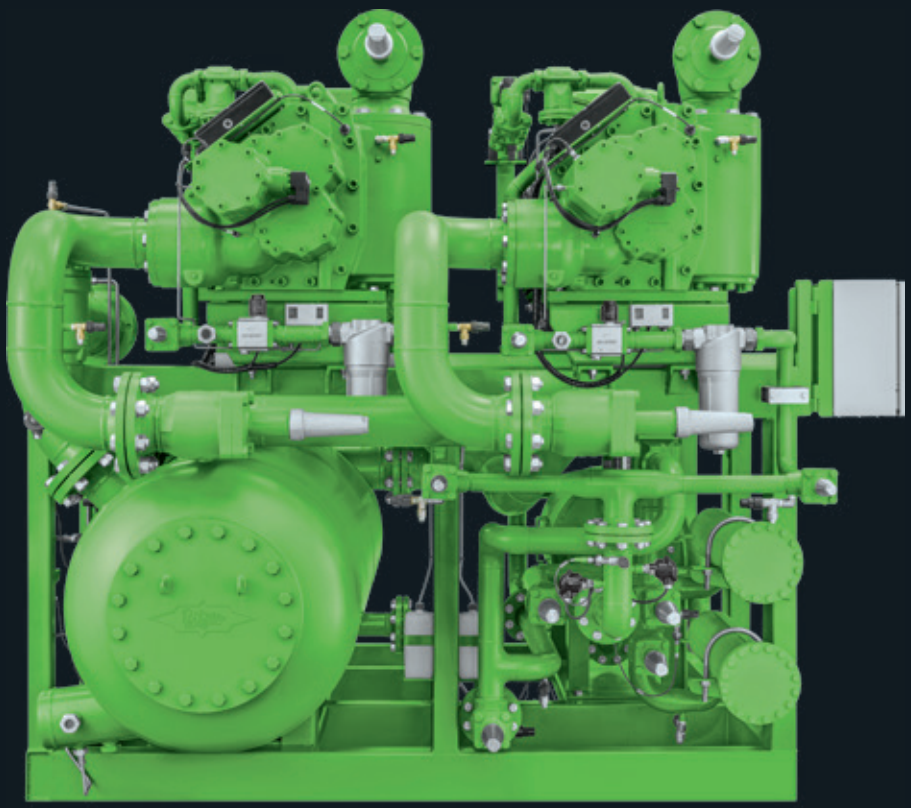
DAS HERZ DER FRISCHE

AMMONIA

COMPRESSOR PACKS

SP-600-1 EN



ACP SERIES

FOR INDUSTRIAL APPLICATIONS

INDUSTRIAL REFRIGERATION

INTELLIGENT PRODUCTS

R717 NH_3

ACP series

Contents Page

The next generation of screw compressor packages

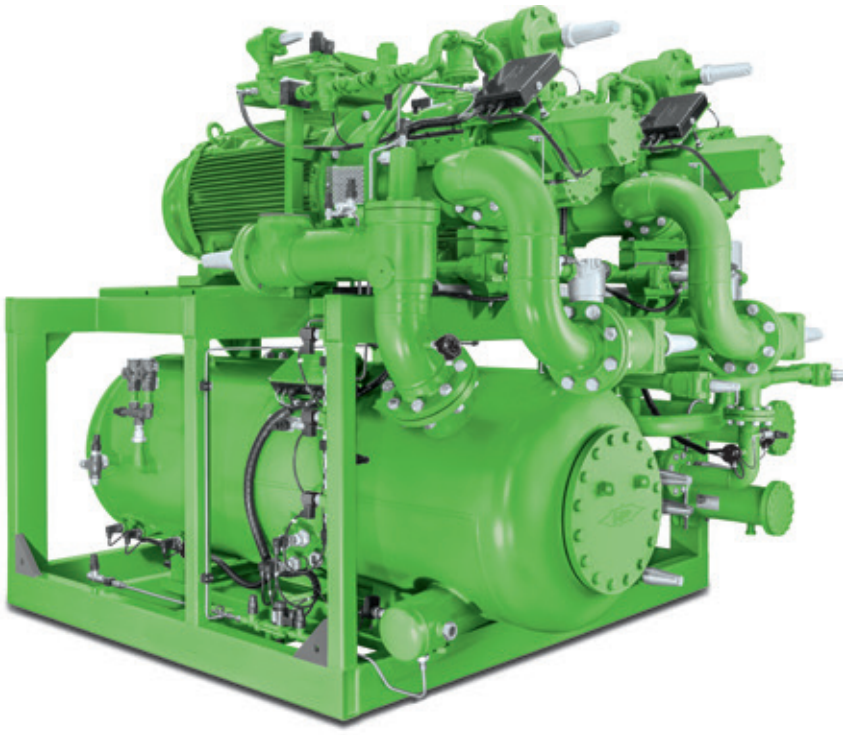
The world's leading independent compressor and pressure vessel manufacturer has expanded to meet the demands of industrial and commercial market with a series of screw compressor packages designed specifically for ammonia.

Available with a wide variety of options and accessories, the BITZER Ammonia Compressor Package (ACP) is designed to meet the growing demand for high efficient, natural refrigerant solutions.

For over 40 years, BITZER has delivered compressors for the ammonia refrigeration market. These packages now make applying these reliable and efficient compressors easy for any system.

Special highlights

// Based on BITZER OS.A85 and OSA.95compressor series
// Heavy duty industrial construction
// Wide variety of option and accessories
// Compact design
// Easy access and easy to service
// Same design among different size compressors
// High efficiency, especially in part load
// Redundant compressors, filters and sensors



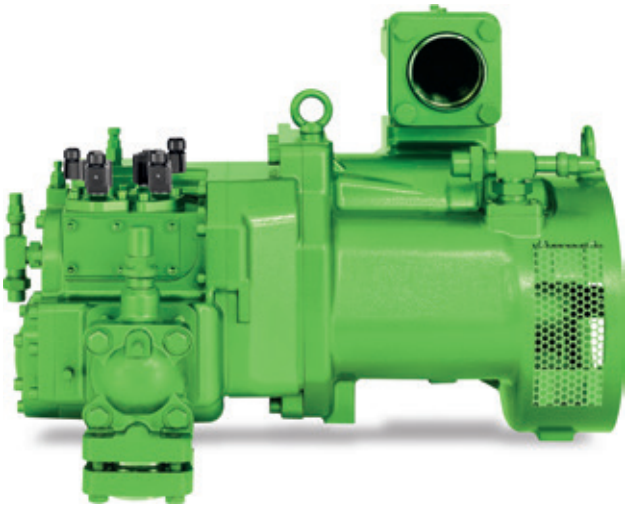
The decisive technical features OS.A85 compressor based

