



DAS HERZ DER FRISCHE

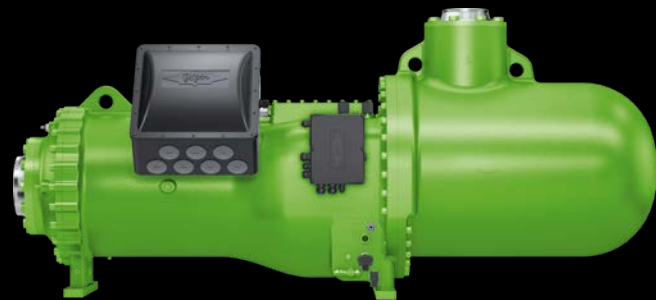
SEMI-HERMETIC

COMPACT SCREW COMPRESSORS

50 Hz // SP-170-9 EN



WITH IQ MODULE



CSH // CSW



CSVH // CSVW



AIR
CONDITIONING



PROCESS
COOLING



HEAT
PUMPS



BITZER Innovation Targets

Products for refrigerants with low global warming potential (GWP)

- // For naturally appearing substances
- // For refrigerants like R1234yf, R1234ze(E) and low-GWP blends

These refrigerants reduce the direct contribution of refrigeration systems to global warming.

Products with high efficiency at full and part load

- // Efficiency improvements of motor and mechanics
- // High system efficiency in part load operation
 - by optimised mechanical capacity regulation
 - by specially developed frequency inverters

This reduces the indirect contribution to global warming by saving energy.

Simple handling and serviceability with advanced electronic modules

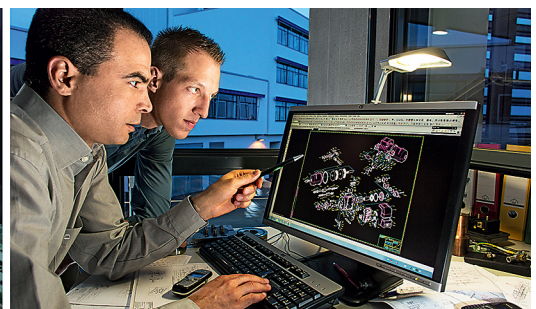
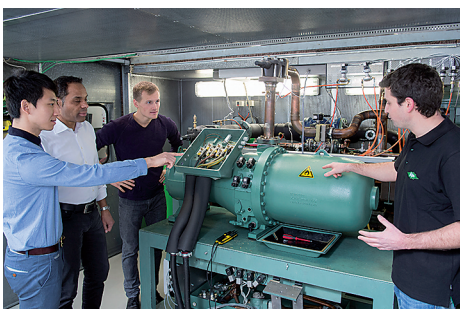
- // Electronic components for
 - data logging
 - capacity regulation
 - actuation of accessories
- // Unified user software for simple configuration. Choose compressor or condensing unit and refrigerant. Ready.

This makes it simple to fully utilize the efficiency potential of our products and optimise operation.

Semi-hermetic Compact Screw Compressors

Series: CSH // CSW // CSVH // CSVW

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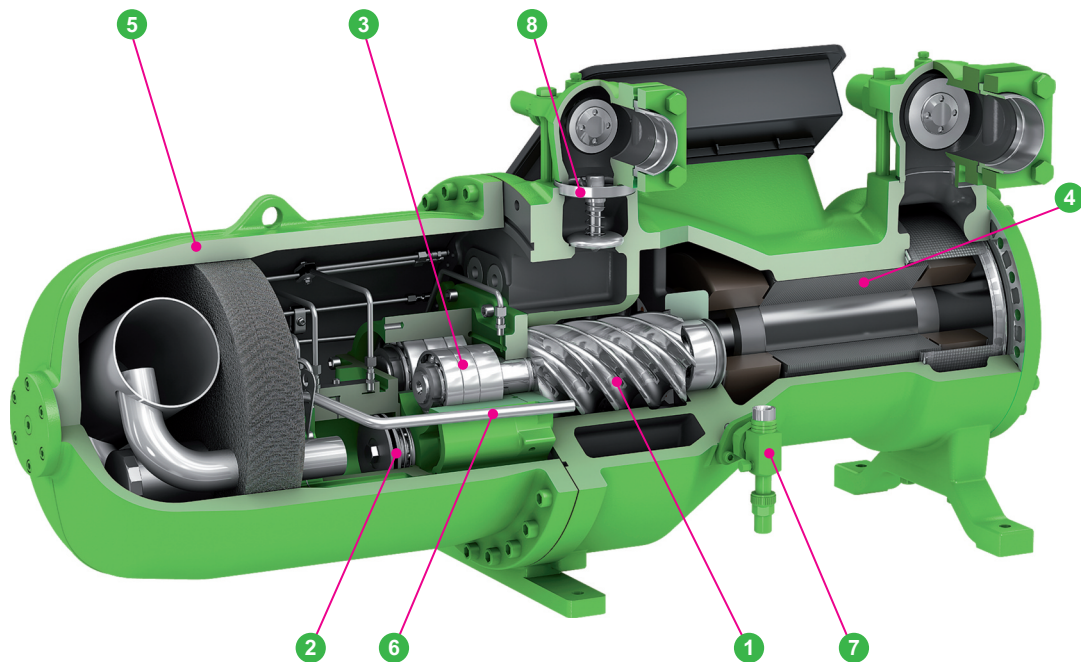


The CSH, CSW, CSVH and CSVW compact screw compressors

The semi-hermetic compact compressors of the CS. series are screw compressors which have been developed for the application in compact refrigeration systems, in liquid chillers for air conditioning and process cooling, and in heat pumps. Many functions are integrated, such as oil separator, slider capacity control, check valve in discharge gas outlet and Economiser operation (ECO) and, depending on design, connections for oil cooling, liquid injection (LI) or oil return. With CSV. series even the frequency inverter is integrated. These compact refrigeration systems flexibly adapt to the various needs of the application.

Special features

- // Energy efficient
 - high efficiency profile
 - stepless or closely stepped capacity control
- // Compact
 - shortest fitting length in its performance class
- // Flexible
 - CS. Series: dual capacity control: changeable between 4-step or stepless capacity control – without modifying the compressor
 - suction and discharge gas connections can be rotated in 90° increments



- ① high efficiency profile
- ② control slider: Part load down to 25% of full load
- ③ long-life bearings with pressure unloading
- ④ specially adapted built-in motor
- ⑤ integrated oil separator
- ⑥ optimized oil management
- ⑦ economiser (ECO)
- ⑧ integrated check valve

High energy efficiency at full and part load

- // CS. series: suitable for operation with external frequency inverter (FI)
 - within the full application range
 - control range depending on operating conditions
- // CSV. series: integrated frequency inverter for systems with particularly high demands
 - on wide control ranges
 - on high control quality
 - on high part load efficiency

One basic structure – application-optimised specialists

CSW

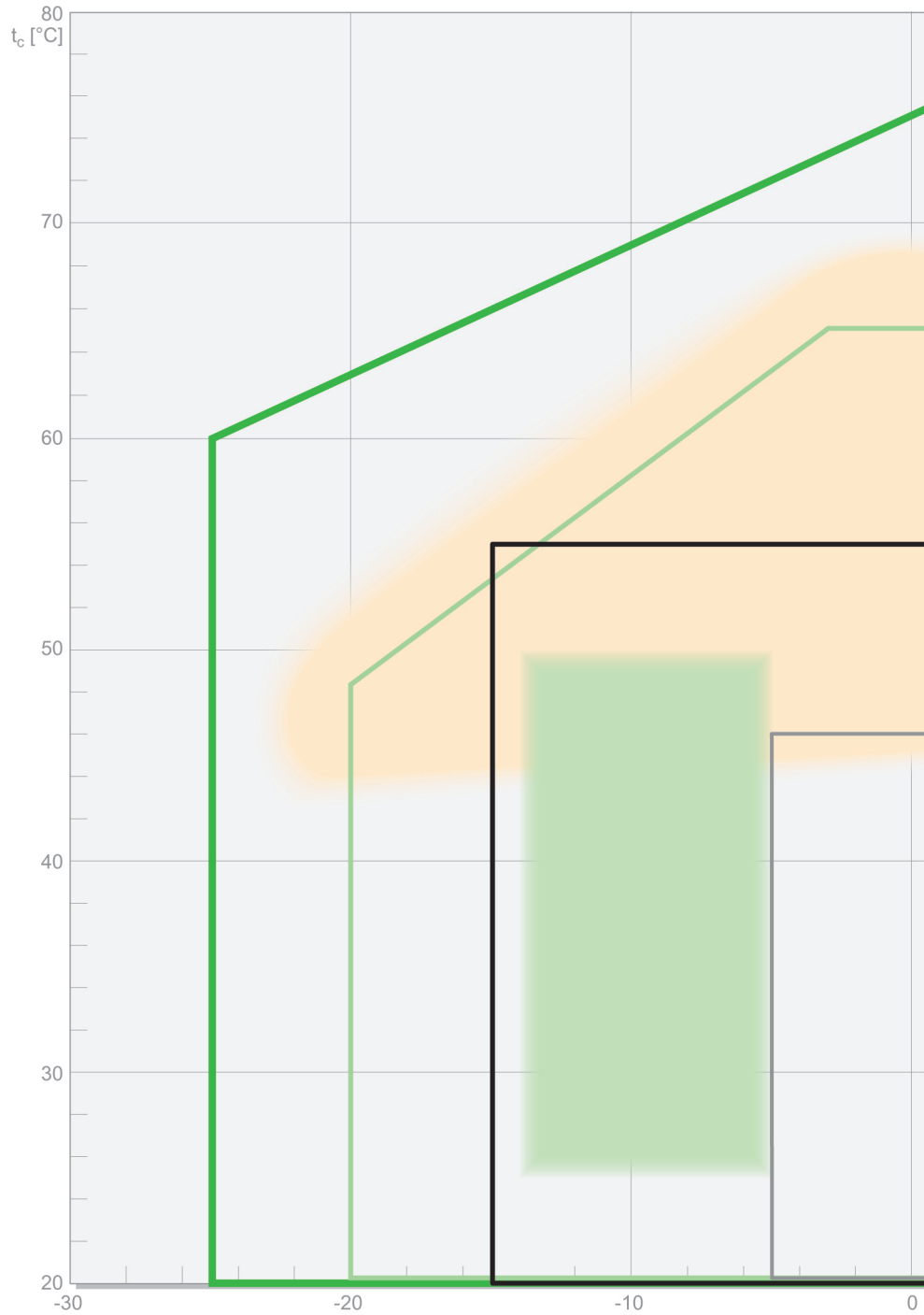
This version is designed for lower condensing temperatures, i. e. for air cooled liquid chillers in cooler regions, or for water cooled liquid chillers in general. It provides a high efficiency at these typical operating points and still has some reserves towards lower evaporating temperatures needed in medium temperature process cooling, for example.

CSW with motor 4

This version is optimised for highly efficient water cooled liquid chillers, where it can fully exploit its energy saving potential.

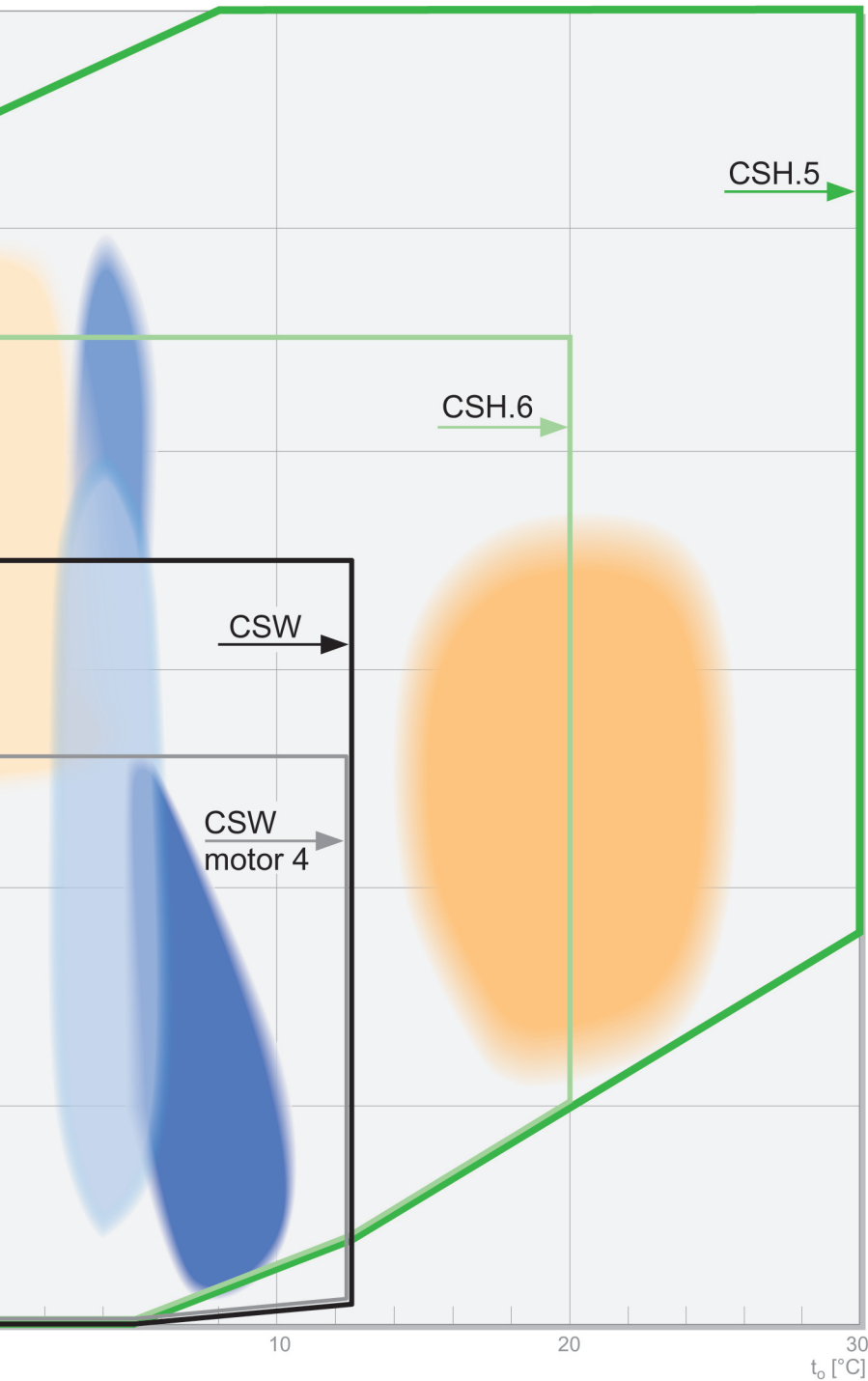
CSWW

This version is designed for slightly lower condensing temperatures and shows its advantages whenever the combination of high efficiency with fine control is required in liquid chillers for air conditioning and process cooling



Exemplary applications

- Heat pump operation air conditioning liquid chillers
- Medium temperature process application
- Building air conditioning



- Building air conditioning at high ambient temperatures
- Highly optimised air conditioning applications
- Data center cooling

CSH.5

This universal version has the largest application range. Motor 1 is designed for data center cooling and for air conditioning by means of air cooled liquid chillers in hot countries, like Middle East. The CSH.5 manages heat pump operation with high condensing temperatures as well as low evaporating temperatures.

CSH.6

This design aims at air cooled liquid chillers in temperate and cold regions, where it achieves an even better efficiency. The application limits fit to moderate data center cooling and typical heat pump operation of liquid chillers for air conditioning.

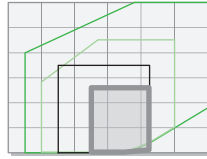
CSVH

Similar to the CSH.6, this design is tailored to air cooled liquid chillers, but with extended application limits in order to provide multiple possibilities for hot regions and data center cooling. The speed control with integrated frequency inverter (FI) over a wide control range provides excellent part load and seasonal efficiency.

CSW with motor 4

Application

// water cooled liquid chillers which also meet the globally most demanding efficiency regulations: the Chinese GB19577:2015



Technical details

- // adaptation to low pressure ratios
 - particularly low friction losses
 - optimised lubrication system
- // motor with low energy consumption
- // economiser (ECO) at full load
- // connection for oil and gas return from flooded evaporator
- // optimised for refrigerants with low pressure, also A2L

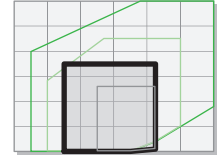
Refrigerants

- // R134a // R1234yf
- // R450A // R1234ze(E)
- // R513A // R515B

CSW

Applications

- // applications with low condensing temperatures
- // systems with flooded evaporator
- // water cooled liquid chillers
- // air cooled liquid chillers in cooler countries
- // medium temperature process cooling



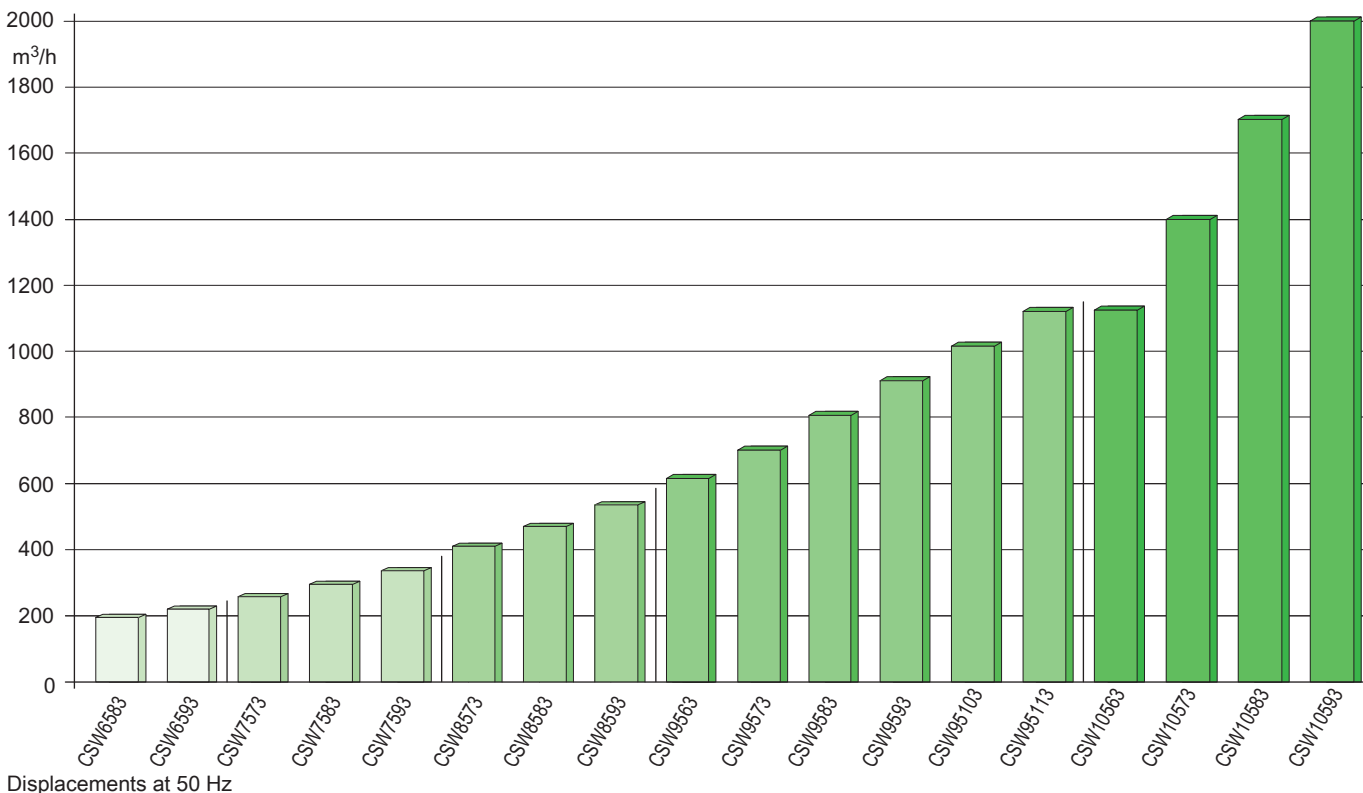
Technical details

- // optimised for low pressure ratios
- // economiser (ECO) at full load
- // connection for oil and gas return
- // 2 motor sizes can be selected
- // extended refrigerant selection, also A2L

Refrigerants

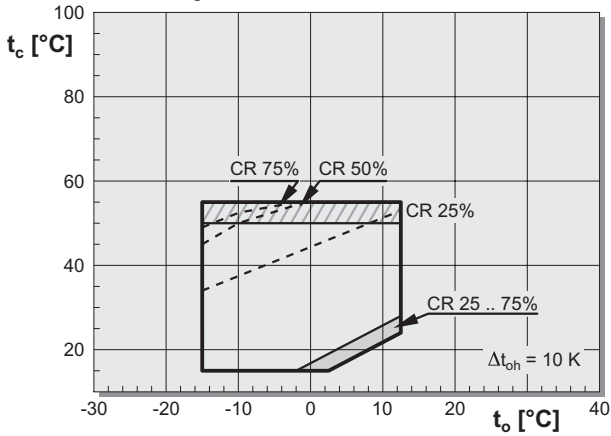
- // R134a // R1234ze(E)
- // R450A // R515B
- // R513A // R407C with CSW65 to CSW95
- // R1234yf // R22 with CSW65 to CSW95

