

## Selection: Semi-hermetic Reciprocating Compressors

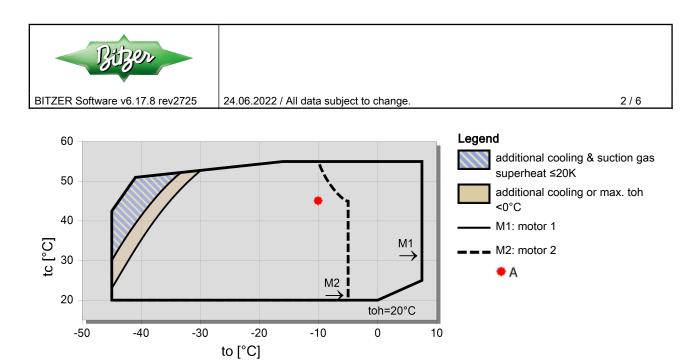
### Input Values

Compressor model Mode		(4N-20.2Y) Refrigeration and Air conditioning	Suction gas temperature Operating mode		20,00 °C Auto
Refrigerant Reference temperature Liq. subc. (in condenser) <b>Result</b>		R404A Dew point temp. 0 K	Power supply Capacity control Useful superheat		400V-3-50Hz 100% 100%
Q [W] Qu* [W] P [kW] I [A] Qc [W]	Cooling capacity Evaporator capacity Power input Current Condenser capacity		COP [ - ] m [kg/h] Op. th [°C]	COP/EER Mass flow Operating mode Discharge gas temp.	w/o cooling

tc	to	0°C	-5°C	-10°C	-15°C	-20°C	-25°C	-30°C	-35°C
30°C	Q [W]	53277	44316	36552	29842	24067	19121	14913	11357
	Qu* [W]	53277	44316	36552	29842	24067	19121	14913	11357
	P [kW]	11,68	11,13	10,53	9,86	9,12	8,29	7,36	6,30
	I [A]	20,8	19,99	19,19	18,33	17,41	16,42	15,38	14,31
	Qc [W]	64959	55444	47077	39704	33190	27414	22271	17662
	COP [ - ]	4,56	3,98	3,47	3,03	2,64	2,31	2,03	1,80
	m [kg/h]	1354	1113	909	736	589	466	361	274
	Op.	Standard	Standard						
	th [°C]	62,6	68,6	75,1	82,2	90,1	98,6	107,7	117,0
40°C	Q [W] Qu* [W]	45848 45848	38056 38056	31289 31289	25434 25434	20390 20390	16071 16071	12398 12398	9299 9299
	P [kW]	13,42	12,66	11,81	10,89	9,91	8,87	7,77	6,63
	I [A]	23,2	22,1	20,9	19,68	18,39	17,10	15,83	14,62
	Qc [W]	59272	50712	43100	36327	30301	24940	20169	15924
	COP [ - ]	3,42	3,01	2,65	2,33	2,06	1,81	1,60	1,40
	m [kg/h]	1315	1077	876	705	561	439	337	252
	Op.	Standard	Standard						
	th [°C]	72,6	78,9	85,6	92,9	100,9	109,8	119,6	130,7
50°C	Q [W] Qu* [W]	37506 37506	31089 31089	25496 25496	20645 20645	16459 16459	12871 12871	9820 9820	7249 7249
	P [kW]	15,21	14,24	13,16	11,98	10,73	9,42	8,09	6,74
	I [A]	25,9	24,4	22,8	21,2	19,46	17,78	16,19	14,73
	Qc [W]	52719	45331	38653	32623	27186	22295	17908	13987
	COP [ - ]	2,47	2,18	1,94	1,72	1,53	1,37	1,21	1,08
	m [kg/h]	1249	1020	825	661	522	405	307	226
	Op.	Standard	Standard						
	th [°C]	84,1	90,8	97,9	105,6	114,0	123,1	133,3	0