Reliable screw technology

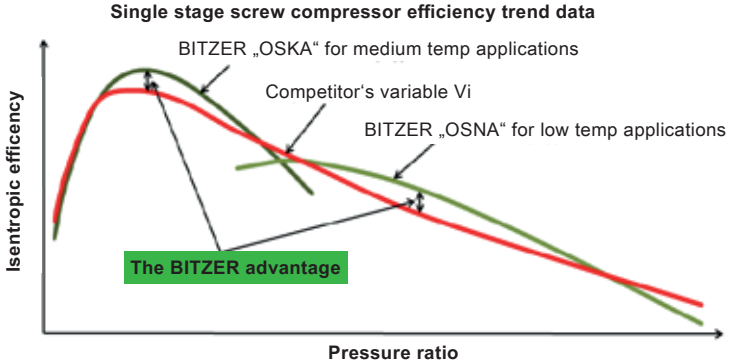
// Utilizing long proven open drive screw series OS'85
// High-efficiency profile twin screws using advance geometry and high rigidity
// Wide Speed Range (VFD Optional):
– OS'85: 1200-4200 RPM
// Automatic start unloading
// Slide Valve with infinite capacity control:
– OS'85: 50-75-100% stepwise
// Economizer operation (Optional)
// High quality shaft seal
// Internal pressure relief valve
// Compressor integrated discharge check valve

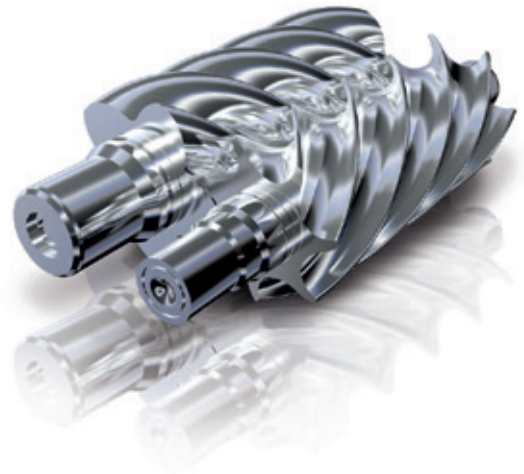
Fixed volumetric index (Vi)

With larger compressors (over 550kW), it can be beneficial to have a variable Vi control that adjusts the internal volumes to match the pressure ratio of the system. However, this additional mechanical feature creates losses in the compression process that are difficult to overcome on smaller rotor diameters.
For this reason, BITZER fixes the Vi for low and medium temp applications and still achieves higher efficiency over most of the application range in comparison to a competitor compressor with variable Vi.



BEST SOFTWARE
SCREW COMPRESSORS
INTELLIGENT PRODUCTS
NATURAL REFRIGERANTS
NH_3





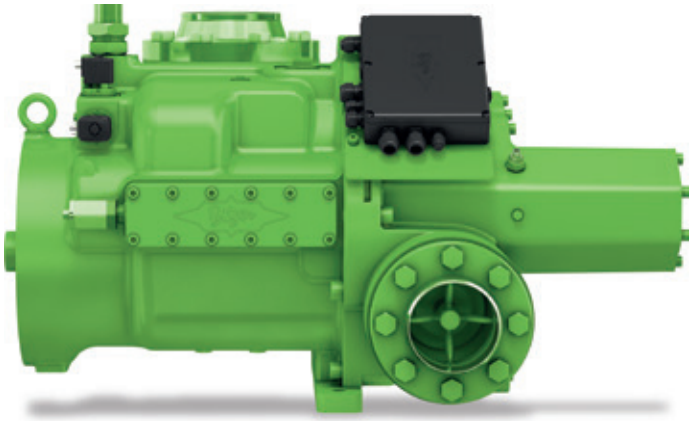
The decisive technical features OS.A95 compressor based

Latest screw technology

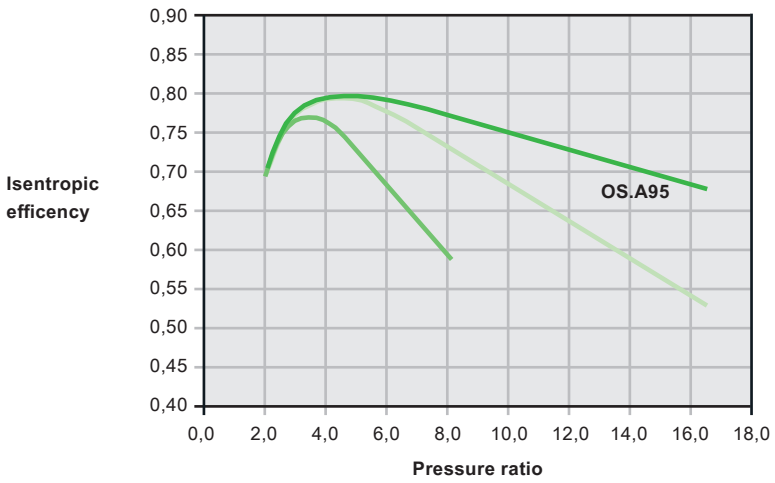
// High-efficiency profile twin screws using advanced geometry and high rigidity
// Wide Speed Range (VFD Optional):
– OS'95: 1200-4200 RPM
// Automatic start unloading
// Slide valve with infinite capacity control and Vi control thanks to an optimized slider concept
// Automatic Vi adjustment
// Economizer operation (Optional)
// High quality shaft seal
// Internal pressure relief valve
// Compressor integrated discharge check valve

Automatic volumetric index (Vi)

With larger compressors (over 550kW), it can be beneficial to have variable Vi control that adjusts the internal volumes to match the pressure ratio of the system. A better matched Vi is able to increase the isentropic efficiency of the compressor process and reduce power consumption. BITZER accomplishes this on the 95 Series compressors through a Vi slider and the new IQ - CM Technology. The IQ module monitors the pressures of the compressor and automatically adjusts the Vi valve to the optimum position to maintain the highest efficiency.