The CSW capacity range

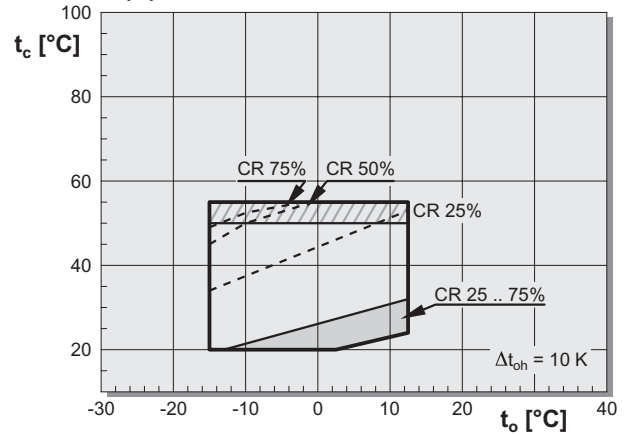


Application limits for CSW

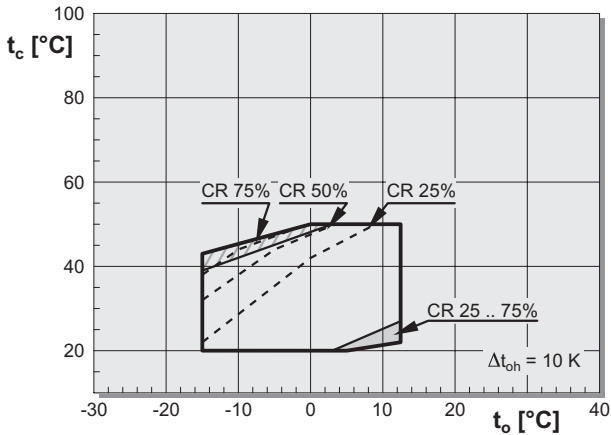
R134a ■ R1234yf ■ R450A ■ R513A



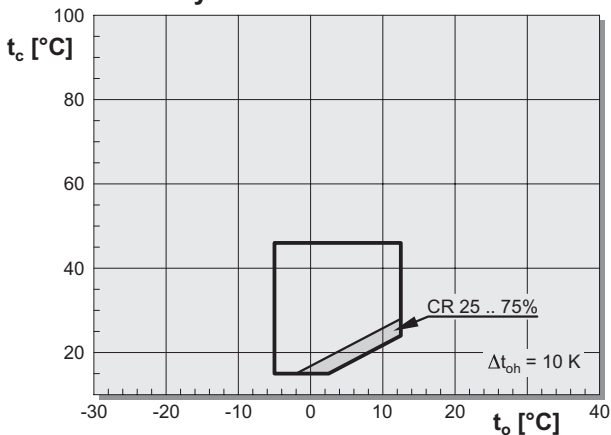
R1234ze(E) ■ R515B



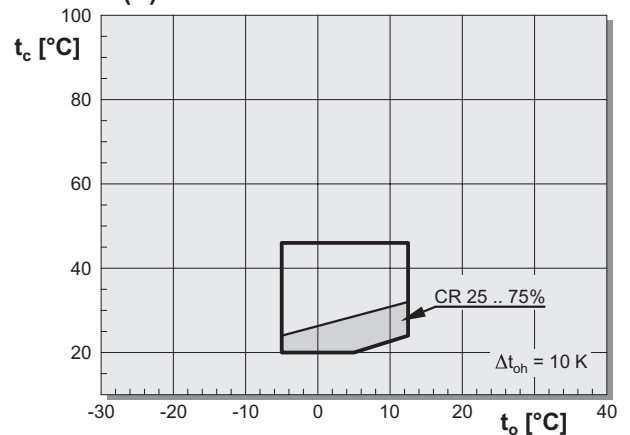
R407C



R134a ■ R1234yf ■ R450A ■ R513A Motor 4



R1234ze(E) ■ R515B Motor 4



Legend

t_o Evaporation temperature (°C)

t_c Condensing temperature (°C)

Δt_{oh} Suction gas superheat (K)

Suction gas superheat max. 5 K

Capacity control CR 25% .. max. CR 75%

Capacity control (CR)

Thermal limits for capacity control (CR) depend on compressor model. The maximum condensing temperature can be restricted with individual models.

Application limits for economiser operation (ECO)

See BITZER SOFTWARE.

CSW105

The CSW105 series comprises our currently largest series screw compressors: four displacement stages from 1170 to 2000 m³/h at 50 Hz and up to 2400 m³/h at 60 Hz or FI operation.

The exceptional full load and part load efficiency of the compressors enables series production of highly efficient liquid chillers that meet the world's most demanding efficiency requirements:

// EU: 2016/2281 Ecodesign Directive for comfort air conditioning liquid chillers

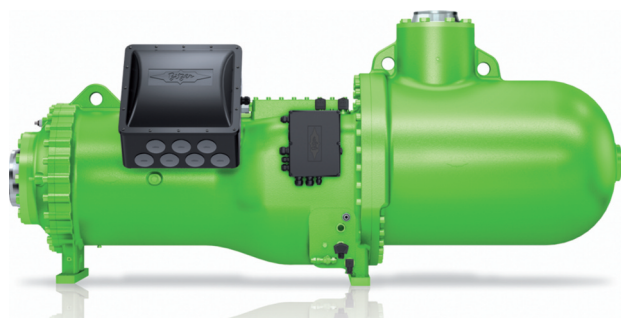
// China: GB19577:2015
Minimum allowable values of energy efficiency and energy efficiency grades for water chillers

Applications

- 1 highly energy-efficient water cooled liquid chillers
 - with only one or with several compressors
 - with the refrigerants R134a or R513A
 - at typical operating conditions for water cooled liquid chillers
- 2 highly energy-efficient high power air cooled liquid chillers
 - with the refrigerants R1234ze(E) and R515B
 - The CSW105 also allows high performance with R1234ze(E) or R515B, although their volumetric cooling capacity is only 75% of the cooling capacity of R134a or R513A.
- 3 heat pumps for energy recovery
 - in reversible chillers for combined cooling and heating
 - with the refrigerants R1234ze(E) and R515B
 - Comfort heating or process heat pump (COP_{heat} up to 5.49)

CSW10593-400Y at 60 Hz or FI operation

| Refrigerant | t _o | t _c | Δt _u | Δt _{oh} | Q _o | COP |
|--------------------|----------------|----------------|-----------------|------------------|--------------------------|-----------------------------|
| ① R134a/R513A | 6°C | 36°C | 3 K | 2 K | 1.8 MW | 6.41 |
| ② R1234ze(E)/R515B | 4.5°C | 47°C | 3 K | 2 K | 1.1 MW | 4.22 |
| ③ R1234ze(E)/R515B | 25°C | 65°C | 3 K | 2 K | Q _c 2.4 MW | COP _{heat} 5.49 |

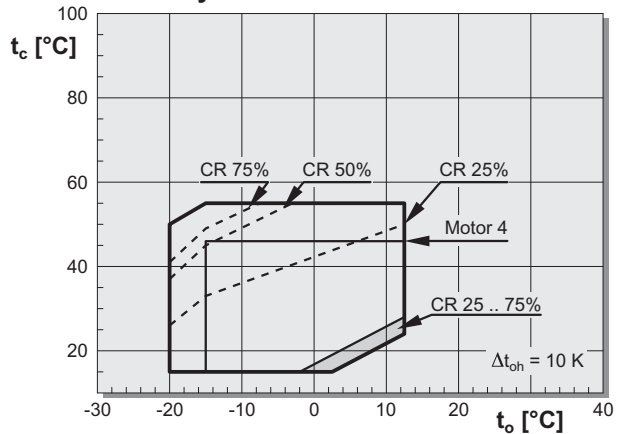


Technical details

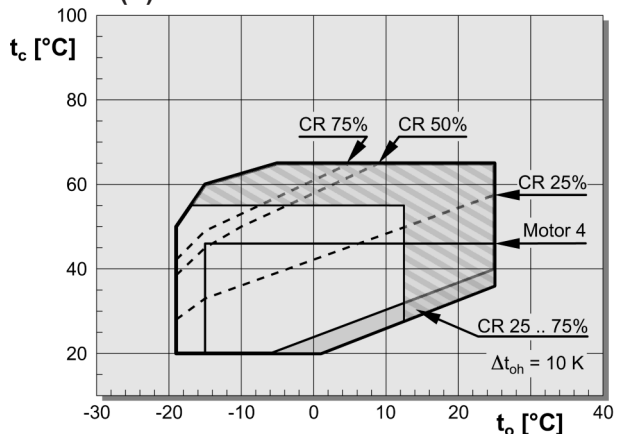
- // double-slider technology
- // IQ module with automatic V_i adaption
 - operation at optimum V_i
 - avoids losses due to under- or over-compression
 - integrated mechanical capacity control from 25 to 100%, steplessly controlled by the IQ module
- // large-volume built-in motor
- // highly optimised profile geometry

Application limits for CSW105

R134a ■ R1234yf ■ R450A ■ R513A



R1234ze(E) ■ R515B



Legend

- t_o Evaporation temperature (°C)
- t_c Condensing temperature (°C)
- Δt_{oh} Suction gas superheat (K)

- Capacity control CR 25% .. max. CR 75%
- ▨ BSE170 required

Capacity control (CR)

Thermal limits for capacity control (CR) depend on compressor model. The maximum condensing temperature can be restricted with individual models.

Capacity control (CR), V_i and frequency inverter (FI) operation

Capacity control (CR)

- // efficient capacity control by shifting the suction port
- // CSH6 to CSH9 and CSW6 to CSW9
easy activation via flanged-on solenoid valves
 - stepless
(CR100 \leftrightarrow CR25%)
 - multistep in three steps
(CR100% \leftrightarrow CR75% \leftrightarrow CR50% \leftrightarrow CR25%)
 - alternative operation mode due to different control logics – without modifying the compressor
- // CSW105
intelligent compressor module with extended protection concept and slider operation
 - efficient stepless capacity and V_i control due to optimised slider concept
(CR100% \leftrightarrow CR25%)
 - automatic V_i control
 - high efficiency in extended application limits

Automatic start unloading (SU)

- // start-up from lowest load conditions

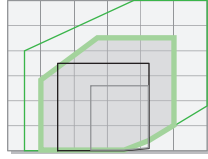
Operation with external frequency inverter (FI)

- // for complete CS. series
- // with all appropriately sized FI models, vendor independent
- // standard control range 25 .. 60 Hz
- // extended control range also by combining FI+CR in coordination with BITZER
- // The entire application limits can only be realised when operating at 60 Hz with FI on the 400 V-50 Hz mains if the special motor for 380 V and 60 Hz nominal voltage is selected. This is motor code 35D
- // Further information see Technical Information ST-420 (online documentation).

CSH.6

Applications

- // air cooled liquid chillers in temperate and cold climate zones
- // data center cooling
- // typical heat pump operation of liquid chillers for air conditioning
- // liquid chillers with high efficiency requirements



Technical details

- // economiser (ECO) at full load
- // optimised for refrigerants with low pressure, also A2L

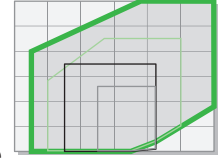
Refrigerants

- // R134a // R1234yf
- // R450A // R1234ze(E)
- // R513A // R515B

CSH.5

Applications for CSH.5 with the most powerful motor

- // very broad and flexible application range
- // data center cooling
- // air cooled liquid chillers for air conditioning for all climate zones
- // heat pumps with high condensing temperatures or low evaporation temperatures
- // process cooling



Technical details

- // economiser (ECO) at full and part load
- // liquid injection (LI)
- // oil cooler connection
- // 2 motor sizes can be selected
- // wide refrigerant selection, also A2L

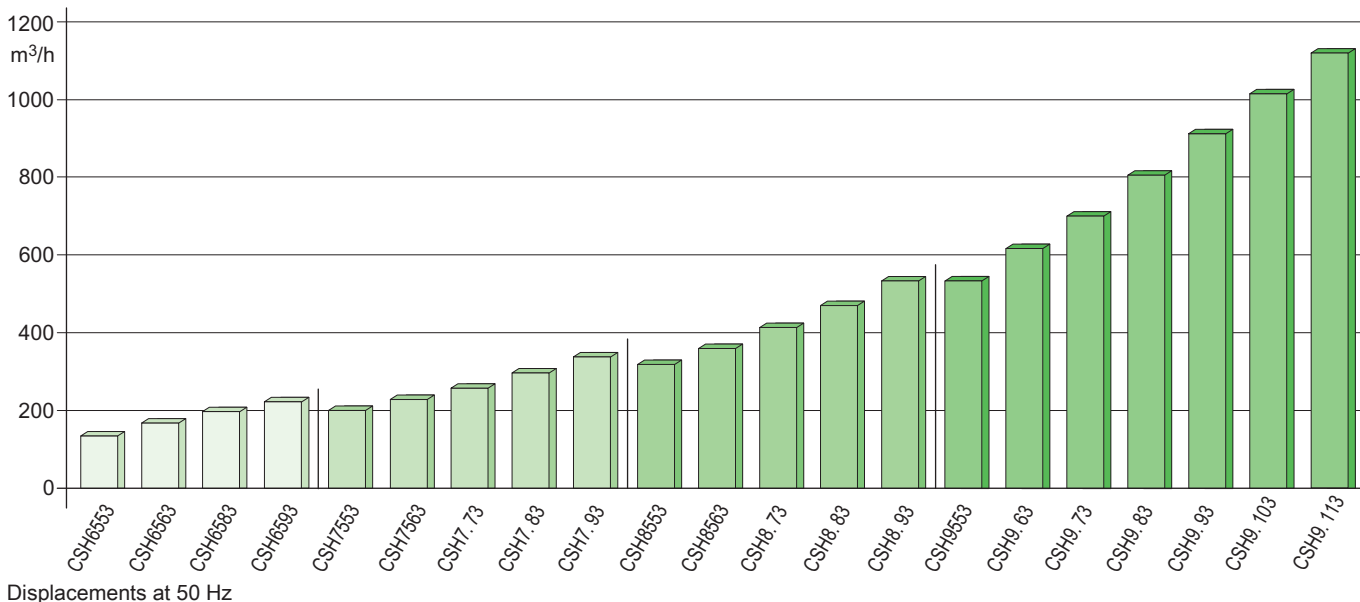
Refrigerants

- // R134a // R407A
- // R450A // R407C
- // R513A // R407F
- // R1234yf // R22
- // R1234ze(E) // R245fa
- // R515B // R290: CS RPO



For the operation in ATEX zone 1 and 2 special ATEX designs of each CSH.5 compressor are available.

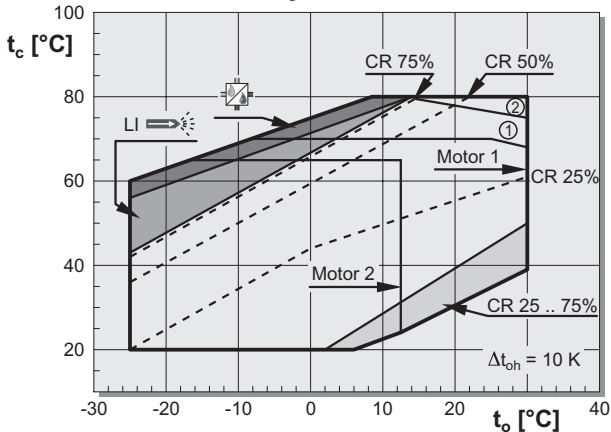
The CSH capacity range



Displacements at 50 Hz

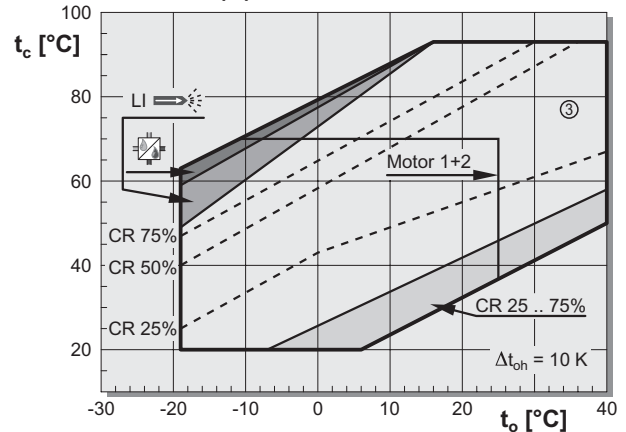
Application limits for CSH

CSH.5: R134a ■ R1234yf ■ R450A ■ R513A

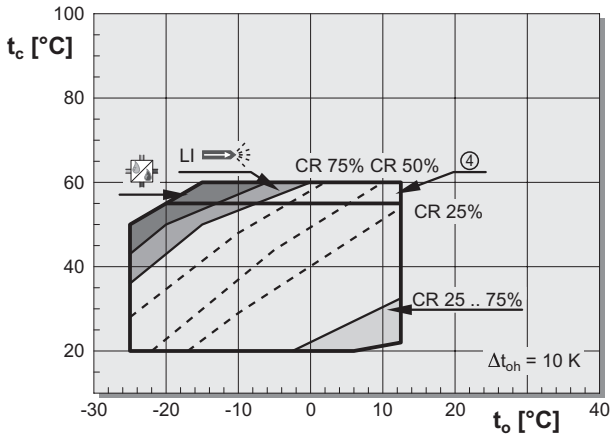


R450A: minimum evaporation temperature: -22°C

CSH.5: R1234ze(E) ■ R515B



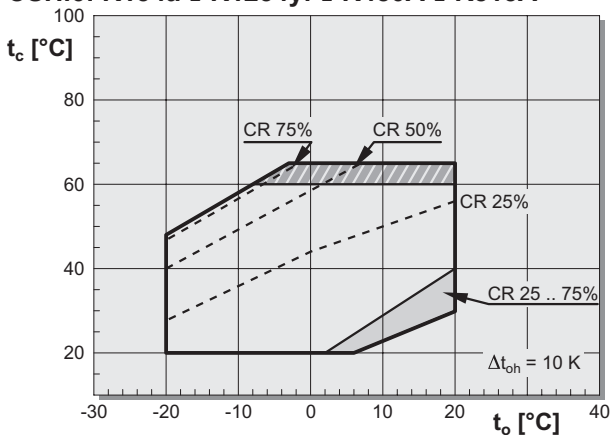
CSH.5: R407C



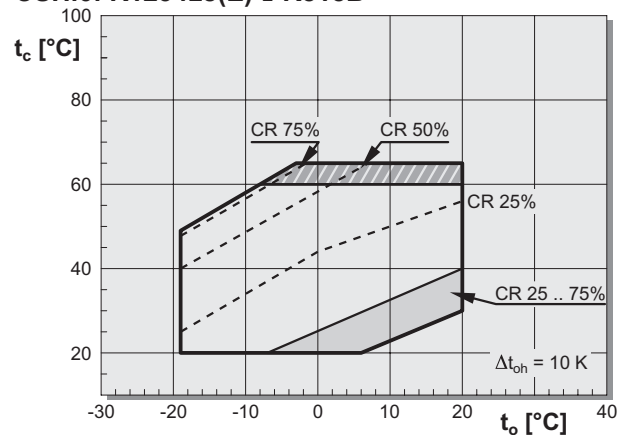
Extended ranges for individual compressors

- ① 400 V network operation at 50 Hz for the compressors CSH6553-50Y, CSH6563-60Y, CSH7553-70Y, CSH7563-80Y, CSH7573-90Y, CSH7583-100Y, CSH8553-110Y, CSH8563-125Y, CSH8573-140Y, CSH8593-180Y, CSH9553-180Y, CSH9563-210Y, CSH9573-240Y and CSH9583-280Y
- ② 400 V network operation at 50 Hz for the compressors ① with R450A only
- ③ CSH7553-70Y, CSH7563-80Y, CSH7573-90Y, CSH7583-100Y, CSH8553-110Y, CSH8563-125Y, CSH8573-140Y, CSH8593-180Y, CSH9553-180Y, CSH9563-210Y, CSH9573-240Y and CSH9583-280Y
For operation above 80°C condensing temperature the compressor protection device SE-i1 is required.
- ④ Maximum condensing temperature 55°C for CSH8583, CSH8593, CSH9593 and CSH95103

CSH.6: R134a ■ R1234yf ■ R450A ■ R513A



CSH.6: R1234ze(E) ■ R515B



Legend

t_o Evaporation temperature (°C)
 t_c Condensing temperature (°C)
 Δt_{oh} Suction gas superheat (K)

■ Liquid injection or external oil cooling required.
 For part load operation the respective application limits (CR 75%, CR 50% and CR 25%) can be lifted by 5 K condensing temperature through liquid injection (up to the full load limits).

■ External oil cooling required
 ■ Capacity control CR 25% .. max. CR 75%
 ■ Operation only possible with BSE170

Further explanations see next page.

Refrigerants with very low global warming potential

For the environmentally friendly refrigerants R290 propane and R600a isobutane, both classified flammable A3 according to ISO817, special compressor models CSHP.. are available.

The unsaturated partly fluorinated hydrocarbons (HFO) R1234yf and R1234ze(E), two variants of tetrafluoropropene, have very low GWP values, too. They can be used as pure substances or as components of blends – see also the application limits. R1234yf and R1234ze(E) are classified as flammable in A2L.

For flammable refrigerants, a risk assessment for the system has to be made reflecting the flammability. The system must be constructed in accordance with national or local regulations.

If the risk assessment classifies the installation area as an explosion protection zone, the special explosion-proof compressor models CSHP.5..X2P, CSHP.5..X2Z, CSHP.5EXP or CSH.5..EXY are to be used.

Further information on the refrigerants can be found in the Refrigerant Report Online Edition A-501.

Ignition sources and enhanced tightness

The products, that are not special explosion-proof, are evaluated to be without ignition sources for the allowed refrigerants under normal operation without failures, based on IEC60335-2-40:2022 clauses 22.116 and 22.117. The products have enhanced tightness according to EN1127-1. This classification means, that no ATEX zone has to be assumed around the product in the case of flammable gases inside the product. For details please contact BITZER..

Thermal limits:

Thermal limits for capacity control (CR) and additional cooling (liquid injection and external oil cooling) depend on compressor model. The maximum condensing temperature can be restricted with individual models. Individual application limits see BITZER SOFTWARE.

Application limits for economiser operation (ECO)

See BITZER SOFTWARE.

Extended application limits

In the BITZER SOFTWARE not all extended application limits are available. Performance data in these ranges upon request.

