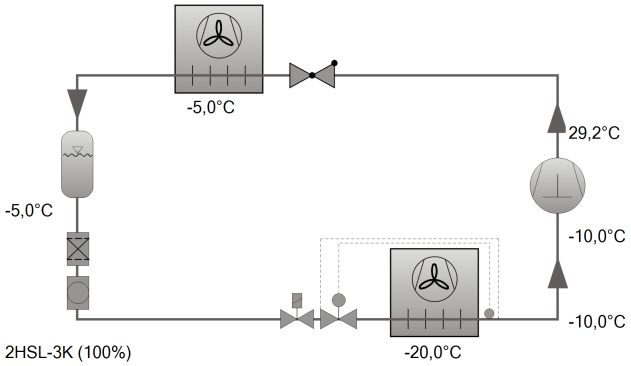
Selection: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	2HSL-3K
Mode	Refrigeration and air conditioning
Refrigerant	R744
Reference temperature	Dew point temp.
Evaporating SST	-20,00 °C
Condensing SDT	-5,00 °C
Liq. subc. (in condenser)	0 K
Suct. gas superheat	10,00 K
Operating mode	Subcritical
Power supply	400V-3-50Hz
Capacity control	100%
Useful superheat	100%



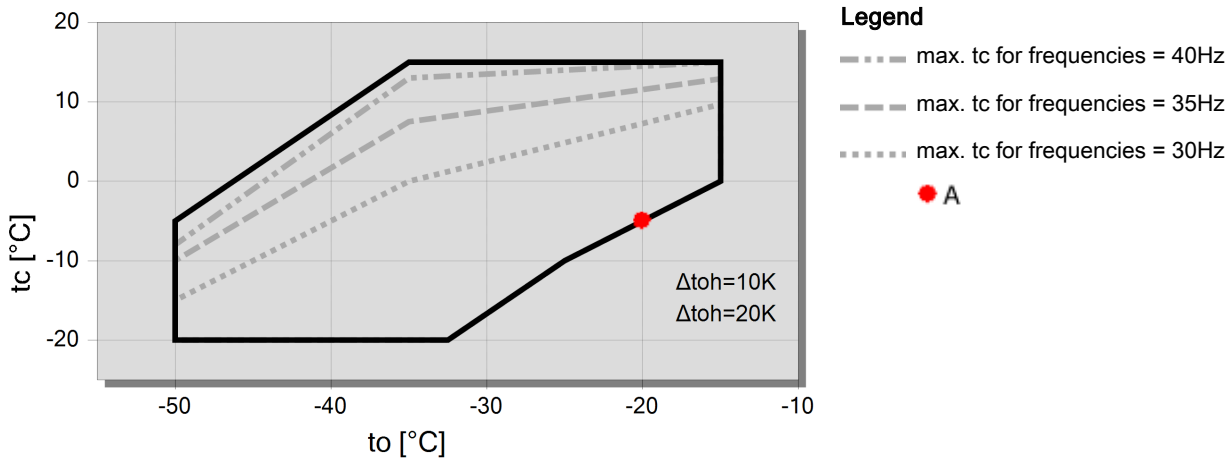
Result

Compressor	2HSL-3K-40S
Capacity steps	100%
Cooling capacity	13,88 kW
Cooling capacity *	13,88 kW
Evaporator capacity	13,88 kW
Power input	1,57 kW
Current (400V)	3,50 A
Voltage range	380-420V
Condenser capacity	15,46 kW
COP/EER	8,82
COP/EER *	8,82
Mass flow	191,4 kg/h
Discharge gas temp. w/o cooling	29,2 °C

CERTIFIED PRODUCT ASERCOM

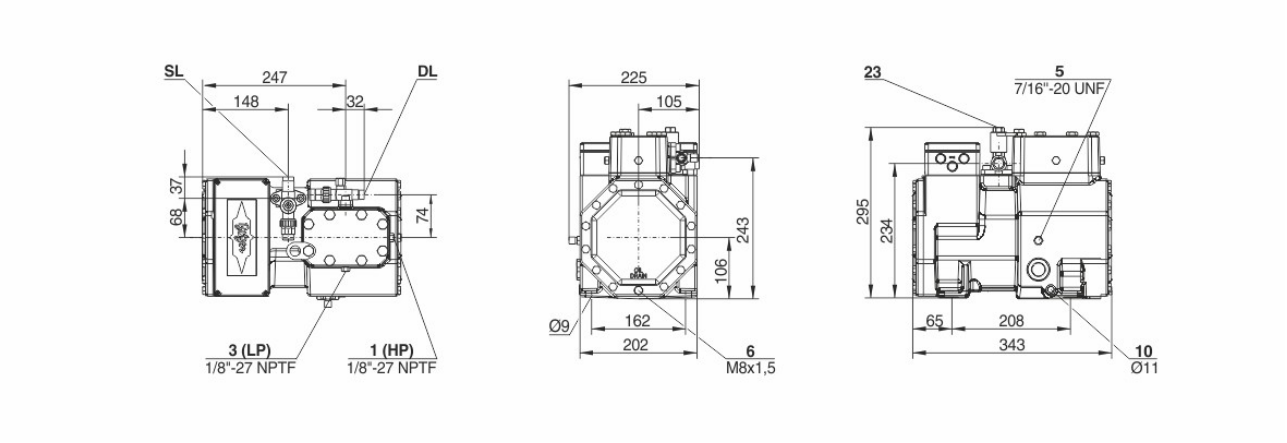
Tentative Data.
*Compressor performance data certified by ASERCOM (see T. Data/ Notes)
Discharge gas temperature at least 50°C (122°F)
*according to EN12900 (10K suction gas superheat, 0K liquid subcooling)

