# BITZER Output data

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# Project survey

### *Selected compressors*

| | | |
|---|---|---|
| Semi-hermetic Reciprocating Compressors | 1x | 4TES-9Y |

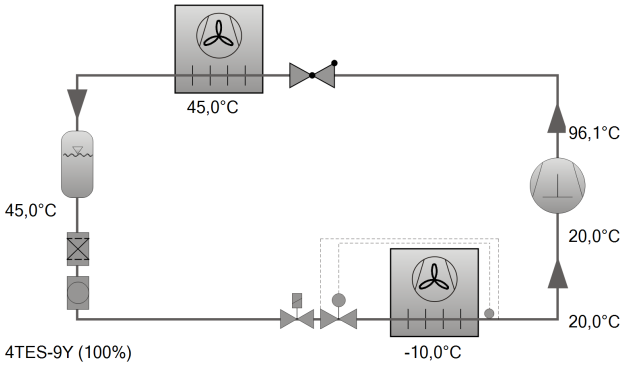
### *Chosen accessory*

| | | |
|---|---|---|
| Horizontal receivers | 1x | F252H |
| IQ MODULE | 1x | CM-RC-02 |

# Selection: Semi-hermetic Reciprocating Compressors

## *Input Values*

| | |
|---|---|
| Compressor model | 4TES-9Y |
| Mode | Refrigeration and air conditioning |
| Refrigerant | R134a |
| Reference temperature | Dew point temp. |
| Evaporating SST | -10,00 °C |
| Condensing SDT | 45,0 °C |
| Liq. subc. (in condenser) | 0 K |
| Suction gas temperature | 20,00 °C |
| Operating mode | Auto |
| Power supply | 400V-3-50Hz |
| Capacity control | 100% |
| Useful superheat | 100% |

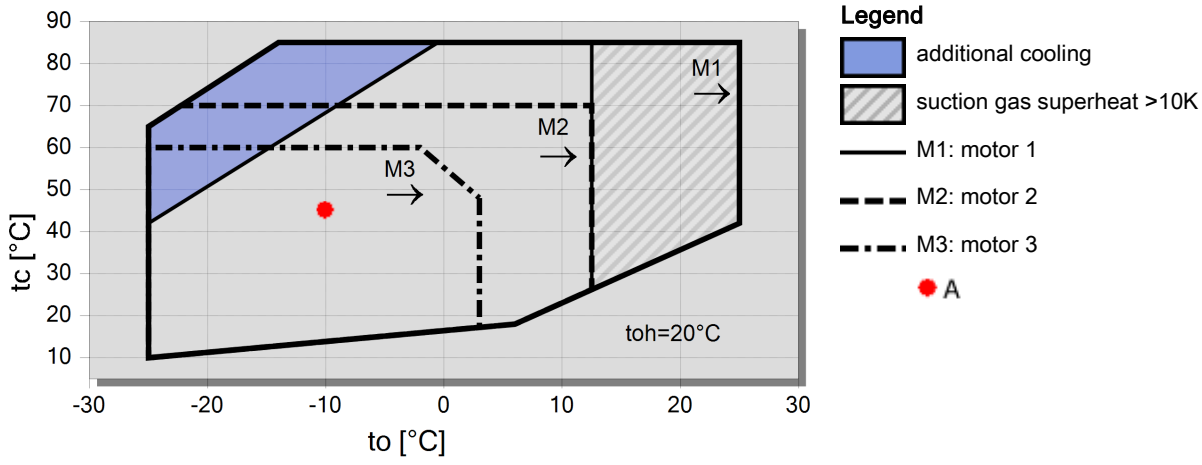



## *Result*

| Compressor | 4TES-9Y-40P |
|---|---|
| Capacity steps | 100% |
| Cooling capacity | 12,33 kW |
| Cooling capacity * | 12,33 kW |
| Evaporator capacity | 12,33 kW |
| Power input | 4,86 kW |
| Current (400V) | 9,23 A |
| Voltage range | 380-420V |
| Condenser capacity | 17,18 kW |
| COP/EER | 2,54 |
| COP/EER * | 2,54 |
| Mass flow | 289 kg/h |
| Operating mode | Standard |
| Discharge gas temp. w/o cooling | 96,1 °C |