BEST SOFTWARE
SCREW COMPRESSORS
INTELLIGENT PRODUCTS
NATURAL REFRIGERANTS
R717 NH_3



The decisive technical features ACP85 and 95 series

Part load efficiency

All of BITZER's ACP packs can come equipped with a variable frequency drive. A VFD ensures system stability and a more efficient part load performance than other unloading methods. Years of experience has proven that compressors operate at part load (75% or below) for the vast majority of time. A VFD capitalizes on this to increase system efficiency. Furthermore, multiple compressors greatly increases part load efficiency by keeping running compressors closer to full load, where the efficiency is highest

Energy efficiency – no suction check valve

BITZER ACP packs utilize internal check valves on the compressors to prevent the rotors from spinning backwards when the compressor is off. This feature is complemented by an oil solenoid/stop valve to ensure that oil does not flow while the compressor is not running. These features eliminate the need for a suction check valve which would create unnecessary pressure drop and decrease or waste system efficiency.

High efficiency motors

// IEC premium efficiency C-face motors
// Inverter rated duty with 70Hz option for zero loss of torque above 50Hz
// Standard: IP55
// Option: Different frequencies & voltages

Quality

// Robust, industrial strength frame
// C-Face motor and machined steel housing ensures perfect motor/compressor shaft alignment
// Long lasting "Flender" style coupling increases shaft to motor reliability
// Motors include Aegis ring and ground shaft current protection for VFD operation
// Motor heaters available for high humidity conditions

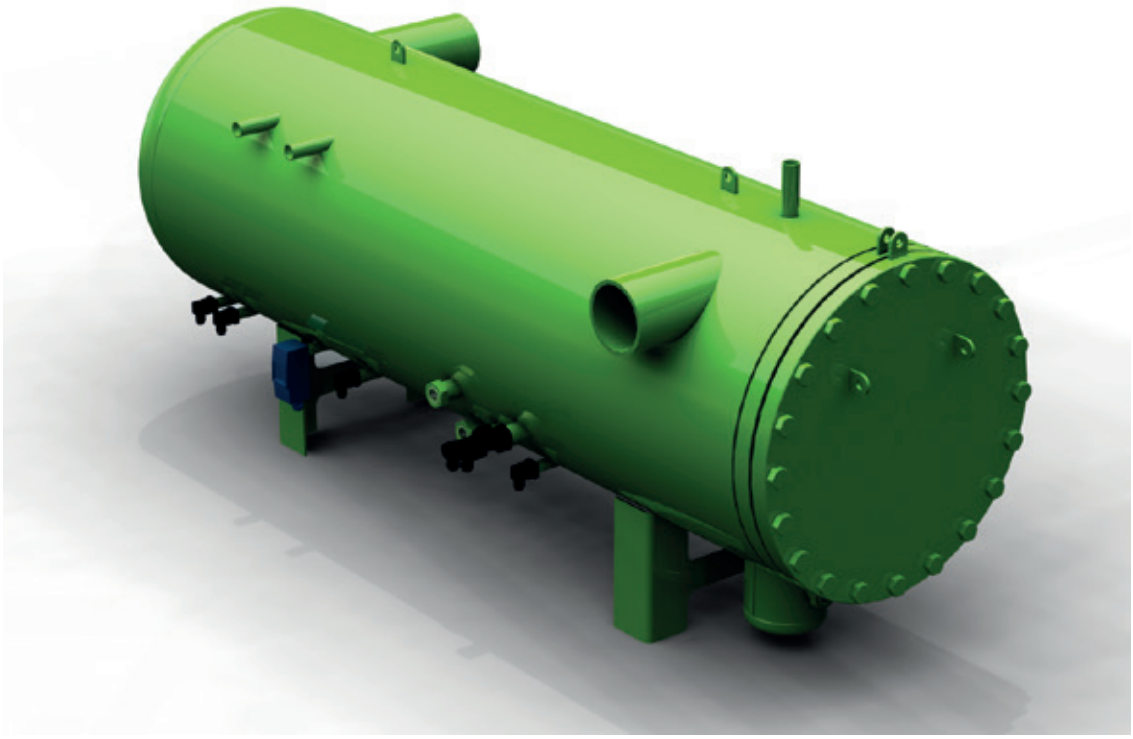
The oil separator and oil management

Oil separator

PRESSURE VESSELS

R717 NH_3

// BITZER PED horizontal coalescing oil separator
// Multiple coalescer elements designed to match application
// Pressure rating: 24bar
// 3 Stages of separation
// Oil carry over rate 2-7ppm
// 3 models: OAHC 650, 800, 1000.



Oil management

// 5 micron oil filtration
// Easily accessible oil filter
// Individual dedicated redundant secondary filter
// Internal automatic oil stop valve and flow switch
// Discharge pressure regulator to ensure oil pressure on startup (and in low ambient).
  – Booster applications: An oil pump is added to primary oil line as standard.

Oil cooling

// Standard: High efficiency plate and shell heat exchanger which can be used with thermosiphon or water/ glycol cooling

Sensor and switches

// Pressure and temperature sensors:
  – Suction header
  – Discharge (between compressor and separator)
  – Coalescing oil separator basin
  – Oil line (pre and post oil filter pressure sensors)

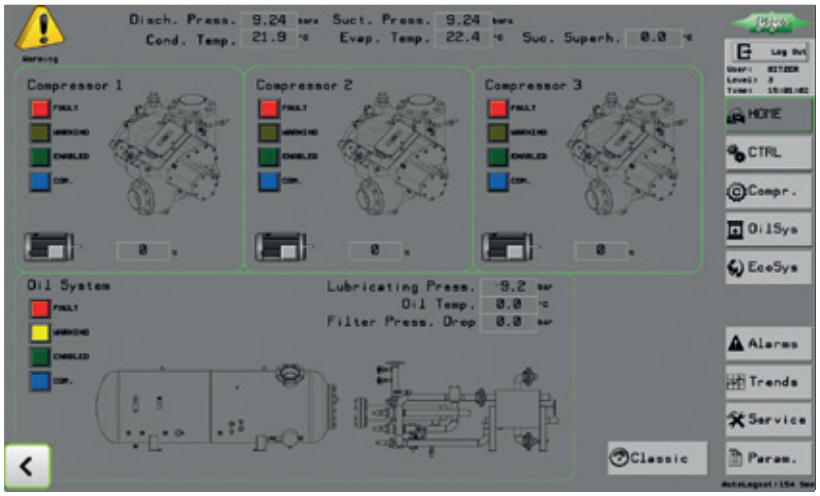
ACP Link

ACP LINK is the responsible device for regulation of the ACP and at the same time protecting the compressor pack by permanent active application envelope surveillance.

