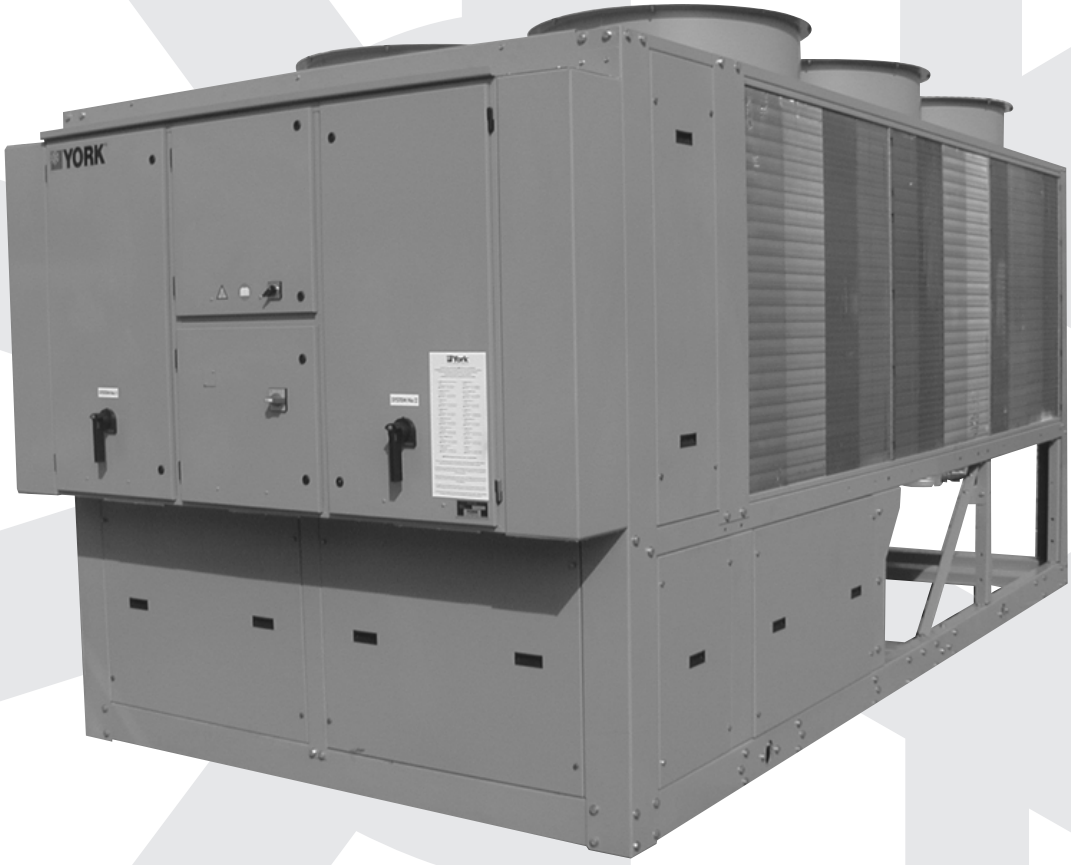
YAGS

HIGH AMBIENT
AIR COOLED LIQUID CHILLER

PRODUCT CATALOGUE



STYLE A

REFRIGERANT TYPE: **R22, R407C**
MODELS: **50 Hz**

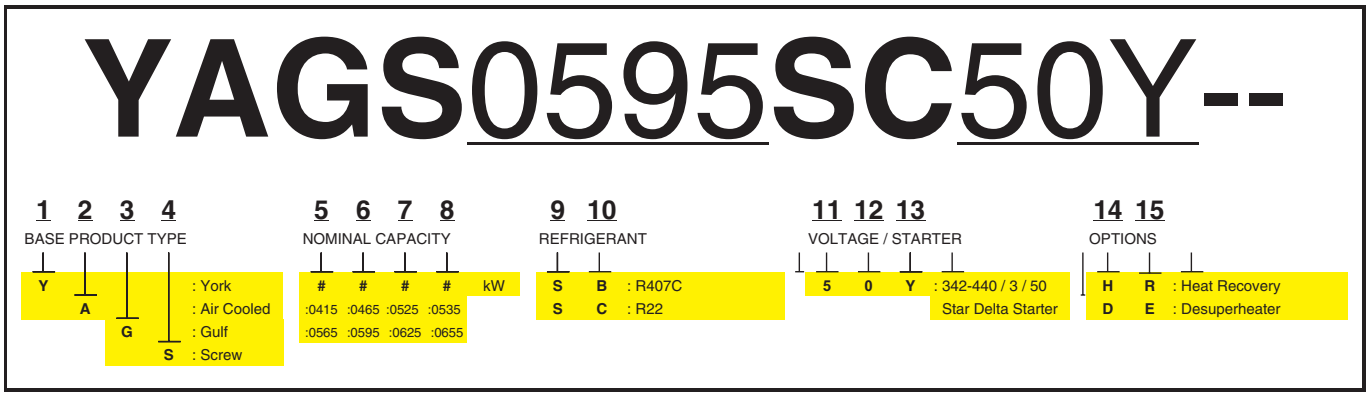
Cooling Capacities: **402** to **666 kW**

YORK EMEA

YORK INTERNATIONAL

CONTENTS

Nomenclature



YAGS

HIGH AMBIENT AIR COOLED SCREW CHILLER

R22 and R407C Refrigerants

COOLING CAPACITIES 402 kW to 666 kW

The YAGS (*QPak*) range of chillers are designed for water or water-glycol cooling.

All models are equipped with semi-hermetic twin helical screw compressors and fuzzy logic control to provide high full and part load efficiencies and reliable performance.

Optional heat recovery condensers or desuperheaters are also available.

All units are designed to be located outside on the roof or at ground level.

AVAILABLE MODELS AND NOMINAL CAPACITIES TABLE 1

R22 Models

YAGS-SC		0415	0465	0525	0535	0565	0595	0625	0655
Cooling Capacity	kW	438	489	534	563	606	630	654	666
Heat Recovery	kW	435	435	435	435	527	527	527	527
DeSuperheater	kW	33	37	43	45	45	48	52	55

R407C Models

YAGS-SB		0415	0465	0525	0535	0565	0595	0625	0655
Cooling Capacity	kW	402	447	507	547	563	597	631	648
Heat Recovery	kW	435	435	435	435	527	527	527	527
DeSuperheater	kW	33	37	43	45	45	48	52	55

Cooling capacities at 7°C leaving chilled liquid temperature and 35°C ambient.
Optional heat recovery capacities at 40°C leaving hot liquid temperature and 7°C leaving chilled liquid temperature.
Optional Desuperheater capacities at 60°C leaving hot liquid temperature, and 7°C leaving chilled liquid temperature.

FEATURES	BENEFITS
High efficiency semi hermetic screw compressors.	Energy efficient, long life reliability.
Two independent refrigerant circuits.	System standby security.
Separate power and control compartments with lockable doors and emergency stop device.	Operator safety considerations.
Microprocessor control with visual display of temperatures, Pressures, motor currents, operating hours, number of starts and start/stop schedules.	System data logging and temperature setpoint reset capability. Energy management and improved operating efficiency.
Fuzzy logic control.	Maximise capacity control.
Unit remote alarm contacts.	Warning notification.
Building management system interface.	For central data logging and single point full system monitoring and control.
Open transition star delta starters.	Low starting current.
Optional closed transition star delta starters.	Reduced changeover spike reduces the risk of electrical interference. Additionally smoothed low starting current.
Optional power factor correction	Reduces energy costs.
Heat Recovery and Desuperheater options.	Low cost hot water for heating or domestic supply.
Full factory run test.	Verifies quality control and ensures that the unit operates satisfactorily prior to delivery.
Manufactured to ISO 9001 EN 29001.	High standard of quality control.

SPECIFICATION

The YAGS air cooled chiller shall be completely assembled with all interconnecting refrigerant piping and internal wiring, ready for field installation. The unit shall be pressure tested, evacuated, and fully factory charged with refrigerant and oil in each of the independent refrigerant circuits.

After assembly, an operational test shall be performed with water flowing through the evaporator to ensure that each refrigerant circuit operates correctly.

The unit structure shall be manufactured from heavy gauge, galvanised steel and coated with baked-on powder paint (Desert Sand (RAL 1019)).

Compressors
Each compressor shall be direct drive, semi-hermetic, rotary twin screw type and include the following items:

- Two screw rotors, with asymmetric profiles, manufactured from forged steel.
- A cast iron compressor housing precision machined to provide optimal clearance for the rotors.
- The entire compressor, from suction to discharge shall have a design working pressure of 31 bar.
- Capacity Control: The compressors shall start at the minimum load position and provide a capacity control range from 100% to 10% of the full chiller load using a continuous function slide valve. A microprocessor controlled output pressure regulating capacity control valve shall be supplied to command compressor capacity independent of control valve input pressure and to balance the compressor capacity with the cooling load.
- An automatic spring return of capacity control valve to the minimum load position to ensure compressor starting at minimum motor load.
- An internal discharge check valve to prevent rotor backspin upon shutdown.
- An acoustically tuned, internal discharge muffler to minimise noise at the source, while optimising flow for maximum performance.
- Discharge shut-off service valves (with optional suction shut-off valves).
- A reliable suction gas cooled high efficiency, accessible hermetic motor.
- Two types of compressor motor starting are available: star/delta open transition starter and optional star/delta closed transition starter.
- A suction gas screen and serviceable, 0.5 micron full flow oil filter within the compressor housing.
- A 350 W compressor body heater.

Oil Separator
Oil separators with a design working pressure of 31 bar shall be the high efficiency, augmented gas impingement type to maximise oil extraction.

Oil Cooler
Oil cooling shall be provided by a dedicated air-cooled finned tube type heat exchanger located in the condenser section of the unit.

Refrigerant Circuits
An independent refrigerant circuit shall be provided per compressor. Each circuit will use copper refrigerant pipe formed on computer controlled bending machines to reduce the number of brazed joints resulting in a reliable and leak resistant system.

Liquid line components shall include: manual shut-off valve with charging port, high absorption removable core filter-drier, sight glass with moisture indicator, and thermostatic expansion valve.

Suction lines shall be covered with closed-cell insulation.

Evaporator
The evaporator is a shell and tube design with refrigerant on the tube side and water on the shell side. Tubes are formed in a 'U' shape and held in a tube bundle, which is free to expand independent of the shell. An independent circuit shall be provided for each compressor. The shell design working pressure shall be 10.3 bar (150 psi), and 24.5 bar (355 psi) for the tubes.

The evaporator shall have water pass baffles manufactured from corrosion resistant/non metallic composite material, removable heads for access to internally enhanced, seamless, copper tubes. Water vent and drain connections shall also be included.

The water nozzles are fitted with PN16 flanges per ISO 7005 part 1a. Companion weld flanges to match evaporator flanges shall be supplied loose for field installation by contractor. All necessary nuts, bolts and gaskets shall be included.

The evaporator shall be equipped with a thermostatically controlled heater for protection to -29°C ambient and insulated with 19 mm flexible closed-cell foam.

Economiser
Selected models in the range have an economiser fitted to the refrigerant circuits. This is a refrigerant-to-refrigerant plate type heat exchanger to maximise unit capacity and efficiency by achieving additional liquid refrigerant sub-cooling. The unit control system controls the economiser via a dedicated solenoid valve.

Condenser
Standard units have condensers fitted with single speed fans. Low sound units have two speed fans fitted.

Fans - The fans shall be dynamically and statically balanced, direct drive with corrosion resistant glass fibre reinforced composite blades moulded into low sound, full airfoil cross section, providing vertical air discharge from extended orifices for efficiency and low sound. Each fan shall be located in a separate compartment to prevent cross flow during fan cycling. Guards of heavy gauge, PVC (polyvinyl chloride) coated galvanised steel shall be provided.

Motors - The fan motors shall be the high efficiency, direct drive, 8 pole, 3 phase, Class-"F", current overload protected, totally enclosed (TEAC) type with double sealed, permanently lubricated, ball bearings.