Application limits for special explosion-proof design

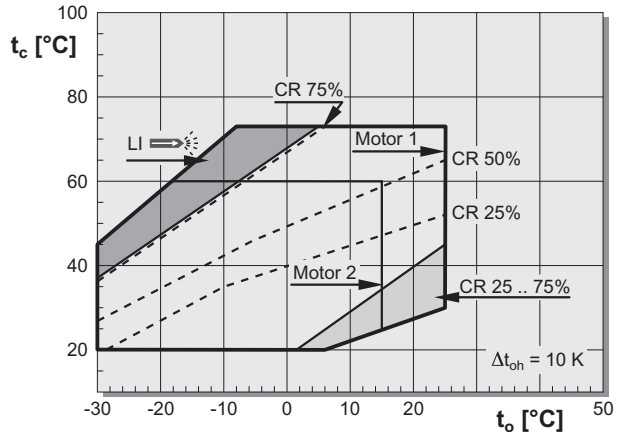
See Operating Instructions SB-179.

CS PRO

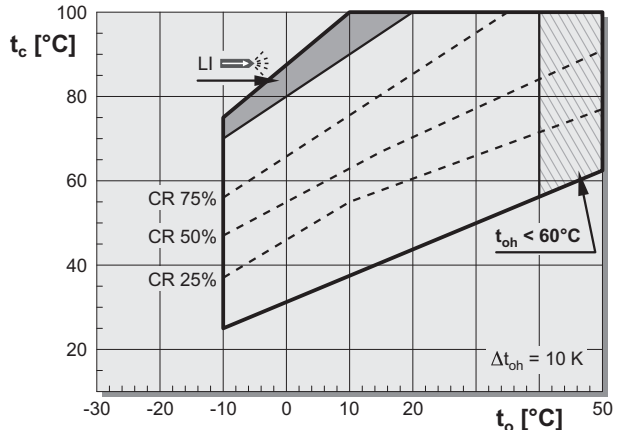
Compressors for naturally occurring refrigerants.

Application limits for CSHP

R290



R600a



Legend

t_o Evaporation temperature (°C))
 t_c Condensing temperature (°C)
 Δt_{oh} Suction gas superheat (K)

- Liquid injection or external oil cooling may become necessary
- Capacity control CR 25% .. max. CR 75%
- Suction gas temperature less than 60°C

CSHP.6

Applications

- // liquid chillers with high efficiency requirements
- // switchable liquid chillers ↔ heat pumps with water supply up to 70°C

Technical details

- // economiser (ECO) at full load

Refrigerant

- // R290 (propane)

CSHP.5

Applications

- // very broad and flexible application range
- // data center cooling
- // process cooling
- // heat pumps with water supply up to 70°C

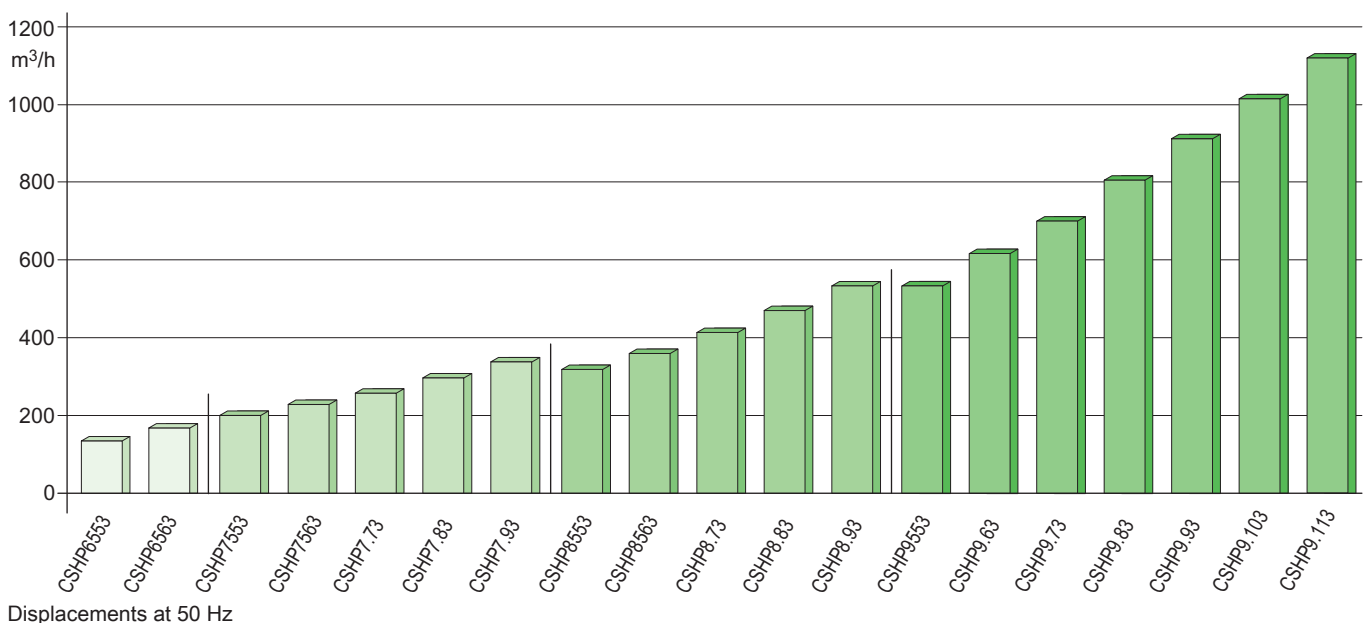
Technical details

- // economiser (ECO) at full and part load
- // liquid injection (LI)
- // oil cooler connection
- // 2 motor sizes can be selected

Refrigerants

- // R290 (propane)
- // R600a (isobutane)

The CS PRO capacity range



CSVH and CSVW

Semi-hermetic compact screw compressors with integrated frequency inverter (FI)

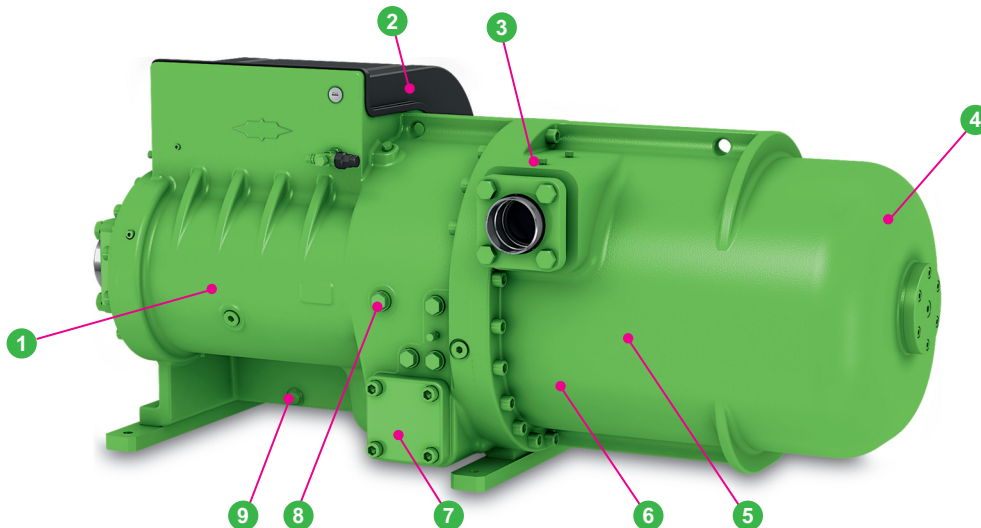
The CSV. compressor series significantly simplifies the installation and stable operation of high efficient variable speed controlled compressors significantly by a pre-wired package with integrated FI, peripheral devices and sensors for compressor protection and monitoring.



FREQUENCY
INVERTER

The highlights

- // Energy efficient
 - automatic V_i control
 - high efficiency rotor profiles: broad cross sections for high volume flow
 - 3rd generation internal oil management
 - infinite capacity modulation by FI
- // Compact and low weight
 - short length
 - low weight
 - integrated FI
 - low weight per capacity



- 1 Special motors for high speed FI operation
- 2 Integrated FI, specially designed and refrigerant cooled
 - // Enhanced operation monitoring and protection functions
 - // Modbus communication to system controller
- 3 Integrated check valve
- 4 3-stage oil separator, designed for low oil carry over rate
- 5 V_i slider, automatically adopting to operating conditions
- 6 Discharge gas pulsation muffler
- 7 Oil filter
- 8 Economiser connection (ECO)
- 9 Gas permeable plug for A2L use

Easy installation

- // FI, motor, sensors and peripheral devices are pre-wired
- // external wiring minimised
 - only 3 wire power connection cables
 - single phase auxiliary voltage
- // Modbus communication

Applications

- // systems with high part load proportion that meet highest efficiency demands
- // compressor for variable base load

CSVW

- optimised for low condensing temperatures:
- // water cooled liquid chillers
 - // systems with flooded evaporator

CSVH

- optimised for large temperature differences between evaporation and condensation:
- // air cooled liquid chillers
 - // process cooling
 - // heat pump applications

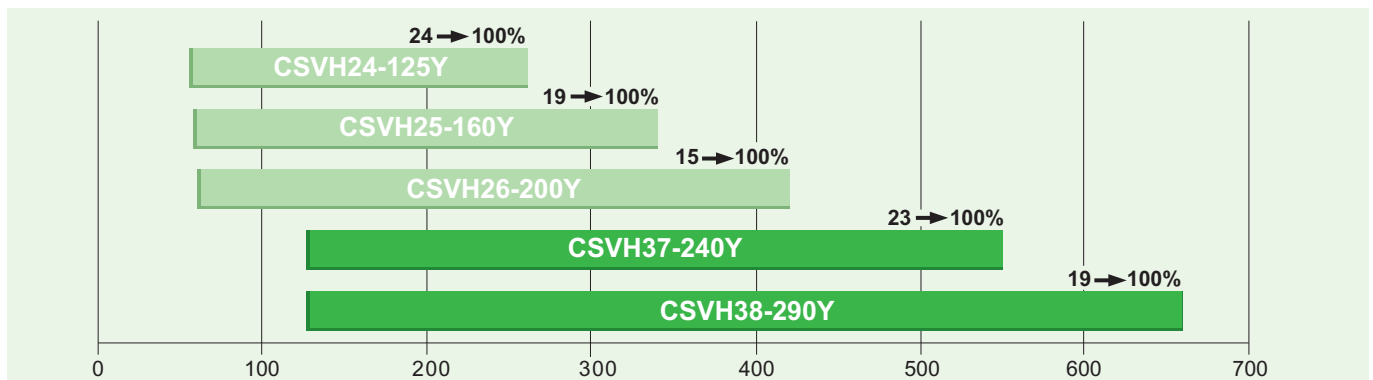
Technical details

- // especially designed V_i for the application
- // important design features adapted from CS. developments
- // control range: down to 15% of full load with automatic V_i adaptation
- // increased compressor availability
 - enhanced operation monitoring
 - improved controllability due to a multilevel alarm system
 - user settings for system adaptation / optimisation

Refrigerants

- // R134a // R1234yf (A2L)
- // R450A // R1234ze(E) (A2L)
- // R513A // R515B

The CSVH capacity range



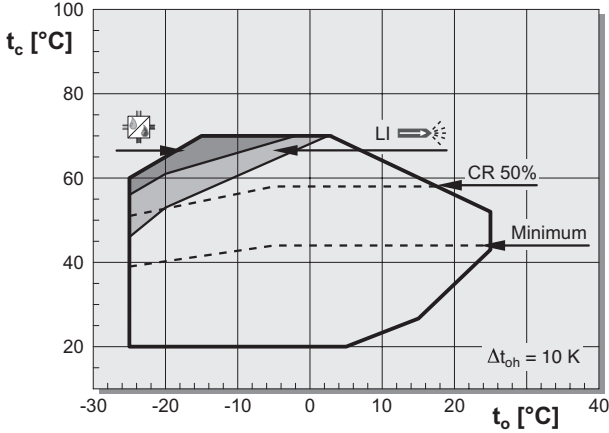
Cooling capacity in kW at typical operating conditions of liquid chillers (to = 5°C) with R134a

Simple handling and serviceability

- // Pre-wired package
 - integrated FI
 - cooling controls for FI
 - V_i slider control valves
 - low and high pressure transmitters
 - oil temperature sensor
 - oil heater
 - oil level monitoring
- // Simple serviceability
 - suction gas filter with large surface and fine mesh
 - oil sight glass
 - oil valve for maintenance
 - exchangeable oil filter

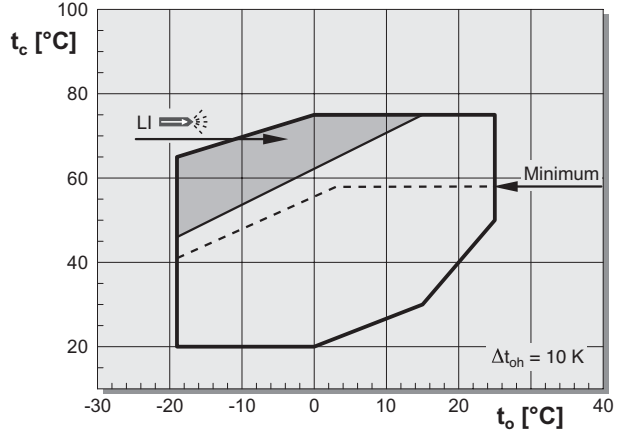
Application limits for CSV.

CSVH: R134a ■ R1234yf ■ R450A ■ R513A

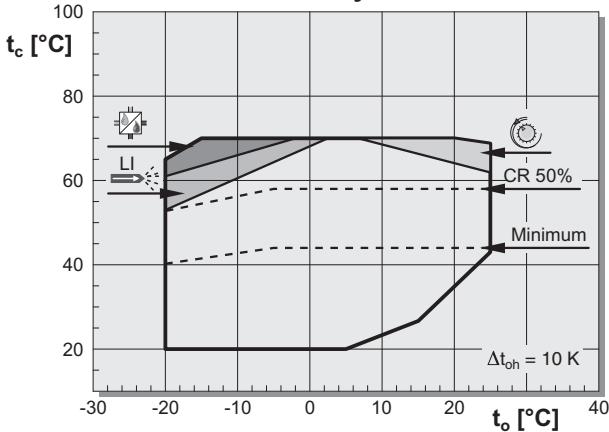


R450A: minimum evaporation temperature: -22°C

CSVH: R1234ze(E)

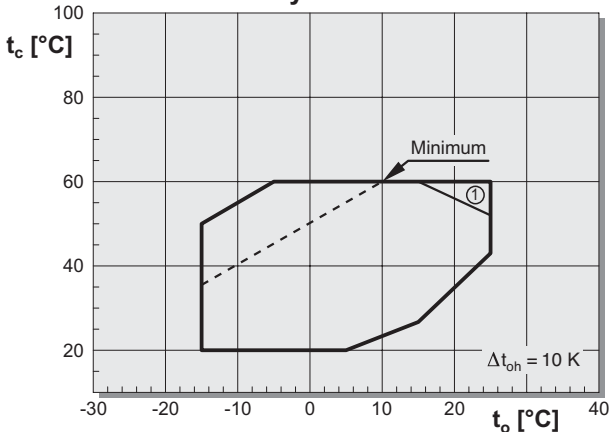


CSVH2..MY: R134a ■ R1234yf ■ R513A

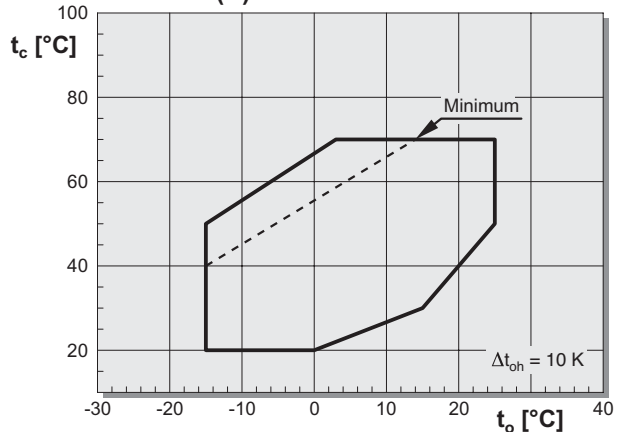


CSVH2 with permanent magnet motor

CSVW: R134a ■ R1234yf ■ R450A ■ R513A



CSVW: R1234ze(E)



Legend

t_o Evaporation temperature (°C)
 t_c Condensing temperature (°C)
 Δt_{oh} Suction gas superheat (K)

- Liquid injection or external oil cooling required
- External oil cooling required
- Speed is automatically adjusted if required

Extended ranges for individual compressors

① Operation in this range only possible with CSVW2.

Thermal limits

CSVH: Thermal limits for capacity control (CR) and additional cooling (liquid injection and external oil cooling) can be higher depending on compressor.

CSVW: In part load the maximum condensing temperature is restricted, depending on compressor.
 Individual application limits see BITZER SOFTWARE.

Application limits for economiser operation (ECO)

See BITZER SOFTWARE.

CSV.: Tuned-in electrics

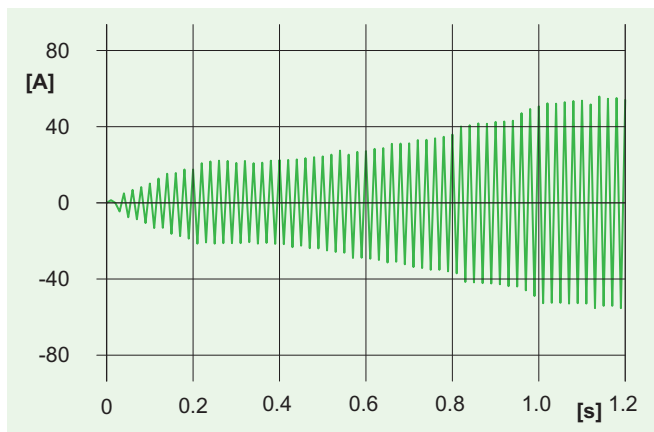
Motor

- // designed for high speed FI operation
- // extra large speed range – up to more than 1 : 6
- // suction gas cooled
- // temperature monitored by FI control

Frequency inverter (FI)

- // designed specifically for CSV. series
 - small size
 - cooling plate with evaporating refrigerant
- // all components designed for full lifetime – no special maintenance required
- // integrated monitoring with warning and alarm functions
- // ready wired monitoring and operating components
- // wide voltage range: nominal 380 .. 480 V at 50 and 60 Hz
- // Bluetooth communication with FI control
- // Modbus communication port to system controller
- // STO function: safe torque off, motor contactor is not necessary
- // softstart function – continuous current rise to operating current without usual inrush peak

Softstart characteristics



Current consumption at compressor start

Permanent magnet motor

- // synchronous motor with high efficiency due to permanent magnets
- // rotor is synchronous with the rotating field
- // wide working range, with high efficiency
- // significantly more efficient than the standard motor – especially at part load

Energy efficiency improvement

The permanent magnet motor is designed for the same full load conditions as the standard motor. Therefore, the electrical values on page 28 are almost identical for the two compressor motorisations. Nevertheless, a compressor with permanent magnet motor is more efficient than the standard asynchronous motor in all load conditions, especially in part load. Depending on the compressor, the SEERon value is up to 5.4% higher.

An "M" at the end of the type designation is the coding for compressors with permanent magnet motor.

| | |
|----------------|------|
| CSVH24-125(M)Y | 4,8% |
| CSVH25-160(M)Y | 5,1% |
| CSVH26-200(M)Y | 5,4% |

Improvement of the SEERon, which is the seasonal energy efficiency according to EU 2016/2281, in direct comparison between liquid chillers each with one compressor either with permanent magnet motor e. g. CSVH26-200MY or with standard motor e. g. CSVH26-200Y.

Optional electrical accessories

- // Line reactor
- // Radio frequency interference filter
- // BEST Interface Converter

Line reactor (L1)

For operation of the compressor, a line reactor is absolutely necessary. It reduces the harmonics which are transmitted to the power supply system by the FI.

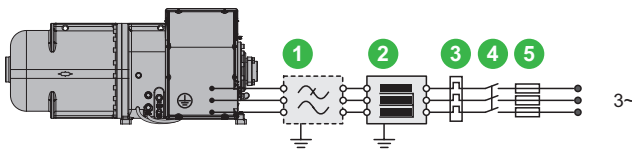
Only with a matching line reactor, the CSV. compressors comply with the category C3 according to EN61800-3:2005. In this case CSV. compressor may be operated at an industrial low voltage network that is separated from the public power supply network by means of a transformer (industrial environment).

RFI filter (Z1)

An RFI filter eliminates the interference waves in the radio frequency range which are emitted by the FI to the power network and which can be radiated by the electric lines. The emitted interference of the FI can be reduced using a line reactor and an RFI filter to such an extent that the compressor can be installed also in residential areas. In this constellation the CSV. compressor has the category C2 according to EN61800-3:2005.

Detailed description see Technical Information ST-160.