ACP LINK functions (standard)

// Compressor capacity control
  – Standard: Variable frequency drive
  – Option: Mechanical unloading
// Compressor / motor protection:
  – Application limit monitoring
    • Complete compressor application limits
    • Pre-alarm warning
  – Low suction pressure
  – Oil temp and pressure monitoring
  – Primary and secondary oil filter, oil flow switch and oil solenoid valve monitoring
  – Short cycle protection
  – Rotation direction protection
// Motor Protection
  – High motor amps
  – High motor temperature via embedded thermistors
// Economizer control
// VFD control and communication via Modbus
// Digital Input and Output available for system Communication
// Highly serviceable input and output menu and panel

IQ INTELLIGENT PRODUCTS
ELECTRONIC COMPONENTS
WIRELESS LOCAL AREA NETWORK



Technical details

// Painted enclosure
// 12” Color Touch Screen
// Graphical User Friendly Operator Interface
// Replicate display with web browser or smartphone App
// TCP/IP Modbus external communication

Additional features

// Easy and simple menu navigation
// Remote PC monitoring
// Security / User log-in access levels
// Highly serviceable input and output menu and panel layout
// Alarm history and data logging
// Historical and live real time data graphing

BITZER IQ technology

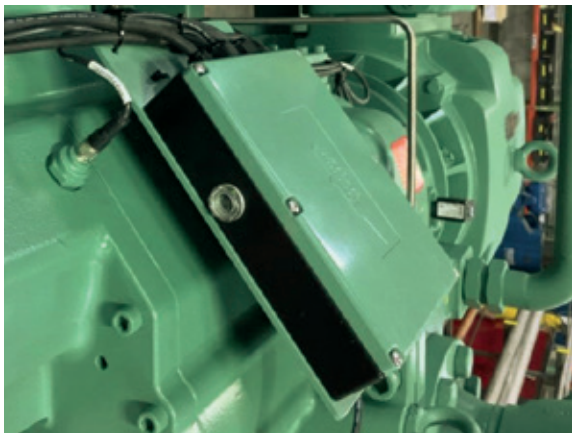
Features

// Utilizing the IQ MODULE (CM-SW)
// Compressor / Oil Separator Mounted
// Modbus external communication
// Elimination of sensor wiring to ACP LINK
// (Only power, Modbus, and fault circuit wiring required)
// LED lights indicate module status
// Easy commissioning and troubleshooting through BEST Software

Automatic monitoring and control

// Capacity control (Based on system regulation)
// Ensures unloaded starting
// Alarm history and data logging
// Application limit monitoring of suction/discharge pressure with warning, alarm and shutoff levels
// Oil supply and discharge gas temperature

IQ MODULE



ACP in the field

ACP nomenclature

Example

ACP 8591 K – 2 V

Series

ACP **8591** K – 2 V

Compressor Model
Frame Size / Displacement

ACP 8591 **K** – 2 V

Application Range
K = Medium / High Temperature Range
N = Low Temperature Application
B = Booster Application

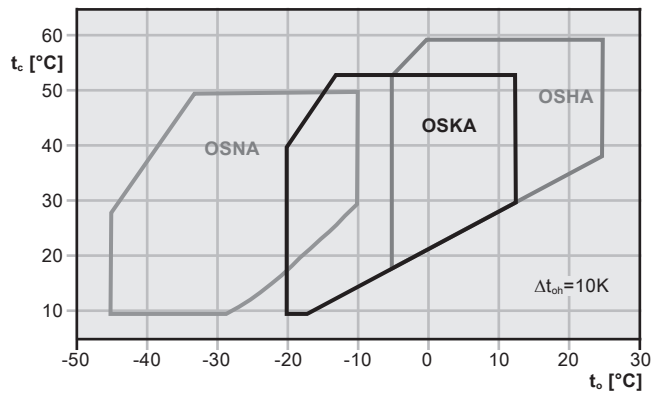
ACP 8591 K – **2** V

Number of Compressors

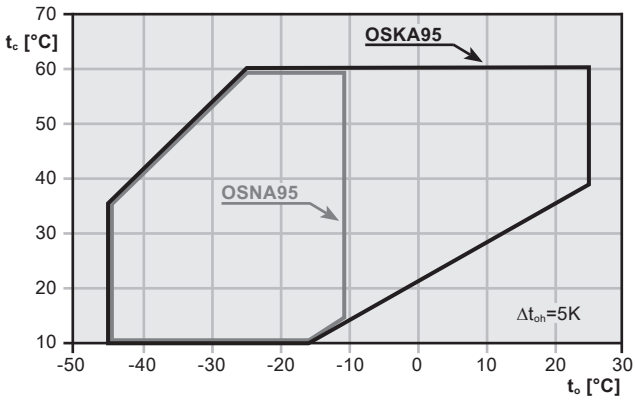
ACP 8591 K – 2 **V**

Capacity Control Method
V = Variable frequency drive
C = Capacity control (w/o VFD)

