BITZER Output data

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Project survey

Selected compressors

Semi-hermetic Reciprocating Compressors	1x	4JE-22

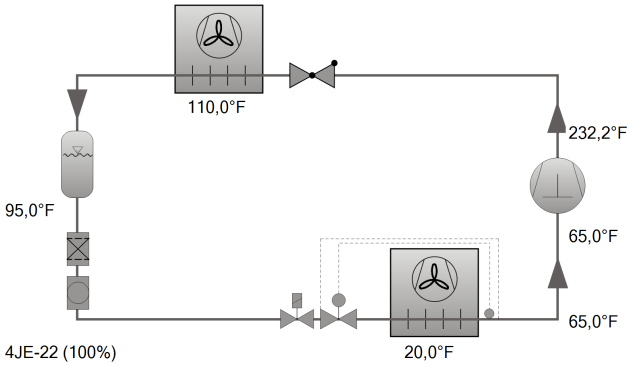
Chosen accessory

Horizontal receivers	1x	F1052T
IQ MODULE	1x	CM-RC-01

Selection: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	4JE-22
Mode	Refrigeration and Air conditioning
Refrigerant	R22
Reference temperature	Dew point temp.
Evaporating SST	20,00 °F
Condensing SDT	110,0 °F
Liq. subc. (in condenser)	15,00 °F
Suction gas temperature	65,0 °F
Operating mode	Auto
Power supply	460V-3-60Hz UL
Capacity control	100%
Useful superheat	100%

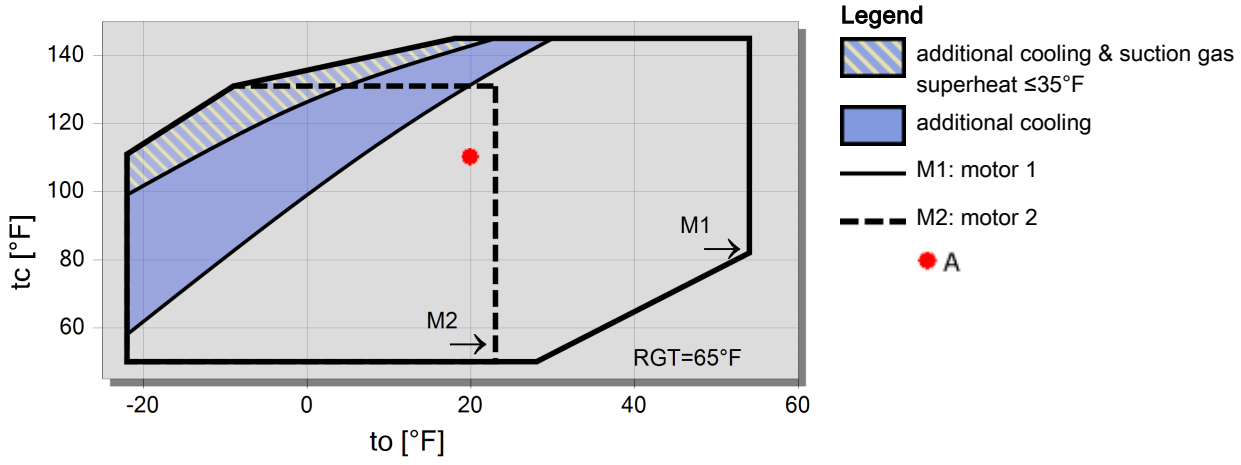


Result

Compressor	**4JE-22-2NU**
Capacity steps	100%
Cooling capacity	163,8 kBtu/h
Cooling capacity *	153,6 kBtu/h
Evaporator capacity	163,8 kBtu/h
Power input	15,46 kW
Current (460V)	22,4 A
Voltage range	440-480V
Condenser capacity	217 kBtu/h
COP/EER	10,59
COP/EER *	9,94
Mass flow	2146 lb/h
Operating mode	Standard
Discharge gas temp. w/o cooling	232 °F