Coils - Fin and tube condenser coils shall be manufactured from seamless, internally enhanced, high condensing coefficient, corrosion resistant copper tubes arranged in staggered rows and mechanically expanded into epoxy coated aluminium alloy with full height fin collars. The design working pressure shall be 31 bar and each coil shall be pressure tested to 34 bar.

Power and Control Panel
All controls and motor starting equipment necessary for unit operation shall be factory wired and function tested.

The panel enclosure shall be designed to IP55 (rain/dust tight) and be manufactured from powder painted galvanised steel. Component mounting panels are of non-painted galvanised steel to ensure optimum protective circuit (earthing).

The Power and Control Panel shall be divided into a power section for each electrical system, a control section and a common input section. All sections shall have a separate hinged, latched, and gasket sealed door equipped with wind struts for safer servicing.

Each power compartment shall contain:

Compressor fuses, compressor and fan contactors, fan manual motor starters to give overload and short circuit protection phase rotation relay and a control circuit fuse.

The control section shall contain:

On/Off switch, microcomputer keypad and display, microprocessor board, I/O expansion board, relay boards and power supply board.

Models with Standard Single Point Power Supply Connection
The common input section contains:

An incoming non-fused disconnect switch for connection of the customer provided single power supply. Internal factory wiring to two fused protected power sections. The control supply is derived internally from the incoming power supply.

The common input section also contains the control circuit switch disconnect/emergency stop device, a transformer (to provide the necessary 24V and 12V supplies for the power supply board, and I/O board), control fuses, residual current circuit breaker, and terminals for a remote emergency stop device.

Microprocessor Controls
Fuzzy Logic control will be incorporated in the YAES range of chillers. Fuzzy logic allows the control system to monitor several key variables to provide tighter, more stable, chilled water temperature control. The control system monitors the leaving chilled water temperature to track where it has been, where it is now, how fast it is moving, and accurately adjusts chiller operation in anticipation of expected performance to minimise hunting and save energy.

The microprocessor shall have the following functions and displays:

- A liquid crystal 40 character display with text provided on two lines and light emitting diode backlighting for outdoor viewing.
- A colour coded, 35 button, sealed keypad with sections for Display, Entry, Setpoints, Clock, Print, Program and Unit On/Off switch.
- The standard controls shall include: glycol chilling or thermal storage, automatic pump down, run signal contacts, demand load limit from external building automation system input, remote reset liquid temperature reset input, unit alarm contacts, chilled liquid pump control, automatic or manual reset after power failure, automatic system optimisation to match operating conditions, software stored in non-volatile memory (EPROM) to eliminate chiller failure due to AC power failure.
- Programmed Setpoint shall be retained in a lithium battery backed RTC memory for a minimum of 5 years.

DISPLAY – In Metric (°C and Bar) or English (°F and psi) units. For each circuit, the following items shall be displayed:

- Return and leaving chilled liquid, and ambient temperature.
- Day, date and time. Daily start/stop times. Holiday and Manual Override status.
- Compressor operating hours and starts. Automatic or manual lead/lag. Lead compressor identification.
- Run permissive status. No cooling load condition. Compressor run status.
- Anti-recycle timer and anti-coincident start timer status per compressor.
- System suction (and suction superheat), discharge, and oil pressures and temperatures.
- Percent full load compressor motor current. Compressor capacity control valve input steps.
- Cut-out status and set-points for: supply fluid temperature, low suction pressure, high discharge pressure and temperature, high oil temperature, low and high ambient, high and low current, and low leaving liquid temperature.
- Unloading limit setpoints for high discharge pressure and compressor motor current.
- Liquid pull-down rate sensitivity (0.3°C to 3°C/minute in 0.05°C increments).
- Status of: evaporator heater, condenser fans, chilled liquid pump.
- "Out of range" message.
- Up to 6 fault shut down conditions.
- Standard Display Language is English, with other language options.

ENTRY – Enter set point changes, cancel inputs, advance day, and change AM/PM.

SET POINTS – Chilled liquid temperature, chilled liquid range, remote reset temperature range.

CLOCK – Time, daily or holiday start/stop schedule, manual override for servicing.

PRINT – Operating data or system fault shutdown history for last six faults, and software version. Printouts through an RS-232 port via a separate printer (by others).

PROGRAM – For setting language, high discharge pressure cut-out, high discharge pressure unload, suction pressure cut-out, high ambient cut-out, low ambient cut-out, leaving liquid temperature cut-out, high motor current unload, anti-recycle time (300 - 600 seconds), local remote control, lead lag control, power failure reset and average motor current cut-out. Settings for liquid temperature set-point reset signal from YORK ISN or building automation system.

Temperature and Current Offset

Pulse width modulating (PWM) controls are provided to remotely limit the running current of each compressor and to adjust the leaving chilled water temperature setpoint to a higher value.

Motor Protection

The microprocessor motor protection provides high current protection to ensure that the motor is not damaged due to voltage, excess refrigerant or other problems that could cause excessive motor current. If the motor current exceeds the 115% FLA trip point after 3 seconds of operation, the microprocessor will shut the system down and lock it out after one fault.

The microprocessor also provides low motor current protection when it senses a motor current of less than 10% FLA.

A motor protector module provides thermal overload protection.

ACCESSORIES AND OPTIONS

POWER OPTIONS

Closed Transition Star/Delta Start

With the addition of closed transition contactors and resistors the change over spike during starting can be reduced to nearer the star inrush level thus reducing the risk of electrical interference during compressor start.

Power Supply Connection Options:

Single Point - System Fused Disconnect Switches

A terminal block in the common input section of the panel for connection of the customer provided single power supply. Internal factory wiring to two door interlocked fused disconnect switches mounted in the power sections. The control supply is derived internally from the terminal block.

Single Point - System Circuit Breakers

A terminal block in the common input section of the panel for connection of the customer provided single power supply. Internal factory wiring to two door interlocked circuit breakers, mounted in the power sections. The control supply is derived internally from the terminal block.

Multi-Point - System Fused Disconnect Switches

Two door interlocked fused disconnect switches, mounted in the power sections, for connection of the customer provided power supplies. A non-fused disconnect switch / emergency stop device (QCSD/ESD) in the common input section with termination for the customer (400 V, 2 Ø, 50 Hz) control supply.

Multi-Point - System Circuit Breakers

Two door interlocked circuit breakers, mounted in the power sections, for connection of the customer provided power supplies. A non-fused disconnect switch / emergency stop device (QCSD/ESD) in the common input section with termination for the customer (400 V, 2 Ø, 50 Hz) control supply.

Power Factor Correction

Factory mounted passive (static) correction capacitors to correct unit compressor power factors to 0.95 (depending on operating conditions).

CONTROL OPTIONS

BAS/EMS Interface

Provides a means to reset the leaving chilled liquid temperature and/or percent full load amps (current limiting) from the building automation system (BAS) / energy management system (EMS), factory mounted:

Printed circuit board to accept 4 to 20 mA or 0 to 10 Vdc from the BAS/EMS.
(Cannot be fitted when a Multi-unit Sequence Control is fitted).

Note: A YORK ISN Building Automation System can provide a Pulse Width Modulated (PWM) signal direct to the standard control panel via the standard on-board RS485 port.

Multi Unit Sequencer

Monitors mixed leaving chilled water or glycol temperature from two or more units and controls to maintain required mixed temperature whilst running the minimum number of units.
(Cannot be fitted when a BAS/EMS Interfaces fitted).

REFRIGERANT CIRCUIT OPTIONS

Suction Valves
A ball valve in the low pressure (suction) pipework per refrigerant circuit for isolation.

Handed Evaporator Liquid Connections
Evaporator connections on standard units are on the right-hand side (when viewed from the control panel). The connections are available on left-hand side as an option, to assist in pipework design etc.

Flow Switch Accessory
Vapour-proof SPDT, NEMA 4X switch, 10.3 bar DWP, -29°C to 121°C, with 1" NPT (IPS) connection for upright mounting in horizontal pipe. A flow switch must be field installed with each unit.

CONDENSER/EXTERIOR OPTIONS

Copper Fin Condenser Coils
Condenser coils are constructed with corrosion resistant copper fins.

Condenser Wired Guards
Heavy gauge welded wire mesh guards mounted over the exterior condenser coil faces (factory mounted).

Unit Aesthetic Panels
Non acoustically lined infill panels manufactured from powder painted galvanised steel, for below the power and control panel, the sides of the unit near the power and control panel and at the rear of the unit covering the ends of the condenser coil.

High Static Pressure Fans
Fans and motors suitable for high external static conditions to 120 Pa.

HEAT RECOVERY OPTIONS

Heat Recovery
Factory fitted plate heat exchanger to provide warm water during cooling to satisfy heating and domestic hot water requirements.

Desuperheaters
Factory fitted desuperheaters on compressor discharge lines to provide hot water during cooling.

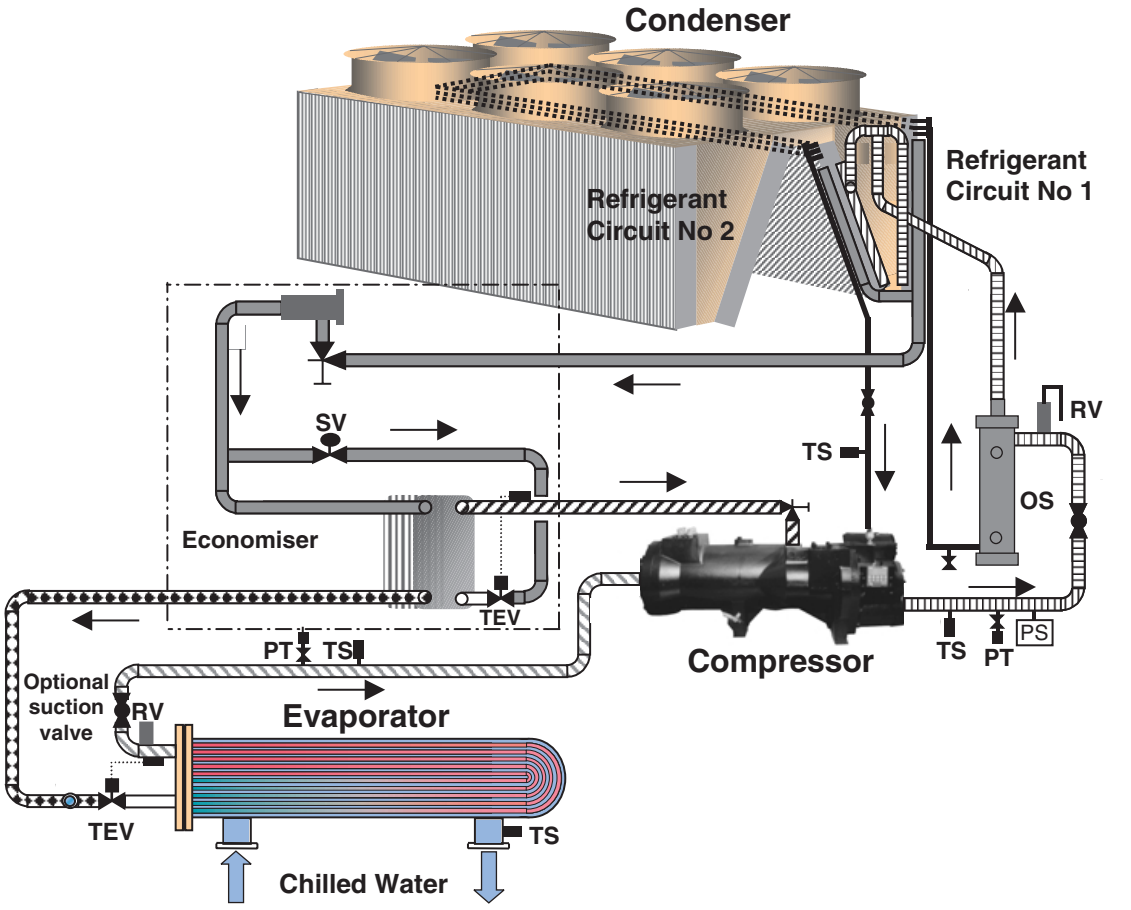
VIBRATION ISOLATION

25 mm Spring Isolators
Level adjustable, spring and cage type isolators for mounting under the unit base rails (Field mounted).