Application Limits 2HSL-3K



Technical Data: 2HSL-3K

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450rpm 50Hz)	4,34 m3/h
Displacement (1750rpm 60Hz)	5,24 m3/h
No. of cylinder x bore x stroke	2 x 38 mm x 22 mm
Weight	50 kg
Max. pressure (LP/HP)	30 / 53 bar
Connection suction line	16 mm - 5/8"
Connection discharge line	12 mm - 1/2"
Oil type R744 (CO2)	BSE60K (Standard) BSE85K, BSG68K (Option)
Motor data	
Motor version	1
Motor voltage (more on request)	380-420V Y-3-50Hz
Max. operating current	6.0 A
Starting current (Rotor locked)	25.5 A
Max. power input	3,0 kW
Extent of delivery (standard)	
Motor protection	SE-B3 (Standard), SE-B2 (Option), CM-RC-02 (Option)
Enclosure class	IP65
Vibration dampers	Standard
Oil charge	1,00 dm³
Available options	
Oil heater	0..60 W PTC (Option)
Sound measurement	

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.

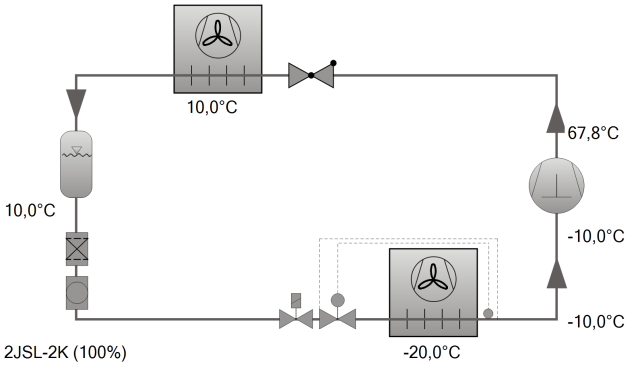
General remarks regarding sound data

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: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	2JSL-2K
Mode	Refrigeration and air conditioning
Refrigerant	R744
Reference temperature	Dew point temp.
Evaporating SST	-20,00 °C
Condensing SDT	10,00 °C
Liq. subc. (in condenser)	0 K
Suct. gas superheat	10,00 K
Operating mode	Subcritical
Power supply	400V-3-50Hz
Capacity control	100%
Useful superheat	100%



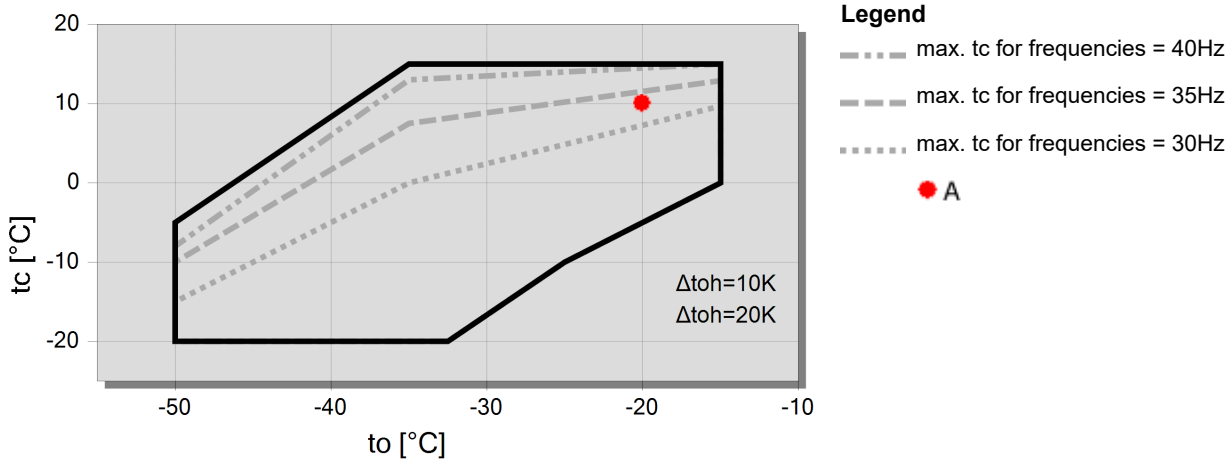
Result

Compressor	2JSL-2K-40S
Capacity steps	100%
Cooling capacity	8,24 kW
Cooling capacity *	8,24 kW
Evaporator capacity	8,24 kW
Power input	2,19 kW
Current (400V)	4,20 A
Voltage range	380-420V
Condenser capacity	10,43 kW
COP/EER	3,76
COP/EER *	3,76
Mass flow	132,8 kg/h
Discharge gas temp. w/o cooling	67,8 °C