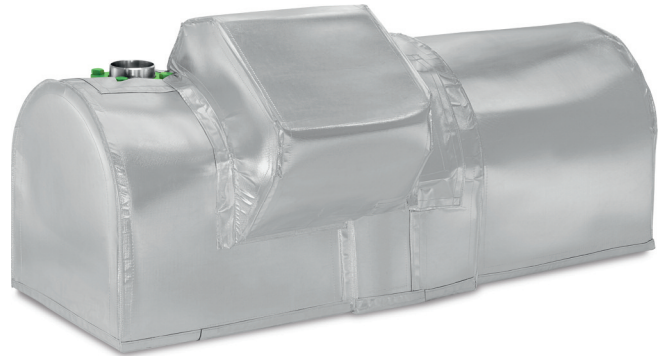
Connection of power voltage



- 1 RFI filter
Not necessary in all cases.
- 2 line reactor
- 3 overload protective device
- 4 compressor contactor
Not necessary if STO is used.
- 5 compressor fuse

Accessories for CSH, CSW, CSVH and CSVW

Sound insulation hoods



- // Efficient sound reduction
 - depending on compressor model and mounting situation, up to 12 dB(A)
 - effective over the whole frequency range
- // Easy to mount and to retrofit
 - flexible material
 - fastening with Velcro straps
 - adapted for every housing series
- // Easy to maintain
 - Easy access to the oil sight glass and to all connections.
 - Pipes and cables can be put through at any place.
- // Tested and proven combination of sound absorbing materials
 - robust
 - water-repellent
 - difficult to ignite (class B1 according to DIN4102)
 - released only for refrigerants of safety group A1
- // Application range
 - Within all application limits
 - Depending on operating point, the thermal limits for capacity control or additional cooling may be at lower condensing temperatures.
 - For an outdoor installation a weather protective housing or a roofing is required.

| Series | Sound reduction | Weight | Part number |
|---|-----------------|--------|-------------|
| CSH6/CSW6 | .. 10 dB(A) | 40 kg | 37790705 |
| CSH7/CSW7 | .. 10 dB(A) | 45 kg | 37790704 |
| CSH8/CSW8 | .. 10 dB(A) | 50 kg | 37790702 |
| CSH9/CSW9 | .. 8 dB(A) | 60 kg | 37790701 |
| CSVH2/CSVW2 | .. 12 dB(A) | 45 kg | 37790703 |
| CSVH3/CSVW3 | .. 10 dB(A) | 50 kg | 37790801 |
| CSVH3/CSVW3 Sectional sound insulation hood | .. 4 dB(A) | 30 kg | 37790802 |

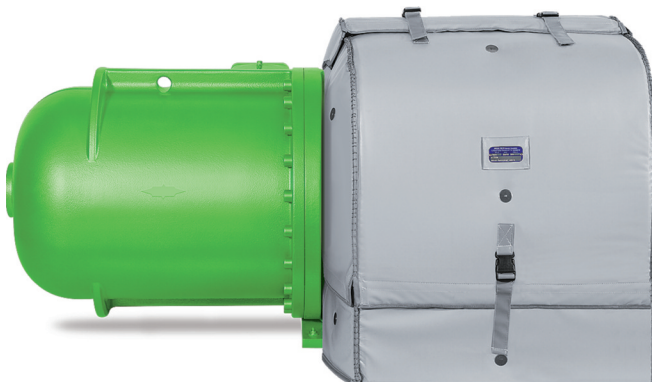
Mounting space

At the highest point and at the sides the sound insulation hood is approximately 40 mm thick.

The hood encloses the whole compressor. For the mounting, a free space of about 100 mm is recommended. The sound insulation hood can be retrofitted even in confined space conditions and if the pipes are already connected.

Sectional sound insulation hood

A sectional sound insulation hood is available for the CSVH3 and CSVW3. It covers the motor, the FI and the compressor side but not the oil separator side.



The accessories at a glance

For the CS. and CSV. series, BITZER offers a comprehensive equipment and accessory range.

| Equipment and accessories | CSH.5 | CSH.6 | CSH2T | CSW | CSW105 | CSVH | CSVW |
|-------------------------------------|-------|-------|-------|-----|--------|------|------|
| suction gas bushing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| suction gas valve ① | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| discharge gas bushing | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| discharge gas valve ① | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| check valve discharge gas outlet | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| muffler for discharge gas line | 0 | 0 | 0 | 0 | | 0 | 0 |
| compressor protection device SE-E4 | ✓ | ✓ | | ✓ | | | |
| compressor protection device SE-E5 | 0 | 0 | | 0 | | | |
| compressor protection device SE-i1 | 0 | 0 | ✓ | 0 | | | |
| compressor module CM-SW-01 | | | | | ✓ | | |
| FI | | | | | | ✓ | ✓ |
| BEST interface converter | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| line reactor | | | | | | 0 | 0 |
| RFI filter | | | | | | 0 | 0 |
| coils for capacity control ② | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| coils for V _r -control ② | | | | | | | |
| switch for minimum oil level | 0 | 0 | 0 | 0 | ✓ | ✓ | ✓ |
| switch for maximum oil level | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| economiser valve ③ | 0 | 0 | 0 | 0 ④ | 0 | 0 | 0 |
| adaptor for liquid injection (LI) | 0 | | 0 | | | 0 | |
| adaptor for oil cooling | 0 | | 0 | | | 0 | |
| adaptor for oil and gas return | | | | 0 | 0 | | 0 |
| oil heater ⑤ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| terminal box cover heater | 0 | 0 | | 0 | | | |
| vibration dampers | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| bridges for direct-on-line start ⑥ | S | 0 | | 0 | | | |
| sound insulation hood | 0 | 0 | | 0 | 0 | 0 | 0 |
| sectional sound insulation hood ⑦ | | | | | | | 0 |
| oil charge | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CE | S | S | S | S | S | S | S |
| ®UL | 0 | | | ® | | 0 | 0 |

- ✓ mounted equipment, included in standard scope of delivery
- S included in standard scope of delivery
- 0 optional accessory
- ① up to DN125
- ② for 230 V 50/60 Hz
- ③ CSH and CSVH: with pulsation muffler
- ④ not with motor 2 and R22 or R407C
- ⑤ 200 .. 230 V
- ⑥ not for CS.95103 and CS.95113
- ⑦ CSV.3 only
- ⑧ upon request

Refrigeration oils

The miscibility of the refrigerant in the oil and the change of lubricity at different temperatures are significant for the selection of the suitable refrigeration compressor oil for the respective application.

| Series | Standard | Alternative with R22 | CSHP |
|---------------|----------|----------------------|----------|
| CSH.5 Motor 1 | BSE170 | B320SH | B-PAG220 |
| CSH.5 Motor 2 | BSE170 | | B-PAG220 |
| CSH.6 | BSE170L | BSE170 | B-PAG220 |
| CSH2T | B-CE500 | | |
| CSW Motor 1 | BSE170L | BSE170 | B320SH |
| CSW Motor 2 | BSE170L | BSE170 | |
| CSW Motor 4 | BSE55 | BSE170L | |
| CSVH | BSE170 | | |
| CSVW | BSE170L | | |

The alternative oil is predominantly designated for applications with higher temperatures.

Oil charge code

Final letter in the model designation

// Y: BSE oils and B-CE500

// P: SHC230 for existing systems

// Z: B-PAG220

// without final letter: B320SH

Oil heaters

ensures the lubricity of the oil even after long standstill periods. It prevents increased refrigerant dilution in the oil and therefore a reduction of viscosity. The oil heater must be used during standstill in case of

// outdoor installation of the compressor

// long shut-off periods

// high refrigerant charge

// risk of refrigerant condensation into the compressor

The CM-SW-01 of CSW105 and the FI control of the CSV. series switches the oil heater on and off if required.

The heating capacity depends on the compressor series:

// CSH65 and CSW65: 200 W

// CSH75, CSH76 and CSW75: 200 W

// CSH85, CSH86 and CSW85: 300 W

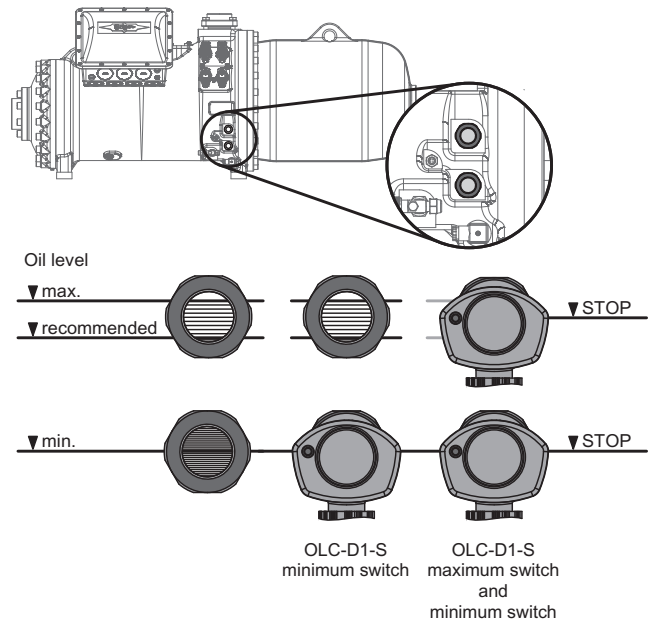
// CSH95, CSH96, CSH2T95 and CSW95: 300 W

// CSW105: 300 W

// CSVH2 and CSVW2: 200 W

// CSVH3 and CSVW3: 300 W

Oil level monitoring OLC-D1-S



For all compressor types, the minimum and maximum oil level can be monitored electronically. Upon request, the prism unit of the sensor is pre-equipped ex-works. For CSW105 and the CSV. series, the minimum switch is fully electrically connected as standard. For the CSV. series, this is also possible for the maximum switch upon request.

Approvals

BITZER offers ex-works approvals that stand for high quality of the compressors and the manufacturing processes. The respective approval of a legal area naturally includes all design and manufacturing-related legal acts of the respective legal area.

// CE: EU area and United Kingdom

// UL/CSA: USA/Canada and Saudi Arabia

The basic construction of the compressors is designed for the conditions of the CE legal area. Any other product marking may require a special design or equipment and must be known when the order is received. The respective compressor is individually marked. UL availability of the individual compressor series see page 17.

Special approvals

// BV (Bureau Veritas)

// DNV (Det Norske Veritas)

// LR (Lloyds Register of Shipping)

// RMRS (Russian Maritime Register of Shipping)

// further approvals upon request

BITZER works with a wide variety of international certification bodies, in particular ship classification societies. These approvals usually require an inspection of the compressor at the factory by a representative of the certifying body. The desired special approval must therefore be known at the latest when the order is received. Subsequent approval confirmations are not possible.

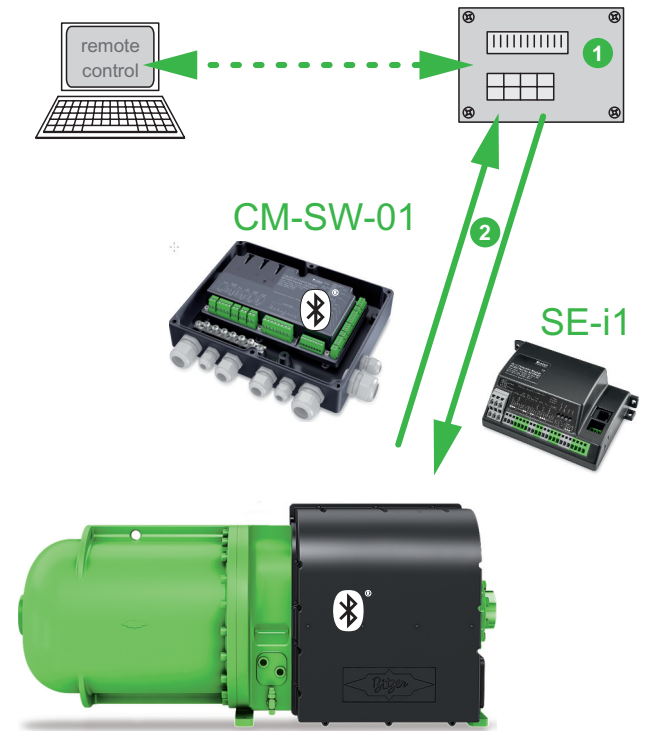
Special type approval certificates are summarised in the online document AU-100.

Communication with system controller

// via RS485 Modbus RTU

// early warning system reports critical system conditions

// warning levels communication close to application limits enables corrective measures by system controller



1 superior system controller

2 RS485 Modbus RTU and optional remote control

Intelligent compressor control improves system efficiency.

Compressor monitoring and communication

| Compressor protection | SE-E4 | SE-E5 | SE-i1 | CM-SW FU-01 | FU CSV. |
|---|------------------------------|--------------|--------------|--------------|---------------------------|
| suitable for | CS.6 | CS.6 | CS.6 | CS.105 | CSV. |
| or | CS.7 | CS.7 | CS.7 | | |
| integrated function | CS.8 | CS.8 | CS.8 | | |
| | CS.9 | CS.9 | CS.9 | | |
| motor voltage | 200 .. 690 V | 200 .. 690 V | 200 .. 690 V | 83 .. 690 V | |
| motor frequency | 50 / 60 Hz | 50 / 60 Hz | FU | FU | |
| allowable ambient temperature | -30 .. +60°C | -30 .. +60°C | -30 .. +60°C | -30 .. +70°C | -20 .. +55°C ^① |
| thermal motor monitoring | ✓ | ✓ | ✓ | ✓ | ✓ |
| thermal FI monitoring | | | | | ✓ |
| suitable for FI operation | 83 .. 690 V bei 20 .. 135 Hz | | ✓ | ✓ | integrated |
| start unloading control | | | | ✓ | ✓ |
| capacity control | | | | ✓ | ✓ |
| V _r -control | | | | ✓ | ✓ |
| oil temperature monitoring | ✓ | ✓ | ✓ | ✓ | ✓ |
| minimum oil level monitoring | ✓ | ✓ | ✓ | ✓ | ✓ |
| oil heater control depending on demand | | | | ✓ | ✓ |
| rotation direction monitoring | ✓ | ✓ | ✓ | ✓ | safe |
| Phase failure monitoring | ✓ | ✓ | ✓ | ✓ | safe |
| monitoring of overvoltage and undervoltage | | | | | ✓ |
| overcurrent monitoring | | | | | ✓ |
| restart delay | ✓ | ✓ | | ✓ | ✓ |
| cycling rate monitoring | | | ✓ | ✓ | ✓ |
| application limits monitoring | | | ✓ | ✓ | ✓ |
| low pressure cutout | | | ✓ | ✓ | ✓ |
| high pressure switch | | | ✓ | ✓ | ✓ |
| status LEDs | | | | ✓ | |
| data log | | | ✓ | ✓ | ✓ |
| warning level communication close to the application limits | | | ✓ | ✓ | ✓ |
| Bluetooth communication | | | | ✓ | ✓ |
| BEST/Modbus communication | | | ✓ | ✓ | ✓ |
| CE | ✓ | ✓ | ✓ | ✓ | ✓ |
| UL | ✓ | ✓ | ✓ | ✓ | ✓ |

① Daily average: 40°C

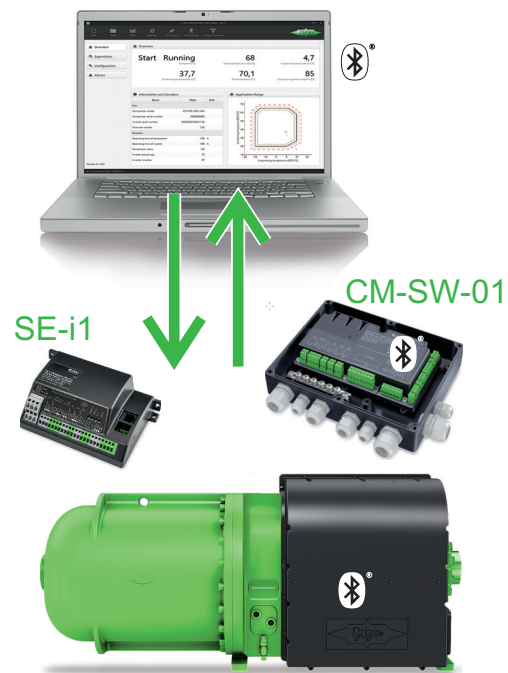
Indicate refrigerant when ordering a CSVH, CSVW, CSW105 or a compressor with SE-i1.



Via PC, all BITZER IQ products may be monitored and configured with the BEST SOFTWARE. With its intuitive user interface it displays a complete operating status overview including data log for easy maintenance and service. This is completely in line with our innovation targets.

Communication

// via BEST interface converter or Bluetooth



Easy configuration

- // easy device parameterisation
- // storing and installing of device and compressor setups
- // safe and easy firmware update

Reliable online diagnosis

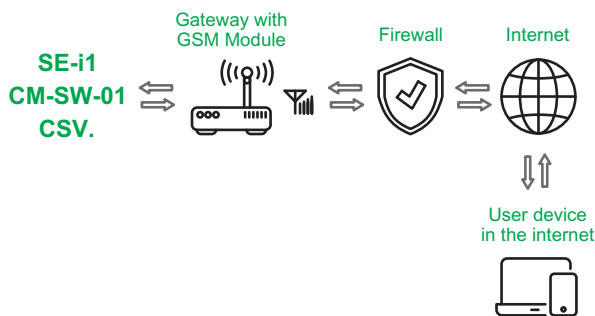
- // display of all connected sensors, e. g. pressure transmitters, temperature sensors, oil level switches, digital and analogue inputs and outputs
- // current operating point within the application limit
- // current capacity control status

Comfortable analysis

- // data log download and visualisation of all operating parameters
- // alarm list with integrated help function for easy maintenance and service
- // prepared for data analysis via the BITZER DIGITAL NETWORK

The BITZER Digital Network (BDN) provides comprehensive access to your compressor data. It enables remote access and remote diagnostics in real time by connecting to your own refrigeration system.

- // at any time.
- // at any place.
- // well protected.



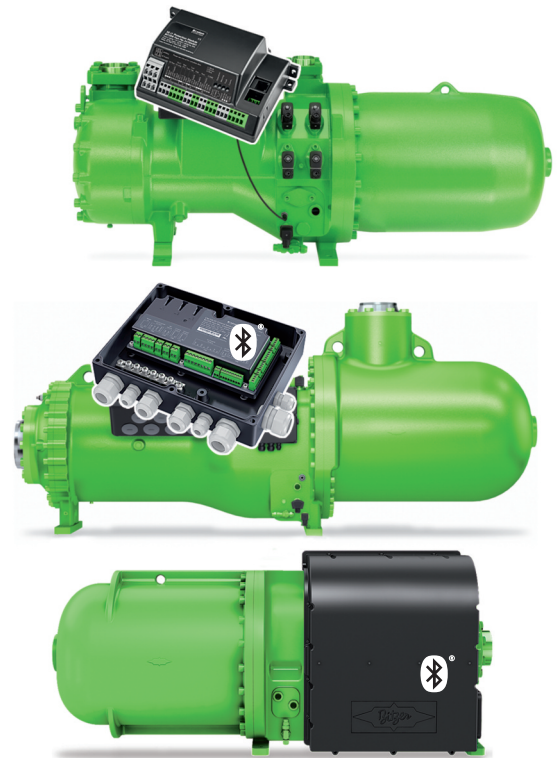
The pre-configured BITZER gateway provides a secure data connection between the compressor and the internet.

All BITZER applications are quickly and easily accessible via the BDN. It connects the user with the entire product knowledge. The BDN makes these innovations possible:

- // easy installation and integration into customer systems
- // preventive maintenance
- // own digital infrastructure
- // saving time
 - when visiting the system
 - in the analysis of operating data
 - in the diagnosis of problems
- // data analysis in high temporal resolution
- // fast troubleshooting
- // notification of problems, e. g. error messages via email

Intelligent compressor protection and remote control

A new generation of intelligent electronics operates, monitors and protects screw compressors beyond the standard requirements and communicates with the superior system controller.



- // SE-i1
 - communicates via: RS485 Modbus RTU, BEST interface converter
 - standard for CSH2T and for CSHP with R600a
 - option for CSH65 to CSH95 and CSH96
 - option for CSW65 to CSW95
- // CM-SW-01 standard in CSW105
 - communicates via: RS485 Modbus RTU, Bluetooth, BEST interface converter
- // CSVH and CSVW, integrated FI
 - communicates via: RS485 Modbus RTU, Bluetooth, BEST interface converter

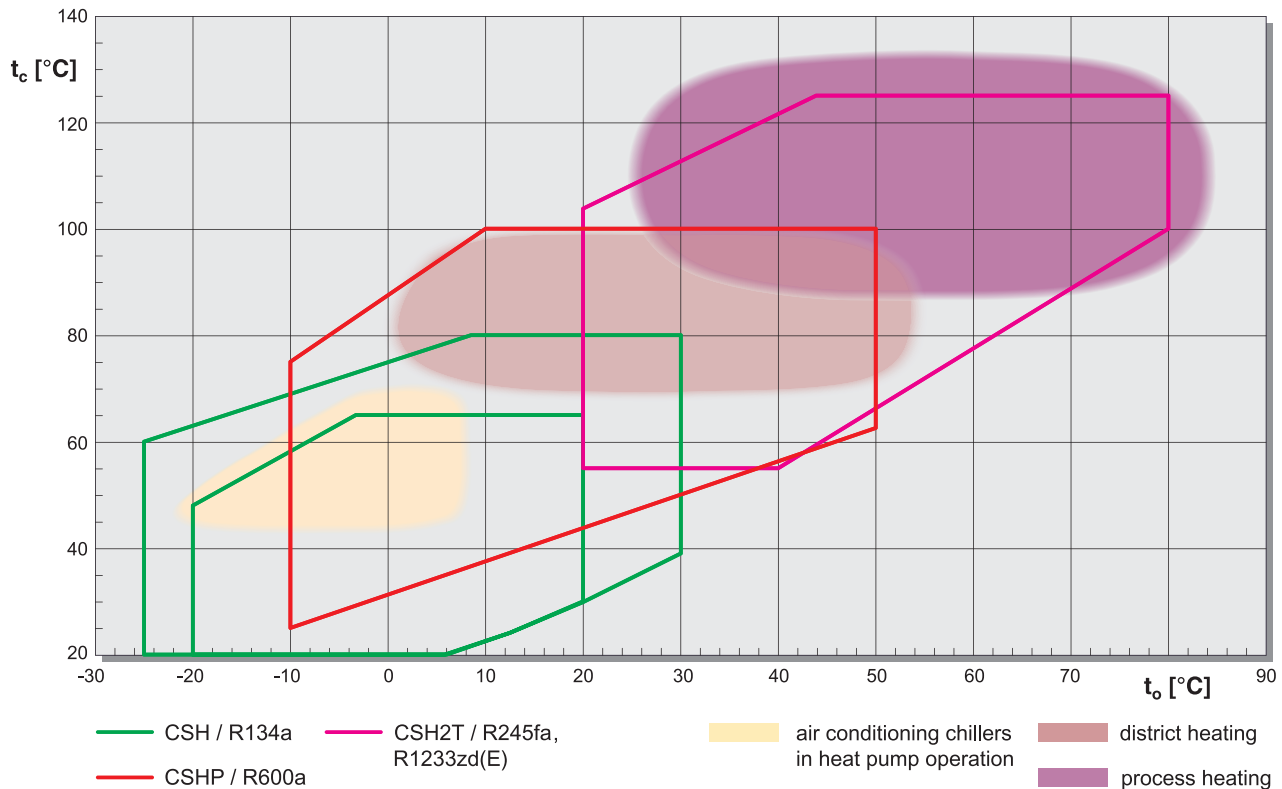
The internal data logging provides runtime and load statistics and the history of alarm and warning messages. This makes it possible to analyse the system situation at any time.