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

### Application Limits 100% 4N-20.2



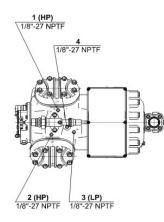


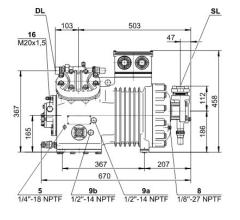
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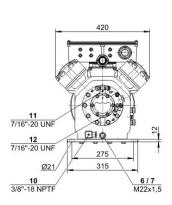
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# Technical Data: (4N-20.2Y)

# **Dimensions and Connections**







### **Technical Data**

Displacement (1450 RPM 60Hz)         56,10 m³/h           Displacement (1750 RPM 60Hz)         67,71 m³/h           No. of cylinder x bore x stroke         4 x 60 mx x 57 mm           Weight         155 kg           Max. pressure (LP/HP)         19 / 28 bar           Connection suction line         4 2m n - 1 5/8"           Connection cooling water         R 1/2"           Oil type R240/R1/CR404A/R507A/R407A/R407F         tc>55°C: BSE32   tc>55°C: BSE55 (Option)           Oil type R290/R1270         B5.2 (Standard)           Whord dat         Motor voltage (more on request)         380.420V PW-3-50Hz           Max operating current         37.0 A         Max 0           Max operating current         57.05 SS32   tc>55 (Option)           Max operating current (Rotor locked)         97.0 A Y / 158.0 A YY           Max. Power input         19,5 kW         Standard           Extent of delivery (Standard)         F64 (Standard), IP66 (Option)           Vibration dampers         300 dm³         Auaetaetaetaetaetaetaetaetaetaetaetaetaeta	Technical Data	
No. of cylinder x bore x stroke4 x 60 mm x 57 mmWeight155 kgMax. pressure (LP/HP)19 / 28 barConnection suction line42 mm - 1 5/8"Connection discharge line28 mm - 1 1/8"Connection gwaterR 1/2"Oil type R134a/R407C/R404A/R507A/R407A/R407Ftc>55°C: BSE35 (C BSE55 (Option)Oil type R22 (R12/R502)B5.2 (Standard)Oil type R290/R1270SHC226E (Standard)Motor voltage (more on request)380-420V PW-3-50HzMotor voltage (more on request)380-420V PW-3-50HzMax operating current37.0 AVinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. Power input19.5 kWExtent of delivery (Standard)Wotor voltage (more on request)3.00 dm3Advaliable OptionsStandardOil charge3.00 dm3Available OptionsConnection suction lineOptionDischarge satemperature sensorOptionStart unloadingOptionCapacity control100-50% (Option)Additional fanOptionOli service valveOptionOil chargeSound power level (+5°C / 50°C)Sound power level (+5°C / 50°C)78.5 dB(A) @ 50Hz<	Displacement (1450 RPM 50Hz)	
Weight         155 kg           Max. pressure (LP/HP)         19 / 28 bar           Connection suction line         42 mm - 1 5/8"           Connection cooling water         R 1/2"           Oint type R134a/R407C/R404A/R507A/R407A/R407F         tc>55°C: BSE32   tc>55°C: BSE55 (Option)           Oil type R290/R1270         B5.2 (Standard)           Oil type R290/R1270         SHC226E (Standard)           Motor voltage (more on request)         380-420V PW-3-50Hz           Max. operating current         37.0 A           Winding ratio         50/50           Starting current (Rotor locked)         97.0 A Y / 158.0 A YY           Max. Power input         19,5 kW           Extent of delivery (Standard)         Feb 2           Notor voltage         Standard           Oil type R290/R1270         Standard           Vibration dampers         Standard           Outprotection         \$7.0 A           Winding ratio         \$0.5/50           Standard         \$0.420 Y PY           Max. Power input         19,5 kW           Extent of delivery (Standard)         PF64 (Standard), IP66 (Option)           Vibration dampers         Quot proton           Oil charge         Quot prom           Vallable Option	Displacement (1750 RPM 60Hz)	67,71 m³/h