CERTIFIED PRODUCT ASERCOM

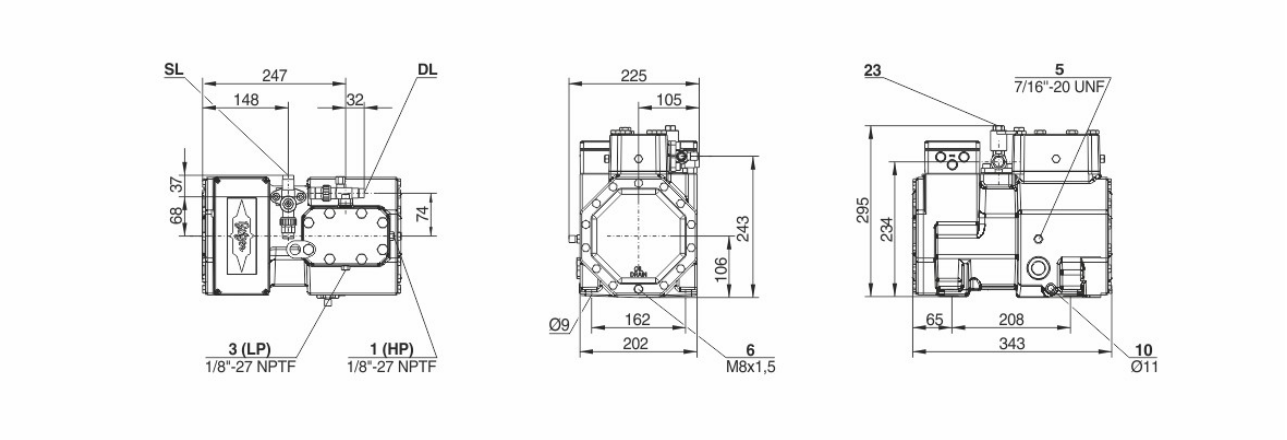
Tentative Data.
*Compressor performance data certified by ASERCOM (see T. Data/ Notes)
*according to EN12900 (10K suction gas superheat, 0K liquid subcooling)

Application Limits 2JSL-2K



Technical Data: 2JSL-2K

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450rpm 50Hz)	3,48 m3/h
Displacement (1750rpm 60Hz)	4,19 m3/h
No. of cylinder x bore x stroke	2 x 34 mm x 22 mm
Weight	48 kg
Max. pressure (LP/HP)	30 / 53 bar
Connection suction line	16 mm - 5/8"
Connection discharge line	12 mm - 1/2"
Oil type R744 (CO2)	BSE60K (Standard) BSE85K, BSG68K (Option)
Motor data	
Motor version	1
Motor voltage (more on request)	380-420V Y-3-50Hz
Max. operating current	4.6 A
Starting current (Rotor locked)	25.5 A
Max. power input	2,4 kW
Extent of delivery (standard)	
Motor protection	SE-B3(Standard), SE-B2(Option)
Enclosure class	IP65
Vibration dampers	Standard
Oil charge	1,00 dm³
Available options	
Oil heater	0..60 W PTC (Option)
Sound measurement	

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

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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: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	(4DC-7.2Y)	Suction gas temperature	20,00 °C
Mode	Refrigeration and Air conditioning	Operating mode	Auto
Refrigerant	R404A	Power supply	400V-3-50Hz
Reference temperature	Dew point temp.	Capacity control	100%
Liq. subc. (in condenser)	0 K	Useful superheat	100%

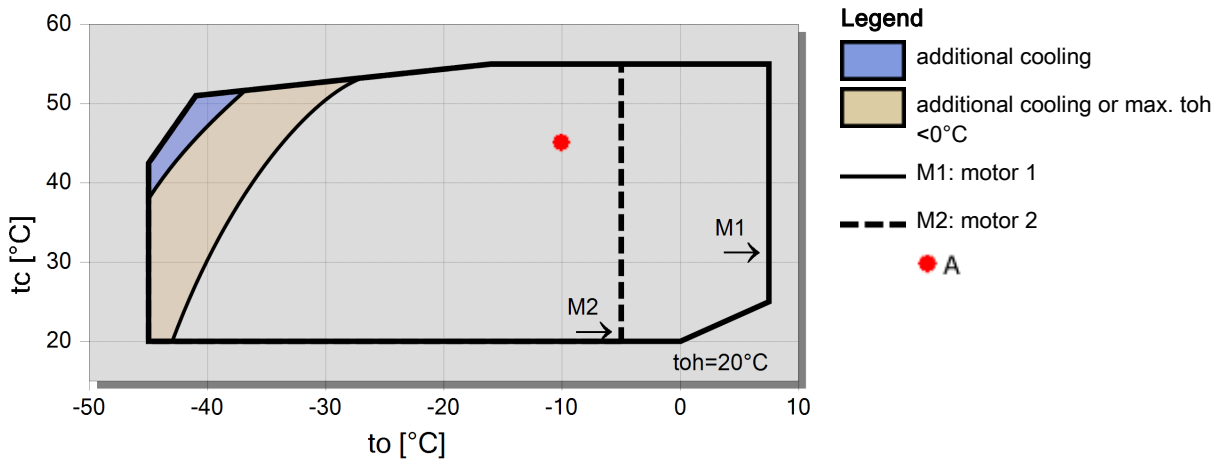
Result

Q [W]	Cooling capacity	COP [-]	COP/EER
Qu* [W]	Evaporator capacity	m [kg/h]	Mass flow
P [kW]	Power input	Op.	Operating mode
I [A]	Current	th [°C]	Discharge gas temp. w/o cooling
Qc [W]	Condenser capacity		

