



BITZER Output data

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Project survey

Selected compressors

Semi-hermetic Reciprocating Compressors

1x 4HE-18Y

Chosen accessory

[Horizontal receivers](#)

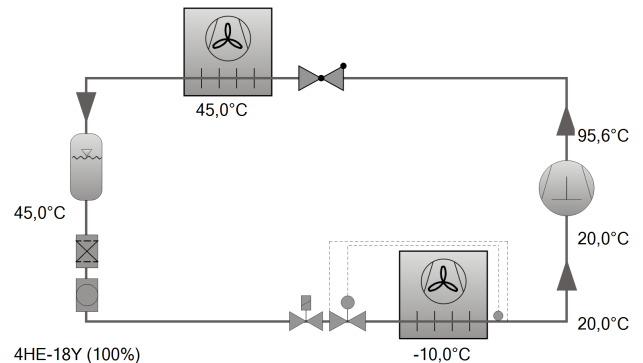
1x F402H



Compressor Selection: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	4HE-18Y
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	4HE-18Y-40P
Capacity steps	100%
Cooling capacity	23,0 kW
Cooling capacity *	23,0 kW
Evaporator capacity	23,0 kW
Power input	8,98 kW
Current (400V)	17,23 A
Voltage range	380-420V
Condenser Capacity	32,0 kW
COP/EER	2,56
COP/EER *	2,56
Mass flow	538 kg/h
Operating mode	Standard
Discharge gas temp. w/o cooling	95,6 °C

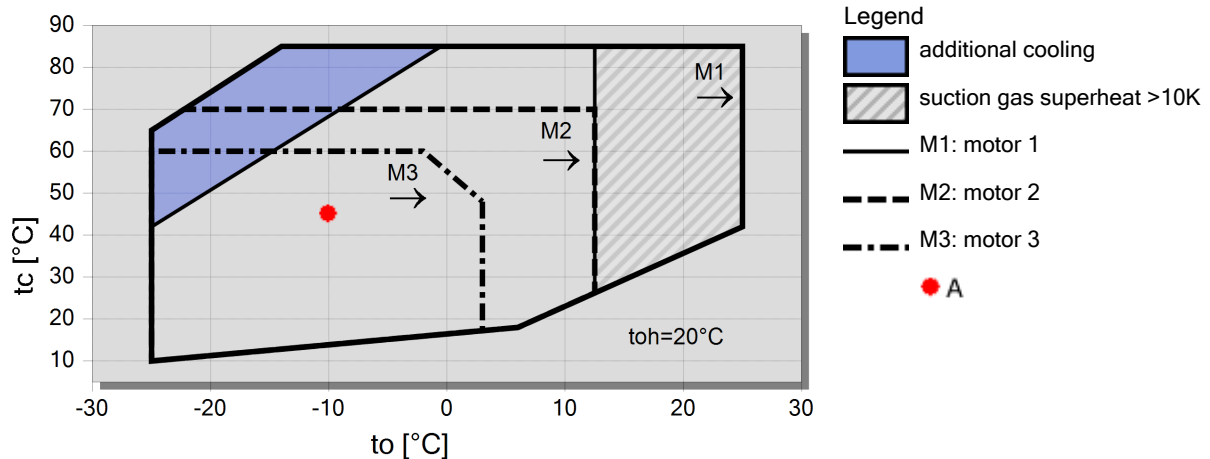


Tentative Data.

*Compressor-Performance data certified by ASERCOM (see T.Data/ Notes)

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

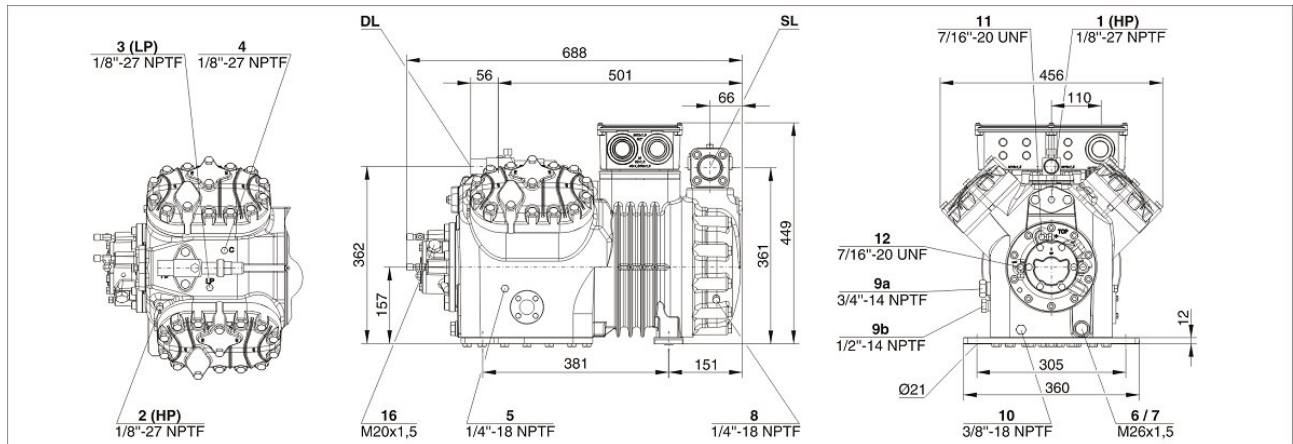
Application Limits 100%





Technical Data: 4HE-18Y

Dimensions and Connections



Technical Data

Technical Data

Displacement (1450 RPM 50Hz)	73,7 m³/h
Displacement (1750 RPM 60Hz)	88,83 m³/h
No. of cylinder x bore x stroke	4 x 70 mm x 55 mm
Weight	183 kg
Max. pressure (LP/HP)	19 / 32 bar
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>70°C: BSE55 (Option)
Oil type R22 (R12/R502)	B5.2(Option)