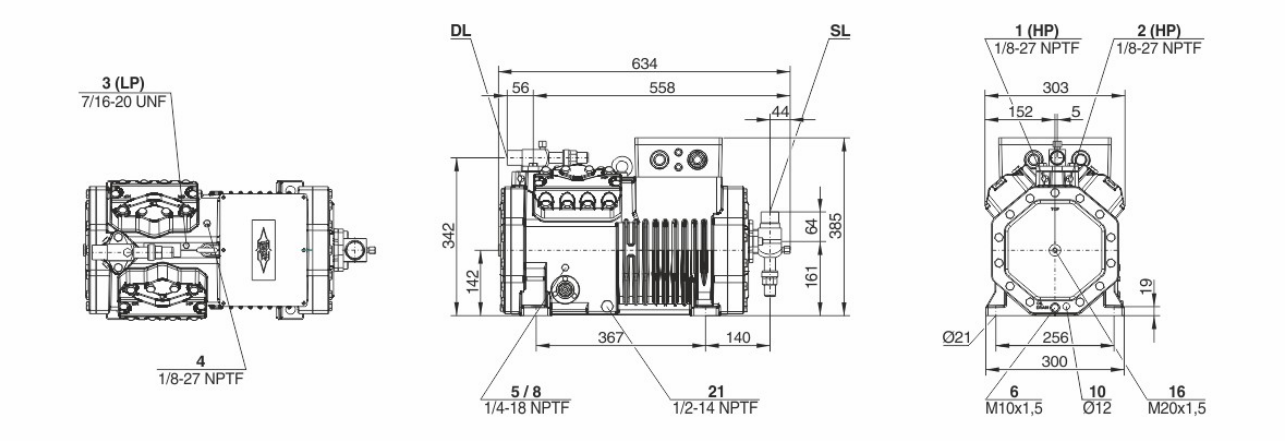
Tentative Data.
*According to EN12900 (20°C suction gas temp., 0K liquid subcooling)

## Application Limits 100%



# Technical Data: 4TES-9Y

## Dimensions and Connections



## Technical Data

| Technical Data | |
|---|---|
| Displacement (1450rpm 50Hz) | 41,3 m3/h |
| Displacement (1750rpm 60Hz) | 49,9 m3/h |
| No. of cylinder x bore x stroke | 4 x 60 mm x 42 mm |
| Weight | 143 kg |
| Max. pressure (LP/HP) | 19 / 32 bar |
| Connection suction line | 35 mm - 1 3/8" |
| Connection discharge line | 28 mm - 1 1/8" |
| Oil type R134a/R407C/R404A/R507A/R407A/R407F | BSE32(Standard) \| R134a tc>70°C: 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) |
| Oil type R454C/R455A | BSE32 (Standard) |
| Oil type R515B | BSE55 (Standard) \| to>15°C: BSE85K (Option) \| tc>70°C: BSE85K (Option) |
| **Motor data** | |
| Motor version | 2 |
| Motor voltage (more on request) | 380-420V PW-3-50Hz |
| Max. operating current | 19.9 A |
| Winding ratio | 50/50 |
| Starting current (Rotor locked) | 49.0 A Y / 81.0 A YY |
| Max. power input | 13,0 kW |
| **Extent of delivery (standard)** | |
| Motor protection | SE-B3 (Option), SE-B2 (Option), CM-RC-02 (Standard) |
| Enclosure class | IP66 |
| Vibration dampers | Standard |
| Oil charge | 2,60 dm³ |
| 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 |
| Refrigerant Injection (RI) | Option |
| Oil service valve | Option |
| Oil heater | 0..140 W PTC (Option) |
| Oil level monitoring | OLC-K1 (Option) |
| **Sound measurement** | |
| Sound power level (-10°C / 45°C) | 74,3 dB(A) @50Hz |
| Sound power level (-35°C / 40°C) | 78,9 dB(A) @50Hz |
| Sound pressure level @ 1m (-10°C / 45°C) | 66,3 dB(A) @50Hz |
| Sound pressure level @ 1m (-35°C / 40°C) | 70,9 dB(A) @50Hz |
| Sound power level (-10°C / 45°C) R134a | 72,3 dB(A) @50Hz |
| Sound pressure level @ 1m (-10°C / 45°C) R134a | 64,3 dB(A) @50Hz |