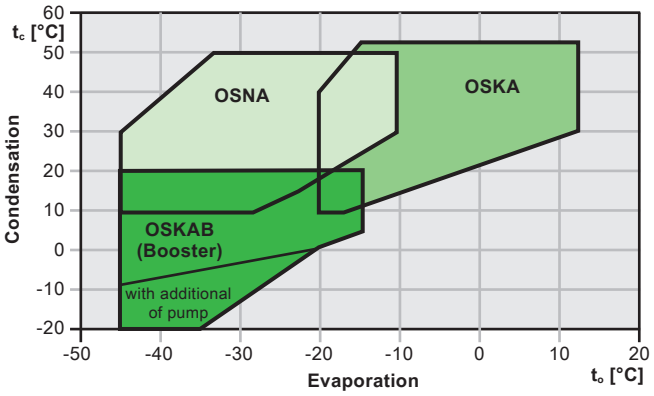
Application limits



Application limits OS.A85 compressors



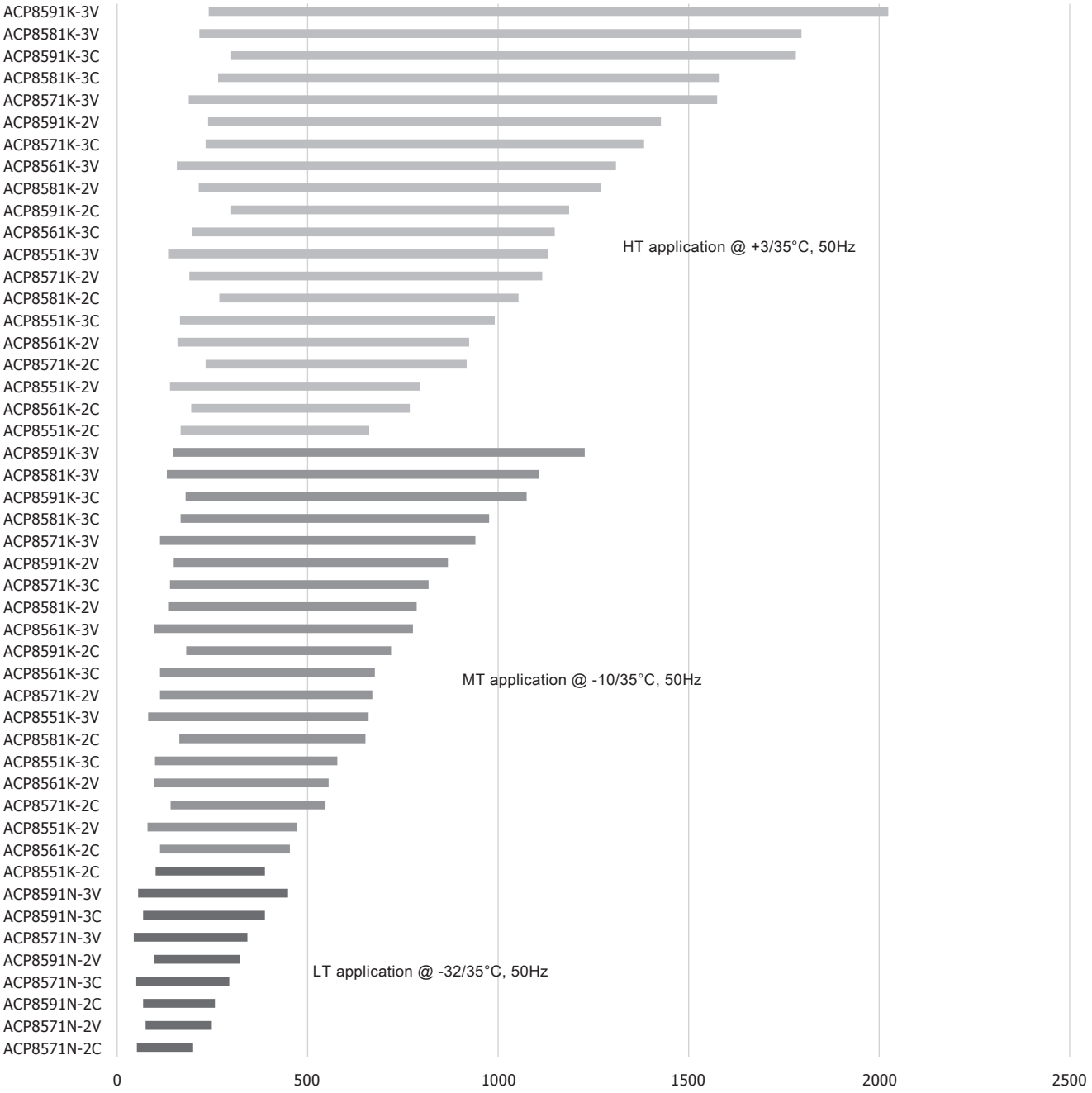
Application limits OS.A95 compressors



Application limits OS.A85/95 booster compressors (dark green)

Performance data ACP85 (50Hz)

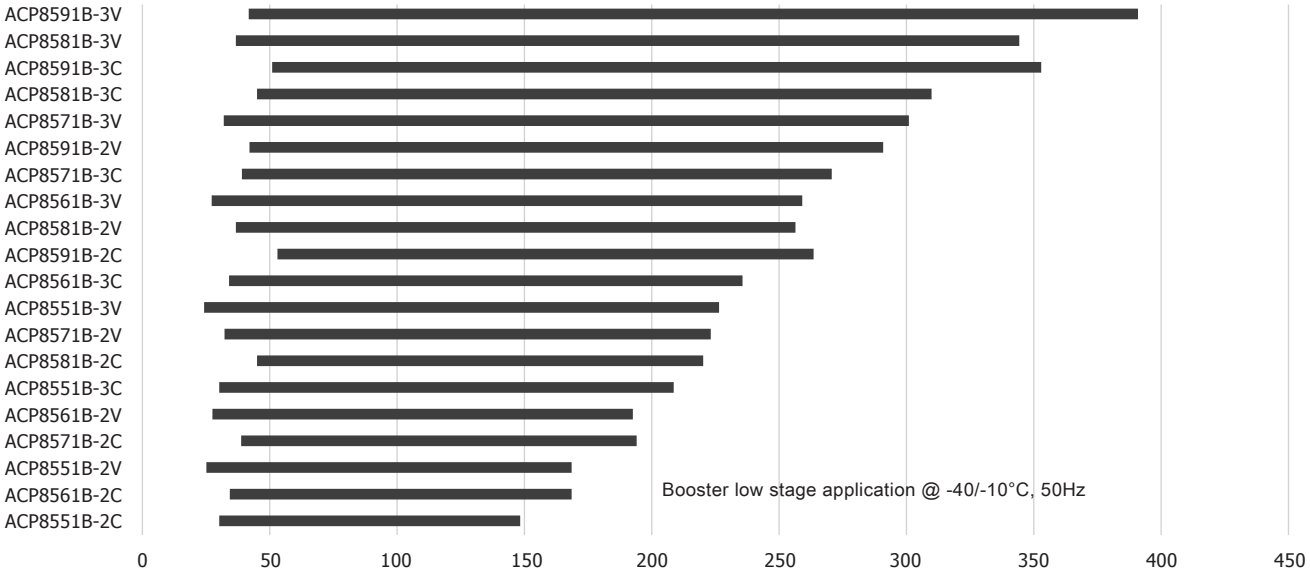
Cooling capacity ACP85 in kW



Capacities are tentative data

Performance data ACP85 booster (50Hz)

