

FMCH-P SERIES, A.1

MEDIUM-SIZED CHILLER

PREMIUM SERIES, AIR COOLED CONDENSER
SINGLE OR DUAL SEMI-HERMETIC COMPRESSOR(S)

15-50 TR 

PREMIUM
SERIES



PROCESS COOLING: PLASTIC INJECTION MOLDING, MEDICAL EQUIPMENT, GLYCOL COOLING SYSTEMS & MORE

PROCESS COOLING LINE

The FMCH-P: FriconUSA Medium-Sized Chiller, Premium series, air cooled condenser, is built with the best components in the market including Bitzer semi-hermetic compressors; available in capacities from 15 to 50 TR in configurations of a single or dual parallel compressor(s). The quality, high efficiency up to 11.3 EER and excellent IPLV, according to AHRI Standard 550/590, assure our customers reliability, low operating costs and long equipment life.

The most common applications are for oil cooling systems in plastic processes such as injection molding, extrusion and blow molding, laser cutting, medical equipment, chemical processing, beverage industry, glycol cooling systems, industrial laundry and for demanding air conditioning such as data centers.

By using Bitzer Ecoline semi-hermetic compressors with infinite variable capacity control "CR11" between 10% and 100% or the implementation of an external VFD (Variable Frequency Drive) or "Varispeed Compressor" on the first compressor, we convert this unit into an incredible VRF (Variable Refrigerant Flow) system resulting in a greater adaptability to the thermal load, stabilizing the fluid temperature and maximizes energy savings at partial load.

Standard ambient operating temperature range: +110°F (+43.3°C) to +40°F (4.4°C)
Extended ambient operating temperature range: +125°F (+51.7°C) to -35°F (-37.2°C)*
**See optional packages.*

Application / Leaving Fluid Temperature Range:

H: High/Medium: +55°F (+12.8°C) to +15°F (-9.4°C)

M: Medium/Low: +40°F (+4.6°C) to -17°F (-27.4°C)

STANDARD FEATURES & BENEFITS:

- Bitzer semi-hermetic compressor(s) with unloader and with spring mounted vibration insulation, crankcase heater and internal thermal protection.
- Step unloader(s) on each compressor (4 cylinders: 50-100%, 6 cylinders: 33-66-100%).
- Aluminum structure with galvanized steel reinforcement, high efficiency condenser with reinforced structure and aluminum micro-channel coils. Its low weight and size reduces the costs of transportation, installation and construction.
- Galvanized, powder coated, acoustically semi-insulated and weatherproof semi-enclosed compressor cabin.
- EcoFriendly; Air cooled micro-channel condenser coil with internal volume reduced requires between 40% and 60% less refrigerant charge and results in a significant reduction of the refrigerant charge necessary for normal or flooded operations.
- Wide range of applications at different working ambient temperatures.
- Quiet, high efficiency, external rotor motor, two speed, AC type axial fans for a better operation.
- Built-in, Direct Expansion (DX) brazed plate Evaporator, one circuit with reduced internal volume requires less refrigerant charge.
- Electronic expansion valve, liquid sight glass and solenoid valve.
- Mechanical flow switch.
- Liquid drier with replaceable core and inlet/outlet ball valve.

STANDARD FEATURES & BENEFITS (CONT.):

- Flexible joint on suction and discharge lines on each compressor.
- Helical oil separator with oil reservoir, discharge check valve and replaceable 5 micron oil filter for units with dual compressors.
- Refrigerant: R-407c for High Temperature application or R-407a for Medium Temperature application.
- Factory pre-charged and individually tested.
- UL 508A listed built-in electrical control panel.
- Compressor and fan circuit breakers.
- Voltage and phase-loss monitor with protection module for each compressor.
- Control: 208-230V / 1PH / 60HZ
- Power supply voltage 460V / 3PH / 60HZ with single point power connection.
- Electronic Control System; compressor(s) and condenser fan operational management: alarms, measurement of pressure and temperature variables, 132x64 LCD backlit built-in display with 6-button keypad. Alarm management: 3 alarms for compressor(s) (overload, pressure and oil) and 1 overload alarm for condenser fans.
- Fixed high pressure controls on each compressor.
- BMS (Building Management System): ModBus protocol for supervisor or HMI (Human Machine Interface).
- 2-year warranty.