These BITZER IQ products actively protect the compressor. They switch off the compressor from critical operating conditions. The sensors and actuators of the BITZER IQ products are delivered ex-works factory wired and preconfigured. This enables quick diagnosis, maintenance and remote control.

Application in heat pumps

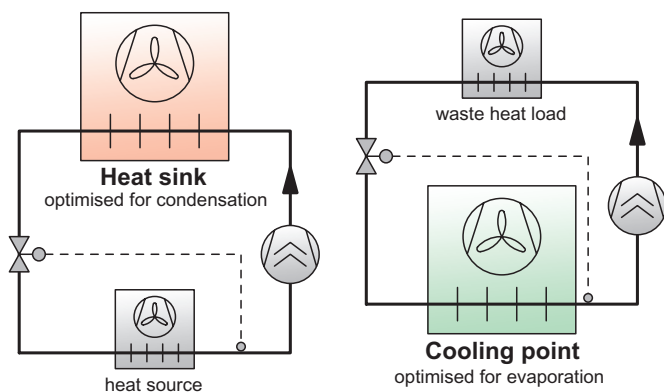
This field of application is subject to dynamic development.

BITZER offers compressors for a wide range of supply temperatures:



Heat pumps

In case of a heat pump, the focus is on using the hot side of the same process cycle used in refrigeration systems. The design and operation of the condenser, which transfers the heat to a heat sink, for example a district heating network, are optimised here.



A system can also be operated reversible, switching between cooling in summer and heat pump for heating in winter. In this case, a compromise must be found between the two applications.

Heat pumps are categorised according to their supply temperature, which in the heat pump process is the condensing temperature minus the temperature difference in the condenser.

Supply temperatures between 25 and 65°C can be generated by air conditioning chillers in heat pump operation with the usual refrigerants, e.g. for panel heating or hot water preparation.

The CS PRO compressors are suitable for the temperature range up to 95°C with the naturally occurring refrigerant R600a, isobutane. In this temperature range, the systems are designed as heat pumps and the components have been developed accordingly.

With the CSH2T series, compressors are available for industrial heat pumps that are operated with the refrigerants R245fa or R1233zd(E). Depending on the condenser design, a supply temperature of up to 120°C can be provided with such a system.

CSH2T

Applications

- // heat pumps for process heating with supply temperature up to 120°C
- // heat source temperature up to more than 80°C

Technical details

- // optimised for high temperatures based on CSH.5
- // economiser (ECO) at full and part load
- // liquid injection (LI)
- // oil cooler connection
- // 2 motor sizes can be selected

Refrigerants

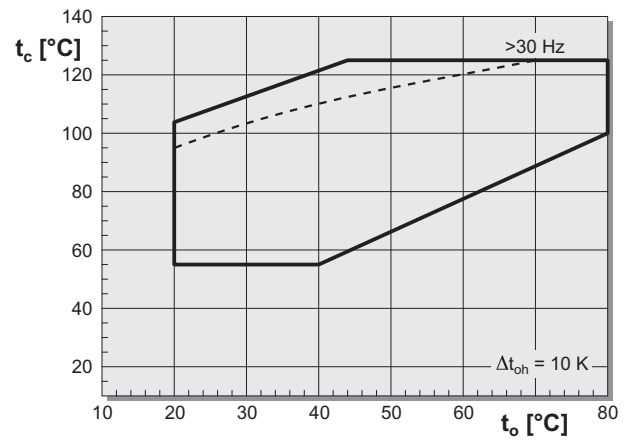
- // R245fa
- // R1233zd(E)

Refrigeration compressor oil

- // B-CE500

Application limits

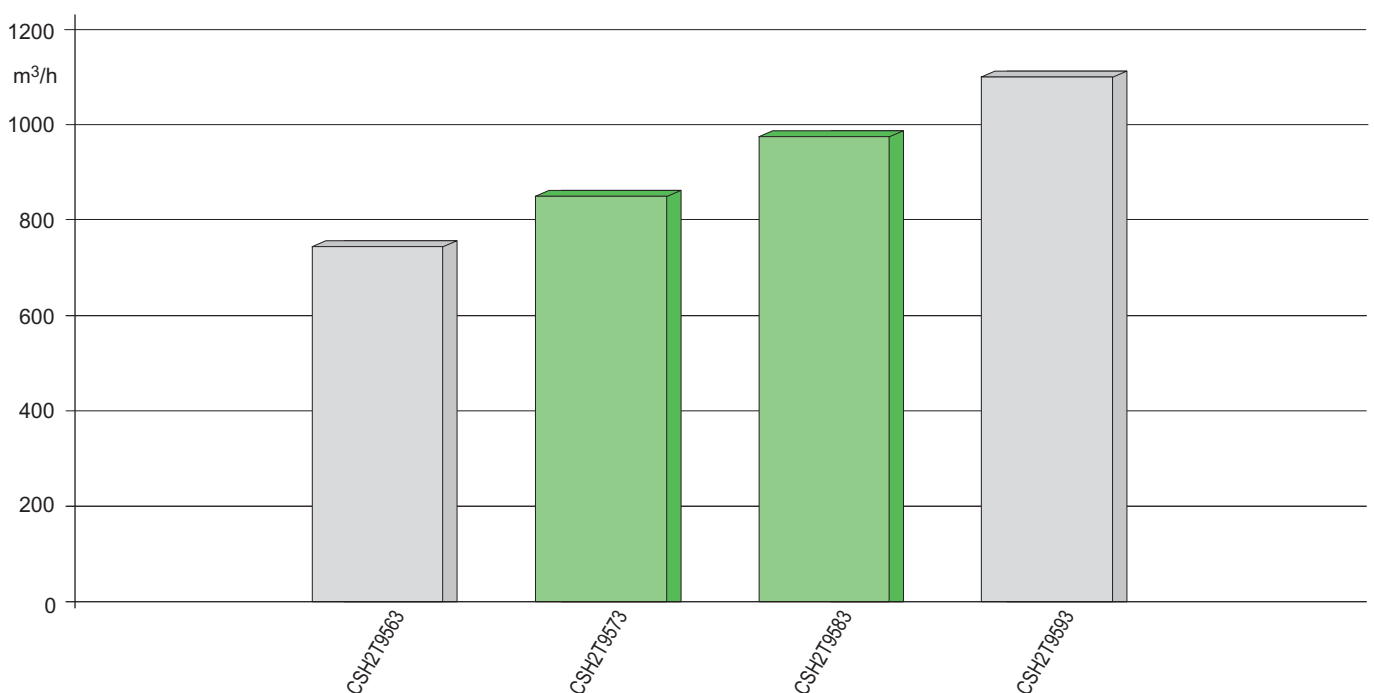
CSH2T: R245fa ■ R1233zd(E)



Legend

- t_o Evaporation temperature (°C)
- t_c Condensing temperature (°C)
- Δt_{oh} Suction gas superheat (K)

The CSH2T capacity range



Displacements at 60 Hz



Model designation

CSH and CSW series

Example

CSHP 8573 - 140 Z - 40P

Semi-hermetic compact screw compressor

CSHP 8573 - 140 Z - 40P

Application range

CSHP 8573 - 140 Z - 40P

Series property

P = design for operation with hydrocarbons

2T = design for high temperature applicatio

CSHP 8573 - 140 Z - 40P

Housing size

CSHP 8573 - 140 Z - 40P

Compressor execution

CSHP 8573 - 140 Z - 40P

Displacement

CSHP 8573 - 140 Z - 40P

Compressor execution

CSHP 8573 - 140 Z - 40P

Motor size

CSHP 8573 - 140 Z - 40P

Oil charge:

Y = polyolester oil

P = poly-alpha-olefin

Z = polyalkylene glycol oil

without final letter: B320SH

CSHP 8573 - 140 Z - 40P

Motor code

CSVH and CSVW series

Example

CSVW 25 - 160 M Y - 40M

Semi-hermetic compact screw compressor

CSVW 25 - 160 M Y - 40M

Speed controlled

CSVW 25 - 160 M Y - 40M

Application range

CSVW 25 - 160 M Y - 40M

Housing size

CSVW 25 - 160 M Y - 40M

Size of frequency inverter

CSVW 25 - 160 M Y - 40M

Motor size

CSVW 25 - 160 M Y - 40M

Permanent magnet motor

CSVW 25 - 160 M Y - 40M

Oil charge: polyolester oil

CSVW 25 - 160 M Y - 40M

Motor code

ATEX special versions

Example

CSHP 8563 - 125 .EX P - 40P

ATEX special design

.EX = device category 2

.X2 = device category 3

.X3 = device category 3 mechanical

Performance data



The BITZER SOFTWARE is available in many languages as a download for Windows as well as a web-based version. It is compatible with any browser and always up to date. The program is also suitable for tablets and smartphones.

The BITZER SOFTWARE covers:

- // Performance data for all common refrigerants under freely selectable operating conditions
- // All relevant technical data
- // Application limits
- // Calculation results and individually defined performance tables for compressors
- // Seasonal calculation
- // Dimensional drawings
- // Parallel compounds
- // Available accessories and their selection
- // All relevant technical documents
- // Further BITZER products

bitzer-software.com

Reference points for evaporating and condensing pressures

Connection positions 1 (HP) and 3 (LP) on the compressor (see dimensional drawing). The pressure drop for shut-off valves and check valves has not been taken into consideration. This is the worldwide state of the art for compact screws, as in factory-produced chillers shut-off valves are often not used and the check valve can also be arranged as an external component in the discharge gas line. For the sake of the international comparability of performance data, this standard was also taken over for the compact screw compressors.

Performance data

Performance data are based on the European Standard EN12900 and 50 Hz operation based on 10 K suction gas superheat, without liquid subcooling. Therefore the rated cooling capacity shows lower values in comparison to data based on 5 or 8.3 K of subcooling.

Evaporating and condensing temperatures correspond to "dew point values" (saturated vapor conditions).

The specified power consumption of the CSV. series includes the operation with frequency inverter and line reactor.

Individual operating points

For detailed compressor selection with the option of individual input data of all load conditions the BITZER SOFTWARE is available.

The screenshot displays the BITZER Software interface. On the left, the 'Compact Screw Compressors CS' section is active, showing the following settings:

- Series: CSVH
- Refrigerant: R513A
- Reference temperature: Dew point temp.
- Compressor selection:
 - Cooling capacity: 300
 - Compressor model: CSVH38-290Y
 - Incl. former types:
- Operating point:
 - Evaporating SST: 5 °C
 - Condensing SDT: 50 °C
 - Operating conditions:
 - with Economiser:
 - Liq. subc. (in condenser): 0 K
 - Suct. gas superheat: 10 K
 - Useful superheat: 100 %
 - Additional cooling: Automatic
 - Max. discharge gas temp.: Auto
 - Extended application range:
 - Power supply:
 - Power frequency: 50Hz
 - Power voltage: 400V-AS (40A)
 - Frequency compressor: 100%

The main window shows a schematic diagram of a compressor system with a green compressor unit and a condenser. The condenser is labeled 'CSVH38-290Y (100.0 %)' and has a temperature of 5.0°C. The evaporator has a temperature of 50.0°C. The discharge gas temperature is 69.1°C. The condensing temperature is 15.0°C. The evaporating temperature is 15.0°C.

The 'Result' tab is selected, showing the following technical data:

| Parameter | Value |
|---------------------------------|-----------------|
| Compressor | CSVH38-290Y-40A |
| Frequency compressor | 100.0 % |
| Cooling capacity | 717 kW |
| Cooling capacity * | 717 kW |
| Evaporator capacity | 717 kW |
| Power input | 221 kW |
| Current (400V) | 360 A |
| Voltage range | 400V |
| Condenser Capacity (w. HX) | 928 kW |
| COP/EER | 3.24 |
| COP/EER * | 3.24 |
| Mass flow LP | 21317 kg/h |
| Mass flow HP | 21317 kg/h |
| min. cooling capacity | 190.9 kW |
| max. cooling capacity | 717 kW |
| Operating mode | Standard |
| Liquid temp. | 50.0 °C |
| Oil volume flow | 0.33 m³/h |
| Cooling method | - |
| Discharge gas temp. w/o cooling | 69.1 °C |



Technical data: CSH

| Compressor model | Motor version | Displacement 50/60 Hz m ³ /h ^① | Refrigerating capacity Q ₀ | | | Oil charge dm ³ | Motor connection ② | Maximum operating current A | Maximum power consumption kW |
|------------------|---------------|--|---|--|---|-------------------------------|---|--|---------------------------------|
| | | | R134a R1234yf ^③ R513A ^③ t ₀ /t _c 5°C/50°C kW | R1234ze(E) t ₀ /t _c 5°C/50°C kW | R407C t ₀ /t _c 5°C/50°C kW | | | | |
| CSH6553-35Y | 2 | 137/165 | 75.6 | 57.0 | - | 8.5 | 400V(±10%) Δ-3-50Hz 460V(±10%) Δ-3-60Hz Y/Δ | 58 | 34 |
| CSH6553-50(Y) | 1 | 137/165 | 75.1 | 56.6 | 106.4 | 8.5 | | 86 | 52 |
| CSH6563-40Y | 2 | 170/205 | 94.3 | 71.3 | - | 8.5 | | 66 | 41 |
| CSH6563-60(Y) | 1 | 170/205 | 94.3 | 71.3 | 133.7 | 8.5 | | 108 | 65 |
| CSH6583-50Y | 2 | 195/236 | 108.8 | 82.1 | - | 9 | | 86 | 51 |
| CSH6593-60Y | 2 | 220/266 | 122.8 | 92.6 | - | 9 | | 108 | 56 |
| CSH7553-50Y | 2 | 197/238 | 106.7 | 80.7 | - | 14 | | 79 | 52 |
| CSH7553-70(Y) | 1 | 197/238 | 108.4 | 82.0 | 155.0 | 14 | | 128 | 78 |
| CSH7563-60Y | 2 | 227/274 | 125.8 | 95.1 | - | 14 | | 98 | 65 |
| CSH7563-80(Y) | 1 | 227/274 | 125.0 | 94.5 | 175.4 | 14 | | 144 | 88 |
| CSH7673-70Y | 2 | 258/311 | 150.2 | 114.5 | - | 14 | | 123 | 73 |
| CSH7573-70Y | 2 | 258/311 | 144.6 | 109.4 | - | 14 | | 124 | 78 |
| CSH7573-90(Y) | 1 | 258/311 | 145.0 | 109.7 | 204 | 14 | | 162 | 96 |
| CSH7683-80Y | 2 | 295/356 | 174.9 | 131.7 | - | 14 | | 140 | 83 |
| CSH7583-80Y | 2 | 295/356 | 168.6 | 127.2 | - | 14 | | 144 | 88 |
| CSH7583-100(Y) | 1 | 295/356 | 169.1 | 127.6 | 238 | 14 | | 170 | 102 |
| CSH7693-90Y | 2 | 336/406 | 199.2 | 150.6 | - | 14 | | 160 | 96 |
| CSH7593-90Y | 2 | 336/406 | 192.0 | 144.9 | - | 14 | | 162 | 93 |
| CSH7593-110(Y) | 1 | 336/406 | 192.5 | 145.3 | 270 | 14 | | 180 | 112 |
| CSH8553-80Y | 2 | 315/380 | 177.5 | 134.0 | - | 21 | | 400V(±10%) Δ/Δ-3-50Hz 460V(±10%) Δ/Δ-3-60Hz part winding | 144 |
| CSH8553-110(Y) | 1 | 315/380 | 181.7 | 137.2 | 257 | 21 | 185 | | 112 |
| CSH8563-90Y | 2 | 359/433 | 205 | 154.4 | - | 21 | 155 | | 96 |
| CSH8563-125(Y) | 1 | 359/433 | 207 | 155.9 | 293 | 21 | 216 | | 132 |
| CSH8673-110Y | 2 | 410/495 | 243 | 184.1 | - | 21 | 195 | | 114 |
| CSH8573-110Y | 2 | 410/495 | 240 | 180.5 | - | 21 | 182 | | 110 |
| CSH8573-140(Y) | 1 | 410/495 | 239 | 179.7 | 338 | 21 | 246 | | 150 |
| CSH8683-125Y | 2 | 470/567 | 273 | 210 | - | 18 | 221 | | 129 |
| CSH8583-125Y | 2 | 470/567 | 265 | 199.9 | - | 18 | 196 | | 120 |
| CSH8583-160(Y) | 1 | 470/567 | 259 | 195.4 | 379 | 18 | 260 | | 160 |
| CSH8693-140Y | 2 | 535/646 | 311 | 237 | - | 18 | 254 | | 148 |
| CSH8593-140Y | 2 | 535/646 | 301 | 228 | - | 18 | 214 | | 131 |
| CSH8593-180(Y) | 1 | 535/646 | 302 | 229 | 455 | 18 | 310 | | 186 |
| CSH9553-180(Y) | 1 | 535/646 | 304 | 231 | 444 | 29 | 330 | | 205 |
| CSH9663-160Y | 2 | 615/742 | 361 | 276 | - | 29 | 291 | | 173 |
| CSH9563-160Y | 2 | 615/742 | 357 | 264 | - | 29 | 280 | 155 | |
| CSH9563-210(Y) | 1 | 615/742 | 354 | 262 | 505 | 29 | 370 | 246 | |
| CSH9673-180Y | 2 | 700/845 | 420 | 316 | - | 29 | 333 | 200 | |
| CSH9573-180Y | 2 | 700/845 | 417 | 310 | - | 29 | 310 | 175 | |
| CSH9573-240(Y) | 1 | 700/845 | 409 | 304 | 601 | 29 | 420 | 255 | |
| CSH9683-210Y | 2 | 805/972 | 486 | 366 | - | 29 | 383 | 226 | |
| CSH9583-210Y | 2 | 805/972 | 480 | 358 | - | 29 | 320 | 204 | |
| CSH9583-280(Y) | 1 | 805/972 | 472 | 352 | 689 | 29 | 450 | 280 | |
| CSH9693-240Y | 2 | 910/1098 | 552 | 414 | - | 29 | 384 | 255 | |
| CSH9593-240Y | 2 | 910/1098 | 546 | 407 | - | 29 | 360 | 222 | |
| CSH9593-300(Y) | 1 | 910/1098 | 546 | 407 | 783 | 29 | 450 | 280 | |
| CSH96103-280Y | 2 | 1015/1225 | 594 | 454 | - | 31 | 456 | 271 | |
| CSH95103-280Y | 2 | 1015/1225 | 588 | 440 | - | 31 | 413 | 254 | |
| CSH95103-320(Y) | 1 | 1015/1225 | 588 | 440 | 868 | 31 | 566 | 332 | |
| CSH96113-320Y | 2 | 1120/1351 | 651 | 507 | - | 31 | 510 | 301 | |
| CSH95113-320Y | 2 | 1120/1351 | 644 | 481 | - | 31 | 447 | 277 | |

Technical Data: CS PRO

| Compressor model | Motor version | Displacement 50/60 Hz m ³ /h ^① | Refrigerating capacity Q _o | | Heating capacity Q _h ^⑤ | | Oil charge dm ³ | Motor connection ② | Maximum operating current A | Maximum power consumption kW |
|------------------|---------------|--|---|---|--|---|-----------------------------------|---------------------------|------------------------------------|-------------------------------------|
| | | | R290 t ₀ / t _c 5°C / 50°C kW | R600a t ₀ / t _c 35°C / 85°C kW | | | | | | |
| CSHP6553-50Z | 2 | 137/165 | 100.6 | – | 8.5 | 400V(±10%) Δ-3-50Hz 460V(±10%) Δ-3-60Hz Y/Δ | 81 | 46 | | |
| CSHP6563-60Z | 2 | 170/205 | 126.3 | – | 8.5 | | 96 | 56 | | |
| CSHP7553-70Z | 2 | 197/238 | 145.3 | 156.9 | 14 | | 114 | 67 | | |
| CSHP7553-80Z | 1 | 197/238 | 145.3 | – | 14 | | 127 | 77 | | |
| CSHP7563-80Z | 2 | 227/274 | 168.6 | 181.9 | 14 | | 129 | 75 | | |
| CSHP7563-90Z | 1 | 227/274 | 168.6 | – | 14 | | 146 | 84 | | |
| CSHP7673-100Z | 1 | 258/311 | 199.7 | – | 14 | | 157 | 94 | | |
| CSHP7573-90Z | 2 | 258/311 | 194.4 | 209 | 14 | | 137 | 82 | | |
| CSHP7573-100Z | 1 | 258/311 | 194.4 | – | 14 | | 161 | 96 | | |
| CSHP7683-110Z | 1 | 295/356 | 223 | – | 14 | | 176 | 105 | | |
| CSHP7583-100Z | 2 | 295/356 | 222 | 239 | 14 | | 163 | 97 | | |
| CSHP7583-110Z | 1 | 295/356 | 222 | – | 14 | | 180 | 107 | | |
| CSHP7593-110Z | 2 | 336/406 | 252 | 272 | 14 | | 180 | 107 | | |
| CSHP8553-110Z | 2 | 315/380 | 229 | 250 | 21 | | 180 | 107 | | |
| CSHP8553-125Z | 1 | 315/380 | 229 | – | 21 | | 216 | 126 | | |
| CSHP8563-125Z | 2 | 359/433 | 261 | 285 | 21 | | 201 | 117 | | |
| CSHP8563-140Z | 1 | 359/433 | 261 | – | 21 | | 244 | 144 | | |
| CSHP8673-180Z | 1 | 410/495 | 306 | – | 21 | | 270 | 153 | | |
| CSHP8573-140Z | 2 | 410/495 | 301 | 328 | 21 | | 222 | 129 | | |
| CSHP8573-180Z | 1 | 410/495 | 301 | – | 21 | | 286 | 162 | | |
| CSHP8683-180Z | 1 | 470/567 | 341 | – | 18 | 303 | 173 | | | |
| CSHP8583-160Z | 2 | 470/567 | 333 | 362 | 18 | 253 | 147 | | | |
| CSHP8583-180Z | 1 | 470/567 | 333 | – | 18 | 310 | 178 | | | |
| CSHP8593-180Z | 2 | 535/646 | 390 | 419 | 18 | 283 | 160 | | | |
| CSHP9553-160Z | 2 | 535/646 | 383 | 418 | 29 | 281 | 166 | | | |
| CSHP9553-180Z | 1 | 535/646 | 383 | – | 29 | 310 | 186 | | | |
| CSHP9663-210Z | 1 | 615/742 | 461 | – | 29 | 381 | 225 | | | |
| CSHP9563-180Z | 2 | 615/742 | 449 | 485 | 29 | 304 | 182 | | | |
| CSHP9563-210Z | 1 | 615/742 | 449 | – | 29 | 375 | 221 | | | |
| CSHP9673-240Z | 1 | 700/845 | 528 | – | 29 | 431 | 255 | | | |
| CSHP9573-210Z | 2 | 700/845 | 522 | 561 | 29 | 347 | 204 | | | |
| CSHP9573-240Z | 1 | 700/845 | 522 | – | 29 | 434 | 255 | | | |
| CSHP9683-320Z | 1 | 805/972 | 619 | – | 29 | 507 | 300 | | | |
| CSHP9583-240Z | 2 | 805/972 | 612 | 649 | 29 | 396 | 232 | | | |
| CSHP9583-320Z | 1 | 805/972 | 612 | – | 29 | 511 | 302 | | | |
| CSHP9693-320Z | 1 | 910/1098 | 704 | – | 29 | 563 | 334 | | | |
| CSHP9593-280Z | 2 | 910/1098 | 700 | 739 | 29 | 433 | 255 | | | |
| CSHP9593-320Z | 1 | 910/1098 | 700 | – | 29 | 562 | 334 | | | |
| CSHP96103-320Z | 2 | 1015/1225 | 744 | – | 31 | 487 | 287 | | | |
| CSHP95103-320Z | 2 | 1015/1225 | 758 | 821 | 31 | 528 | 312 | | | |
| CSHP96113-320Z | 2 | 1120/1351 | 832 | – | 31 | 566 | 336 | | | |
| CSHP95113-320Z | 2 | 1120/1351 | 838 | 906 | 31 | 566 | 336 | | | |

Indicate refrigerant when ordering the compressor.
Tentative data: Refrigerating and heating capacity as well as electrical data

Legend see page 30.