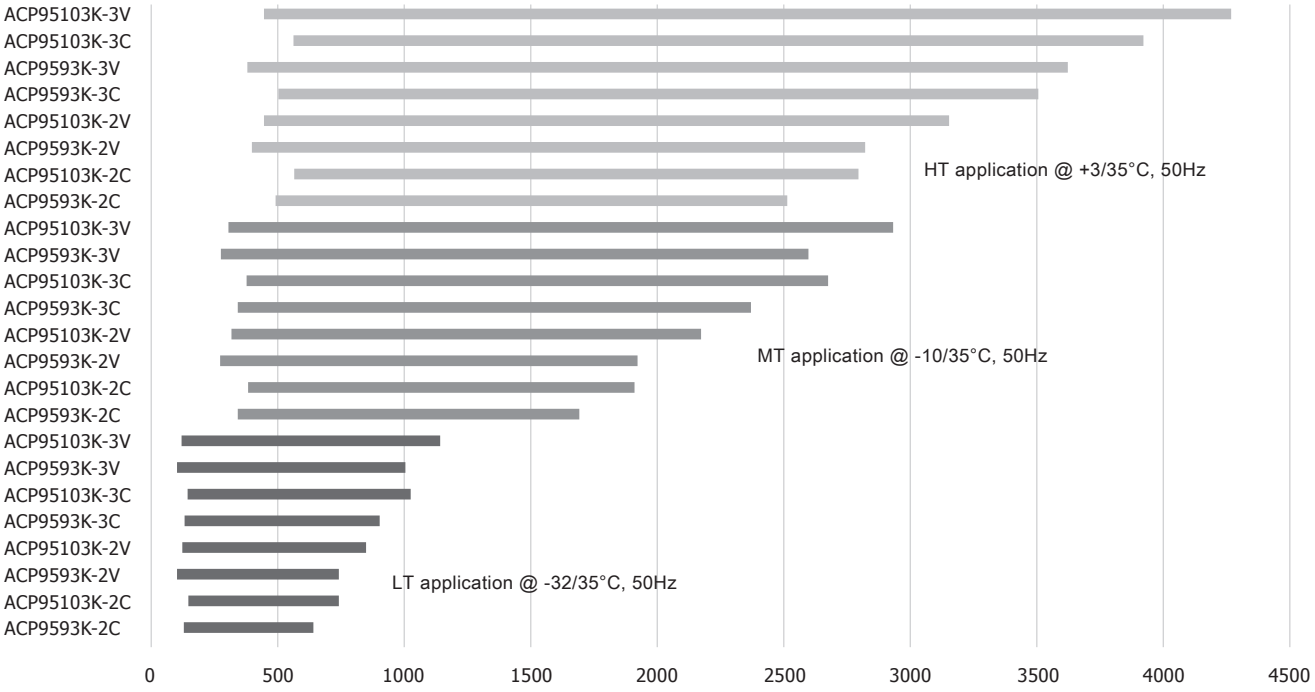
Cooling capacity ACP85 booster low stage in kW



Capacities are tentative data

Performance data ACP95 (50Hz)

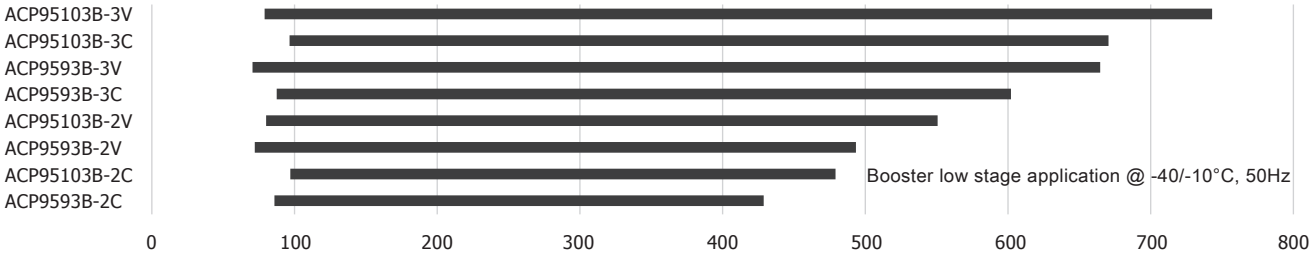
Cooling capacity ACP95 in kW



Capacities are tentative data

Performance data ACP95 booster (50Hz)

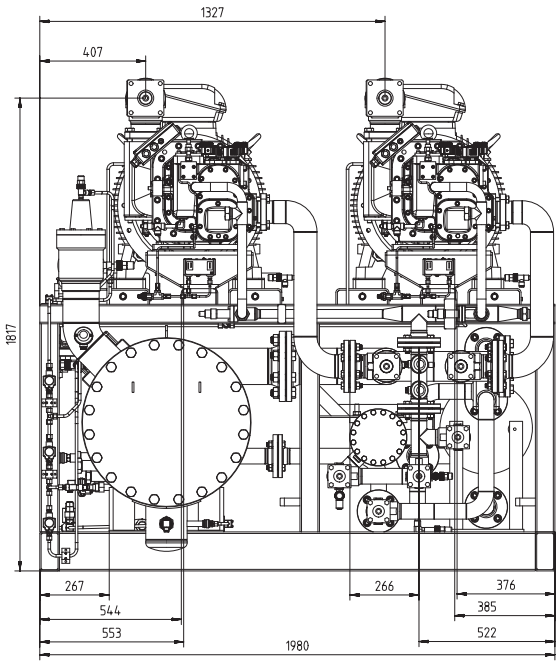
Cooling capacity ACP95 booster low stage in kW