tc	to	0°C	-5°C	-10°C	-15°C	-20°C	-25°C	-30°C	-35°C
30°C	Q [W]	25012	20788	17123	13950	11213	8864	6857	5155
	Qu* [W]	25012	20788	17123	13950	11213	8864	6857	5155
	P [kW]	5,51	5,39	5,18	4,88	4,52	4,10	3,63	3,12
	I [A]	10,17	10,02	9,75	9,38	8,94	8,46	7,95	7,45
	Qc [W]	30520	26177	22300	18834	15734	12962	10486	8279
	COP [-]	4,54	3,86	3,31	2,86	2,48	2,16	1,89	1,65
	m [kg/h]	636	522	426	344	275	216	166,1	124,4
	Op.	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	th [°C]	62,7	69,7	77,0	84,9	93,3	102,5	112,6	123,9
40°C	Q [W]	21087	17485	14349	11626	9272	7247	5513	4040
	Qu* [W]	21087	17485	14349	11626	9272	7247	5513	4040
	P [kW]	6,55	6,26	5,88	5,43	4,91	4,35	3,74	3,11
	I [A]	11,59	11,18	10,66	10,07	9,42	8,74	8,07	7,44
	Qc [W]	27640	23743	20228	17053	14184	11594	9257	7153
	COP [-]	3,22	2,79	2,44	2,14	1,89	1,67	1,47	1,30
	m [kg/h]	605	495	402	322	255	198,1	149,8	109,3
	Op.	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	th [°C]	74,5	81,7	89,2	97,3	106,0	115,4	125,8	137,5
50°C	Q [W]	17212	14225	11616	9345	7379	5687	4240	3013
	Qu* [W]	17212	14225	11616	9345	7379	5687	4240	3013
	P [kW]	7,46	7,00	6,46	5,86	5,20	4,50	3,78	3,03
	I [A]	12,87	12,21	11,46	10,64	9,78	8,92	8,11	7,36
	Qc [W]	24670	21222	18075	15202	12581	10192	8018	6045
	COP [-]	2,31	2,03	1,80	1,60	1,42	1,26	1,12	0,99
	m [kg/h]	573	467	376	299	234	179,1	132,7	93,8
	Op.	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	th [°C]	86,6	93,9	101,7	110,1	119,2	129,1	0	0

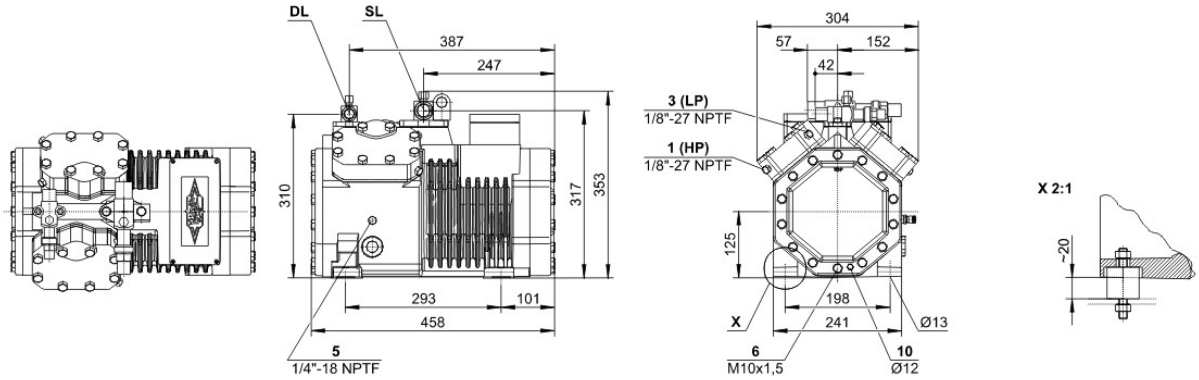
-- No calculation possible (see message in single point selection)
*According to EN12900 (20°C suction gas temp., 0K liquid subcooling)

Application Limits 100% Octagon 4DC-7.2


60
50
40
30
20
tc [°C]
-50
-40
-30
-20
-10
0
10
to [°C]
M1
M2
toh=20°C
Legend
additional cooling
additional cooling or max. toh <0°C
M1: motor 1
M2: motor 2
A

Technical Data: (4DC-7.2Y)

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450 RPM 50Hz)	26,84 m3/h
Displacement (1750 RPM 60Hz)	32,39 m3/h
No. of cylinder x bore x stroke	4 x 50 mm x 39,3 mm
Weight	88,5 kg
Max. pressure (LP/HP)	19 / 28 bar
Connection suction line	28 mm - 1 1/8"
Connection discharge line	22 mm - 7/8"
Oil type R134a/R407C/R404A/R507A/R407A/R407F	tc<55°C: BSE32 | tc>55°C: BSE55 (Option)
Oil type R22 (R12/R502)	B5.2 (Standard)
Oil type R290/R1270	SHC226E (Standard)
Motor data	
Motor voltage (more on request)	380-420V Y-3-50Hz
Max operating current	15.9 A
Starting current (Rotor locked)	82.4 A
Max. Power input	9,0 kW
Extent of delivery (Standard)	
Motor protection	SE-B1
Enclosure class	IP65
Vibration dampers	Standard
Oil charge	2,00 dm³
Available Options	
Discharge gas temperature sensor	Option
Start unloading	Option
Capacity control	100-50% (Option)
Additional fan	Option
Crankcase heater	0..120 W PTC (Option)
Oil level monitoring	OLC-K1 (Option, not for R290/R1270)
Sound measurement	
Sound power level (+5°C / 50°C)	71,0 dB(A) @ 50Hz
Sound power level (-10°C / 45°C)	72,0 dB(A) @ 50Hz
Sound power level (-35°C / 40°C)	(74,0) dB(A) @ 50Hz
Sound pressure level @ 1m (+5°C / 50°C)	63,0 dB(A) @ 50Hz
Sound pressure level @ 1m (-10°C / 45°C)	64,0 dB(A) @ 50Hz
Sound pressure level @ 1m (-35°C / 40°C)	(66,0) 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

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Condensing capacity

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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: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	6JE-22Y	Suction gas temperature	20,00 °C
Mode	Refrigeration and Air conditioning	Operating mode	Auto
Refrigerant	R134a	Power supply	400V-3-50Hz
Reference temperature	Dew point temp.	Capacity control	100%
Liq. subc. (in condenser)	0 K	Useful superheat	100%