OPERATING LIMITATIONS — TABLE 2

Model YAGS				0415		0465		0525		0535		0565		0595		0625		0655	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid outlet temperature	Water outlet	°C	5 to 13															
		Glycol outlet	°C	-10 to 13															
		Temp. spread	°C	3 to 10															
	Flow rate		l/s	13.8	33.0	13.8	33.0	13.8	33.0	15.3	33.0	15.3	33.0	15.3	33.0	15.3	33.0	15.3	33.0
	Pressure drop		kPa	7.5	38.0	7.5	38.0	7.5	38.0	10.5	43.5	10.5	43.5	10.5	43.5	10.5	43.5	10.5	43.5
	Maximum working pressure		bar	10															
Ambient Air entering temperature			°C	-18 to 52															
Refrigerant System High Pressure Side			bar	31															
Power Supply400 V, 3 Ø, 50 Hz (nominal)			V	342 to 440															
Recommended System Water Volume			l	1270		1426		1585		1642		1722		1824		1945		1996	

REFRIGERANT FLOW DIAGRAM FIGURE 1



Oil

Low Pressure Liquid

High Pressure Subcooled Liquid

High Pressure Further Subcooled Liquid

Low Pressure Superheated Vapour

High Pressure Superheated Vapour

Medium Pressure Vapour

TEV Thermostatic expansion valve
SV Solenoid valve
PT Pressure tapping
PS Pressure sensor
RV Relief valve
TS Temperature sensor
OS Oil separator

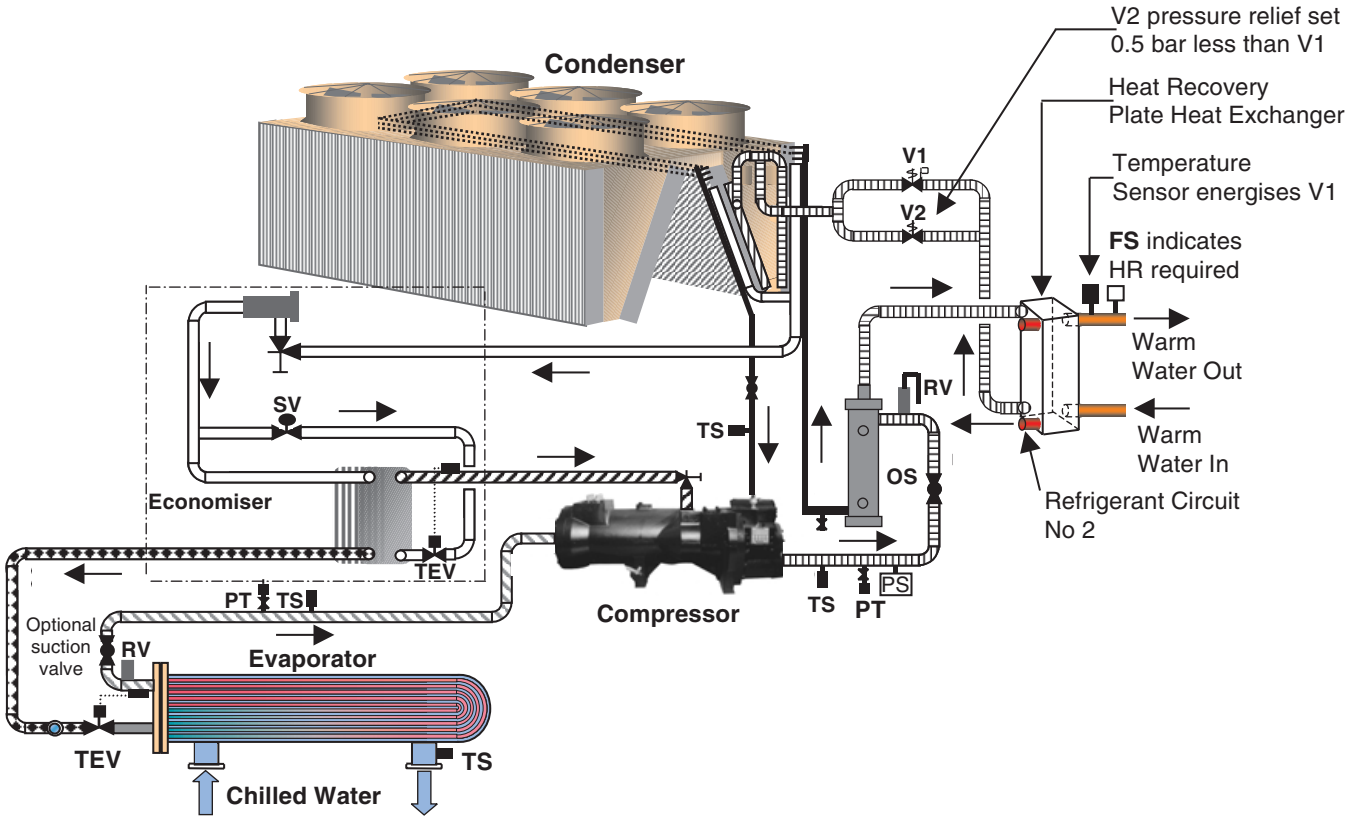
Note: Economiser (plate heat exchanger) fitted to selected models only.

Cooling (Figure 1)
Low pressure liquid refrigerant enters the evaporator and is evaporated and superheated by the heat energy absorbed from the chilled water passing through the evaporator shell. Low pressure vapour enters the compressor where pressure and superheat are increased. High pressure vapour is passed through the oil separator where compressor oil is removed and recirculated to the compressor via the oil cooler. The high pressure oil-free vapour is fed to the air cooled condenser coil and fans where the heat is removed. The fully condensed liquid enters the economiser. A small percentage of the liquid passes through an expansion valve, into the other side of the economiser where it is evaporated. This low pressure liquid subcools the major part of the refrigerant. Medium pressure vapour then returns to the compressor. The subcooled refrigerant then passes through the expansion valve where pressure is reduced and further cooling takes place before returning to the evaporator.

Optional Heat Recovery (Figure 1a)
If the warm water flow switch detects water flow the heat recovery pressure regulating valves are energised. The valves allow high-pressure superheated refrigerant, from the oil separators, to enter the twin circuit heat recovery plate heat exchanger. The refrigerant is partially condensed as the warm water absorbs heat energy.

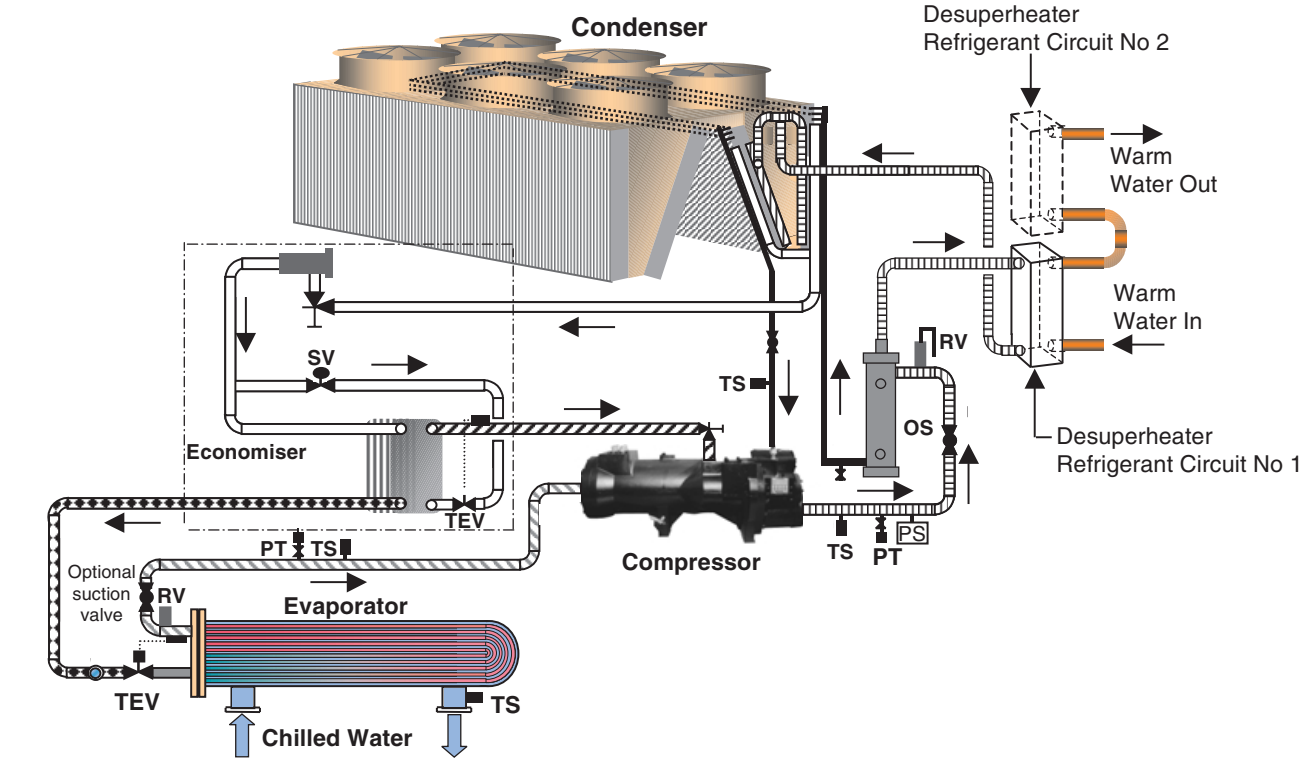
The valves are de-energised when the leaving warm water temperature sensor registers the high point of the set point dead band. If water flow is maintained the valves are re-energised if the temperature sensor registers the low point of the set point dead band.

FIGURE 1a REFRIGERANT FLOW DIAGRAM MODELS WITH OPTIONAL HEAT RECOVERY



Refer to figure 1 for legend.

FIGURE 1b REFRIGERANT FLOW DIAGRAM MODELS WITH OPTIONAL DESUPERHEATERS



Refer to figure 1 for legend.

SELECTION GUIDE

DATA REQUIRED

To select a YORK YAGS chiller the following information is required:

1. Required cooling capacity.
2. Design chilled water entering and leaving temperatures.
3. Design water flow rate if one of the temperatures in item 3 are unknown.
4. Design condenser entering air temperature. This will normally be the design summer ambient air temperature unless location or other factors have an influence.
5. Altitude above sea level.
6. Design evaporator fouling factor.
7. Static pressure resistance against condenser entering and leaving air flow (where ducts, louvres, attenuators, etc., are used) at full unit air volume.

Note: Items 1, 2 and 3 must be linked by the following formulae:

Cooling Capacity (kW) = Range (°C) x Flow (litres/sec) x 4.18

Where:
Range = Entering liquid temperature - Leaving liquid temperature.

CHILLER SELECTION METHOD

1. Determine the correct size of chiller by selecting the model which most closely matches the required capacity at the design conditions of leaving water temperature and entering air temperature (Table 6).
2. Apply correction factors for fouling factor (Table 3) and altitude (Table 4) to the capacity and power values from the capacity tables (Table 7). Ensure the corrected capacity is still sufficient for requirements.
3. Using the corrected capacity of the selected chiller adjust the design temperature range, or flow rate, to balance the formulae shown in “Data Required”.
4. Physical and electrical data can now be determined from Tables 8 and 9.
5. Always re-check that selections fall within the design limitations specified in Table 2.