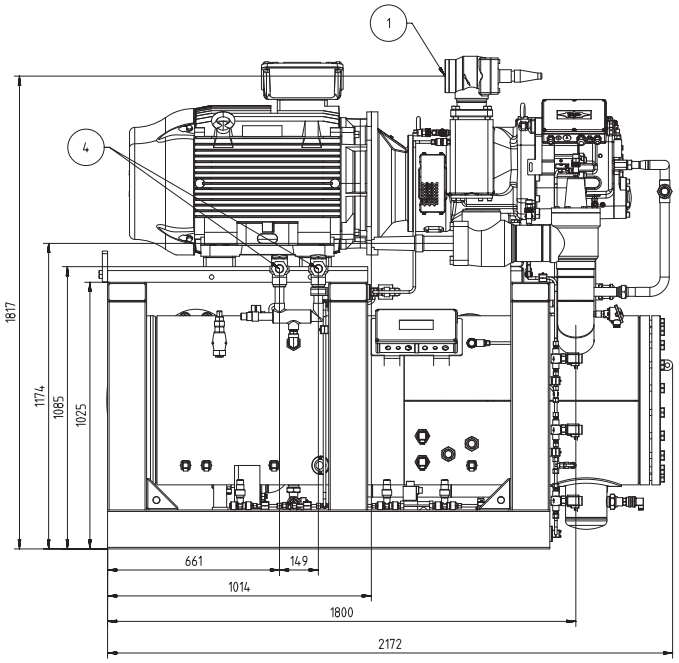


Capacities are tentative data

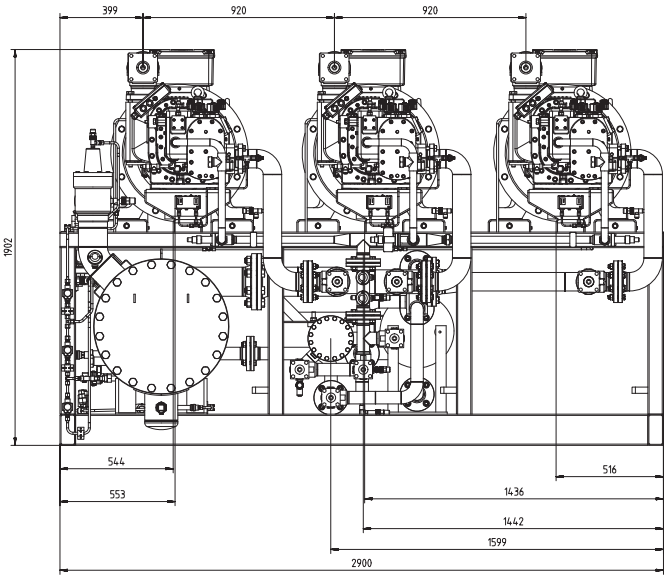
Dimensional data ACP85

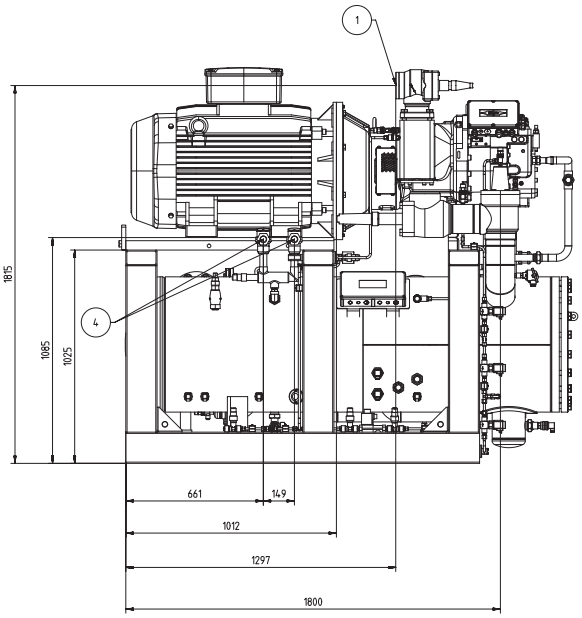
ACP85 .. 2 with OAHC 65051A





ACP85 .. 3 with OAHC 65051A

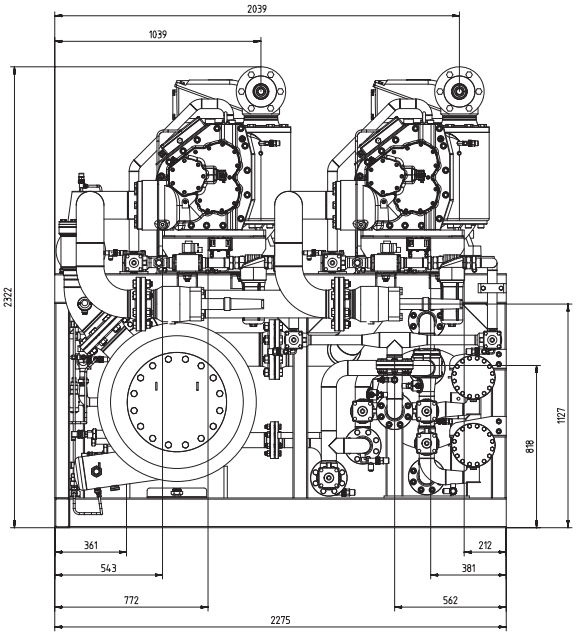


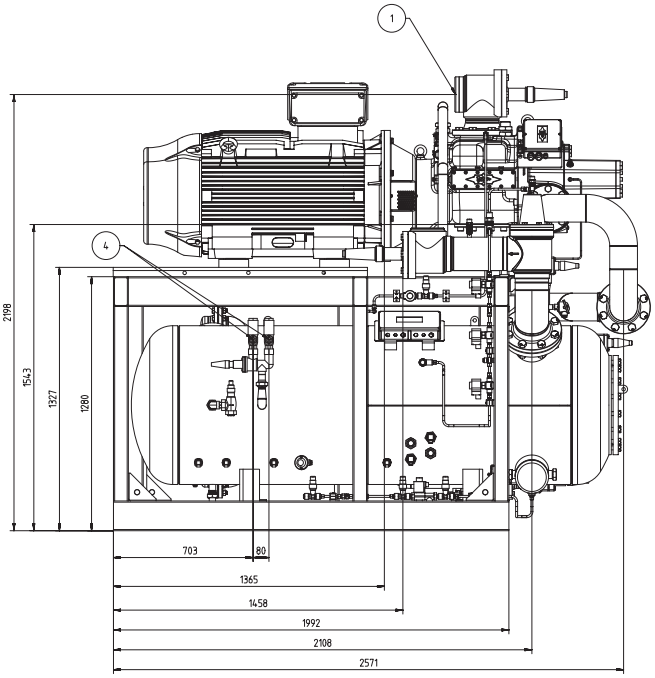


All dimensions are tentative data

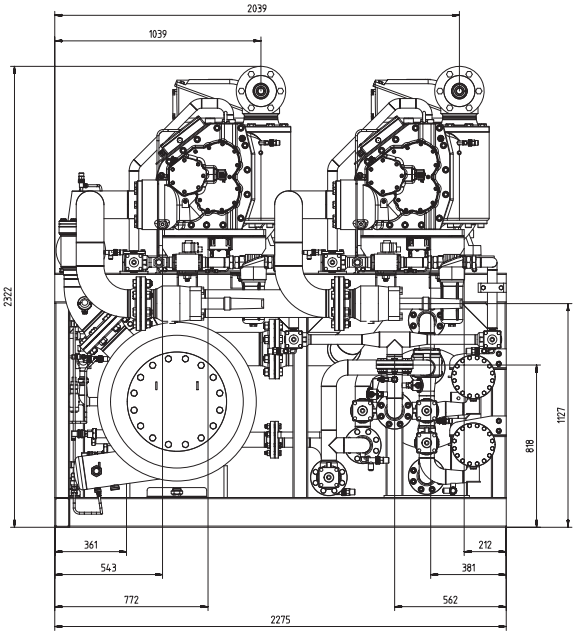
Dimensional data ACP95

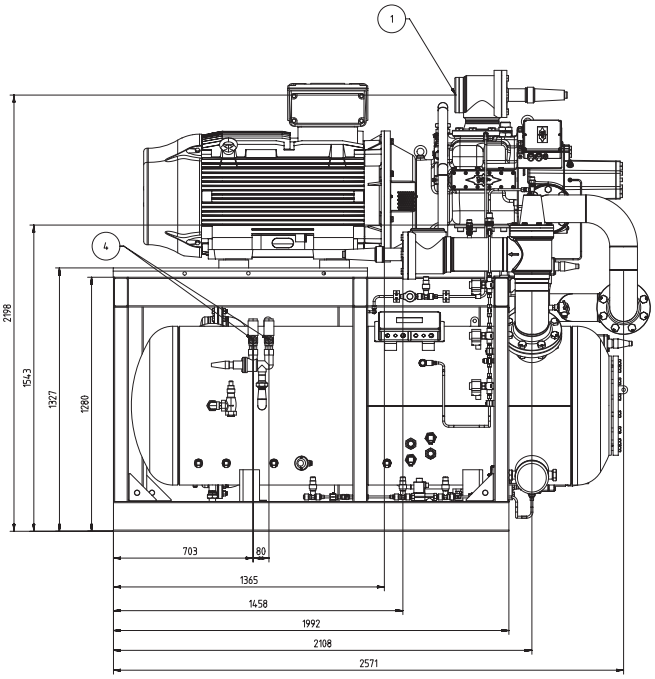
ACP95 .. 2 with OAHC 80051A