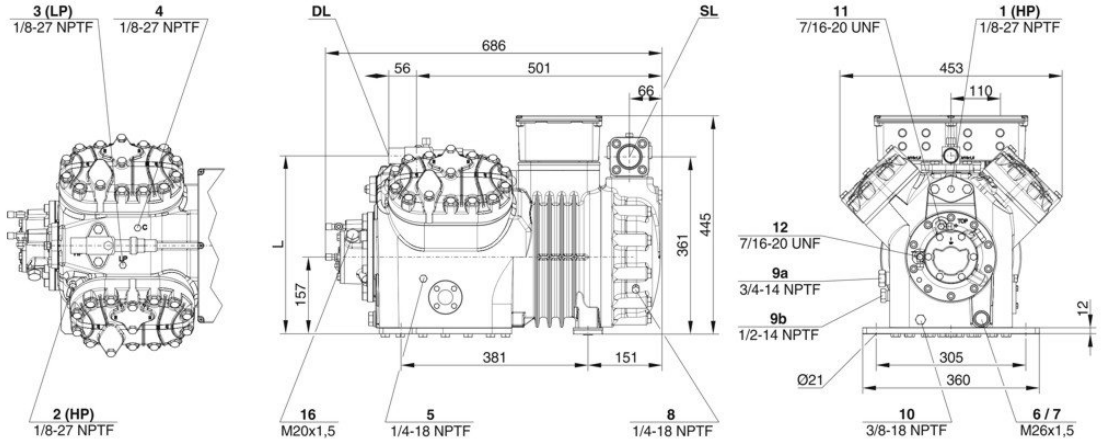
Tentative Data.
*with 65°F suction gas temperature, 0°F liquid subcooling

Application Limits 100%



Technical Data: 4JE-22

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450 RPM 50Hz)	2242.5 CFH
Displacement (1750 RPM 60Hz)	2706.5 CFH
No. of cylinder x bore x stroke	4 x 2.56 inch x 2.17 inch
Weight	423 lb
Max. pressure (LP/HP)	275 / 464 psi
Connection suction line	42 mm - 1 5/8"
Connection discharge line	28 mm - 1 1/8"
Oil type R134a/R407C/R404A/R507A/R407A/R407F	BSE32(Standard) | R134a tc>155°F: BSE55 (Option)
Oil type R22 (R12/R502)	B5.2(Option)
Oil type R1234yf	BSE32 (Standard) | R1234yf tc>70°C : BSE55 (Option)
Oil type R1234ze	BSE55 (Standard) | to>15°C: BSE85K (Option) | tc>70°C: BSE85K (Option)
Ölfüllung R454C/R455A	BSE32 (Standard)
Motor data	
Motor version	1
Motor voltage (more on request)	440-480V Y-3-60Hz UL
Max operating current	37.2 A
Starting current (Rotor locked)	176.0 A
Max. Power input	25.3 kW
Extent of delivery (Standard)	
Motor protection	SE-B3(Standard), SE-B2(Option)
Enclosure class	IP54 (Standard), IP66 (Option)
Vibration dampers	Standard
Oil charge	140.8 fl oz
Discharge shut-off valve	Standard
Suction shut-off valve	Standard
Available Options	
Discharge gas temperature sensor	Option
Start unloading	Option
Capacity control	100-50% (Option)
Capacity Control - infinite	100-10% (Option)
Additional fan	Option
Oil service valve	Option
Crankcase heater	140 W (Option)
Oil pressure monitoring	MP54 (Option), Delta-PII
Sound measurement	
Sound power level (+5°C / 50°C)	77,5 dB(A) @60Hz
Sound power level (-10°C / 45°C)	80 dB(A) @60Hz

Sound power level (-35°C / 40°C)	83,5 dB(A) @60Hz
Sound pressure level @ 1m (+5°C / 50°C)	69,5 dB(A) @60Hz
Sound pressure level @ 1m (-10°C / 45°C)	72 dB(A) @60Hz
Sound pressure level @ 1m (-35°C / 40°C)	75,5 dB(A) @60Hz
Sound power level (+5°C / 50°C) R134a	75,5 dB(A) @60Hz
Sound power level (-10°C / 45°C) R134a	78 dB(A) @60Hz
Sound pressure level @ 1m (+5°C / 50°C) R134a	67,5 dB(A) @60Hz
Sound pressure level @ 1m (-10°C / 45°C) R134a	70 dB(A) @60Hz

Semi-hermetic Reciprocating Compressors

Motor 1 = e.g. 4TES-12 with 12"HP", primary for air-conditioning (e.g. R22,R407C) and air-conditioning with R134a at high ambient temperatures.
Motor 2 = e.g. 4TES-9 with 8"HP", universal Motor for medium and low temperature application (e.g. R404A, R507A, R407A, R407F) and air-conditioning with R134a
Motor 3 = e.g. 4TES-8, for medium temperature applications and R134a

For more information concerning the application range use the "Limits" button.