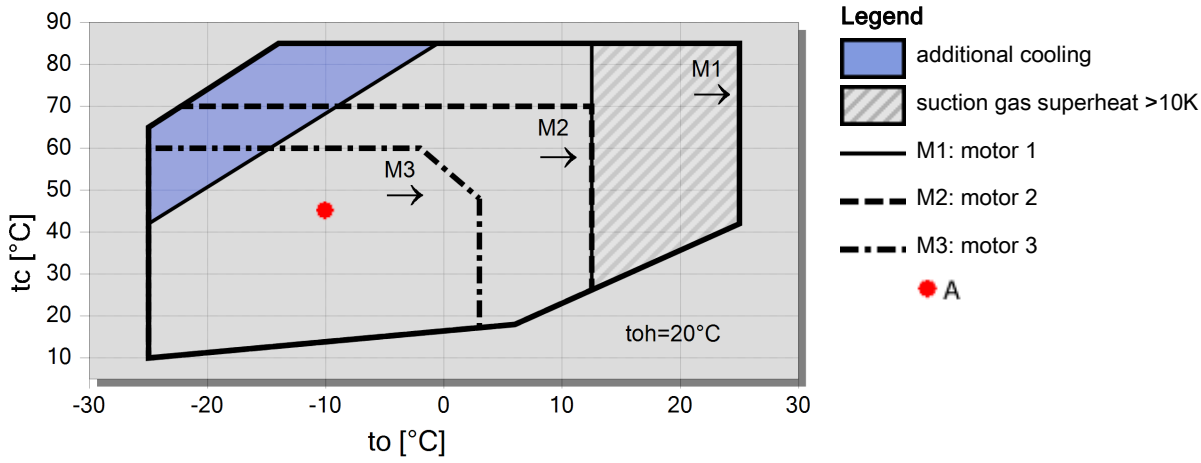
Result

Q [W]	Cooling capacity	COP [-]	COP/EER
Qu* [W]	Evaporator capacity	m [kg/h]	Mass flow
P [kW]	Power input	Op.	Operating mode
I [A]	Current	th [°C]	Discharge gas temp. w/o cooling
Qc [W]	Condenser capacity		

tc	to	5°C	0°C	-5°C	-10°C	-15°C	-20°C	-25°C	-30°C
30°C	Q [W]	--	55461	44726	35613	27925	21489	16148	--
	Qu* [W]		55461	44726	35613	27925	21489	16148	
	P [kW]		10,87	10,39	9,70	8,86	7,90	6,86	
	I [A]		21,6	21,0	20,2	19,29	18,27	17,26	
	Qc [W]		66334	55115	45315	36781	29384	23013	
	COP [-]		5,10	4,31	3,67	3,15	2,72	2,35	
	m [kg/h]		1146	918	727	568	436	326	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		64,2	71,6	79,5	88,1	97,5	107,9	
40°C	Q [W]	--	48848	39178	30975	24062	18285	13502	--
	Qu* [W]		48848	39178	30975	24062	18285	13502	
	P [kW]		12,88	11,93	10,84	9,63	8,37	7,10	
	I [A]		24,1	22,9	21,6	20,2	18,77	17,48	
	Qc [W]		61726	51111	41811	33696	26656	20597	
	COP [-]		3,79	3,28	2,86	2,50	2,18	1,90	
	m [kg/h]		1103	879	691	534	404	298	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		75,3	82,7	90,6	99,2	108,7	119,7	
50°C	Q [W]	--	42077	33510	26249	20140	15046	10843	--
	Qu* [W]		42077	33510	26249	20140	15046	10843	
	P [kW]		14,51	13,13	11,65	10,11	8,58	7,09	
	I [A]		26,3	24,5	22,6	20,7	18,99	17,47	
	Qc [W]		56586	46636	37894	30255	23626	17930	
	COP [-]		2,90	2,55	2,25	1,99	1,75	1,53	
	m [kg/h]		1051	831	647	494	367	264	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		86,3	93,7	101,7	110,4	120,3	132,1	

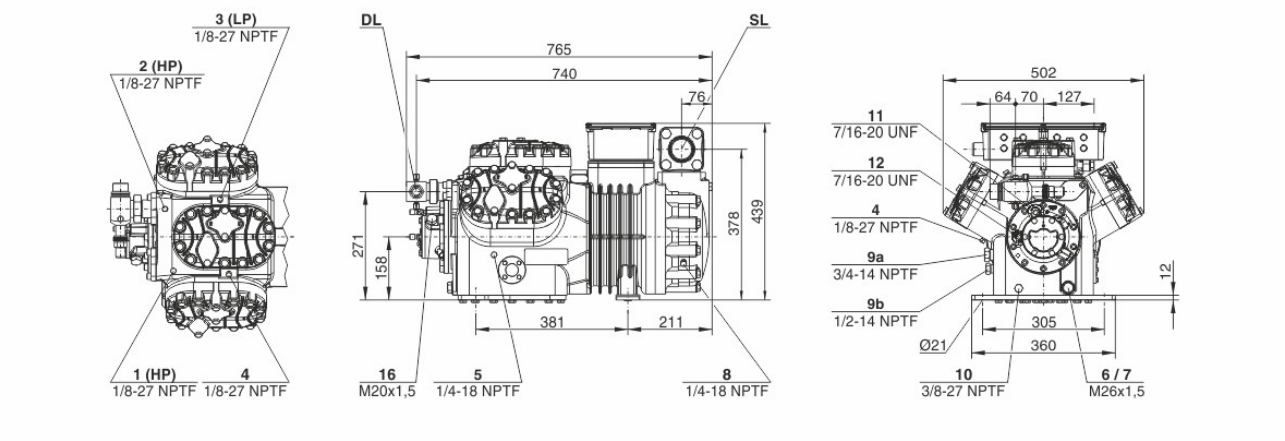
-- No calculation possible (see message in single point selection)
*According to EN12900 (20°C suction gas temp., 0K liquid subcooling)