Max. pressure (LP/HP)19 / 28 barConnection suction line42 mm - 1 5/8"Connection discharge line28 mm - 1 1/8"Connection cooling waterR 1/2"Oil type R134a/R407C/R404A/R507A/R407Ftc<55°C: BSE32   tc>55°C: BSE55 (Option)Oil type R22 (R12/R502)B5.2 (Standard)Oil type R290/R1270SHC226E (Standard)Motor dat $V$ Motor voltage (more on request)380-420V PW-3-50HzMax operating current37.0 AWinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. power input19,5 kWExtent of delivery (Standard)WVibration dampersStandardOil charge300 dm³Available OptionsStandardDischarge gas temperature sensorOptionDischarge gas temperature sensorOptionOptionCapacity controlAdditional fanOptionVater-cooled cylinder headsOptionOil service valveOptionOil service valveOptionOptionOptionOptionOptionOptionOptionOil pervice valveOption nonPS4 (Option), Delta-PII (Option, not fo	No. of cylinder x bore x stroke	4 x 60 mm x 57 mm
Connection suction line $42 \text{ mm} - 15/8^{"}$ Connection discharge line $28 \text{ mm} - 11/8^{"}$ Connection cooling waterR 1/2"Oil type R134a/R407C/IR404A/R507A/R407A/R407Ftc>55°C: BSE32   tc>55°C: BSE55 (Option)Oil type R22 (R12/R502)B5.2 (Standard)Oil type R290/R1270SHC226E (Standard)Motor voltage (more on request)380-420V PW-3-50HzMax operating current37.0 AWinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. Power input19.5 kWExtent of delivery (Standard)Motor voltage (more on request)SE-B2Enclosure classIP54 (Standard), IP66 (Option)Vibration dampersStandardOil charge3,00 dm³Available OptionsConnection section lineDischarge shut-off valveOptionDischarge stemperature sensorOptionOptionCapacity controlAdditional fanOptionVater-cooled cylinder headsOptionOtiser class turloacingMP54 (Option)Oil pervice valveOptionOjien requester100 W (Option)Oil pervice valveOptionOil starter (Starter Colocked)78.0 dB(A) @ 50HzSound power level (+5°C / 50°C)78.0 dB(A) @ 50HzSound power level (+5°C / 40°C)(84.5) dB(A) @ 50Hz	Weight	155 kg
Connection discharge line28 mm - 1 1/8"Connection cooling waterR 1/2"Oil type R134a/R407C/R404A/R507A/R407Ftc<55°C: BSE32   tc>55°C: BSE55 (Option)Oil type R290/R1270SHC226E (Standard)Oil type R290/R1270SHC226E (Standard)Motor voltage (more on request)380-420V PW-3-50HzMax operating current37.0 AWinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. Power input19.5 kWExtent of delivery (Standard)WWotor voltage (more on request)SE-B2Enclosure classIP54 (Standard), IP66 (Option)Vibration dampersStandardOil charge3,00 dm³Available OptionsOptionDischarge gas temperature sensorOptionDischarge gas temperature sensorOptionAdditional fanOptionVater-cooled cylinder headsOptionOil service valveOptionOil service valveOption <t< td=""><td>Max. pressure (LP/HP)</td><td>19 / 28 bar</td></t<>	Max. pressure (LP/HP)	19 / 28 bar
Connection cooling waterR 1/2"Oil type R134a/R407C/R404A/R507A/R407A/R407FR 1/2"Oil type R22 (R12/R502)B5.2 (Standard)Oil type R29/R1270SHC226E (Standard)Motor data380-420V PW-3-50HzMax operating current37.0 AWinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. Power input19.5 kWExtent of delivery (Standard)Motor datage (more on request)SE-B2Enclosure classIP54 (Standard), IP66 (Option)Vibration dampersStandardOil type R29 (R120)StandardVibration dampersStandardOil charge3.00 dm³Available OptionsOptionDischarge shut-off valveOptionDischarge shut-off valveOptionOptionCapacity controlAdditional fanOptionOil service valveOptionOil service valveOptionCapacity control100 W (Option)Oil service valveOptionCapacity control00 W (Option)Oil service valveOptionOil service valveOp	Connection suction line	42 mm - 1 5/8"