Motor data

Motor version	2
Motor voltage (more on request)	380-420V PW-3-50Hz
Max operating current	36.7 A
Winding ratio	50/50
Starting current (Rotor locked)	97.0 A Y / 158.0 A YY
Max. Power input	22,0 kW

Extent of delivery (Standard)

Motor protection	SE-B2
Enclosure class	IP54 (Standard), IP66 (Option)
Vibration dampers	Standard
Oil charge	4,00 dm³

Available Options

Discharge gas temperature sensor	Option
Start unloading	Option
Capacity control	100-50% (Option)
Capacity Control - infinite	100-50% (Option)
Additional fan	Option
CIC System	Option
Oil service valve	Option
Crankcase heater	140 W (Option)
Oil pressure monitoring	MP54 (Option), Delta-PII

Sound measurement

Sound power level (-10°C / 45°C)	78,0 dB(A) @50Hz
Sound power level (-35°C / 40°C)	81,0 dB(A) @50Hz
Sound pressure level @ 1m (-10°C / 45°C)	70 dB(A) @50Hz
Sound pressure level @ 1m (-35°C / 40°C)	73 dB(A) @50Hz
Sound power level (-10°C / 45°C) R134a	76 dB(A) @50Hz
Sound pressure level @ 1m (+5°C / 50°C) R134a	
Sound pressure level @ 1m (-10°C / 45°C) R134a	68 dB(A) @50Hz



Semi-hermetic Reciprocating Compressors

Motor 1 = e.g. 4TES-12 (4TCS-12.2) 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 (4TCS-8.2) 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 (4VCS-6.2) to 6FE-44 (6F-40.2) and 44JE-30 (44J-26.2) to 66FE-88 (66F-80.2) 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 compressors 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 (www.ASERCOM.org).

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 application (IP-units 60Hz) and R404A if not declared.

Sound pressure level: values based on free field area conditions with hemispherical 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 Discharge gas temperature sensor (HP)
- 3 Low pressure connection (LP)
- 4 CIC system: spray nozzle (LP)
- 4b CIC sensor
- 5 Oil fill plug
- 6 Oil drain (magnetic screw)
- 7 Oil filter
- 8 Oil return (oil separator)
- 9 Oil and gas equalization (parallel operation)
- 9a Gas equalization (parallel operation)
- 9b Oil equalization (parallel operation)
- 10 Crankcase heater
- 11 Oil pressure connection +
- 12 Oil pressure connection -
- 13 Cooling water connection
- 16 Connection for differential oil pressure switch "Delta-P"



Horizontal receivers

Input Values

Common	Yes
Auto	
Operating point	Auto

Operating Points

	A
to [°C]	-10
tc [°C]	45

Result

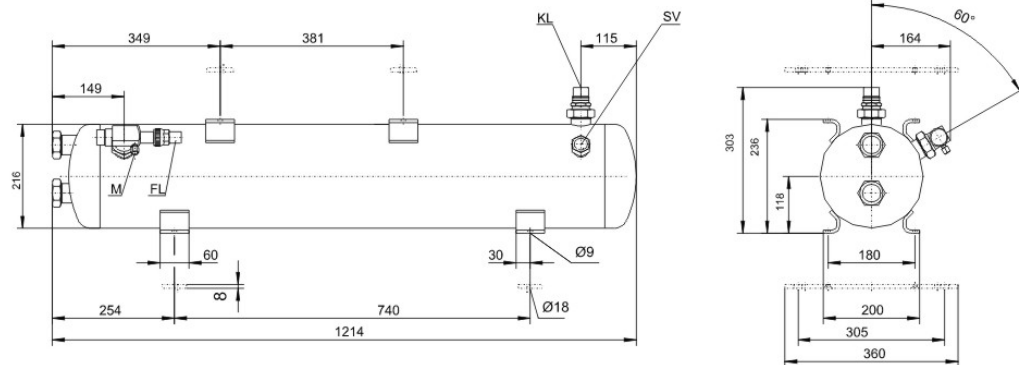
Compressor:	
Recommendation:	F402H
Selection	F402H
Recommended operating point:	A
Selected operating point:	A
Receiver volume	39,0 dm ³
max refrigerant charge	43,0 kg
receiver load	83,1 %
Receiver unit	mounted compl.
lower fixing rails	327301-05
upper fixing rails	327301-10
upper fixing plate	320366-02

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



Technical Data: F402H

Dimensions and Connections



Technical Data

Technical Data

Weight	32,0 kg
Total width	1214 mm
Total depth	272 mm
Total height	303mm
Receiver volume refrigerant	39,0 l
Max. refrigerant charge 90% at 20°C	20°C
R22	42,5 kg
R134a	43,0 kg
R407C	40,7 kg
R404A/R507A	37,5 kg
Connection inlet KL	28mm - 1 1/8"
Connection thread/ -flange	1 3/4" - 12 UNF
Connection outlet FL	28mm - 1 1/8"
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
*According PED 97/23/EC	Standard
Special Approvals (on request)	Option



Liquid receiver

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 "--".

Legend of connection positions according to "Dimensions":