Application Limits 100% 6JE-22


90
80
70
60
50
40
30
20
10
tc [°C]
-30
-20
-10
0
10
20
30
to [°C]
M1
M2
M3
toh=20°C
Legend
additional cooling
suction gas superheat >10K
M1: motor 1
M2: motor 2
M3: motor 3
A

Technical Data: 6JE-22Y

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450 RPM 50Hz)	95,3 m³/h
Displacement (1750 RPM 60Hz)	115,02 m³/h
Frequency range	25..70 Hz
No. of cylinder x bore x stroke	6 x 65 mm x 55 mm
Weight	231 kg
Max. pressure (LP/HP)	19 / 32 bar
Connection suction line	54 mm - 2 1/8"
Connection discharge line	35 mm - 1 3/8"
Oil type R134a/R407C/R404A/R507A/R407A/R407F	BSE32(Standard) | R134a tc>70°C: BSE55 (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	3
Motor voltage (more on request)	380-420V PW-3-50Hz
Max operating current	28.5 A
Max operating current 70Hz/400V/FI	42,4 A
Winding ratio	50/50
Starting current (Rotor locked)	125.0 A Y / 211.0 A YY
Max. Power input	16,0 kW
Extent of delivery (Standard)	
Motor protection	SE-B3(Standard), SE-B2(Option), CM-RC-01(Option)
Enclosure class	IP54 (Standard), IP66 (Option)
Vibration dampers	Standard
Oil charge	4,75 dm³
Discharge shut-off valve	Standard
Suction shut-off valve	Standard
Available Options	
Discharge gas temperature sensor	Option
Start unloading	Option
Capacity control	100-66-33% (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 (-10°C / 45°C)	77,3 dB(A) @50Hz
Sound pressure level @ 1m (-10°C / 45°C)	69,3 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.

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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: Semi-hermetic Reciprocating Compressors

Input Values

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

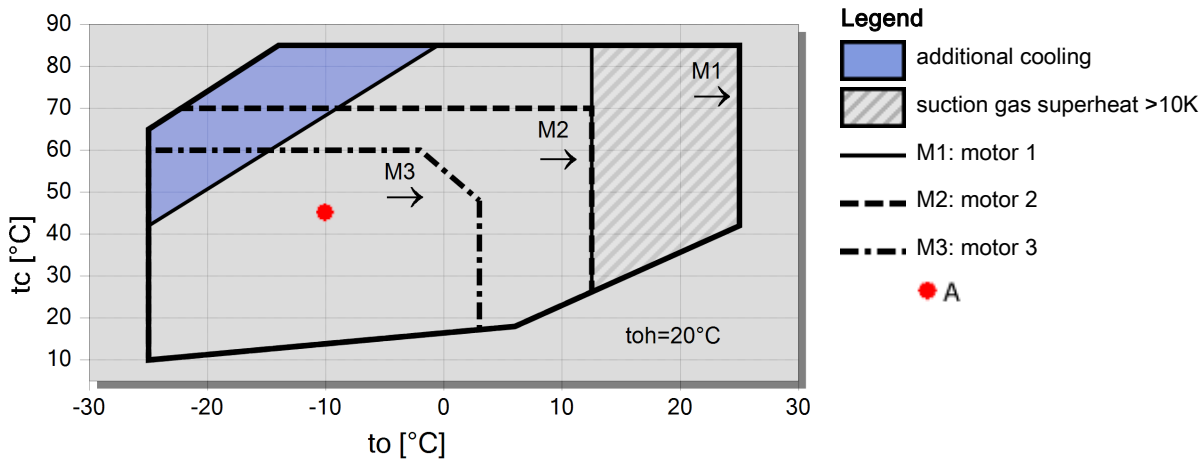
Result

Q [W]	Cooling capacity	COP [-]	COP/EER
Qu* [W]	Evaporator capacity	m [kg/h]	Mass flow
P [kW]	Power input	Op.	Operating mode
I [A]	Current	th [°C]	Discharge gas temp. w/o cooling
Qc [W]	Condenser capacity		

tc	to	5°C	0°C	-5°C	-10°C	-15°C	-20°C	-25°C	-30°C
30°C	Q [W]	--	50550	41042	32921	26019	20186	15288	--
	Qu* [W]		50550	41042	32921	26019	20186	15288	
	P [kW]		10,31	9,70	8,97	8,15	7,27	6,36	
	I [A]		18,91	18,13	17,22	16,26	15,29	14,36	
	Qc [W]		60865	50742	41890	34168	27457	21652	
	COP [-]		4,90	4,23	3,67	3,19	2,78	2,40	
	m [kg/h]		1044	843	672	529	409	309	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		65,6	72,3	79,5	87,4	96,2	106,5	
40°C	Q [W]	--	44862	36341	29073	22909	17716	13376	--
	Qu* [W]		44862	36341	29073	22909	17716	13376	
	P [kW]		12,14	11,19	10,15	9,05	7,92	6,80	
	I [A]		21,4	20,1	18,70	17,32	16,00	14,80	
	Qc [W]		57004	47529	39219	31955	25638	20178	
	COP [-]		3,69	3,25	2,87	2,53	2,24	1,97	
	m [kg/h]		1013	815	649	509	392	295	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		76,3	83,2	90,5	98,4	107,1	117,1	
50°C	Q [W]	--	38708	31199	24808	19404	14871	11103	--
	Qu* [W]		38708	31199	24808	19404	14871	11103	
	P [kW]		13,69	12,42	11,09	9,73	8,38	7,06	
	I [A]		23,6	21,8	19,94	18,16	16,52	15,06	
	Qc [W]		52396	43617	35895	29133	23247	18163	
	COP [-]		2,83	2,51	2,24	1,99	1,78	1,57	
	m [kg/h]		967	774	611	476	363	270	
	Op.		Standard	Standard	Standard	Standard	Standard	Standard	
	th [°C]		87,4	94,5	102,1	110,3	119,4	129,8	