Oil type R134a/R407C/R404A/R507A/R407F         tc<55°C: BSE32   tc>55°C: BSE55 (Option)           Oil type R22 (R12/R502)         B5.2 (Standard)           Motor data         St0226E (Standard)           Motor data         380-420V PW-3-50Hz           Max operating current         37.0 A           Winding ratio         50/50           Starting current (Rotor locked)         97.0 A Y / 158.0 A YY           Max. Power input         19.5 kW           Extent of delivery (Standard)         Winding ratio           Motor protection         SE-B2           Enclosure class         IP54 (Standard), IP66 (Option)           Vibration dampers         Standard           Oil charge         3,00 dm³           Available Options         E           Connection suction line         Option           Discharge shut-off valve         Option           Capacity control         100-50% (Option)           Additional fan         Option           Vater-cooled cylinder heads         Option           Oil service valve         Option           Oil service valve         Option           Oil service valve         Option           Casacity control         MD4000000000000000000000000000000000000	Connection discharge line	28 mm - 1 1/8"
Oil type R22 (R12/R502)B5.2 (Standard)Oil type R290/R1270SHC226E (Standard)Motor data	Connection cooling water	R 1/2"
Oil type R290/R1270SHC226E (Standard)Motor data	Oil type R134a/R407C/R404A/R507A/R407A/R407F	tc<55°C: BSE32   tc>55°C: BSE55 (Option)
Motor dataMotor voltage (more on request)380-420V PW-3-50HzMax operating current37.0 AWinding ratio50/50Starting current (Rotor locked)97.0 A Y / 158.0 A YYMax. Power input19,5 kWExtent of delivery (Standard)Motor protectionMotor protectionSE-B2Enclosure classIP54 (Standard), IP66 (Option)Vibration dampersStandardOil charge3,00 dm³Available OptionsOptionDischarge gas temperature sensorOptionDischarge gas temperature sensorOptionCapacity control100-50% (Option)Aditional fanOptionWater-cooled cylinder headsOptionOil pressure monitoringMP54 (Option)Odi pressure monitoringMP54 (Option)Odi pressure monitoringMP54 (Option)Sound power level (+10°C / 45°C)78.5 dB(A) @ 50HzSound power level (-10°C / 45°C)78.5 dB(A) @ 50HzSound power level (-10°C / 40°C)(84.5) dB(A) @ 50Hz	Oil type R22 (R12/R502)	B5.2 (Standard)
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Sound measurement           Sound power level (+5°C / 50°C)         78,0 dB(A) @ 50Hz           Sound power level (-10°C / 45°C)         78,5 dB(A) @ 50Hz           Sound power level (-35°C / 40°C)         (84,5) dB(A) @ 50Hz		
Sound power level (+5°C / 50°C)         78,0 dB(A) @ 50Hz           Sound power level (-10°C / 45°C)         78,5 dB(A) @ 50Hz           Sound power level (-35°C / 40°C)         (84,5) dB(A) @ 50Hz		MP54 (Option), Delta-PII (Option, not for R290/R1270)
Sound power level (-10°C / 45°C)         78,5 dB(A) @ 50Hz           Sound power level (-35°C / 40°C)         (84,5) dB(A) @ 50Hz		
Sound power level (-35°C / 40°C) (84,5) dB(A) @ 50Hz	,	
Sound pressure level @ 1m (+5°C / 50°C) 70,0 dB(A) @ 50Hz		
	Sound pressure level @ 1m (+5°C / 50°C)	70,0 dB(A) @ 50Hz



BITZER Software v6.17.8 rev2725

24.06.2022 / All data subject to change.

Sound pressure level @ 1m (-10°C / 45°C) Sound pressure level @ 1m (-35°C / 40°C)

70,5 dB(A) @ 50Hz (76,5) 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.

#### 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)



#### BITZER Software v6.17.8 rev2725 24.06.2022 / All data subject to change.

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.