Operation modes 4VES-7 to 6FE-44 and 44JE-30 to 66FE-88 with R407F/R407A/R22

CIC = liquid injection with low temperature application, suction gas cooled motor.

ASERCOM certified performance data

The Association of European Refrigeration Component Manufacturers has implemented a procedure of certifying performance data. The high standard of these certifications is assured by:

* plausibility tests of the data performed by experts.

* regular measurements at independent institutes.

These high efforts result in the fact that only a limited number of compressors can be submitted. Due to this not all BITZER compresors are certified until now. Performance data of compressors which fulfil the strict requirements may carry the label "ASERCOM certified". In this software you will find the label at the respective compressors on the right side below the field "result" or in the print out of the performance data. All certified compressors and further information are listed on the homepage of ASERCOM.

Condensing capacity

The condensing capacity can be calculated with or without heat rejection. This option can be set in the menu Program ☐ Options. The heat rejection is constantly 5 % of the power consumption. The condensing capacity is to be found in the line Condensing cap. (with HR) resp. Condensing capacity.

Data for sound emission

Data based on 50 HZ apllication (IP-units 60 Hz) and R404A if not declared.
Sound pressure level: values based on free field area conditions with hemisperhical sound emission in 1 meter distance.

General remarks regarding sound data

Listed sound data were measured under testing conditions in our laboratory. For this purpose the free-standing test sample is mounted on a solid foundation plate and the pipework is connected vibration-free to the largest extend possible. Suction and discharge lines are fixed in a flexible configuration, such that a transmission of vibrations to the environment can be largely excluded. In real installations considerable differences might be observed, compared to the measurements in the laboratory. The airborne sound emitted by the compressor can be reflected from surfaces of the system and this may increase the airborne sound level measured close to the compressor. Vibrations caused by the compressor are also transferred to the system by the compressor feet and piping depending on the damping ratio of the fixings. Thus, the vibrations can induce other components to such an extent that these components contribute to an increase in airborne sound emission. If required, the transfer of vibrations to the system can be minimized by suitable fixing and damping elements.

Legend of connection positions according to "Dimensions":

1 High pressure connection (HP)
2 Connection for discharge gas temperature sensor (HP) (for 4VE(S)-6Y .. 4NE(S)-20(Y) connection for CIC sensor as alternative)
3 Low pressure connection (LP)
4 CIC system: injection nozzle (LP)
4b Connection for CIC sensor
4c Connection for CIC sensor (MP / operation with liquid subcooler)
5 Oil fill plug
6 Oil drain
7 Oil filter (magnetic screw)
8 Oil return (oil separator)
8* Oil return with NH3 and insoluble oil
9 Connection for oil and gas equalization (parallel operation)
9a Connection for gas equalization (parallel operation)

9b Connection for oil equalization (parallel operation)
10 Oil heater connection
11 Oil pressure connection +
12 Oil pressure connection –
13 Cooling water connection
14 Intermediate pressure connection (MP)
15 Liquid injection (operation without liquid subcooler and with thermostatic expansion valve)
16 Connection for oil monitoring (opto-electrical oil monitoring "OLC-K1" or differential oil pressure switch "Delta-PII")
17 Refrigerant inlet at liquid subcooler
18 Referigerant outlet at liquid subcooler
19 Clamp space
20 Terminal plate
21 Maintenance connection for oil valve
22 Pressure relief valve to the atmosphere (discharge side)
23 Pressure relief valve to the atmosphere (suction side)
24 IQ MODULE
SL Suction gas line
DL Discharge gas line
Dimensions can show tolerances according to EN ISO 13920-B.