STANDARD OPTIONS:

- Different compressor brand.
- Condenser coil with E-Coating for greater resistance to corrosion.
- Protective mesh for the condenser.
- EC type fans with variable speed (for 575V a VFD is used).
- Evaporator option:
 - Remote evaporator
- Built-In, insulated Hydronic Package with TEFC type motors:
 - Recirculation pump
 - Recirculation pump with VFD
 - Recirculation pump & polyethylene buffer tank
 - Recirculation pump with VFD & polyethylene buffer tank
 - Stainless steel recirculation pump
 - Stainless steel recirculation pump with VFD
 - Stainless steel recirculation pump & polyethylene buffer tank
 - Stainless steel recirculation pump with VFD & polyethylene buffer tank
 - Recirculation pump & stainless steel closed buffer tank with additional expansion tank
 - Recirculation pump w/VFD & stainless steel closed buffer tank with additional expansion tank
 - Stainless steel recirculation pump & stainless steel closed buffer tank with additional expansion tank
 - Stainless steel recirculation pump w/VFD stainless steel closed buffer tank with additional expansion tank

Note: stainless steel for potable water.
- Refrigerants: R-404a, R-407a, R-407c, R-448a, R-449a, R-507a
- Different power supply voltage.

ADDITIONAL OPTIONS:

- VRF (Variable Refrigerant Flow) package to maximize the efficiency and capacity adaptability to the demand:
 - VRF-I: CRIL Unloader. Infinite capacity control on the first compressor (4 cylinders: 10≈100%, 6 cylinders: 33≈100%).
 - VRF-II*: VFD (Variable Frequency Drive). Infinite capacity control on the lead compressor in each circuit (42~116%).
 - VRF-III: Bitzer Varispeed Compressor. Infinite capacity control on the first compressor (25~145%). Available for certain models only.

**Certain limitations apply.*
- FECC (Fully Enclosed Compressor Cabin) package for better soundproofing:
 - FECC-I: Fully enclosed metal compressor cabin.
 - FECC-II: Same as FECC-I with internal convoluted acoustic foam panel lining.
- Refrigerant and oil evacuated for non-hazardous shipping.
- LAOP (Low Ambient Operation Package) required for operation below +40°F:
 - LAOP-I: +110°F (+43.3°C) to +10°F (-12.2°C), Includes: split condenser with variable speed fan on the first fan and electrical antifreeze heater on the evaporator.
 - LAOP-II: +110°F (+43.3°C) to -20°F (-28.9°C), Includes: same as LAOP-I plus liquid receiver and flooded condenser with head pressure control valve.
 - LAOP-III*: +110°F (+43.3°C) to -35°F (-37.2°C), Includes: same as LAOP-II plus insulated liquid receiver with electric heater and thermally insulated compressor cabin and control panel with ventilated heating.

**Requires FECC-II (Fully Enclosed Compressor Cabin) package.*
- HAOP (High Ambient Operation Package) required for operation above +110°F:
 - HAOP-I: +125°F (+51.7°C) to +40°F (4.4°C), Includes: air exhaust duct to the condenser plenum for cooling of the control panel and filter for the air inlet.
- Suction pressure regulator valve "EPR" required for applications with a water temperature range below +40°F (+4.4°C) or when a greater precision in the fluid temperature is necessary.
- Suction accumulator.
- Helical oil separator, discharge check valve and replaceable 5 micron oil filter for units with single compressor.
- MDS (Main Disconnect Switch)
- Electronic Control System:
 - BACnet Communication board.
 - Remote LCD display.
 - Local or remote touch screen display.
 - Energy Management Module.
 - CHSM (Chiller System Manager) controls the sequence between various units.
- Extended 5-year compressor warranty (U.S. only).