FOULING FACTORS — TABLE 3

COOLER		
Fouling Factor m² °C/kW	Capacity Factor	Comp. Input Factor
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.915	0.962

ALTITUDE FACTORS — TABLE 4

Altitude (m)	Capacity Factor	Comp. Input Factor
0	1.000	1.000
600	0.987	1.010
1200	0.973	1.020
1800	0.958	1.029
2400	0.943	1.038

COOLING ONLY CHILLER SAMPLE SELECTION

A R22 chiller is required to cool water from 12°C to 7°C having a cooling capacity of 550 kW at a design flow rate of 25.0 l/s. Other design conditions applying are:

Ambient air entering condenser: 35°C
Fouling factor: 0.044 m² °C./kW
Altitude: Sea level

From a cursory examination of Capacity Table 6, a model YAGS0535SC gives approximately the required capacity:

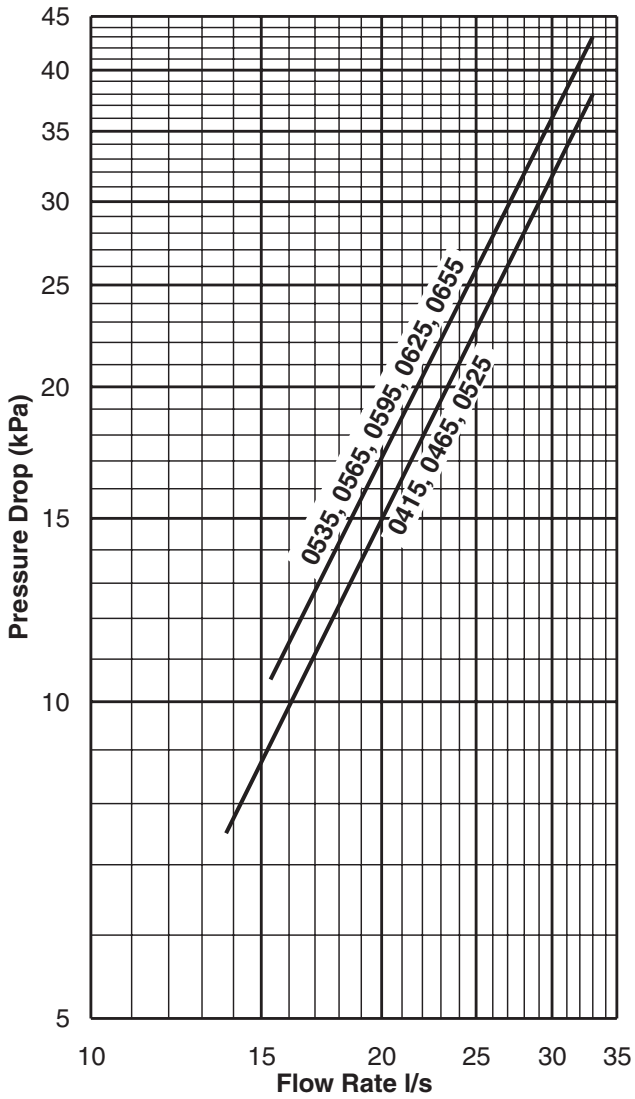
Capacity = 562.9 kW
Compressor power = 145.9 kW

No correction factors apply therefore, after calculating the flow rate, the conditions will be as follows:

Cooling capacity: 562.9 kW
Water temperature: 12°C to 7°C (Range = 5°C)
Water flow rate: 26.9 l/s
Compressor power: 145.9 kW

All values are within the operating limits in Table 2. From Pressure Drop Graph (Figure 2), YAGS0535SC evaporator water pressure drop = 29.8 kPa at the calculated flow of 26.9 l/s.

FIGURE 2 EVAPORATOR PRESSURE DROPS



Model	Pressure Drop Calculation
0415, 0465, 0525	Pressure Drop [kPa] = 0.0567 x (Flow Rate [l/s]$^{1.8612}$)
0535, 0565, 0595, 0625, 0655	Pressure Drop [kPa] = 0.0677 x (Flow Rate [l/s]$^{1.8492}$)

OPTIONAL HEAT RECOVERY SAMPLE SELECTION

A chiller is required to cool water from 12°C to 7°C having a cooling capacity of approximately 550 kW at a design flow rate of 25.0 l/s. Other design conditions applying are:

Ambient air entering condenser: 35°C
Fouling factor: 0.044 m² °C./kW
Altitude: Sea level
Required hot leaving Temperature 50°C
Hot water temperature range 12°C

A model YAGS0565SC meets the cooling requirements, see sample selection above.

From Table 7 a model YAGS0565SC gives the following data when providing hot water at 50°C.

LWT	Cool (kW)	Power (kW)	Heat (kW)
7°C	562.9	145.9	299

The heating capacity should be corrected for the hot water temperature range Table 5: 299 kW x 1.02 = 305

Heat recovery water flow: $\frac{305}{12°C \times 4.18}$ = 6.1 l/s

Heat recovery pressure drop from graph (Figure 3) is 35 kPa at the calculated flow of 6.1 l/s.

TABLE 5 TEMPERATURE RANGE FACTORS

Temperature Range	Capacity Factor	Temperature Range	Capacity Factor
8	0.98	11	1.01
9	0.99	12	1.02
10	1.00	13	1.03
		14	1.04

FIGURE 3 HEAT RECOVERY PRESSURE DROP

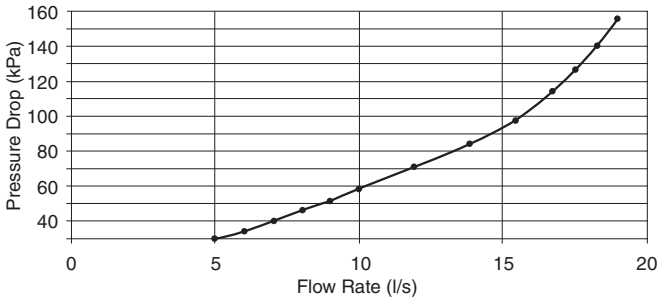
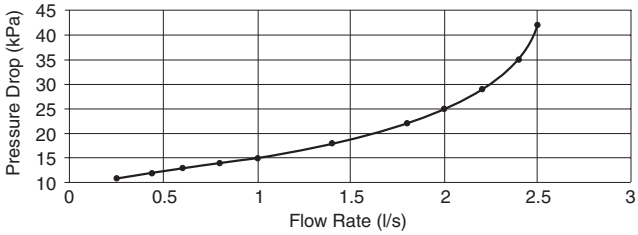


FIGURE 4 DESUPERHEATERS PRESSURE DROP



The water pressure drop values shown in figures 3 and 4 are for two refrigerant circuit models with flow rates based on 10°C hot water temperature range.

TABLE 6 OPTIONAL HEAT RECOVERY CAPACITIES - ALL MODELS

YAGS Models	Leaving Chilled Water °C	Leaving Hot Water Temperature °C		
		40	45	50
	5.0	415	371	285
	6.0	***425***	***380***	***292***
	7.0	435	389	299
0415	***8.0***	***446***	***399***	***306***
0465	9.0	457	408	313
0525	***10.0***	***467***	***417***	***320***
0535	11.0	478	427	327
	12.0	***489***	***436***	***334***
	13.0	500	446	341

YAGS Models	Leaving Chilled Water °C	Leaving Hot Water Temperature °C		
		40	45	50
	5.0	503	452	336
	6.0	***515***	***462***	***343***
	7.0	527	473	350
0565	***8.0***	***540***	***484***	***357***
0595	9.0	552	495	365
0625	***10.0***	***565***	***506***	***372***
0655	11.0	577	517	380
	12.0	***590***	***529***	***388***
	13.0	603	540	395

