Suction Port Pressure)

SHIMIZU, JAPAN PRODUCTION

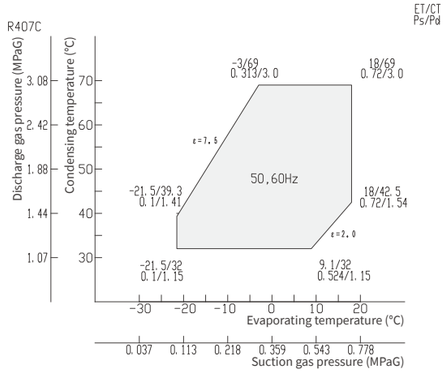
R407C / Fixed speed / CA·C series



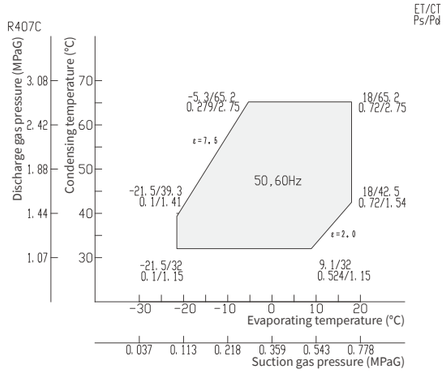
R407C / AC INV / C series



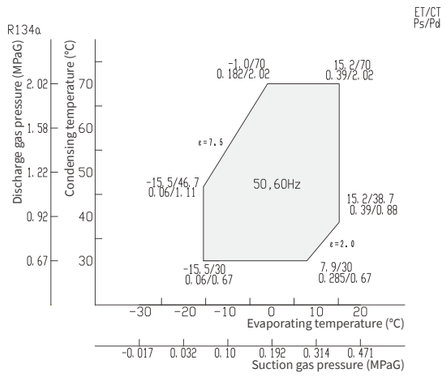
R407C / Fixed speed / GA series



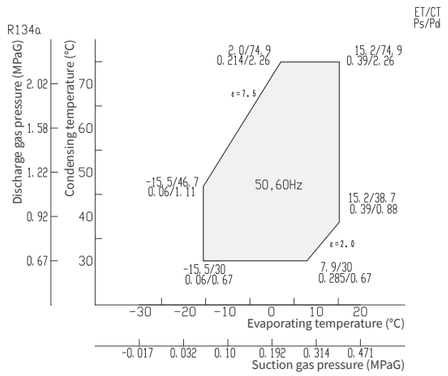
R407C / Fixed speed / E series



R134a / Fixed speed / CA series



R134a / Fixed speed / GA series



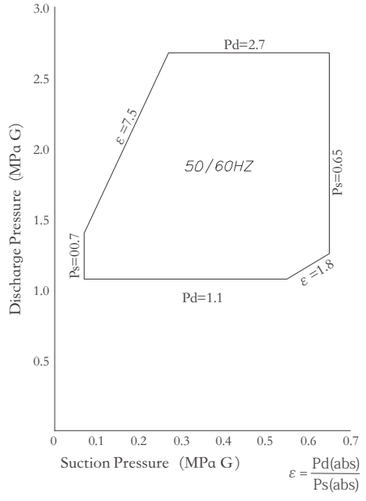
WORKING RANGE

*Pressure is relative (gauge) pressure.
*Pressure Ratio ε (The absolute Pressure basis)
ε=(Discharge Port Pressure) / (Suction Port Pressure)

GUANGZHOU, CHINA PRODUCTION

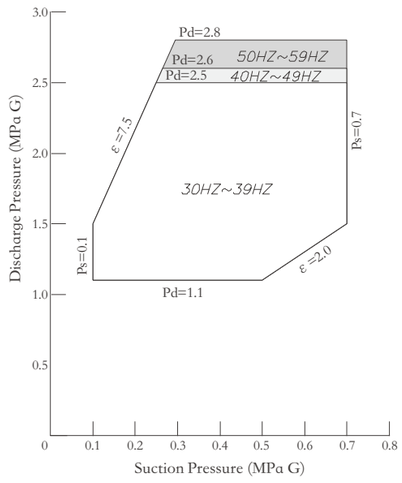
R407C / Fixed speed / G series

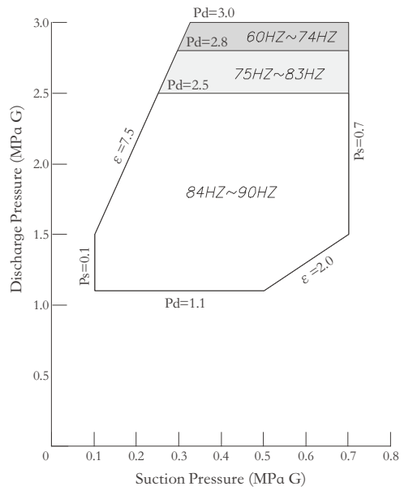
G30*D*/G353DH/G40*D*/G50*D*/G60*D*



R407C / AC INV / G series

G30*D*V/G40*D*V/G50*D*V/G60*D*V

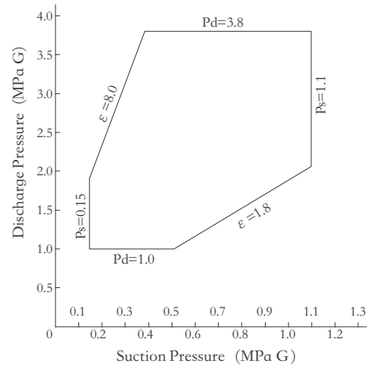




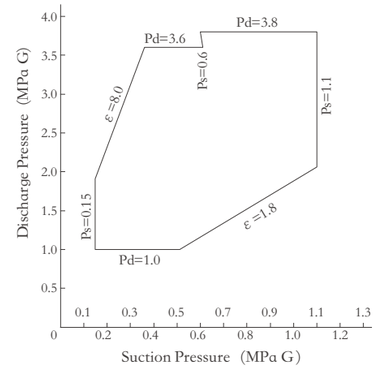
*Pressure is relative (gauge) pressure.
*Pressure Ratio ε (The absolute Pressure basis)
ε=(Discharge Port Pressure) / (Suction Port Pressure)

R410A / Fixed speed / DA series

DA65*LAG

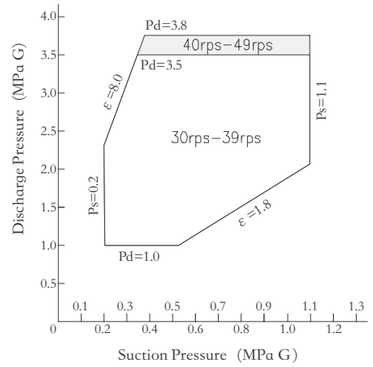


DA80*LAG

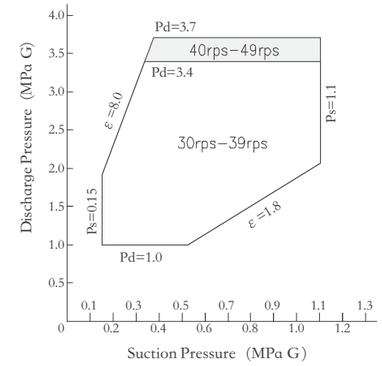


R410A / DC INV / DA series

DA42*LDG



DA65*LDG



DA80*LDG