Single Compressor



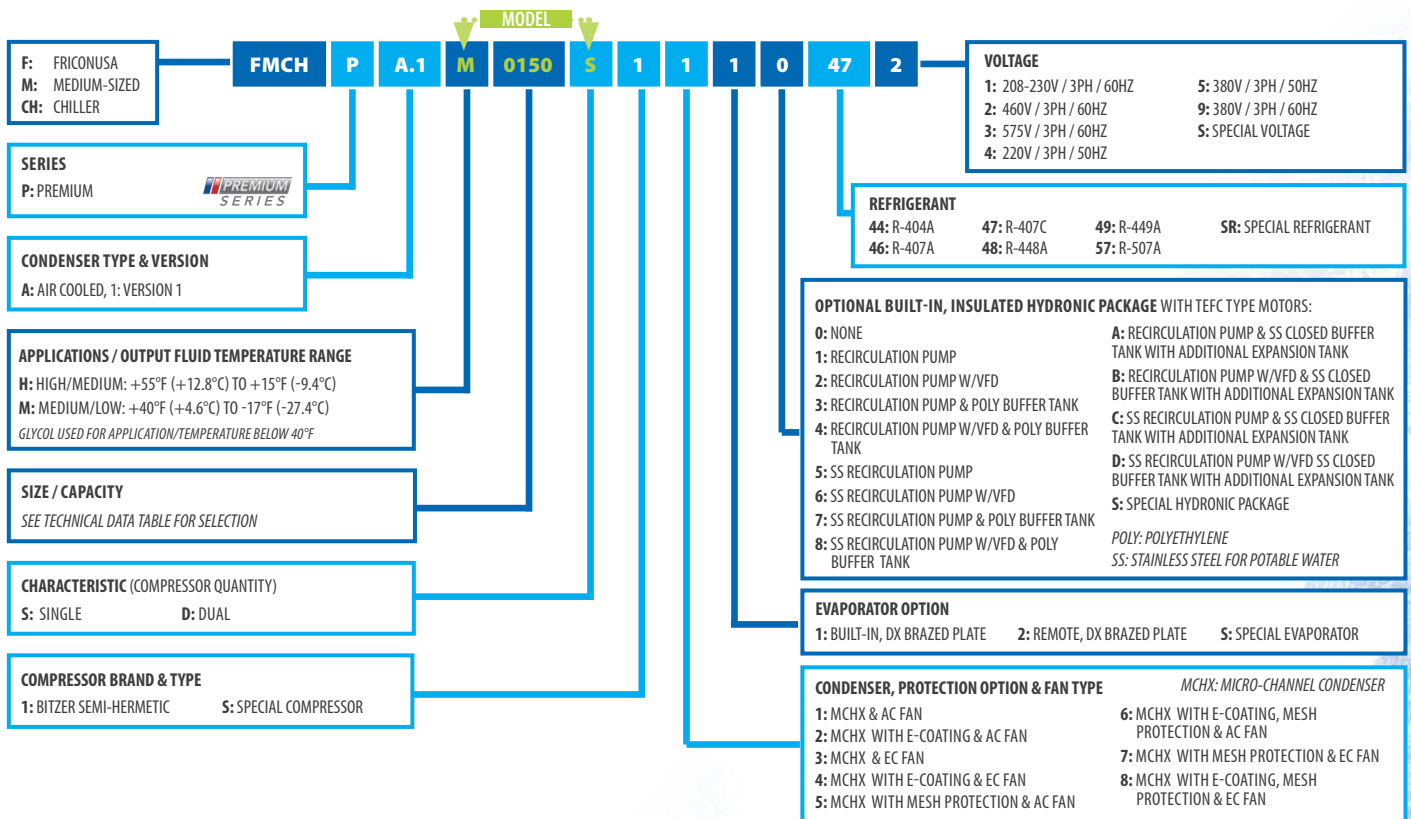
Dual Compressors

- 1. Compressor(s)
- 2. Micro-channel condenser
- 3. Fans
- 4. Brazed plate evaporator
- 5. Liquid drier
- 6. Electronic expansion valve
- 7. Fluid inlet/outlet
- 8. Electrical control panel
- 9. Electronic Control System
- 10. Access doors
- 11. Protective mesh (optional)
- 12. Recirculation pump & buffer tank (hydraulic package, optional)



SUBJECT TO CHANGE ACCORDING TO ACCESSORIES/OPTIONS. PLEASE CONSULT THE FACTORY FOR SPECIFIC INFORMATION.

NOMENCLATURE



CAPACITY CORRECTION FACTORS

Ambient Temperature in °F	60	65	70	75	80	85	90	95	100	105	110	115	120	125
Capacity Factor R-404A & R-507A	1.32	1.28	1.23	1.19	1.15	1.10	1.05	1.00	0.95	0.90	0.85	0.81	0.76	0.72
Capacity Factor R-407A & R-407C	1.29	1.25	1.21	1.17	1.12	1.08	1.04	1.00	0.97	0.92	0.87	0.83	0.79	0.75