COOLING CAPACITIES - R22 MODELS

TABLE 7

Model	Leaving Liquid Temp. °C	Condenser Entering Air Temperature °C											
		30		35		40		45		46		50	
		Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW
YAGS 0415SC	5.0	437.8	112.2	411.9	126.2	388.4	141.9	367.3	159.6	363.2	163.3	337.0	173.9
	6.0	***451.6***	***113.7***	***425.0***	***127.9***	***401.0***	***143.9***	***379.3***	***161.8***	***375.3***	***165.6***	***343.6***	***174.4***
	7.0	465.6	115.2	438.4	129.6	413.7	145.9	391.4	164.0	387.3	167.9	350.3	175.0
	8.0	***479.9***	***116.6***	***451.9***	***131.3***	***426.6***	***147.8***	***403.9***	***166.3***	***399.7***	***170.3***	***357.1***	***175.5***
	9.0	494.3	118.1	465.6	132.9	439.7	149.7	416.4	168.6	412.1	172.6	363.8	176.1
	10.0	***508.9***	***119.4***	***479.5***	***134.6***	***452.9***	***151.7***	***429.0***	***170.9***	***424.6***	***175.0***	***370.6***	***176.7***
	11.0	523.7	120.8	493.6	136.2	466.3	153.6	441.8	173.2	437.3	177.4	377.3	177.4
	12.0	***538.6***	***122.2***	***507.8***	***137.9***	***479.8***	***155.6***	***454.8***	***175.6***	***448.2***	***179.0***	***384.1***	***178.1***
	13.0	553.7	123.5	522.1	139.5	493.5	157.6	468.0	177.9	459.0	180.4	390.9	178.7
YAGS 0465SC	5.0	488.5	130.0	460.1	146.2	434.3	164.4	411.0	184.7	406.5	189.0	367.7	196.8
	6.0	***503.7***	***131.9***	***474.5***	***148.3***	***448.2***	***166.8***	***424.5***	***187.4***	***420.1***	***191.8***	***370.8***	***195.6***
	7.0	519.2	133.7	489.4	150.4	462.3	169.2	438.0	190.0	433.6	194.5	373.8	194.6
	8.0	***535.0***	***135.4***	***504.4***	***152.4***	***476.7***	***171.5***	***451.9***	***192.7***	***447.3***	***197.3***	***376.8***	***193.6***
	9.0	551.0	137.2	519.6	154.4	491.3	173.8	465.9	195.5	461.3	200.1	379.6	192.6
	10.0	***567.2***	***138.8***	***535.1***	***156.4***	***506.0***	***176.2***	***480.1***	***198.2***	***475.3***	***203.0***	***382.4***	***191.7***
	11.0	583.7	140.5	550.7	158.4	520.9	178.5	494.3	201.0	489.5	205.8	385.0	190.9
	12.0	***600.2***	***142.2***	***566.5***	***160.4***	***536.0***	***180.9***	***508.9***	***203.8***	***499.8***	***207.0***	***387.5***	***190.1***
	13.0	617.0	143.9	582.4	162.4	551.3	183.3	523.6	206.6	509.9	208.0	389.9	189.3
YAGS 0525SC	5.0	521.3	138.9	504.8	159.5	491.7	183.0	480.8	209.1	477.1	214.0	374.8	197.8
	6.0	***536.4***	***139.9***	***519.2***	***160.8***	***505.5***	***184.5***	***494.0***	***211.0***	***486.2***	***214.3***	***377.1***	***196.5***
	7.0	552.0	141.0	533.9	162.0	519.4	186.0	507.5	212.9	495.6	214.7	379.9	195.3
	8.0	***567.9***	***142.0***	***548.9***	***163.2***	***533.7***	***187.5***	***521.3***	***214.8***	***505.8***	***215.2***	***382.7***	***194.0***
	9.0	584.1	142.9	564.2	164.3	548.3	188.9	535.4	216.6	515.7	215.6	385.5	192.8
	10.0	***601.1***	***143.9***	***579.9***	***165.5***	***563.3***	***190.4***	***549.8***	***218.5***	***525.8***	***216.0***	***388.3***	***191.5***
	11.0	617.7	144.8	596.0	166.7	578.5	191.8	564.6	220.4	536.0	216.4	391.1	190.1
	12.0	***634.9***	***145.8***	***612.2***	***167.8***	***594.0***	***193.3***	***579.5***	***222.3***	***546.3***	***216.7***	***393.9***	***188.8***
	13.0	652.5	146.7	628.9	169.0	610.0	194.8	594.7	224.2	556.9	217.1	396.6	187.5
YAGS 0535SC	5.0	551.6	125.7	530.8	144.2	514.7	165.3	501.7	189.0	499.5	194.1	490.9	215.2
	6.0	***568.4***	***126.5***	***546.7***	***145.1***	***529.7***	***166.2***	***516.2***	***190.2***	***513.8***	***195.4***	***504.7***	***216.8***
	7.0	585.6	127.2	562.9	145.9	544.9	167.1	530.6	191.4	528.2	196.6	518.9	218.3
	8.0	***603.3***	***127.8***	***579.4***	***146.6***	***560.6***	***168.0***	***545.4***	***192.5***	***542.9***	***197.8***	***533.3***	***219.8***
	9.0	621.5	128.4	596.4	147.3	576.6	168.9	560.5	193.6	557.8	199.0	547.8	221.3
	10.0	***639.8***	***128.9***	***613.7***	***148.0***	***593.0***	***169.7***	***576.3***	***194.7***	***573.5***	***200.2***	***562.8***	***222.8***
	11.0	658.7	129.4	631.4	148.6	609.7	170.5	592.2	195.8	589.2	201.3	578.1	224.2
	12.0	***677.6***	***130.1***	***649.8***	***149.0***	***626.6***	***171.3***	***608.5***	***196.9***	***605.4***	***202.5***	***592.2***	***225.3***
	13.0	697.2	130.6	668.3	149.6	644.5	172.1	625.2	198.0	622.0	203.6	595.6	222.6
YAGS 0565SC	5.0	603.6	150.6	569.4	169.3	537.3	190.2	508.2	213.6	502.8	218.6	482.2	239.4
	6.0	***624.2***	***152.6***	***587.7***	***171.5***	***554.6***	***192.7***	***524.9***	***216.5***	***519.4***	***221.6***	***498.2***	***242.7***
	7.0	643.7	154.5	606.3	173.6	572.3	195.3	541.8	219.4	536.2	224.6	514.6	246.1
	8.0	***662.9***	***156.5***	***625.0***	***175.8***	***590.2***	***197.8***	***558.9***	***222.3***	***553.2***	***227.6***	***531.3***	***249.5***
	9.0	682.7	158.4	644.1	177.9	608.3	200.3	576.3	225.2	570.3	230.6	547.9	252.9
	10.0	***703.0***	***160.2***	***663.3***	***180.0***	***626.8***	***202.8***	***593.8***	***228.2***	***587.8***	***233.7***	***559.6***	***254.2***
	11.0	723.6	162.0	682.4	182.3	645.3	205.3	611.7	231.1	605.6	236.7	562.5	252.0
	12.0	***744.1***	***163.7***	***702.0***	***184.5***	***664.1***	***207.8***	***629.3***	***234.0***	***623.2***	***239.8***	***567.5***	***251.0***
	13.0	765.1	165.4	721.9	186.6	682.7	210.5	647.9	237.1	641.5	242.9	571.3	249.4
YAES 0595SC	5.0	621.7	154.5	593.6	175.4	568.8	199.2	547.1	225.7	543.2	231.4	515.9	250.1
	6.0	***641.5***	***156.0***	***610.7***	***177.1***	***585.0***	***201.1***	***563.7***	***228.1***	***559.6***	***233.9***	***526.8***	***251.1***
	7.0	661.0	157.6	630.2	178.8	603.5	203.2	580.5	230.5	576.3	236.4	537.0	251.7
	8.0	***680.5***	***159.1***	***649.0***	***180.5***	***621.4***	***205.1***	***597.6***	***232.9***	***593.0***	***238.8***	***547.4***	***252.3***
	9.0	700.6	160.5	668.1	182.2	639.6	207.1	613.9	235.1	609.9	241.2	557.7	252.9
	10.0	***721.2***	***161.9***	***687.5***	***183.8***	***658.2***	***209.0***	***632.7***	***237.6***	***627.6***	***243.7***	***565.6***	***252.4***
	11.0	742.1	163.2	707.1	185.5	676.8	211.2	650.7	239.9	646.0	246.2	569.0	250.2
	12.0	***763.2***	***164.5***	***727.1***	***187.2***	***696.0***	***213.1***	***668.7***	***242.5***	***664.0***	***248.8***	***573.3***	***248.6***
	13.0	784.7	165.8	747.5	188.8	715.2	215.2	687.5	245.0	682.3	251.4	577.1	246.6
YAES 0625SC	5.0	639.7	158.3	617.7	181.5	600.2	208.1	586.0	237.8	583.5	244.2	549.6	260.8
	6.0	***658.8***	***159.4***	***633.6***	***182.6***	***615.4***	***209.4***	***602.4***	***239.7***	***599.8***	***246.2***	***555.4***	***259.5***
	7.0	678.2	160.6	654.1	183.9	634.7	211.0	619.1	241.5	616.4	248.1	559.4	257.2
	8.0	***698.1***	***161.6***	***673.0***	***185.1***	***652.6***	***212.4***	***636.2***	***243.4***	***632.7***	***250.0***	***563.4***	***255.0***
	9.0	718.5	162.5	692.0	186.4	670.8	213.8	651.5	244.9	649.4	251.8	567.4	252.8
	10.0	***739.3***	***163.5***	***711.6***	***187.6***	***689.5***	***215.2***	***671.5***	***247.0***	***667.4***	***253.8***	***571.5***	***250.5***
	11.0	760.6	164.4	731.7	188.7	708.3	217.0	689.7	248.7	686.5	255.7	575.4	248.3
	12.0	***782.2***	***165.3***	***752.1***	***189.8***	***727.8***	***218.4***	***708.1***	***250.9***	***704.9***	***257.9***	***579.0***	***246.1***
	13.0	804.3	166.2	773.0	190.9	747.6	219.8	727.1	252.8	723.1	259.8	582.8	243.8
YAGS 0655SC	5.0	652.9	147.8	628.5	169.1	607.4	193.3	593.5	221.0	590.8	227.0	580.6	251.6
	6.0	***673.0***	***148.6***	***647.2***	***170.0***	***626.7***	***194.6***	***609.8***	***222.3***	***607.2***	***228.3***	***596.8***	***253.3***
	7.0	693.5	149.3	666.4	170.8	644.7	195.9	627.7	223.6	624.7	229.7	613.6	255.0
	8.0	***714.5***	***150.0***	***686.2***	***171.6***	***663.2***	***196.9***	***643.2***	***225.0***	***640.9***	***231.2***	***630.5***	***256.6***
	9.0	736.2	150.7	706.3	172.4	682.3	197.8	663.2	226.4	659.1	232.6	647.8	258.5
	10.0	***758.0***	***151.3***	***727.0***	***173.1***	***701.7***	***198.7***	***681.7***	***227.6***	***678.3***	***234.0***	***665.5***	***260.3***
	11.0	780.4	151.9	748.1	173.8	721.7	199.6	700.6	228.8	697.0	235.2	683.6	261.9
	12.0	***803.2***	***152.5***	***769.6***	***174.5***	***742.0***	***200.5***	***719.9***	***230.0***	***716.2***	***236.5***	***702.1***	***263.5***
	13.0	826.6	153.0	791.6	175.2	762.7	201.4	739.6	231.2	735.7	237.8	721.1	265.1

Power (kW) is for compressors only, all cooling capacities are for units with ripple fin condensers and high air flow fans.
Power consumption of all fans running: YAGS 0415, 0465, 0525 = 22 kW, YAGS 0535, 0565, 0625 = 29.6 kW, YAGS 0655 = 37 kW.