Selection: Horizontal receivers

Input Values

Common	Yes
Auto	
Operating point	Auto

Operating Points

	A
to [°F]	20
tc [°F]	110

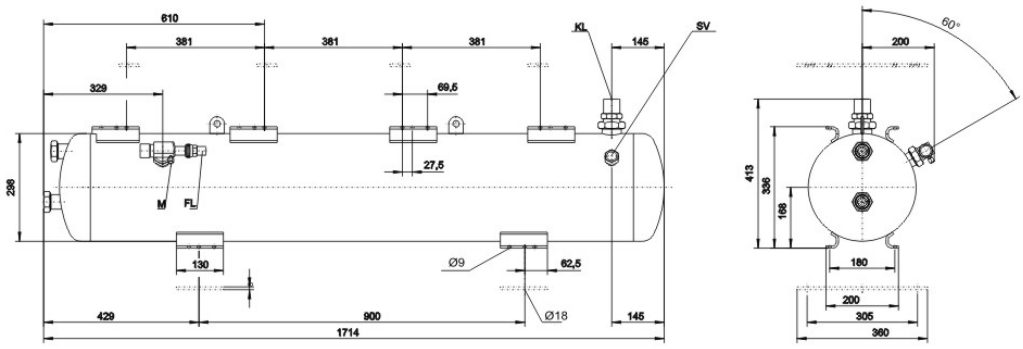
Result

Compressor:	4JE-22
Recommendation:	F1052T
Selection	**F1052T**
Recommended operating point:	A
Selected operating point:	A
Receiver volume	3695 fl.oz.
max refrigerant charge	252 lb
receiver load	53,1 %
Receiver unit	indivi. components
lower fixing rails	327301-06
upper fixing rails	327301-10
upper fixing plate	320366-02

#1: Receiver selection for compact systems without condensing pressure control. Precise calculation only via refrigerant charge (see notes).

Technical Data: F1052T

Dimensions and Connections



Technical Data

Technical Data	
Weight	190.7 lb
Total width	67.5 "
Total depth	13.7 "
Total height	16.3 "
Receiver volume refrigerant	3695.48 fl.oz
Max. refrigerant charge 90% at 20°C / 68°F	
R22	252.2 lb
R134a	255.5 lb
R407C	241.5 lb
R404A/R507A	222.6 lb
R448A	231,9 lb
R449A	232,7 lb
R450A	248,4 lb
R454C	208,6 lb
R455A	216,4 lb
R513A	255,1 lb
R1234yf	231,4 lb
R1234ze	245,5 lb
R515B	249,3 lb
Max. pressure	475 psi
Max. Operating Temperature	248°F
Connection inlet KL	42mm - 1 5/8"
Connection thread/ -flange	2 1/4" - 12 UN
Connection outlet FL	35mm - 1 3/8"
Connection thread/ -flange	1 3/4" - 12 UNF
Gauge	7/16" 20UNF
Connection for pressure relief valve	1 1/4"-12UNF
Adapter for pressure relief valve	Option
Minimum level control	Option
Maximum level control	Option
Electric liquid level control	Option
*According PED 2014/68/EU	Standard
Special Approvals (on request)	Option

Selection of the receivers:

1) "Approx. according to cooling capacity":
The receiver volume is determined by the design of the unit, the operating mode and the function of the receiver (receiving the complete refrigerant charge in the receiver or only compensating capacity variations). When selected via cooling capacity, an approximate selection of the receiver is obtained.Receivers in systems with long pipelines, winter control or in very compact systems should be selected according to method 2).

2) "According to refrigerant charge in the receiver":
The calculation is made on the basis of the specified refrigerant charge. The receiver volume is determined at 20°C and at a maximum filling charge of 95% of the possible receiver content.
Compressor units equipped with receiver
The BITZER range of products comprises compressor units with horizontal receivers. In the output window of the accessories these units, which are included in the standard delivery, are marked with “mounted” in the compressor unit line. Units that can be mounted, but are not included in the Bitzer delivery program, are marked with “single parts”.Units in which the compressor does not fit onto the receiver are marked with "--".