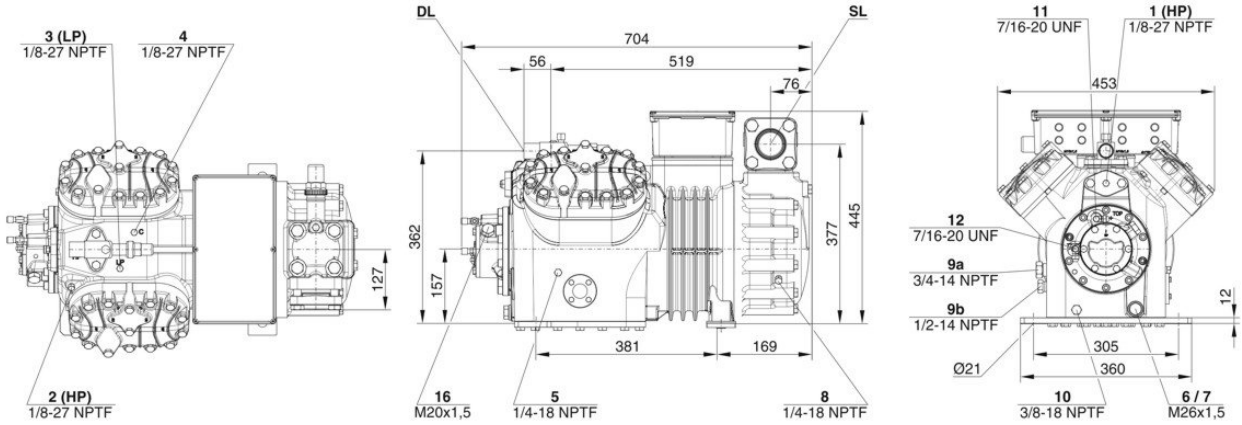
-- No calculation possible (see message in single point selection)
*According to EN12900 (20°C suction gas temp., 0K liquid subcooling)

Application Limits 100% 4GE-20


90
80
70
60
50
40
30
20
10
tc [°C]
-30
-20
-10
0
10
20
30
to [°C]
M1
M2
M3
toh=20°C
Legend
additional cooling
suction gas superheat >10K
M1: motor 1
M2: motor 2
M3: motor 3
A

Technical Data: 4GE-20Y

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450 RPM 50Hz)	84,5 m³/h
Displacement (1750 RPM 60Hz)	101,98 m³/h
Frequency range	25..70 Hz
No. of cylinder x bore x stroke	4 x 75 mm x 55 mm
Weight	196 kg
Max. pressure (LP/HP)	19 / 32 bar
Connection suction line	54 mm - 2 1/8"
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 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	3
Motor voltage (more on request)	380-420V PW-3-50Hz
Max operating current	25.9 A
Max operating current 70Hz/400V/FI	38,1 A
Winding ratio	50/50
Starting current (Rotor locked)	97.0 A Y / 158.0 A YY
Max. Power input	16,0 kW
Extent of delivery (Standard)	
Motor protection	SE-B3(Standard), SE-B2(Option), CM-RC-01(Option)
Enclosure class	IP54 (Standard), IP66 (Option)
Vibration dampers	Standard
Oil charge	4,50 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
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)	79,0 dB(A) @50Hz
Sound pressure level @ 1m (-10°C / 45°C)	71 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

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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":

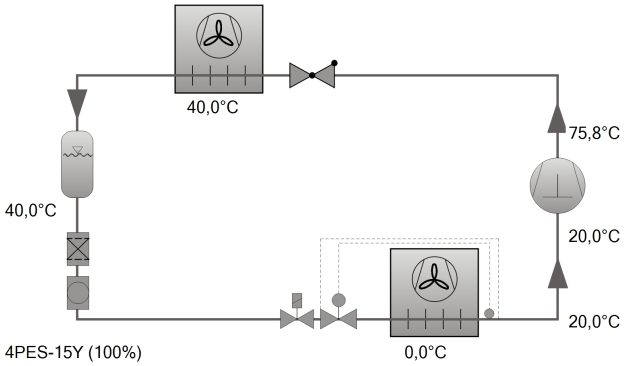
1 High pressure connection (HP)
2 Connection for discharge gas temperature sensor (HP) (for 4VE(S)-6Y .. 4NE(S)-20(Y) connection for CIC sensor as alternative)
3 Low pressure connection (LP)
4 CIC system: injection nozzle (LP)
4b Connection for CIC sensor
4c Connection for CIC sensor (MP / operation 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: Semi-hermetic Reciprocating Compressors

Input Values

Compressor model	4PES-15Y
Mode	Refrigeration and air conditioning
Refrigerant	R134a
Reference temperature	Dew point temp.
Evaporating SST	0 °C
Condensing SDT	40,0 °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%