# 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.

# Selection: Horizontal receivers

## *Input Values*

| | |
|---|---|
| Common | Yes |
| Auto | |
| Operating point | Auto |

## *Operating points*

| | A |
|---|---|
| to [°C] | -10 |
| tc [°C] | 45 |

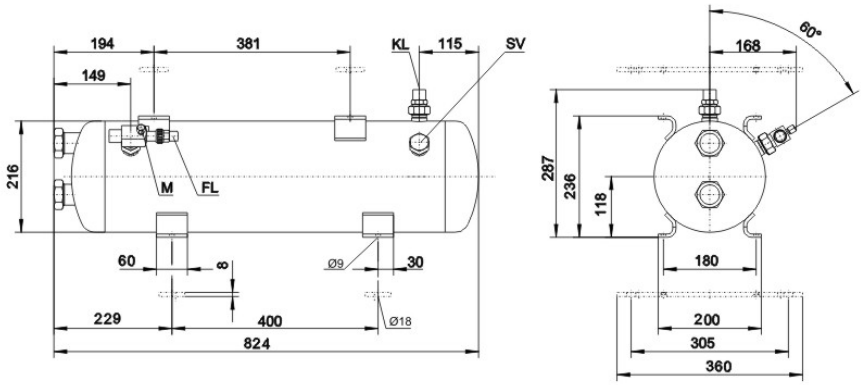
## *Result*

| | |
|---|---|
| Compressor: | 4TES-9Y |
| Recommendation: | F252H |
| **Selection** | **F252H** |
| Recommended operating point: | A |
| Selected operating point: | A |
| Receiver volume | 25,0 dm³ |
| Max. refrigerant charge | 27,6 kg |
| Receiver load | 75,4 % |
| Receiver unit | indivi. components |
| lower fixing rails | 327301-05 |
| upper fixing rails | 327301-24 |
| 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: F252H

## Dimensions and Connections



## Technical Data

| Technical Data | |
|---|---|
| Weight | 23,6 kg |
| Total width | 824 mm |
| Total depth | 276 mm |
| Total height | 287mm |
| Receiver volume refrigerant | 25,0 l |
| Max. refrigerant charge 90% at 20°C / 68°F | |
| R22 | 27,2 kg |
| R134a | 27,6 kg |
| R407C | 26,1 kg |
| R404A/R507A | 24,0 kg |
| R448A | 25,0 kg |
| R449A | 25,1 kg |
| R450A | 26,8 kg |
| R454C | 22,6 kg |
| R455A | 23,4 kg |
| R513A | 27,6 kg |
| R1234yf | 25 kg |
| R1234ze | 26,5 kg |
| R515B | 26,9 kg |
| Max. pressure | 33 bar |
| Max. operating temperature | 120°C |
| Connection inlet KL | 22mm - 7/8" |
| Connection thread/ -flange | 1 1/4" - 12 UNF |
| Connection outlet FL | 22mm - 7/8" |
| Connection thread/ -flange | 1 1/4" - 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 |
| *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***

| Quantit | Selection | Extent of delivery | Functionality |
|---|---|---|---|
| 1 | CM-RC-O2/SE-B no basic module | CM-RC-02 mounted in module housing. Peripheral devices connected to module | Data logging of operating conditions, compressor start function (contactors), Modbus communication, Bluetooth |

# Technical Data: CM-RC-02

## Dimensions and Connections

Drawing not found:

## Technical Data

| Electrical data | |
|---|---|
| Operating voltage | 115V-230V +10%/-10% |
| Required fuse | 8A @ 115V / 4A @ 230V |
| Enclosure class for module housing of 4VES-6 .. 6FE-50 | IP66 |
| Enclosure class for module housing of 8GE-50 .. 8FE-70 | IP66 |
| Allowable ambient temperature | -30°C / 70°C |
| Maximum allowable altitude | 4000m |
| Allowable relative humidity | 5%-95% |
| **Extent of delivery (standard)** | |
| Interfaces: | |
| - Modbus RTU | |
| - Bluetooth | |
| Real-time clock | |