Technical Data: Compressors for high temperature heat pumps

| Compressor model | Motor version | Displacement 60 Hz m ³ /h ^① | Heating capacity Q _h ^⑥ ECO operation | | Oil charge dm ³ | Motor connection ④ | Maximum operating current A ^④ | Maximum power consumption kW ^④ |
|------------------|---------------|---|---|---|-------------------------------|--|---|--|
| | | | R245fa t ₀ / t _c 70°C / 120°C kW | R1233zd(E) t ₀ / t _c 70°C / 120°C kW | | | | |
| CSH2T9573-210Y | 2 | 845 | – | 649 | 29 | FI operation in Δ direct-on-line start 360-400V Δ-3-60Hz | 358 | 200 |
| CSH2T9573-240Y | 1 | 845 | 718 | – | 29 | | 441 | 255 |
| CSH2T9583-240Y | 2 | 972 | – | 746 | 29 | | 435 | 235 |
| CSH2T9583-280Y | 1 | 972 | 825 | – | 29 | | 473 | 295 |

Tentative data: Heating capacity and electrical data

Legend for the pages 28 to 31

- ① 50 Hz: 2900 min⁻¹, 60 Hz: 3500 min⁻¹
CSH2T: 60 Hz: 3500 min⁻¹
- ② Basis for motor data:
CS.65, CS.75 and CS.85: part winding motor (PW, Δ/ΔΔ).
Data for Y/Δ design upon request.
CS.95 and CS.105: star-delta motor (Y/Δ)
Consider the maximum operating current for the selection of contactors, cables and fuses.
Contactors: operational category AC3.
PW: Select both motor contactors for approx. 60% of the maximum operating current.
Y/Δ: Select the contactors according to contactor manufacturer's instructions. Consider the maximum operating current.
- ③ The indicated cooling capacity is valid for R134a.
Deviations of cooling capacities:
R1234yf: 5°C/50°C approx. 94% and 5°C/38°C approx. 97%.
R513A: 5°C/50°C approx. 101% and 5°C/38°C approx. 104%..

- ④ Basis for motor data:
60 Hz with VARIPACK FSU+480
Connect motor in delta direct-on-line start.
Operation permissible with frequency inverter (FI) only.
Select electrical components according to the specifications of the FI manufacturer.

Heating capacity is the sum of refrigerating capacity and power consumption.

- ⑤ The CSHP heating capacity data for R600a are based on operation at 50 Hz, 20 K suction gas superheat without liquid subcooling.
- ⑥ The CSH2T heating capacity data are based on operation at 60 Hz, 5 K suction gas superheat and ECO operation with liquid subcooling at: t_{eco} + 10 K.

Technical Data: CSW

| Compressor model | Motor version | Displacement 50/60 Hz m ³ /h ^① | Refrigerating capacity Q ₀ | | | Oil charge dm ³ | Motor connection ② | Maximum operating current A | Maximum power consumption kW |
|------------------|---------------|--|---|--|---|-----------------------------------|---|------------------------------------|-------------------------------------|
| | | | R134a R1234yf ^③ R513A ^③ t ₀ /t _c 5°C/38°C kW | R1234ze(E) t ₀ /t _c 5°C/38°C kW | R407C t ₀ /t _c 5°C/38°C kW | | | | |
| CSW6583-40Y | 2 | 195/236 | 126.6 | 94.2 | - | 9 | 400V(±10%) Δ-3-50Hz 460V(±10%) Δ-3-60Hz Y/Δ | 74 | 43 |
| CSW6583-50(Y) | 1 | 195/236 | - | - | 183.4 | 9 | | 92 | 55 |
| CSW6593-50Y | 2 | 220/266 | 142.5 | 106.1 | - | 9 | | 84 | 47 |
| CSW6593-60(Y) | 1 | 220/266 | - | - | 217 | 9 | | 105 | 62 |
| CSW7573-60Y | 2 | 258/311 | 174.3 | 129.8 | - | 14 | | 98 | 55 |
| CSW7573-70(Y) | 1 | 258/311 | - | - | 255 | 14 | | 123 | 73 |
| CSW7583-70Y | 2 | 295/356 | 198.3 | 147.7 | - | 14 | | 112 | 64 |
| CSW7583-80(Y) | 1 | 295/356 | - | - | 290 | 14 | | 140 | 83 |
| CSW7593-80Y | 2 | 336/406 | 226 | 168.2 | - | 14 | | 128 | 72 |
| CSW7593-90(Y) | 1 | 336/406 | - | - | 330 | 14 | | 160 | 95 |
| CSW8573-80Y | 4 | 410/495 | 282 | 210 | - | 20 | | 118 | 72 |
| CSW8573-90Y | 2 | 410/495 | 283 | 211 | - | 20 | | 156 | 87 |
| CSW8573-110(Y) | 1 | 410/495 | - | - | 412 | 20 | | 195 | 116 |
| CSW8583-90Y | 4 | 470/567 | 309 | 230 | - | 17 | | 135 | 80 |
| CSW8583-110Y | 2 | 470/567 | 306 | 228 | - | 17 | | 177 | 96 |
| CSW8583-125(Y) | 1 | 470/567 | - | - | 455 | 17 | 221 | 127 | |
| CSW8593-110Y | 4 | 535/646 | 349 | 260 | - | 17 | 156 | 90 | |
| CSW8593-125Y | 2 | 535/646 | 349 | 260 | - | 17 | 203 | 109 | |
| CSW8593-140(Y) | 1 | 535/646 | - | - | 517 | 17 | 254 | 144 | |
| CSW9563-125Y | 4 | 615/742 | 431 | 320 | - | 27 | 400V(±10%) Δ-3-50Hz 460V(±10%) Δ-3-60Hz part winding Y/Δ | 192 | 105 |
| CSW9563-140Y | 2 | 615/742 | 425 | 316 | - | 27 | | 233 | 132 |
| CSW9563-160(Y) | 1 | 615/742 | - | - | 624 | 27 | | 291 | 175 |
| CSW9573-140Y | 4 | 700/845 | 482 | 352 | - | 27 | | 213 | 125 |
| CSW9573-160Y | 2 | 700/845 | 486 | 355 | - | 27 | | 266 | 147 |
| CSW9573-180(Y) | 1 | 700/845 | - | - | 714 | 27 | | 333 | 198 |
| CSW9583-160Y | 4 | 805/972 | 565 | 421 | - | 27 | | 238 | 140 |
| CSW9583-180Y | 2 | 805/972 | 558 | 416 | - | 27 | | 306 | 167 |
| CSW9583-210(Y) | 1 | 805/972 | - | - | 829 | 27 | | 383 | 223 |
| CSW9593-180Y | 4 | 910/1098 | 640 | 476 | - | 27 | | 263 | 155 |
| CSW9593-210Y | 2 | 910/1098 | 634 | 472 | - | 27 | | 345 | 186 |
| CSW9593-240(Y) | 1 | 910/1098 | - | - | 940 | 27 | | 431 | 252 |
| CSW95103-210Y | 4 | 1015/1225 | 687 | 511 | - | 29 | | 307 | 179 |
| CSW95103-240Y | 2 | 1015/1225 | 686 | 510 | - | 29 | | 378 | 220 |
| CSW95103-280(Y) | 1 | 1015/1225 | - | - | 1012 | 29 | | 456 | 272 |
| CSW95113-240Y | 4 | 1120/1351 | 771 | 574 | - | 29 | 335 | 196 | |
| CSW95113-280Y | 2 | 1120/1351 | 760 | 566 | - | 29 | 411 | 240 | |
| CSW95113-320(Y) | 1 | 1120/1351 | - | - | 1123 | 29 | 510 | 297 | |
| CSW10563-210Y | 4 | 1170/1401 | 795 | 604 | - | 32 | 327 | 210 | |
| CSW10563-240Y | 2 | 1170/1401 | 798 | 606 | - | 32 | 394 | 240 | |
| CSW10573-240Y | 4 | 1400/1690 | 952 | 722 | - | 32 | 377 | 230 | |
| CSW10573-290Y | 2 | 1400/1690 | 955 | 725 | - | 32 | 454 | 276 | |
| CSW10583-290Y | 4 | 1700/2052 | 1148 | 868 | - | 32 | 454 | 276 | |
| CSW10583-360Y | 2 | 1700/2052 | 1152 | 871 | - | 32 | 565 | 340 | |
| CSW10593-360Y | 4 | 2000/2414 | 1373 | 1043 | - | 32 | 565 | 340 | |
| CSW10593-400Y | 2 | 2000/2414 | 1378 | 1047 | - | 32 | 629 | 382 | |

Legend see page 30.

Technical Data: CSVH and CSVW

| Compressor model | Displacement at maximum speed m ³ /h | Refrigerating capacity Q _o ^① | | | | Oil charge dm ³ | Frequency inverter connection | Maximum operating current ^② | | Maximum power consumption kW |
|---|--|--|--|--|--|-------------------------------|--|--|----------------|---------------------------------|
| | | R134a | | R1234ze(E) | | | | A ^③ | A ^④ | |
| | | t _o /t _c 5°C / 50°C kW | t _o /t _c -10°C / 45°C kW | t _o /t _c 5°C / 50°C kW | t _o /t _c -10°C / 45°C kW | | | | | |
| CSVH24-125Y CSVH24-125MY | 464 | 281 | 161 | 213 | 118 | 15 | 380..480V / 3 / 50 Hz 380..480V / 3 / 60 Hz | 220 | 190 | 130 |
| CSVH25-160Y CSVH25-160MY | 580 | 358 | 203 | 271 | 149 | 15 | | 260 | 225 | 167 |
| CSVH26-200Y CSVH26-200MY | 725 | 439 | 246 | 326 | 176 | 15 | | 340 | 290 | 198 |
| CSVH37-240Y | 960 | 593 | 338 | 446 | 250 | 35 | | 420 | 370 | 250 |
| CSVH38-290Y | 1156 | 712 | 405 | 536 | 300 | 35 | | 490 | 430 | 290 |
| CSVW24-125Y CSVW24-125MY | 464 | 285 | 160 | 213 | 119 | 15 | 380..480V / 3 / 50Hz 380..480V / 3 / 60Hz | 220 | 190 | 126 |
| CSVW25-160Y CSVW25-160MY | 580 | 359 | 201 | 268 | 149 | 15 | | 260 | 225 | 162 |
| CSVW26-200Y CSVW26-200MY | 725 | 439 | 245 | 327 | 179 | 15 | | 340 | 290 | 198 |
| CSVW37-240Y | 1000 | 582 | 328 | 437 | 243 | 35 | | 420 | 370 | 250 |
| CSVW38-290Y | 1206 | 705 | 399 | 526 | 292 | 35 | | 490 | 430 | 290 |

Indicate refrigerant when ordering the compressor.

Permanent magnet motor: CSV..MY.

The efficiency difference is particularly noticeable at part load.

See page 17.

① Performance data at maximum compressor speed. They are based on the European Standard EN12900 and 50 Hz operation, relating to 10 K suction gas superheat without liquid subcooling. Performance data for individual operating conditions and part load operation for see BITZER SOFTWARE.

② Consider the max. operating current or max. power consumption at max. speed for the selection of cables and fuses.
Fuses: Semiconductor fuses with aR or gR characteristics

③ Nominal supply voltage (FI input voltage)
400V-3-50/60Hz

④ Nominal supply voltage (FI input voltage)
460V-3-50/60Hz

Dimensional drawings

The following pages show the dimensional drawings of the compressors in their standard scope of delivery. CAD data of the compressors including all options can be found as 2D dxf drawings and 3D STP models on the website www.bitzer.de and in the BITZER SOFTWARE.

Dimensional drawings for CS PRO

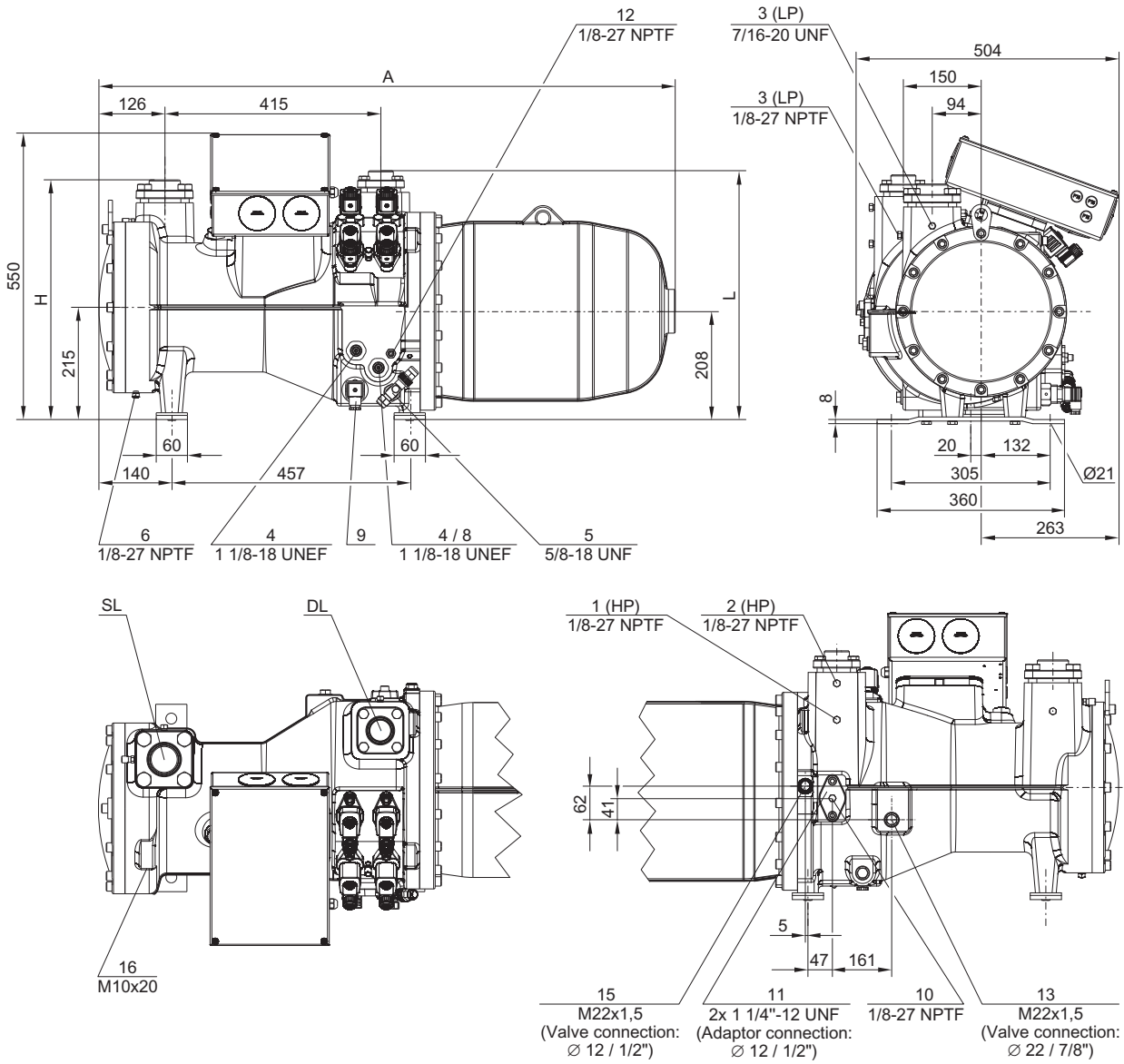
The model designations CSH.5 and CSH.6 on the following pages include the respective CSHP.5 and CSHP.6 models.

Connection positions

| | |
|----------|--|
| 1 | High pressure connection (HP): Connection for high pressure switch (HP) |
| 2 | Additional high pressure connection (HP) |
| 2a | Connection for high pressure transmitter (HP) CSW105: connected to the compressor module |
| 3 | Low pressure connection (LP): Connection for low pressure switch (LP) |
| 3a | Connection for low pressure transmitter (LP) CSW105: connected to the compressor module |
| 4 | Oil sight glass |
| 5 | Oil valve for maintenance (standard scope of delivery) / connection for oil equalisation (with parallel operation) |
| 6 | Oil drain plug (motor housing) |
| 8 | Connection for opto-electronic oil level switch - (OLC-D1-S) CSW105: connected to the compressor module CSV.: integrated into FI control |
| 9 | Oil heater with heater sleeve (standard) CSW105: connected to the compressor module CSV.: integrated into FI control |
| 10 | Oil pressure connection |
| 11 | Connections for external oil cooler (optional adaptor) |
| 11a | Outlet to oil cooler |
| 11b | Inlet/return from oil cooler |
| 12 | Oil temperature sensor CSW105: connected to the compressor module CSV.: integrated into FI control |
| 13 | Connection for economiser (ECO, optional shut-off valve, CSH and CSVH with pulsation muffler) |
| 14 | Gewindebohrung für Rohhalterung |
| 14a | for ECO line |
| 14b | for LI line |
| 15 | Connection for liquid injection (LI, optional shut-off valve) |
| 16 | Earth screw for housing |
| 17 | CSW and CSVW only: Connection for oil and gas return (for systems with flooded evaporator, optional adaptor) |
| 18 | Oil filter (maintenance connection) |
| 19 | FI cooling (liquid refrigerant) |
| 20 | Frequency inverter (FI) |
| 21 | Oil injection valve (internal) |
| 22 | Compressor module |
| 23 | Slider position indicator |
| 24 | Gas permeable plug |
| SL | Suction gas line |
| DL | Discharge gas line |
| X | Removal space for oil filter |
| X1 .. X4 | Plan a removal space for FI housing. |

Dimensional drawings

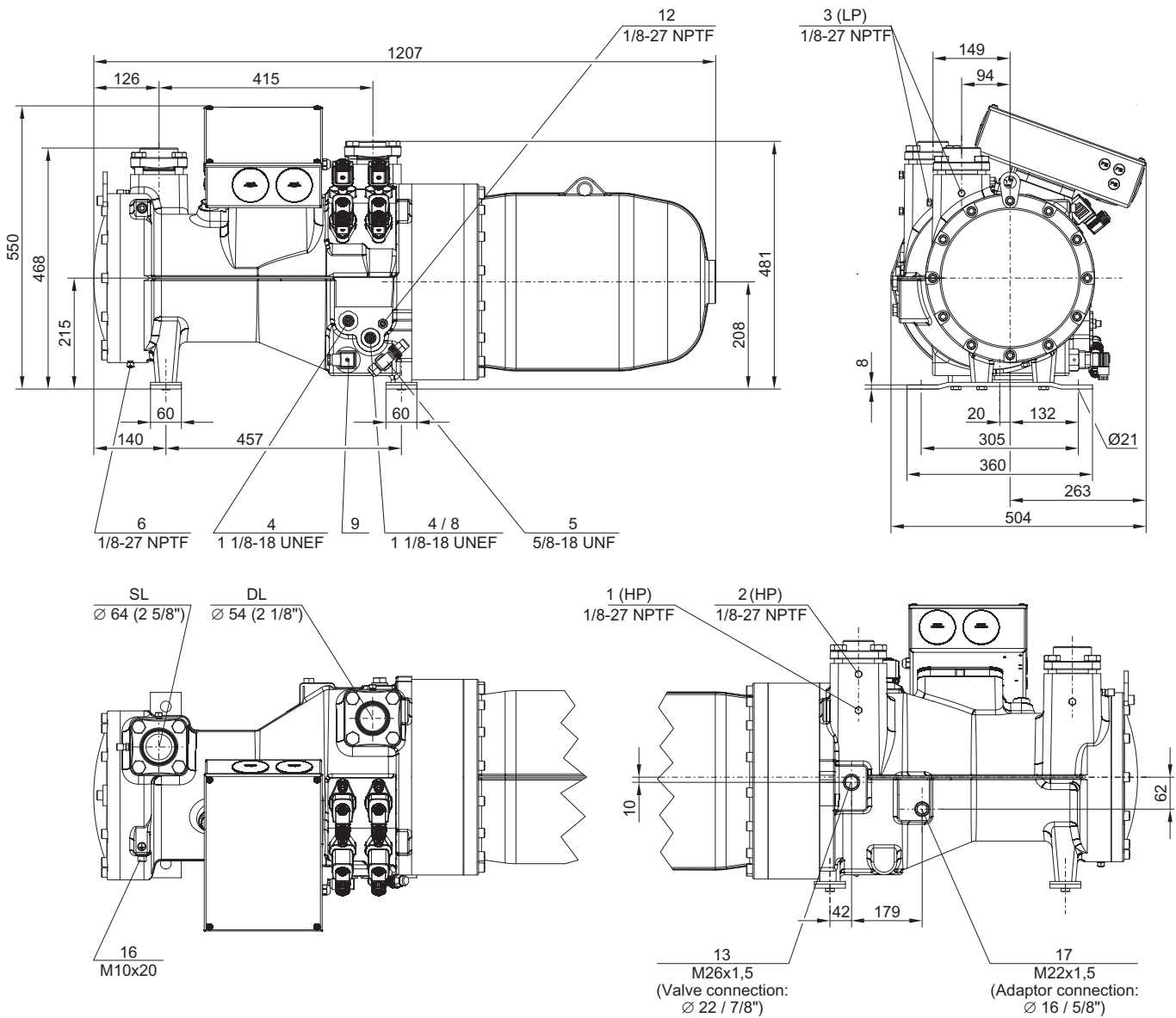
CSH65



| | A | H | L | DL | SL |
|---------|------|-----|-----|---|---|
| | mm | mm | mm | mm | mm |
| CSH6553 | 1107 | 460 | 478 | Ø42 (1 ⁵ / ₈ " | Ø54 (2 ¹ / ₈ " |
| CSH6563 | | | | | |
| CSH6583 | 1207 | 470 | 481 | Ø54 (2 ¹ / ₈ " | Ø64 (2 ⁵ / ₈ " |
| CSH6593 | | | | | |