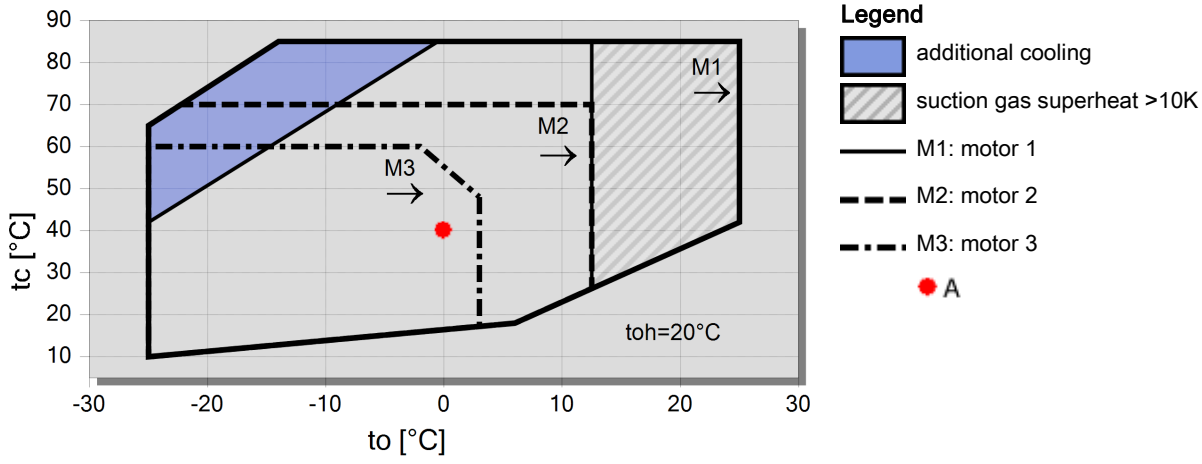


Result

Compressor	4PES-15Y-40P
Capacity steps	100%
Cooling capacity	23,9 kW
Cooling capacity *	23,9 kW
Evaporator capacity	23,9 kW
Power input	6,39 kW
Current (400V)	13,81 A
Voltage range	380-420V
Condenser capacity	30,3 kW
COP/EER	3,74
COP/EER *	3,74
Mass flow	540 kg/h
Operating mode	Standard
Discharge gas temp. w/o cooling	75,8 °C

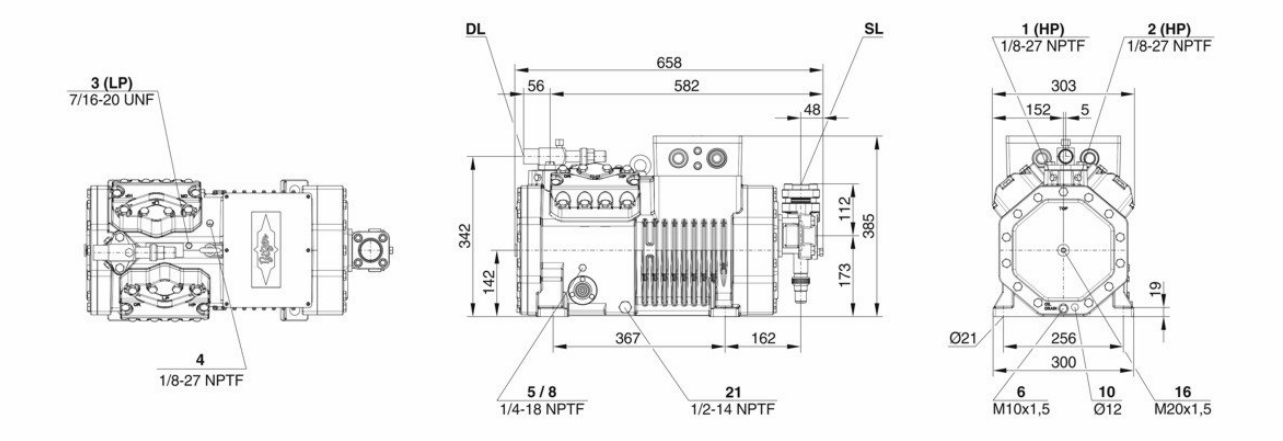
Tentative Data.
*According to EN12900 (20°C suction gas temp., 0K liquid subcooling)

Application Limits 100% 4PES-15



Technical Data: 4PES-15Y

Dimensions and Connections



Technical Data

Technical Data	
Displacement (1450rpm 50Hz)	48,50 m3/h
Displacement (1750rpm 60Hz)	58,53 m3/h
No. of cylinder x bore x stroke	4 x 65 mm x 42 mm
Weight	153 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)
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)
Motor data	
Motor version	1
Motor voltage (more on request)	380-420V PW-3-50Hz
Max. operating current	28.2 A
Winding ratio	50/50
Starting current (Rotor locked)	81.0 A Y / 132.0 A YY
Max. power input	16,0 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
Oil service valve	Option
Oil heater	0..140 W PTC (Option)
Oil level monitoring	OLC-K1 (Option)
Sound measurement	
Sound power level (+5°C / 50°C)	75,0 dB(A) @50Hz
Sound power level (-10°C / 45°C)	76,3 dB(A) @50Hz
Sound power level (-35°C / 40°C)	79,9 dB(A) @50Hz
Sound pressure level @ 1m (+5°C / 50°C)	67 dB(A) @50Hz
Sound pressure level @ 1m (-10°C / 45°C)	68,3 dB(A) @50Hz
Sound pressure level @ 1m (-35°C / 40°C)	71,9 dB(A) @50Hz
Sound power level (+5°C / 50°C) R134a	73 dB(A) @50Hz
Sound power level (-10°C / 45°C) R134a	74,3 dB(A) @50Hz
Sound pressure level @ 1m (+5°C / 50°C) R134a	65 dB(A) @50Hz
Sound pressure level @ 1m (-10°C / 45°C) R134a	66,3 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

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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.