TABLE 7 COOLING CAPACITIES - R407C MODELS

Model	Leaving Liquid Temp. °C	Condenser Entering Air Temperature °C											
		30		35		40		45		46		50	
		Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW	Cool kW	Power kW
YAGS 0415SB	5.0	405.7	120.4	374.4	136.3	345.6	154.3	319.3	174.5	314.5	178.8	268.6	180.4
	6.0	***420.1***	***121.0***	***388.0***	***136.8***	***358.6***	***154.7***	***331.8***	***174.8***	***326.9***	***179.1***	***276.7***	***179.0***
	7.0	434.7	121.6	401.9	137.4	371.8	155.1	344.5	175.0	339.2	179.2	284.7	177.3
	8.0	***449.6***	***122.1***	***415.9***	***137.8***	***385.2***	***155.5***	***357.4***	***175.2***	***350.2***	***178.4***	***288.4***	***173.9***
	9.0	464.7	122.6	430.3	138.3	398.9	155.9	370.4	175.5	361.8	177.9	294.1	171.4
	10.0	***480.0***	***123.1***	***444.8***	***138.7***	***412.7***	***156.2***	***383.8***	***175.7***	***373.5***	***177.3***	***300.7***	***169.2***
	11.0	495.5	123.5	459.6	139.1	426.7	156.6	397.3	175.9	385.1	176.8	305.6	166.6
	12.0	***511.2***	***123.9***	***474.4***	***139.5***	***441.1***	***156.9***	***411.0***	***176.2***	***396.8***	***176.2***	***310.5***	***164.1***
	13.0	526.9	124.2	489.7	139.8	455.6	157.2	424.8	176.4	408.6	175.7	315.0	161.6
YAGS 0465SB	5.0	451.1	139.2	416.6	157.5	385.0	178.1	356.1	201.3	350.8	206.3	275.8	194.0
	6.0	***467.0***	***140.0***	***431.7***	***158.2***	***399.3***	***178.7***	***369.9***	***201.7***	***364.5***	***206.7***	***281.5***	***191.1***
	7.0	483.1	140.7	447.0	158.9	414.0	179.3	383.9	202.1	377.9	206.8	287.0	188.3
	8.0	***499.5***	***141.4***	***462.5***	***159.5***	***428.8***	***179.9***	***398.2***	***202.5***	***388.5***	***205.2***	***291.9***	***185.4***
	9.0	516.0	142.1	478.3	160.2	443.9	180.4	412.7	202.9	400.2	204.2	296.8	182.6
	10.0	***532.8***	***142.8***	***494.3***	***160.8***	***459.1***	***180.9***	***427.4***	***203.3***	***411.7***	***203.0***	***301.5***	***179.9***
	11.0	549.8	143.4	510.6	161.4	474.6	181.5	442.3	203.7	422.9	201.9	306.0	177.3
	12.0	***566.9***	***144.0***	***526.9***	***161.9***	***490.3***	***182.0***	***457.4***	***204.1***	***434.2***	***200.7***	***310.5***	***174.8***
	13.0	584.2	144.5	543.5	162.5	506.3	182.5	472.7	204.5	445.5	199.6	314.7	172.3
YAGS 0525SB	5.0	501.0	146.6	477.5	166.7	456.3	189.0	436.2	213.3	416.0	210.7	297.8	184.9
	6.0	***516.6***	***148.3***	***492.3***	***168.8***	***470.5***	***191.6***	***449.9***	***216.4***	***425.4***	***212.1***	***300.2***	***184.5***
	7.0	532.5	150.1	507.4	171.0	484.9	194.1	463.8	219.5	435.0	213.5	302.5	184.0
	8.0	***548.9***	***151.9***	***522.8***	***173.0***	***499.5***	***196.8***	***478.0***	***222.7***	***444.7***	***214.9***	***304.8***	***183.5***
	9.0	565.5	153.6	538.6	175.1	514.6	199.4	487.5	223.5	451.6	214.9	307.1	182.9
	10.0	***582.4***	***155.3***	***554.7***	***177.2***	***529.9***	***202.0***	***490.1***	***221.2***	***454.3***	***213.1***	***309.3***	***182.3***
	11.0	599.7	157.0	571.1	179.3	545.5	204.6	495.4	220.0	458.7	211.8	311.5	181.7
	12.0	***617.3***	***158.7***	***587.8***	***181.3***	***561.6***	***207.0***	***499.0***	***218.1***	***462.0***	***210.2***	***313.7***	***181.0***
	13.0	635.3	160.4	604.8	183.5	577.8	209.7	502.5	216.2	465.2	208.6	315.8	180.3
YAGS 0535SB	5.0	540.1	134.7	512.6	153.3	488.5	174.3	467.0	197.0	462.9	201.8	438.4	218.4
	6.0	***558.0***	***135.9***	***529.5***	***154.7***	***504.6***	***175.8***	***482.2***	***199.1***	***478.0***	***204.1***	***440.5***	***216.3***
	7.0	576.4	137.0	546.5	156.2	520.7	177.5	497.7	201.3	493.4	206.4	449.9	216.6
	8.0	***595.0***	***138.1***	***564.2***	***157.4***	***537.4***	***179.2***	***513.5***	***203.4***	***509.1***	***208.6***	***454.4***	***215.2***
	9.0	614.0	139.3	582.2	158.7	554.4	180.9	529.8	205.6	525.2	210.9	458.8	213.8
	10.0	***633.7***	***140.2***	***600.5***	***160.1***	***571.7***	***182.6***	***546.3***	***207.7***	***541.6***	***213.1***	***463.1***	***212.4***
	11.0	653.5	141.3	619.3	161.4	589.5	184.2	563.2	209.8	558.4	215.3	467.3	210.9
	12.0	***673.7***	***142.3***	***638.3***	***162.6***	***607.6***	***185.9***	***580.4***	***212.0***	***575.4***	***217.6***	***471.3***	***209.3***
	13.0	694.3	143.3	657.8	163.9	626.0	187.6	598.0	214.1	592.9	219.8	475.3	207.8
YAGS 0565SB	5.0	567.5	160.4	524.0	181.2	483.7	204.8	447.0	231.3	440.2	237.0	400.1	253.2
	6.0	***588.1***	***161.0***	***543.2***	***181.8***	***502.1***	***205.3***	***464.6***	***231.6***	***457.7***	***237.3***	***411.7***	***250.3***
	7.0	608.6	161.8	562.8	182.5	520.5	205.8	482.5	231.9	475.4	237.5	419.6	246.0
	8.0	***629.5***	***162.4***	***582.6***	***183.1***	***539.6***	***206.3***	***500.6***	***232.3***	***493.4***	***237.9***	***427.1***	***241.7***
	9.0	650.5	163.0	602.6	183.6	558.7	206.8	518.7	232.6	511.4	238.2	434.4	237.6
	10.0	***671.8***	***163.6***	***622.9***	***184.2***	***578.1***	***207.3***	***537.4***	***232.9***	***529.8***	***238.4***	***441.4***	***233.6***
	11.0	693.3	164.1	643.4	184.7	597.7	207.7	556.2	233.3	548.6	238.8	448.0	229.8
	12.0	***714.2***	***165.0***	***664.1***	***185.2***	***617.6***	***208.2***	***575.3***	***233.6***	***567.5***	***239.0***	***454.5***	***226.0***
	13.0	736.1	165.5	685.1	185.7	637.6	208.6	594.6	234.0	586.7	239.4	460.7	222.4
YAES 0595SB	5.0	595.7	164.5	558.6	186.5	525.0	211.2	494.2	238.7	488.4	244.5	419.0	247.3
	6.0	***616.0***	***165.7***	***577.7***	***187.9***	***543.1***	***212.8***	***511.6***	***240.4***	***505.6***	***246.3***	***426.2***	***245.2***
	7.0	636.4	167.0	597.1	189.3	561.5	214.3	529.4	242.2	523.2	248.1	432.0	242.5
	8.0	***657.3***	***168.1***	***616.9***	***190.6***	***580.4***	***215.9***	***547.4***	***244.0***	***538.3***	***248.8***	***437.5***	***239.7***
	9.0	678.4	169.3	636.9	191.9	599.5	217.4	565.6	245.8	554.5	249.6	442.7	237.0
	10.0	***699.5***	***170.6***	***657.3***	***193.3***	***618.9***	***219.0***	***584.2***	***247.6***	***569.9***	***250.3***	***447.9***	***234.3***
	11.0	721.3	171.8	678.0	194.5	638.7	220.5	603.1	249.5	585.8	251.1	452.8	231.7
	12.0	***743.0***	***173.1***	***698.8***	***196.0***	***658.8***	***222.0***	***622.5***	***251.1***	***602.0***	***251.7***	***457.6***	***229.2***
	13.0	765.4	174.2	720.0	197.4	679.1	223.5	640.1	252.2	617.2	251.9	462.3	226.7
YAES 0625SB	5.0	623.8	168.5	593.2	191.7	566.2	217.6	541.4	246.0	536.6	252.0	437.9	241.4
	6.0	***643.8***	***170.3***	***612.1***	***193.9***	***584.1***	***220.2***	***558.6***	***249.1***	***553.6***	***255.3***	***440.7***	***240.1***
	7.0	664.2	172.1	631.4	196.0	602.5	222.8	576.2	252.4	571.0	258.7	444.4	238.9
	8.0	***685.0***	***173.8***	***651.1***	***198.1***	***621.2***	***225.4***	***594.2***	***255.6***	***583.2***	***259.6***	***447.8***	***237.6***
	9.0	706.2	175.5	671.1	200.2	640.3	228.0	612.4	259.0	597.5	261.1	451.0	236.3
	10.0	***727.2***	***177.6***	***691.6***	***202.3***	***659.7***	***230.6***	***631.0***	***262.3***	***609.9***	***262.3***	***454.3***	***235.0***
	11.0	749.3	179.4	712.5	204.3	679.6	233.2	650.0	265.6	623.0	263.4	457.5	233.6
	12.0	***771.7***	***181.1***	***733.4***	***206.7***	***699.9***	***235.8***	***669.6***	***268.6***	***636.5***	***264.3***	***460.7***	***232.3***
	13.0	794.6	182.8	754.9	209.0	720.6	238.4	685.6	270.4	647.7	264.5	463.9	230.9
YAGS 0655SB	5.0	640.3	158.1	607.6	180.0	579.2	204.4	553.9	231.2	549.0	237.0	529.9	260.3
	6.0	***661.7***	***159.4***	***627.8***	***181.5***	***598.2***	***206.2***	***571.8***	***233.7***	***566.9***	***239.5***	***547.3***	***263.2***
	7.0	683.2	160.7	648.3	182.9	617.7	208.0	590.3	235.9	585.2	241.9	565.1	266.2
	8.0	***705.1***	***162.1***	***669.2***	***184.3***	***637.3***	***210.0***	***609.2***	***238.2***	***603.9***	***244.3***	***583.3***	***269.2***
	9.0	727.7	163.3	690.1	186.0	657.5	211.7	628.5	240.5	623.1	246.7	594.3	269.3
	10.0	***750.9***	***164.5***	***711.8***	***187.5***	***678.0***	***213.5***	***648.0***	***242.8***	***642.4***	***249.1***	***597.0***	***266.3***
	11.0	774.4	165.7	733.9	189.0	699.0	215.3	668.0	245.1	662.3	251.5	607.4	265.6
	12.0	***798.4***	***166.9***	***756.4***	***190.5***	***720.1***	***217.4***	***688.3***	***247.6***	***682.5***	***254.1***	***612.8***	***263.5***
	13.0	822.9	168.0	779.7	191.8	742.0	219.3	708.8	250.2	702.7	256.9	618.0	261.3

Power (kW) is for compressors only, all cooling capacities are for units with ripple fin condensers and high air flow fans.
Power consumption of all fans running: YAGS 0415, 0465, 0525 = 22 kW, YAGS 0535, 0565, 0625 = 29.6 kW, YAGS 0655 = 37 kW.

PHYSICAL DATA - ALL MODELS

TABLE 8

Model YAGS				0415	0465	0525	0535
Refrigerant Charge	SC Models - Circuit 1		kg	61	61	65	76
	SC Models - Circuit 2		kg	63	61	65	76
	SB Models - Circuit 1		kg	58	58	62	72
	SB Models - Circuit 2		kg	60	58	62	72
Refrigerant Economiser	Circuit 1		kg	No	No	Yes	Yes
	Circuit 2		kg	No	No	Yes	Yes
Compressor	Type (circuit 1) -DXS			36L	36L	36L-E	36L-E
	Nominal cooling capacity		kW	250	250	250	250
	Type (circuit 2) -DXS			24L	36L	36L-E	36L-E
	Nominal cooling capacity		kW	190	250	250	250
	Capacity Control		%	20 - 100%	20 - 100%	20 - 100%	20 - 100%
Oil Charge	Per circuit		l	8	8	8	8
Evaporator	Type			C1	C1	C1	C2
	Water volume		l	207	207	207	248
Air Cooled Condenser	Total coil face area		m²	17.84	17.84	17.84	23.78
	Number of tube rows			4	4	4	3
	Number of fans (cicuit 1)			3	3	3	4
	Number of fans (cicuit 2)			3	3	3	4
Fans	Nominal speed		rpm	950	950	950	965
	Total airflow		m³/s	51.0	51.0	51.0	68.0
Dimensions (1)	Length		mm	4764	4764	4764	5983
	Width		mm	2242	2242	2242	2242
	Height		mm	2478	2478	2478	2478
Operating Weight (2)	Units with aluminium fin coils (coated)		kg	4557	4598	4698	5164
	Units with copper fin coils		kg	5127	5168	5268	5739
	Heat recovery units (aluminium fin coils)		kg	5085	5126	5226	5692
	Units with Desuperheater (aluminiun fin coils)		kg	4857	4898	4998	5464

Model YAGS				0565	0595	0625	0655
Refrigerant Charge	SC Models - Circuit 1		kg	61	65	65	76
	SC Models - Circuit 2		kg	61	61	65	76
	SB Models - Circuit 1		kg	58	62	62	72
	SB Models - Circuit 2		kg	58	58	62	72
Refrigerant Economiser	Circuit 1		kg	No	Yes	Yes	Yes
	Circuit 2		kg	No	No	Yes	Yes
Compressor	Type (circuit 1) -DXS			45L	45L-E	45L-E	45L-E
	Nominal cooling capacity		kW	280	280	280	280
	Type (circuit 2) -DXS			45L	45L	45L-E	45L-E
	Nominal cooling capacity		kW	280	280	280	280
	Capacity Control		%	20 - 100%	20 - 100%	20 - 100%	20 - 100%
Oil Charge	Per circuit		l	8	8	8	9
Evaporator	Type			C2	C2	C2	C2
	Water volume		l	248	248	248	248
Air Cooled Condenser	Total coil face area		m²	23.78	23.78	23.78	29.73
	Number of tube rows			3	3	3	3
	Number of fans (cicuit 1)			4	4	4	5
	Number of fans (cicuit 2)			4	4	4	5
Fans	Nominal speed		rpm	965	965	965	965
	Total airflow		m³/s	68.0	68.0	68.0	85.0
Dimensions (1)	Length		mm	5983	5983	5983	7202
	Width		mm	2242	2242	2242	2242
	Height		mm	2478	2478	2478	2478
Operating Weight (2)	Units with aluminium fin coils (coated)		kg	5123	5144	5164	5704
	Units with copper fin coils		kg	5698	5719	5739	6424
	Heat recovery units (aluminium fin coils)		kg	5672	5693	5713	6253
	Units with Desuperheater (aluminiun fin coils)		kg	5423	5444	5464	6004

(1) Length excludes switch disconnect or circuit breaker handles.

(2) Deduct 210 kg (models 0415, 0465, 0525) or 250 kg (models 0535, 0565, 0595, 0625, 0655) from operating weight to obtain **shipping wei** on cooling only units. Deduct 260 kg (models 0415, 0465, 0525) or 300 kg (models 0535, 0565, 0595, 0625, 0655) on heat recovery units. Deduct 240 kg (models 0415, 0465, 0525) or 280 kg (models 0535, 0565, 0595, 0625, 0655) on units with DeSuperheater.

(3) Add 150 kg (all models) to operating weight and shipping weight on units with optional aesthetic panels.