Dimensional drawings

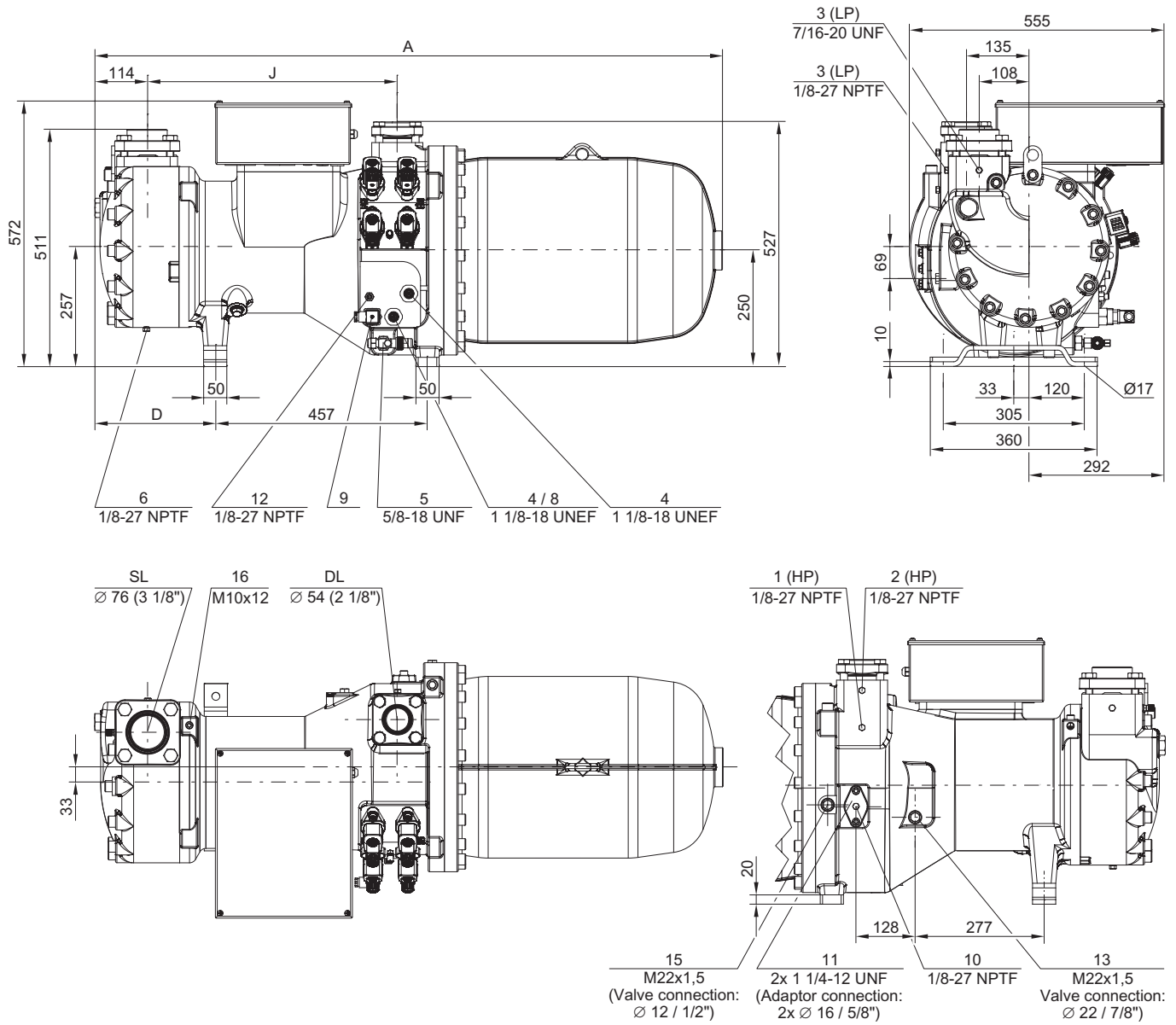
CSW65



Connection positions see page 33.

Dimensional drawings

CSH75



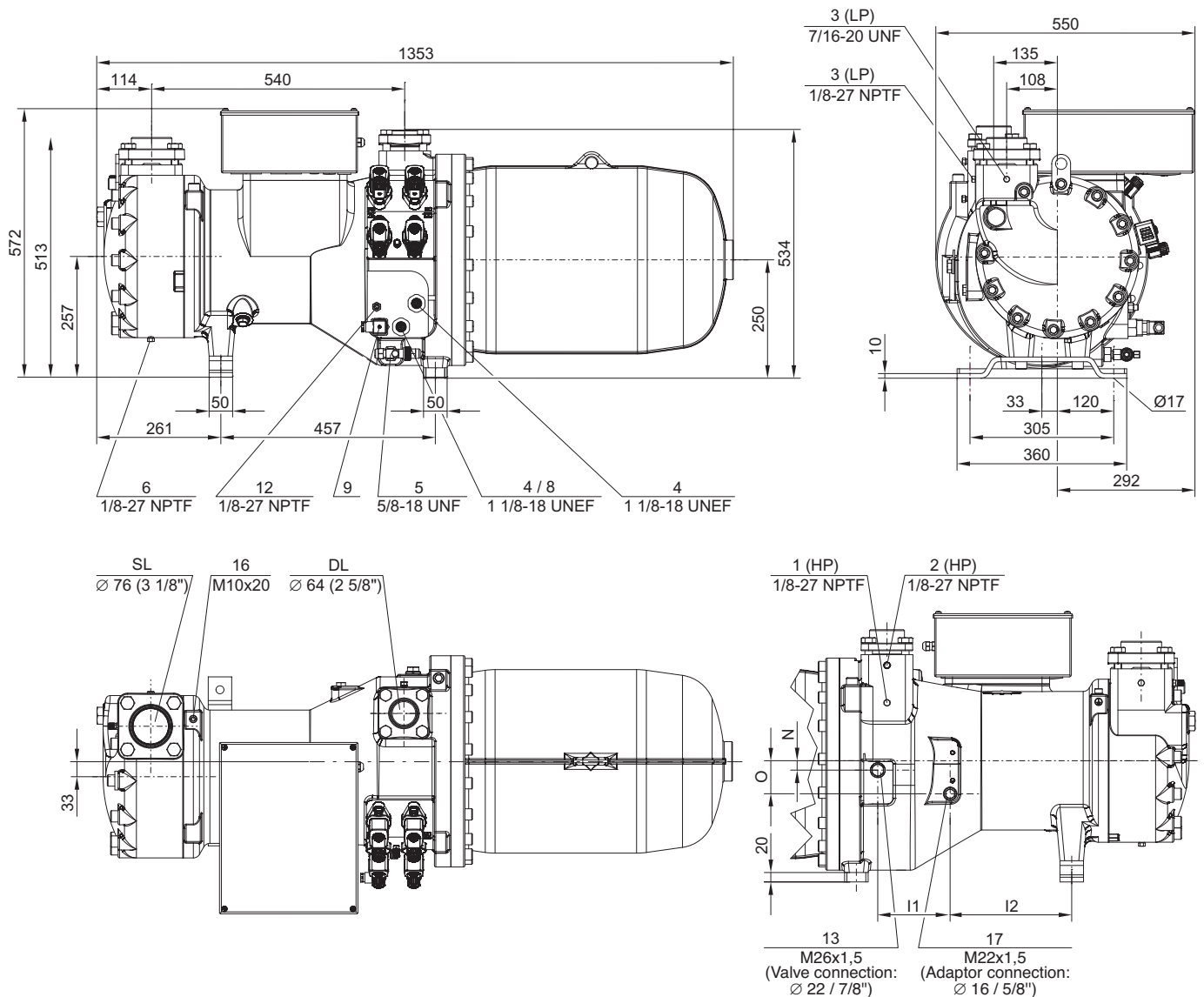
Technical data

| | A mm | D mm | J mm |
|--|---------|---------|---------|
| CSH7553 / CSH7563 / CSH7573 CSH7583-80Y / CSH7593-90Y | 1354 | 262 | 540 |
| CSH7583-100(Y) CSH7593-110(Y) | 1385 | 293 | 570 |

Connection positions see page 33.

Dimensional drawings

CSH76 and CSW75

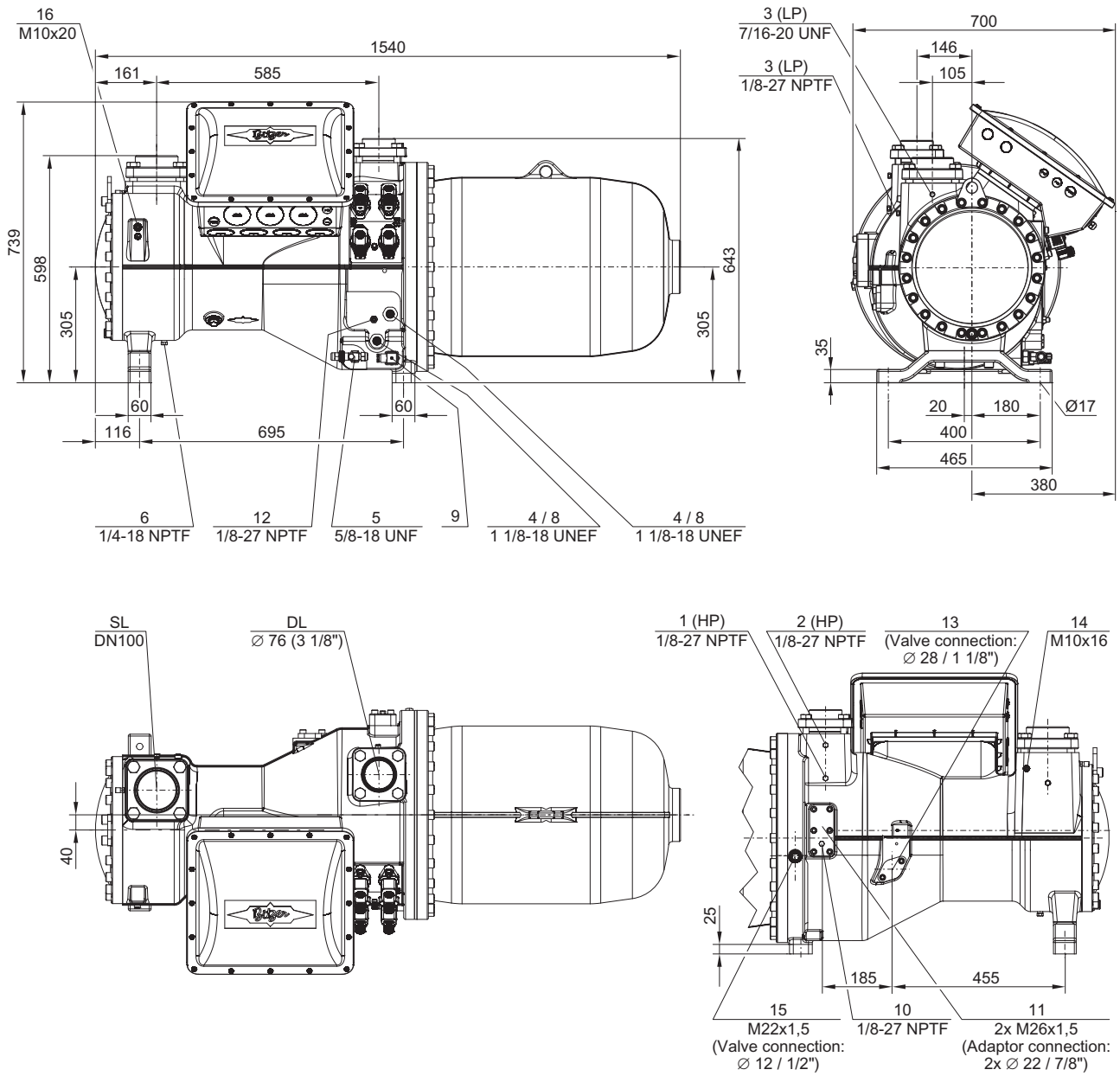


| | l1 mm | l2 mm | N mm | O mm |
|--|----------|----------|---------|---------|
| CSH7673 CSW7573 | 153 | 258 | 20 | 70 |
| CSH7683 / CSH7693 CSW7583 / CSW7593 | 157 | 261 | 23 | 69 |

Connection positions see page 33.

Dimensional drawings

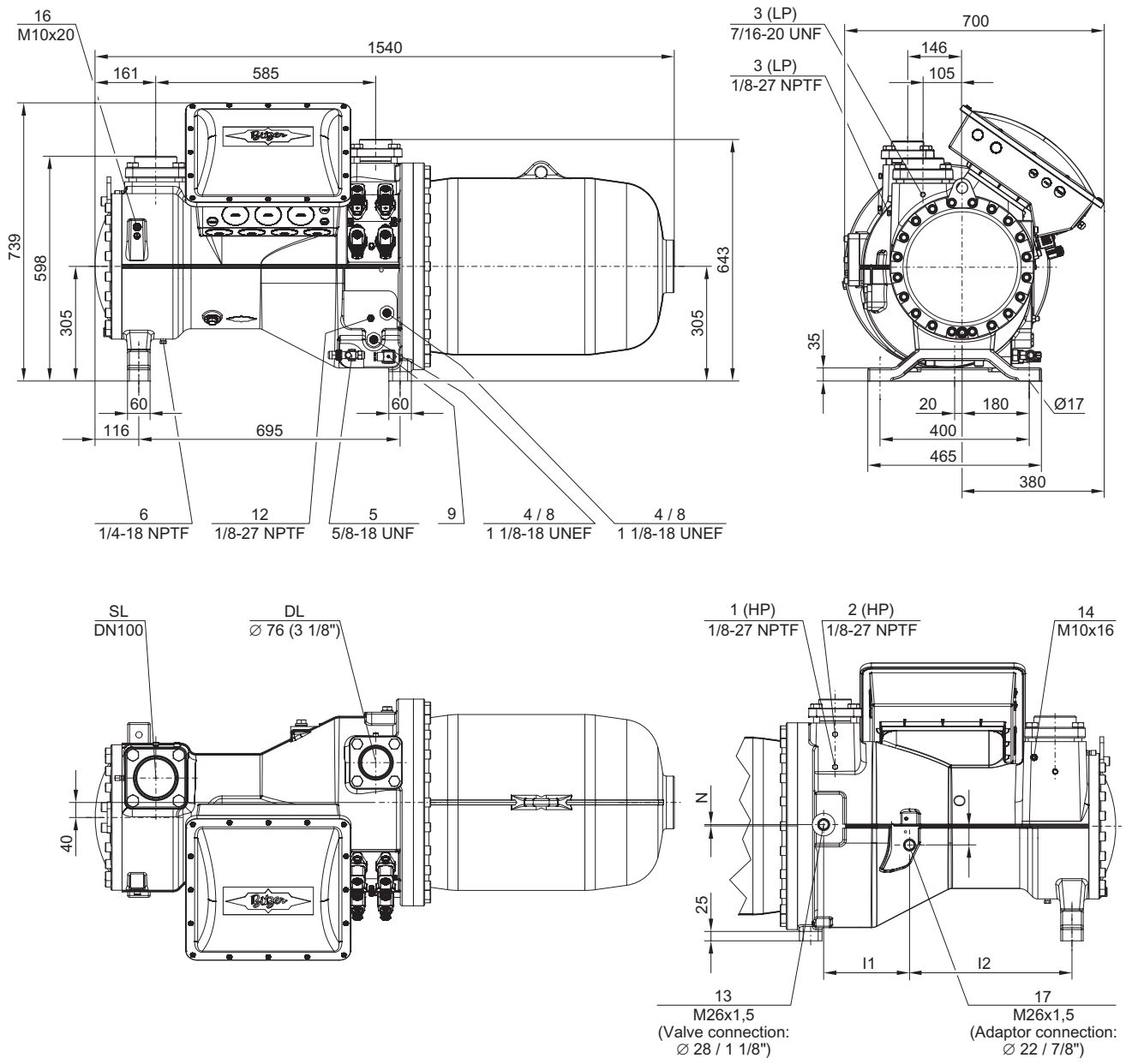
CSH85



Connection positions see page 33.

Dimensional drawings

CSH86 and CSW85

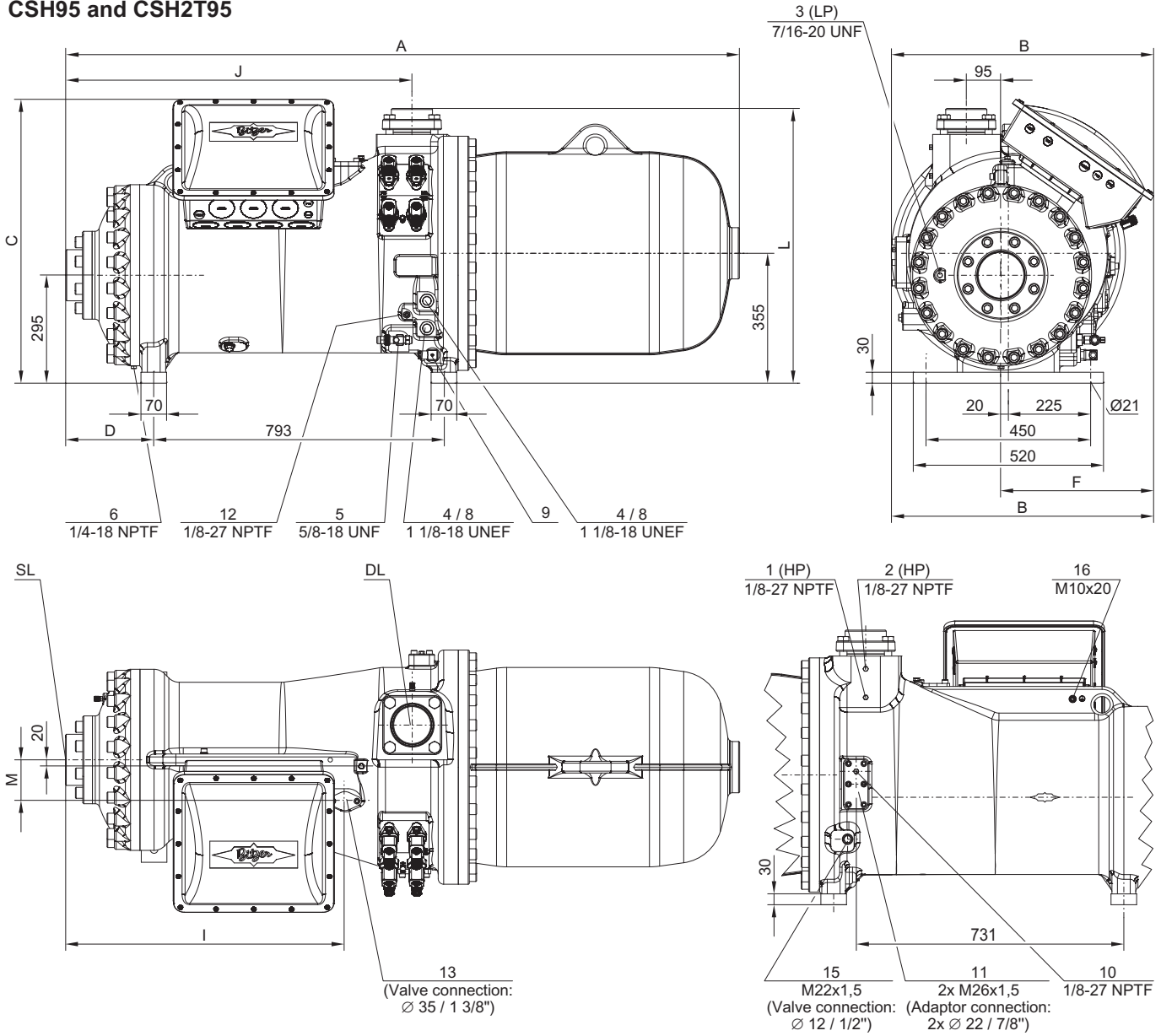


| | l1 mm | l2 mm | N mm | O mm |
|--|----------|----------|---------|---------|
| CSH8673 CSW8573 | 221 | 434 | 0 | 56 |
| CSH8686 / CSH8693 CSW8583 / CSW8593 | 228 | 432 | 4 | 50 |

Connection positions see page 33.