ACP95 .. 2 with OAHC 100051A





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Dimensional data ACP95

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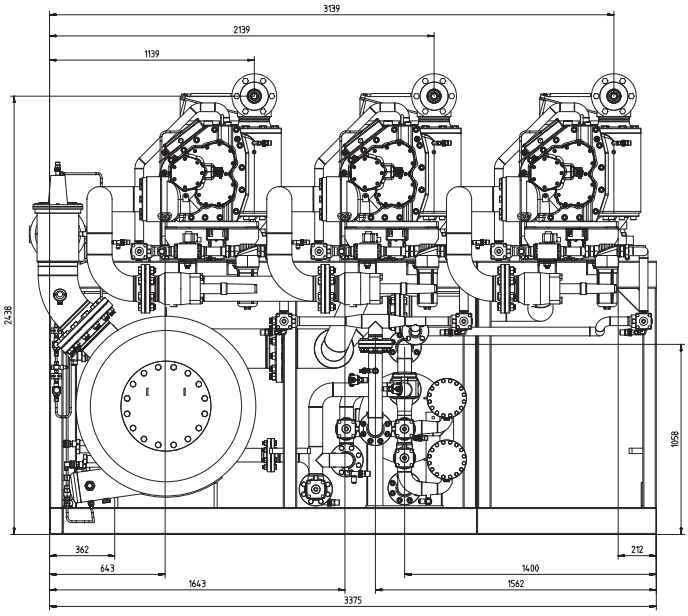
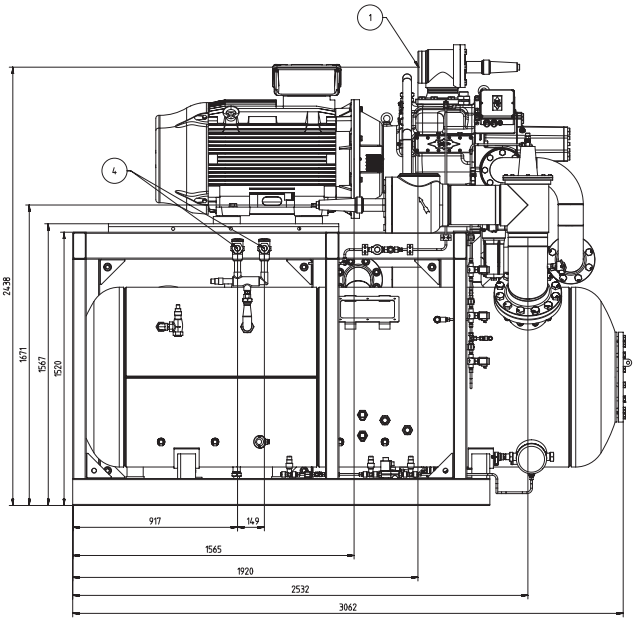
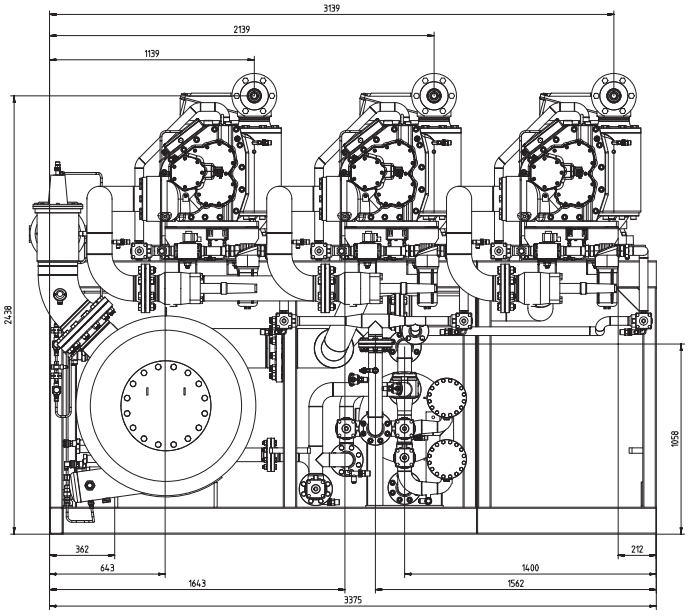
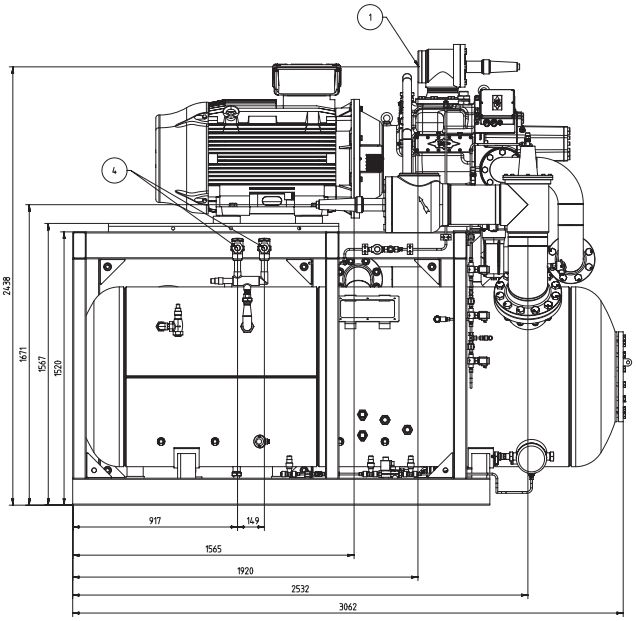




ACP95 .. 3 with OAHC 100051A





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Notes

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