TABLE 9 ELECTRICAL DATA - R22 MODELS

	Nominal Running Amps (1)		Maximum Running Amps (2)			Start-up (3) Amps	Locked Rotor(4)	
	@ 380 V	@ 400 V	@342V	@ 380 V	@ 400 V		Star for Star/Delta	
Model	Without Power Factor Correction						Current Amps	
YAGS-SC	With Optional Power Factor Correction fitted						@ 380V	@ 400V
0415	271	267	384	349	338	402	267	283
	248	240	364	327	314	389		
0465	305	299	431	389	377	438	267	283
	281	271	409	367	351	424		
0525	331	323	421	379	367	450	267	283
	307	295	399	357	341	436		
0535	310	304	434	392	380	442	267	283
	286	276	412	370	354	428		
0565	354	344	432	390	378	464	267	283
	332	318	410	368	352	451		
0595	369	358	432	390	378	478	267	283
	347	332	410	368	352	465		
0625	384	372	432	390	378	478	267	283
	362	346	410	368	352	465		
0655	352	342	444	402	390	462	267	283
	328	316	422	380	364	449		

(1) Nominal running amps at 35°C ambient air temperature and 7°C leaving liquid temperature.
(2) Maximum running amps is the maximum current drawn by the unit.
(3) Start-up amps is the largest compressor starting with the other system operating at nominal running amps at 400 V.
(4) Locked rotor conditions are for the largest compressor.

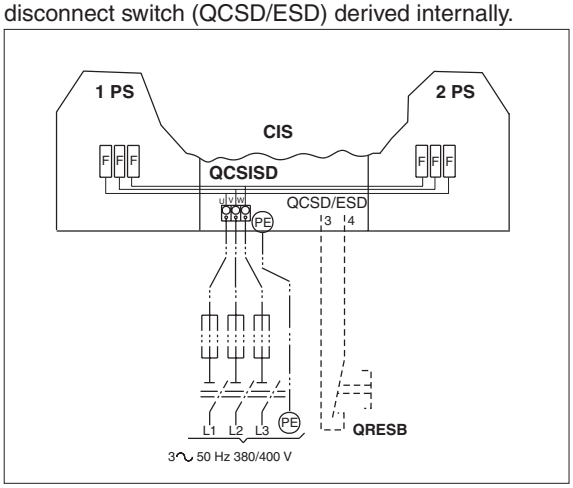
TABLE 9 ELECTRICAL DATA - R407C MODELS

	Nominal Running Amps (1)		Maximum Running Amps (2)			Start-up (3) Amps	Locked Rotor(4)	
	@ 380 V	@ 400 V	@342V	@ 380 V	@ 400 V		Star for Star/Delta	
Model	Without Power Factor Correction						Current Amps	
YAGS-SB	With Optional Power Factor Correction fitted						@ 380V	@ 400V
0415	289	285	410	375	364	411	267	283
	266	258	390	353	340	398		
0465	331	325	459	417	405	451	267	283
	307	297	437	395	379	437		
0525	363	355	459	417	405	466	267	283
	339	327	437	395	379	452		
0535	336	330	470	428	416	455	267	283
	312	302	448	406	390	441		
0565	392	382	470	428	416	481	267	283
	370	356	448	406	390	468		
0595	407	396	470	428	416	495	267	283
	385	370	448	406	390	482		
0625	422	410	470	428	416	495	267	283
	400	384	448	406	390	482		
0655	392	382	482	440	428	482	267	283
	368	356	460	418	402	469		

(1) Nominal running amps at 35°C ambient air temperature and 7°C leaving liquid temperature.
(2) Maximum running amps is the maximum current drawn by the unit.
(3) Start-up amps is the largest compressor starting with the other system operating at nominal running amps at 400 V.
(4) Locked rotor conditions are for the largest compressor.

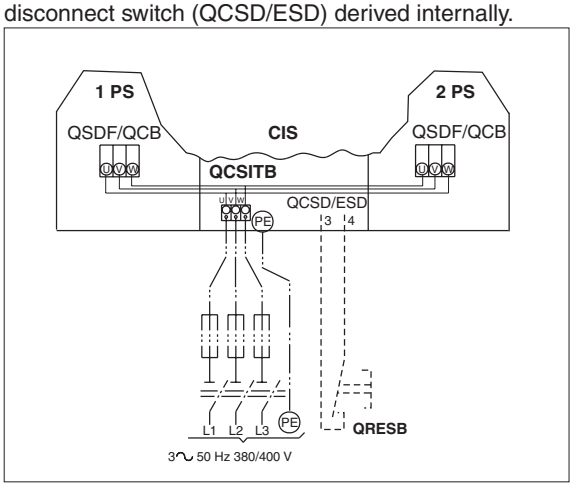
POWER SUPPLY CONNECTION DIAGRAMS (All Models)

Standard Single Point Power Supply
One supply to master non-fused disconnect switch (XCSISD) with internal power distribution to fuses, control supply to non-fused disconnect switch (QCSD/ESD) derived internally.

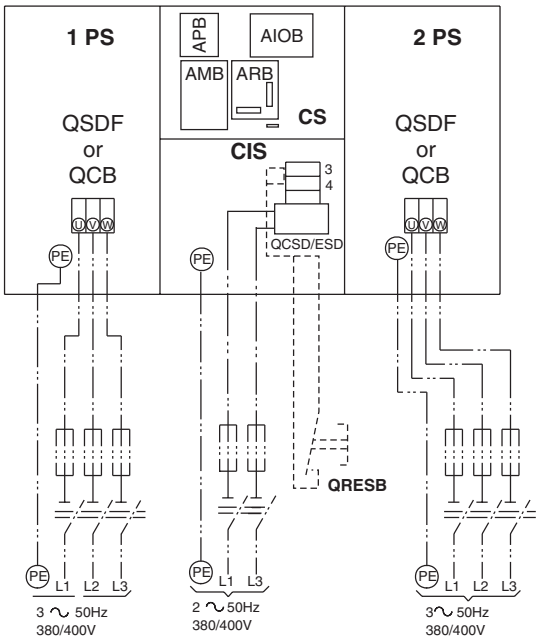


DESIGNATION	DESCRIPTION
AIOB	INPUT/OUTPUT EXPANSION BOARD
AMB	MICROPROCESSOR BOARD
APB	POWER SUPPLY BOARD
ARB	RELAY BOARD
CS	CONTROL SECTION
CIS	COMMON INPUT SECTION
F	FUSE
PE	PROTECTIVE EARTH
PS	POWER SECTION
QCSD/ESD	CONTROL CIRCUIT SWITCH DISCONNECT / EMERGENCY STOP DEVICE
QCB	CIRCUIT BREAKER
QCSISD	COMMON SUPPLY INPUT SWITCH DISCONNECT
QCSITB	COMMON SUPPLY INPUT TERMINAL BLOCK
QRESB	REMOTE EMERGENCY STOP BUTTON
QSDF	SWITCH DISCONNECT FUSED

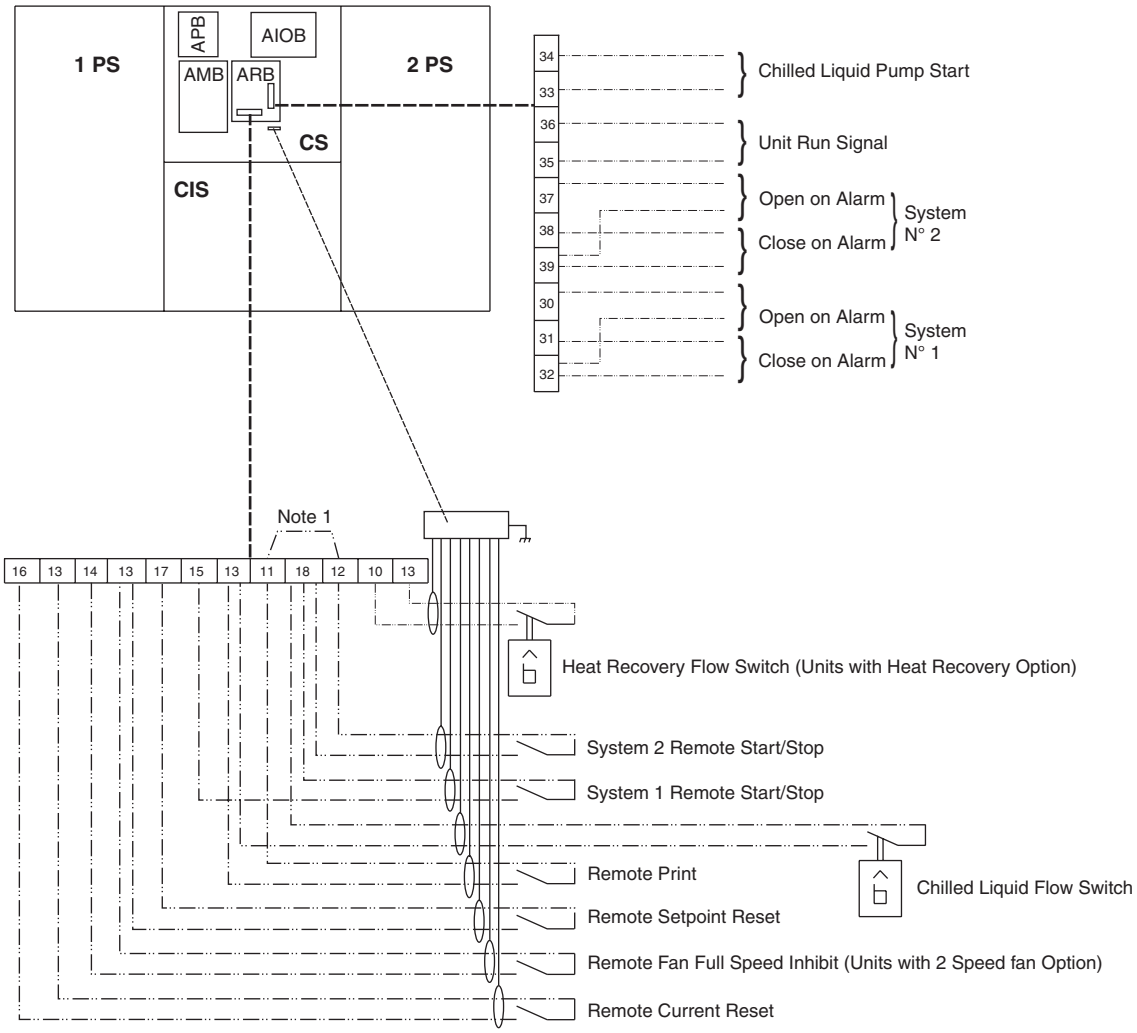
Single Point Power Supply (Option)
One supply to a common terminal block (QCSITB) with internal power distribution to fused disconnect switches (QSDF) or circuit breakers (QCB), control supply to non-fused disconnect switch (QCSD/ESD) derived internally.



Multi Point Power Supply (Option)
Two supplies to fused disconnect switches (QSDF) or circuit breakers (QCB) with separate control supply to non-fused disconnect switch (QCSD/ESD).