Dimensional drawings

CSH95 and CSH2T95



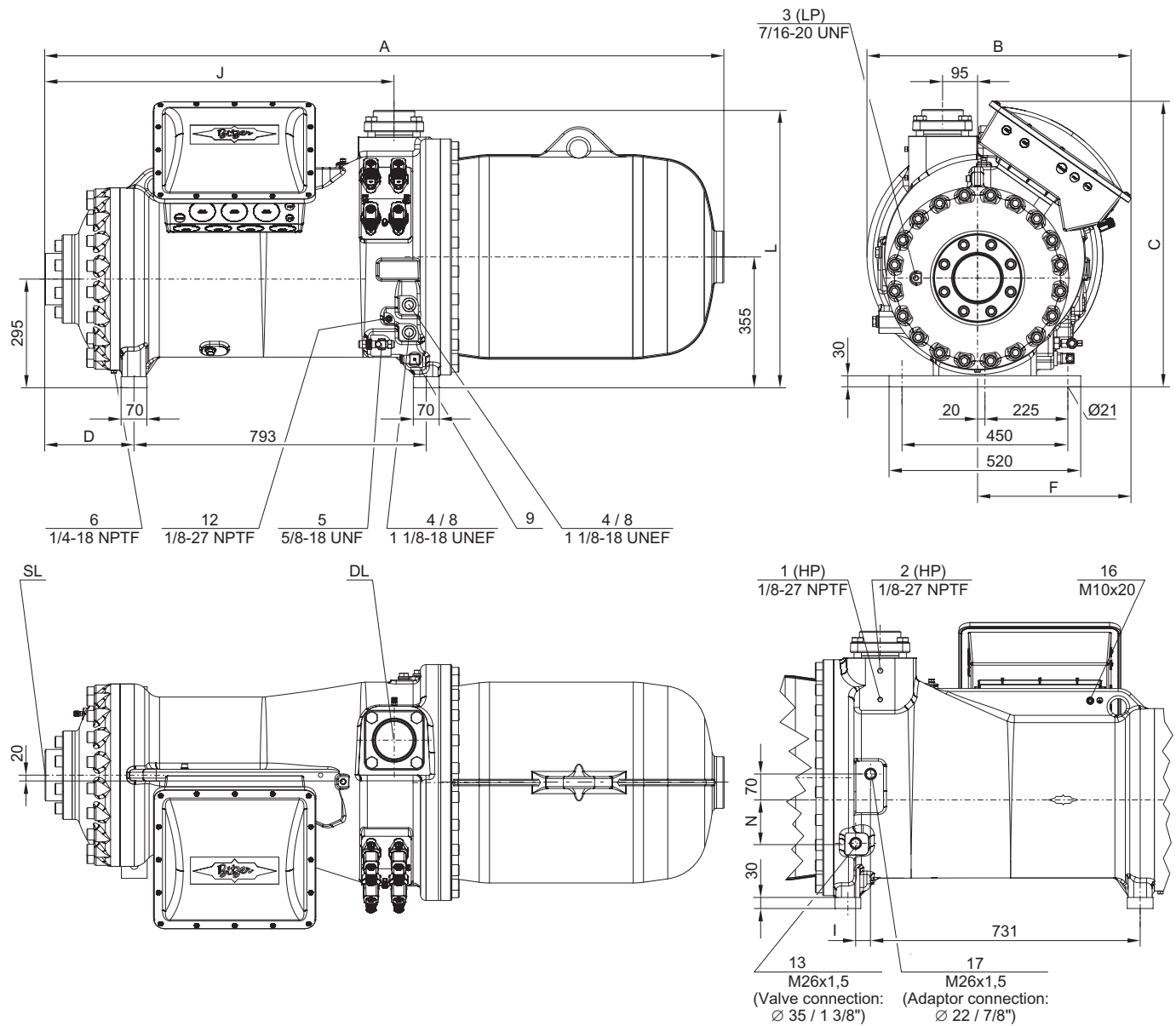
| | A | B | C | D | F | I | J | L | M | DL | SL |
|-----------------|------|-----|-----|-----|-----|-----|-----|-----|-----|----------|-------|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| CSH9553 | | | | | | | | | | | |
| CSH9563 | 1824 | 717 | 776 | 224 | 417 | 746 | 930 | 744 | 106 | Ø76 | DN100 |
| CSH9573 | | | | | | | | | | (3 1/8") | |
| CSH2T9573 | | | | | | | | | | | |
| CSH9583-210Y | | | | | | | | | | | |
| CSH9593-240Y | 1842 | 717 | 776 | 242 | 417 | 764 | 948 | 751 | 113 | DN100 | DN125 |
| CSH2T9583-240Y | | | | | | | | | | | |
| CSH9583-280(Y) | | | | | | | | | | | |
| CSH9593-300(Y) | 1869 | 717 | 776 | 269 | 417 | 791 | 975 | 751 | 113 | DN100 | DN125 |
| CSH2T9583-280Y | | | | | | | | | | | |
| CSH95103-280Y | 1955 | 731 | 796 | 269 | 431 | 791 | 975 | 758 | 113 | DN100 | DN125 |
| CSH95103-320(Y) | | | | | | | | | | | |
| CSH95113-320Y | 1975 | 731 | 796 | 289 | 431 | 810 | 995 | 758 | 113 | DN100 | DN125 |

Connection positions see page 33.

Using larger suction gas flanges changes the dimensions A, D, I and J.

Dimensional drawings

CSH96 and CSW95



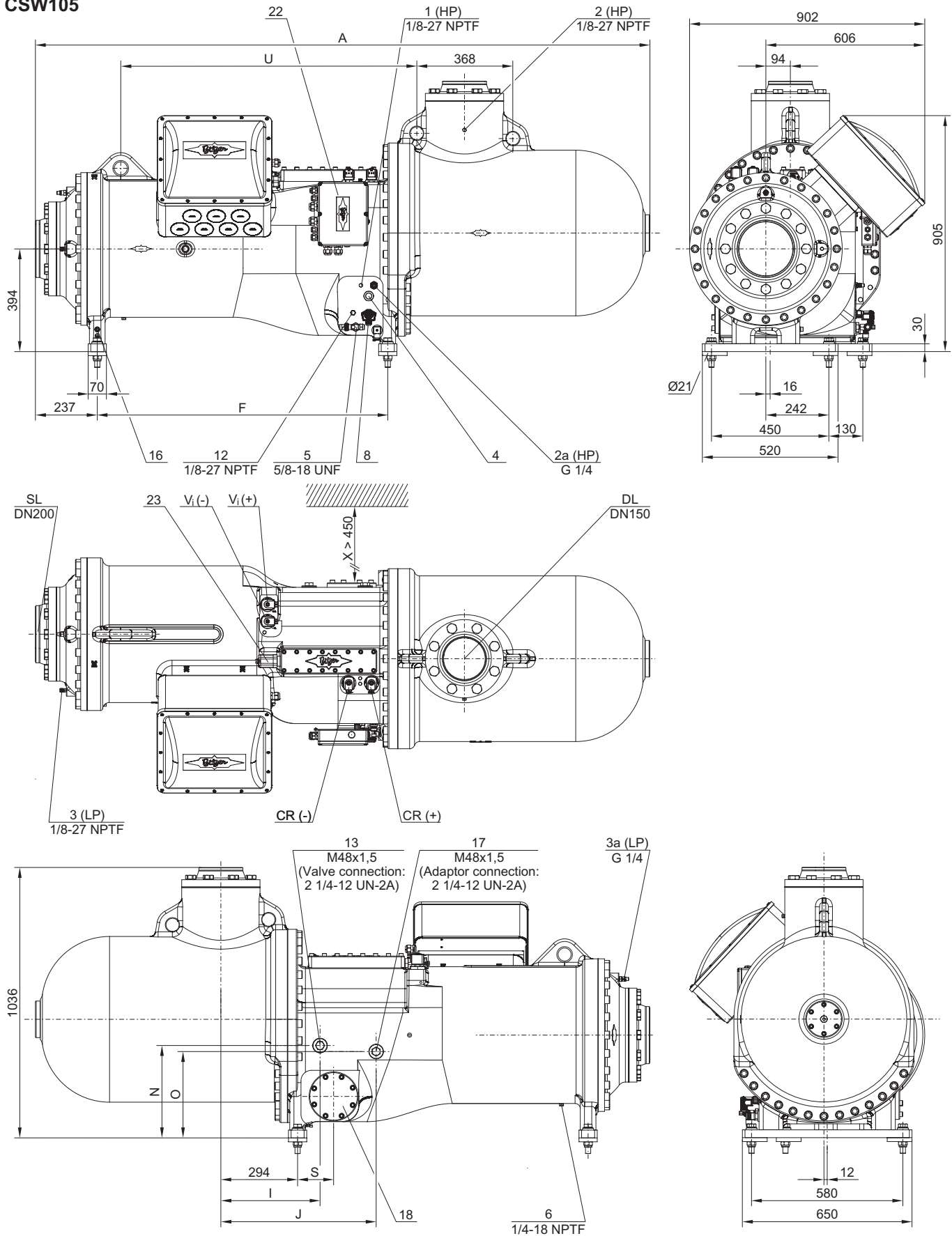
| | A mm | B mm | C mm | D mm | F mm | I mm | J mm | L mm | N mm | DL mm | SL mm |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------------------|----------|
| CSH9663 / CSH9673 CSW9563 / CSW9573 | 1824 | 717 | 776 | 224 | 417 | 41 | 930 | 751 | 118 | $\text{Ø}76$ ($3\frac{1}{8}$ " | DN100 |
| CSH9683 / CSH9693 CSW9583 / CSW9593 | 1842 | 717 | 776 | 242 | 417 | 34 | 948 | 751 | 122 | DN100 | DN125 |
| CSW95103-240Y | 1927 | 731 | 796 | 242 | 431 | 26 | 948 | 751 | 120 | DN100 | DN125 |
| CSH96103-280Y CSW95103-280(Y) CSW95113-280Y | 1955 | 731 | 796 | 269 | 431 | 26 | 975 | 751 | 120 | DN100 | DN125 |
| CSH96113-320Y CSW95113-320(Y) | 1974 | 731 | 796 | 289 | 431 | 26 | 994 | 751 | 120 | DN100 | DN125 |

Connection positions see page 33.

Using larger suction gas flanges changes the dimensions A, D, I and J.

Dimensional drawings

CSW105

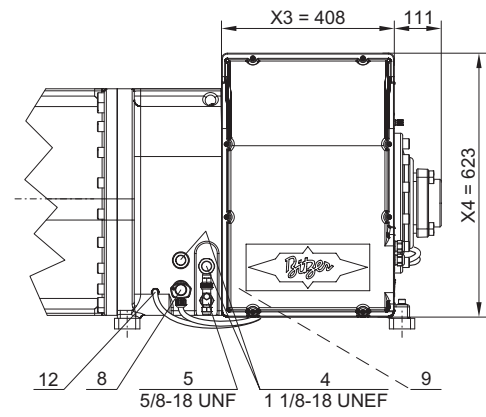
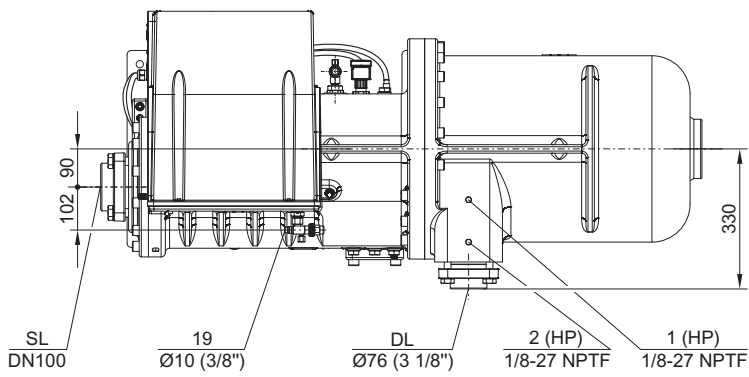
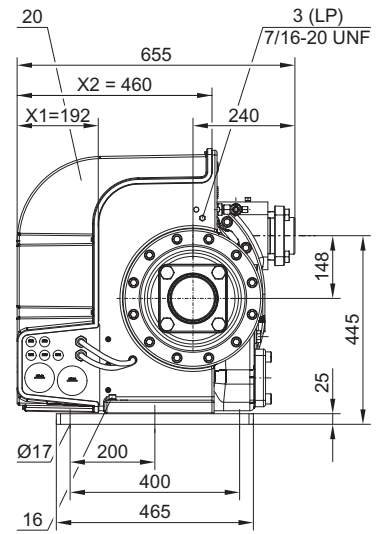
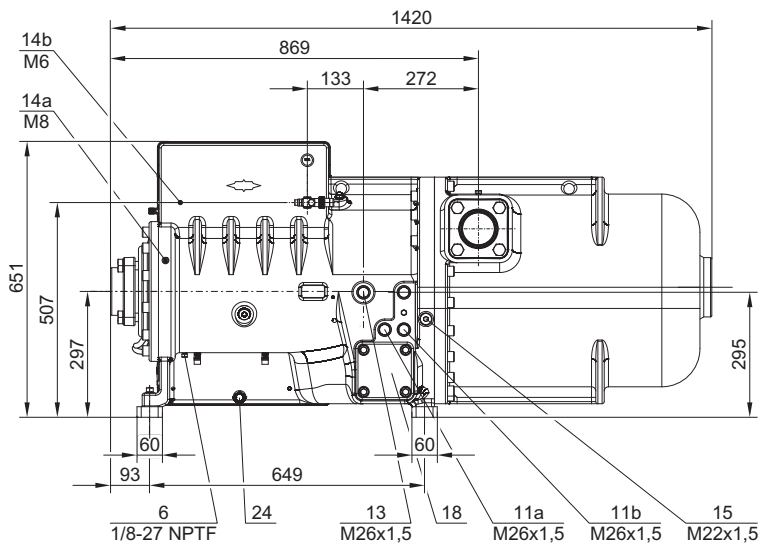


Connection positions see page 33.

| | A mm | F mm | I mm | J mm | N mm | O mm | S mm | U mm |
|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| CSW10563 CSW10573 | 2310 | 1069 | 380 | 591 | 454 | 336 | 163 | 1090 |
| CSW10583 CSW10593 | 2354 | 1113 | 421 | 595 | 354 | 330 | 138 | 1134 |

Dimensional drawings

CSVH2

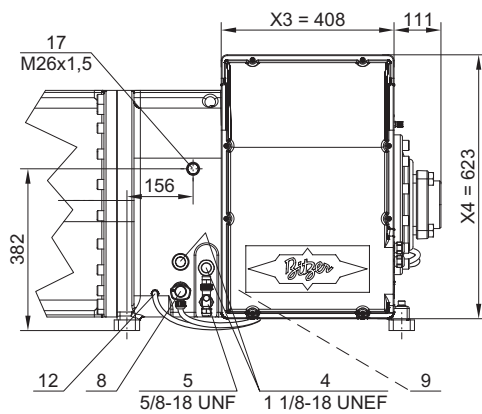
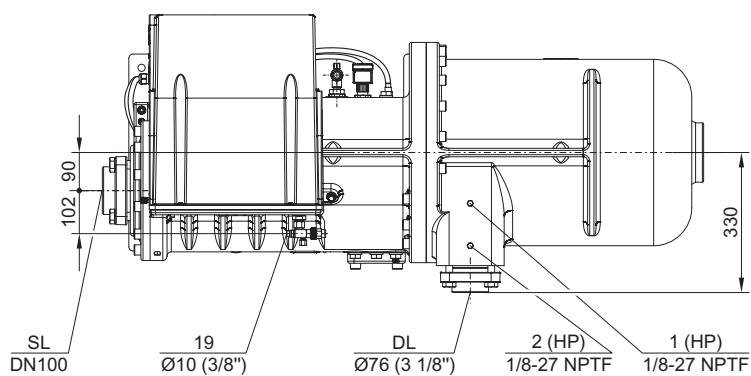
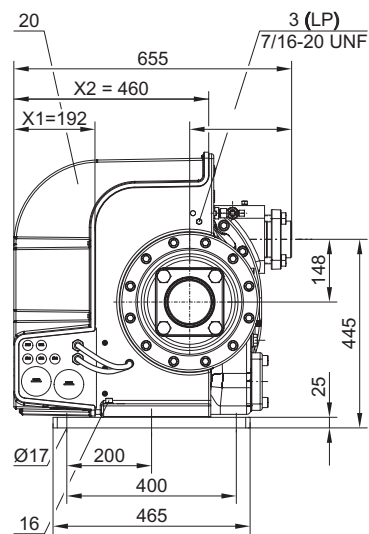
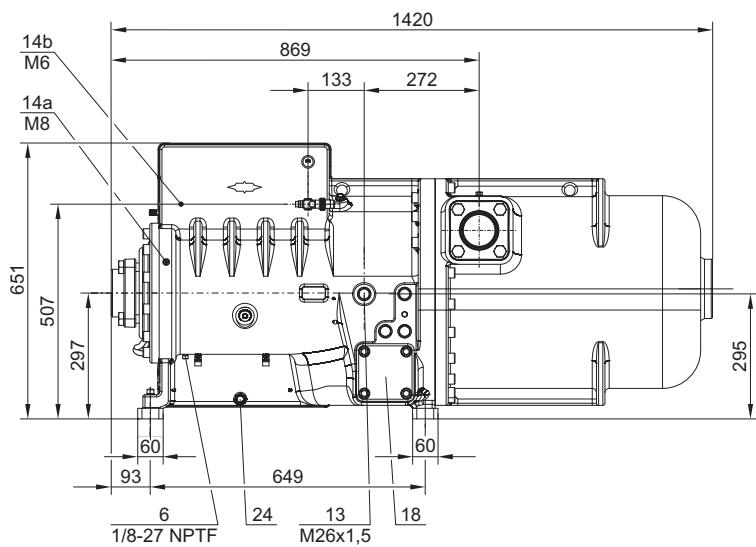


Optional alternative suction gas connection: DN125
This flange is 14 mm longer.

Connection positions see page 33.

Dimensional drawings

CSVW2

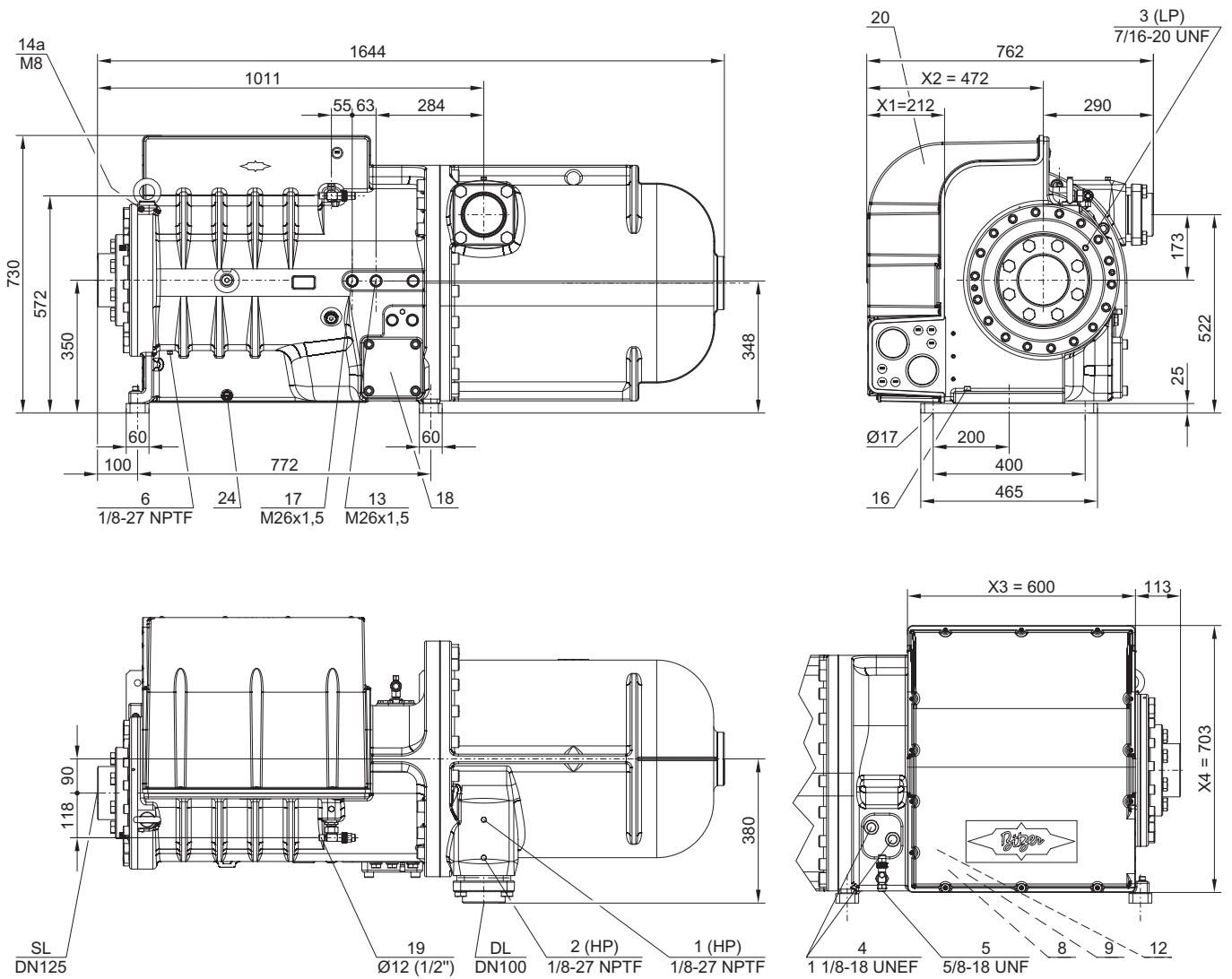


Optional alternative suction gas connection: DN125
This flange is 14 mm longer.

Connection positions see page 33.

Dimensional drawings

CSVW3



Connection positions see page 33.



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