Selection: IQ MODULE

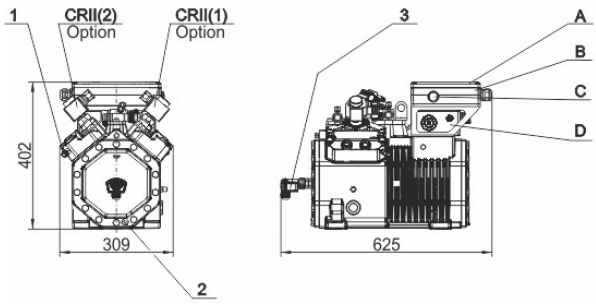
Result

Quantity	Selection	Extent of Delivery	Functionality
1	CM-RC-01 Basis Package for 4JE-13 .. 6FE-50	CM-RC-01 mounted in the extension terminal box with all actuators and sensors wired	Data logging of operating conditions, compressor start function (contactors), Modbus communication, Bluetooth
		Motor temperature sensor (PTC)	Motor overheat protection
		Discharge gas temperature sensor (PT1000)	Compressor discharge temperature protection and recording
		Oil pressure sensor (DP-1)	Oil pressure monitoring and recording
		Crankcase heater	Automated oil heater control
1	VARISTEP valve for 4JE-13 .. 6FE-50	VARISTEP solenoid valve with coil mounted and wired	Automated and quasi stepless capacity adaptation between 50 and 100% (0..10V Input). 2 x VARISTEP: 33..66..100%. See also KT-101.
1	SU valve for 4JE-13 .. 6FE-50	SU solenoid valve with coil mounted and wired	Unloading of the compressor for reduced starting current and torque

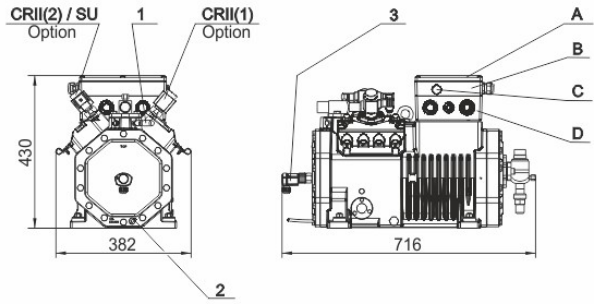
Technical Data: CM-RC-01

Dimensions and Connections

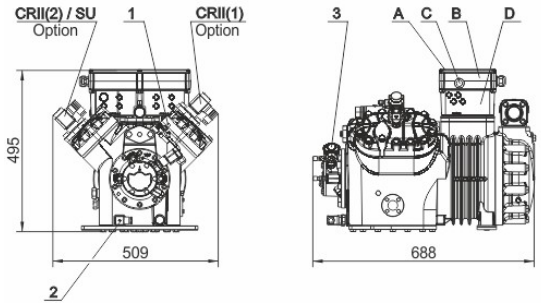
4FES .. 4BES



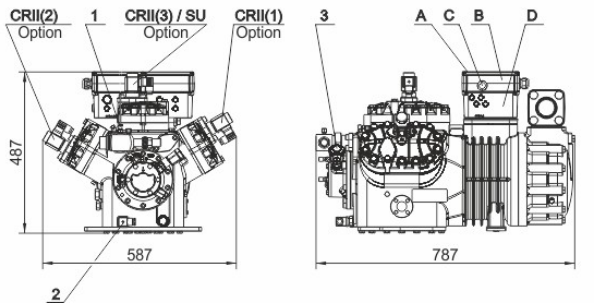
4VES .. 4NES



4JE .. 4FE



6JE .. 6FE



Technical Data

Electrical data	
Operating Voltage	115V-230V +10%/-15%
Required fuse	8A @ 115V / 4A @ 230V
Enclosure class for module housing of 4VES-6 .. 6FE-50	IP65
Enclosure class for module housing of 8GE-50 .. 8FE-70	IP54
Allowable ambient temperature	-22°F / 158°F
Maximum allowable altitude	6500ft
Allowable relative humidity	5%-95%
Extent of delivery (Standard)	

Interfaces:
- Modbus RTU
- Bluetooth

Real-time clock

Legend of connection positions according to "Dimensions":
1 Discharge gas temperature sensor
2 Crankcase heater
3 Oil level sensor (OLC-D1) / Oil pressure sensor (DP-1)
A Terminal box cover
B Compressor module housing
C LED sight glass
D Compressor terminal box