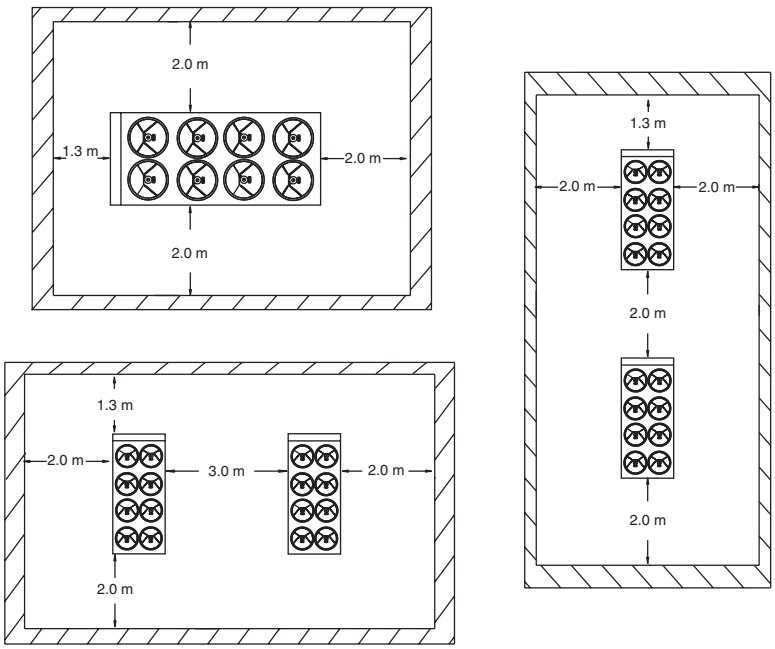


CUSTOMER CONNECTION DIAGRAM (All Models)



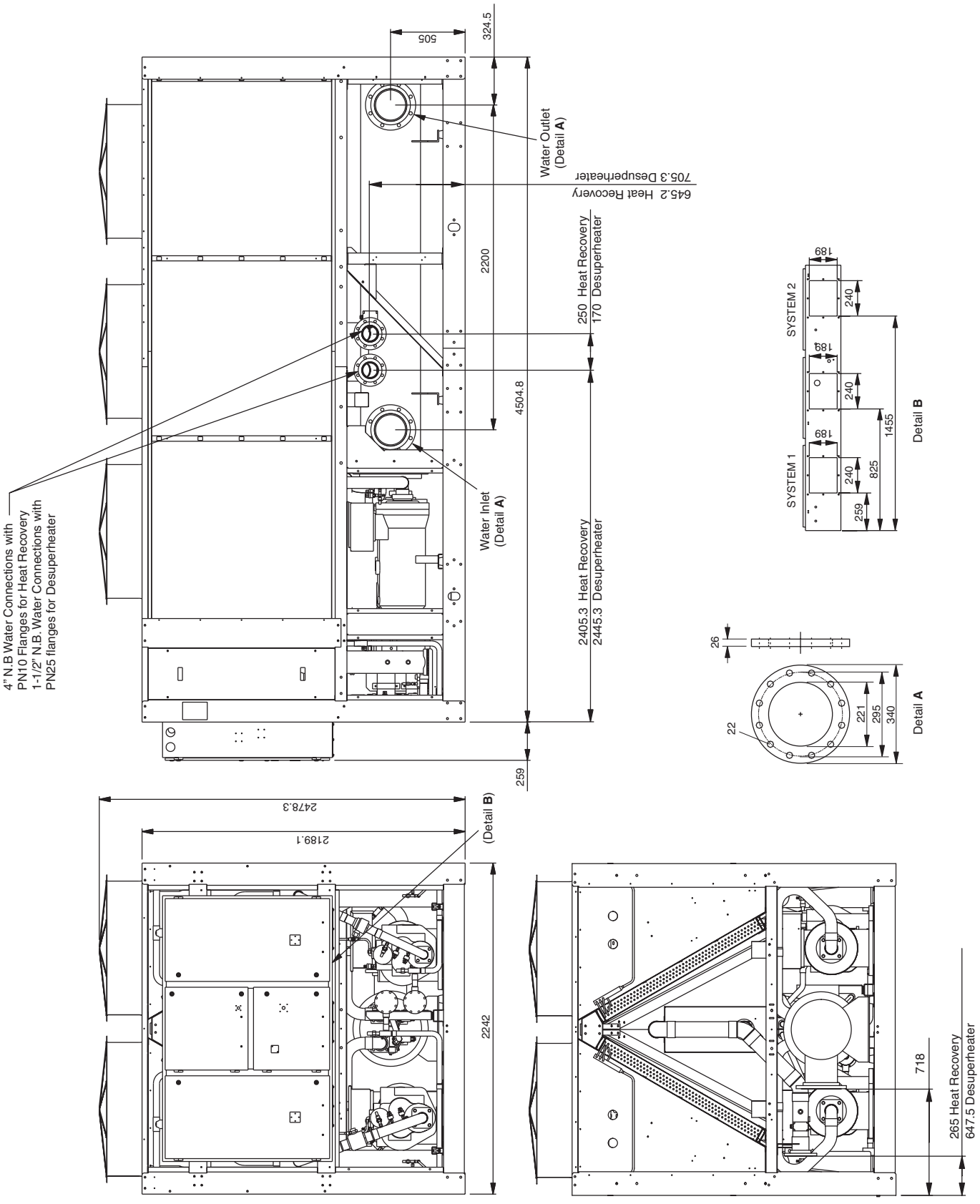
Note 1: Fit link between terminals 12 and 15 and connect a voltage free contact to terminals 15 and 18 for Remote Unit Start/Stop.

CLEARANCES (All Models)



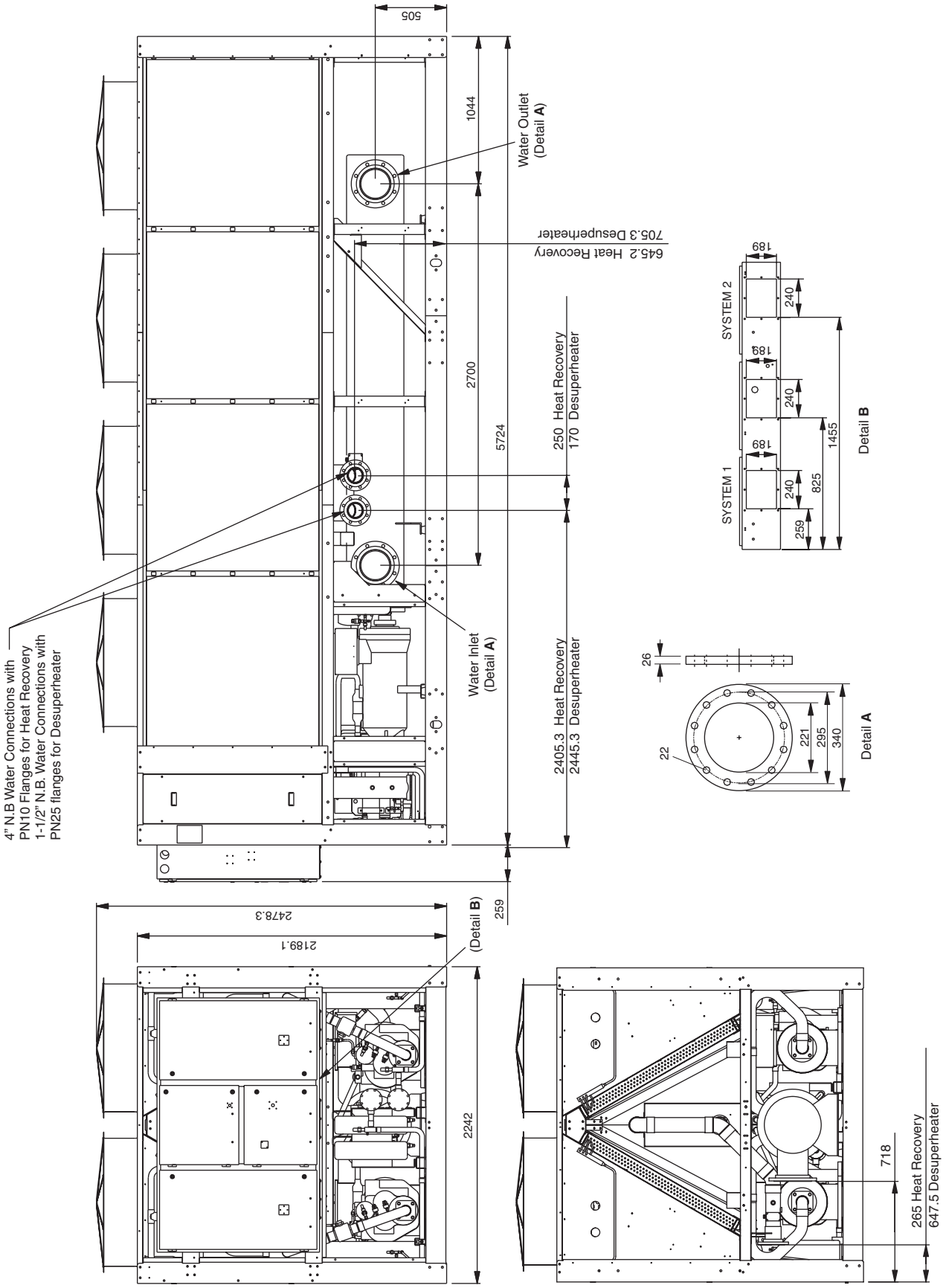
DIMENSIONS

Models YAGS0415, YAGS0465 and YAGS0525



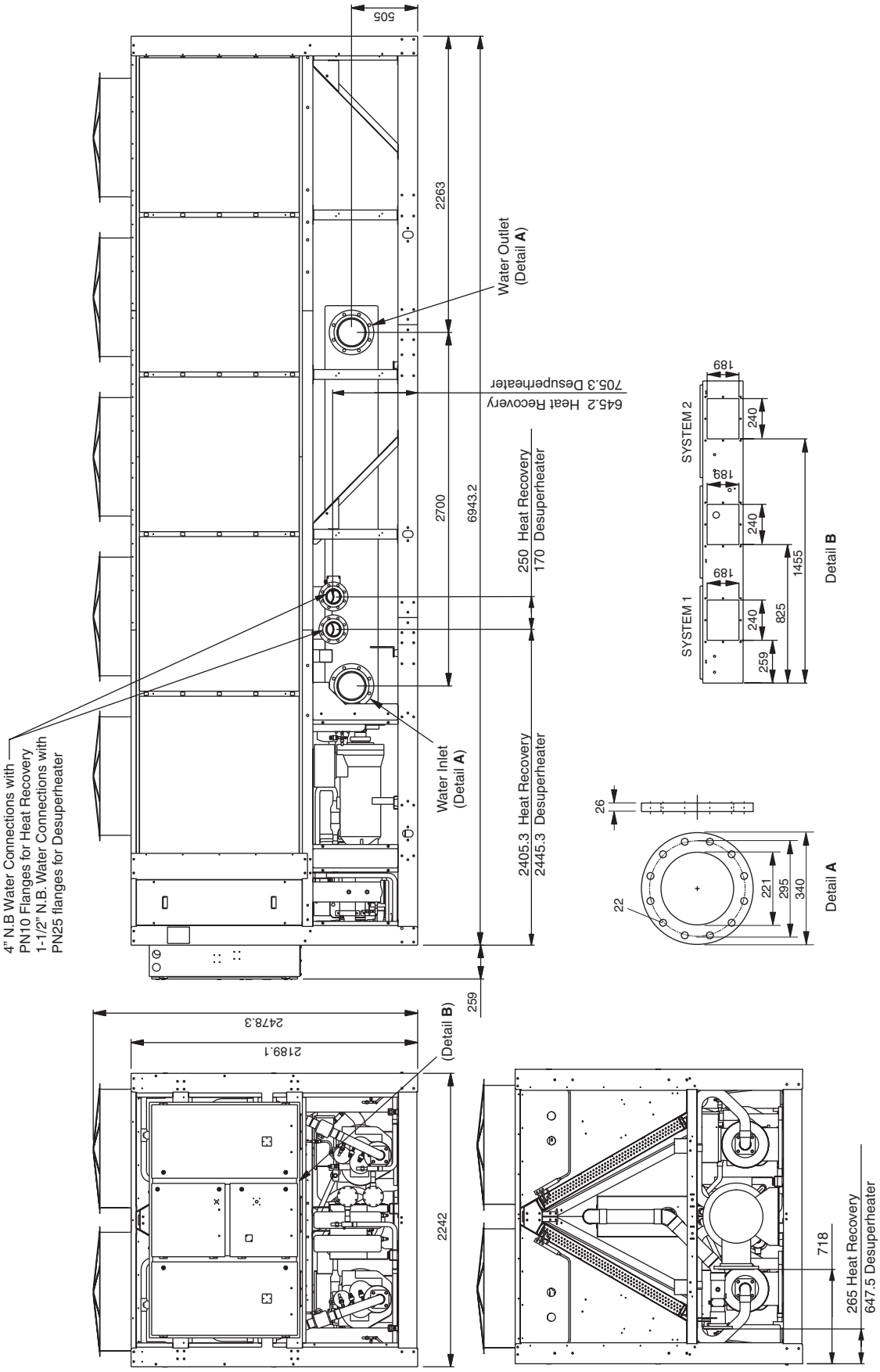
DIMENSIONS (continued)

Models YAGS0535, YAGS0565, YAGS0595 and YAGS0625



DIMENSIONS (continued)

Models YAGS0655



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