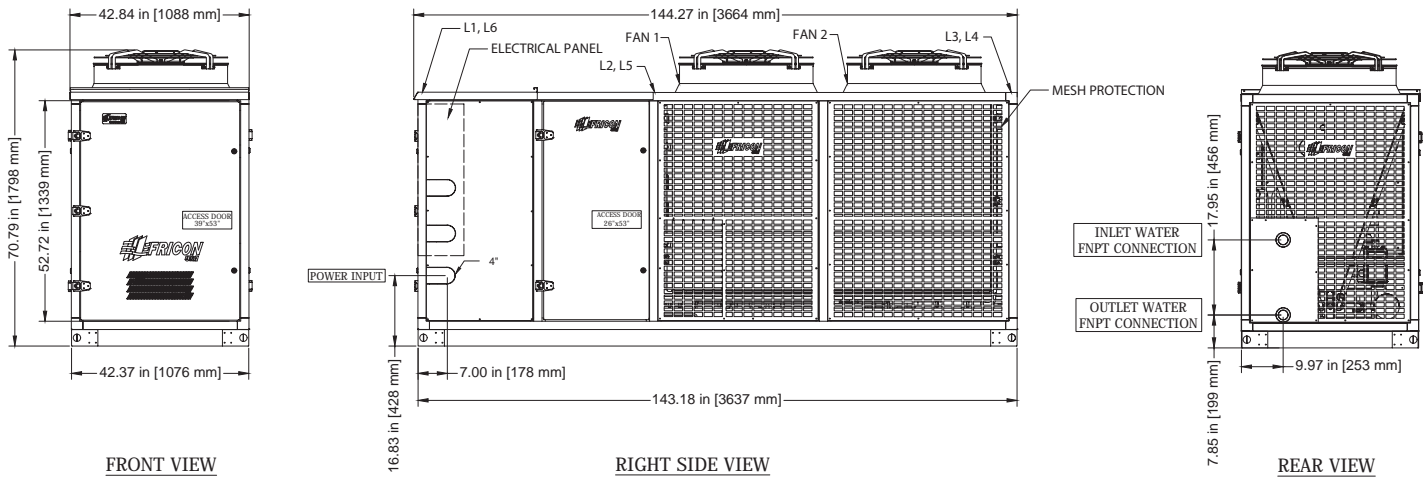
HAOP (High Ambient Operation Package) required for operation above +110°F

‡ Multiply capacity by .83 when used with 50 Hz power.

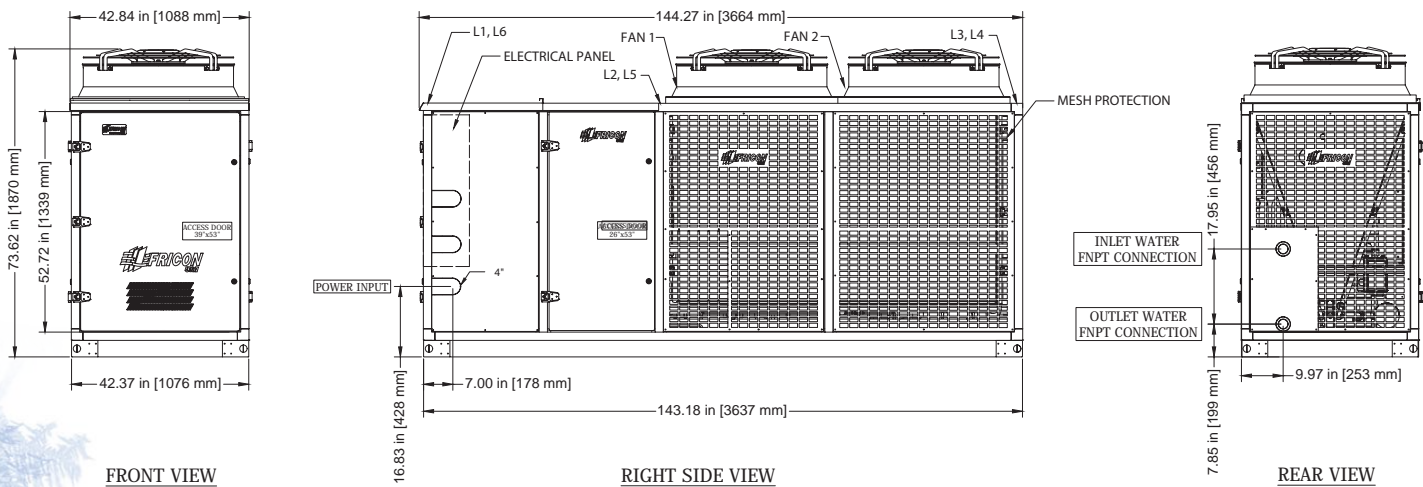
All capacities are calculated at 20°F return gas temperature and dew point values

FRAME TYPE / DRAWING REFERENCE

A) Single semi-hermetic compressor, 800mm AC type fans



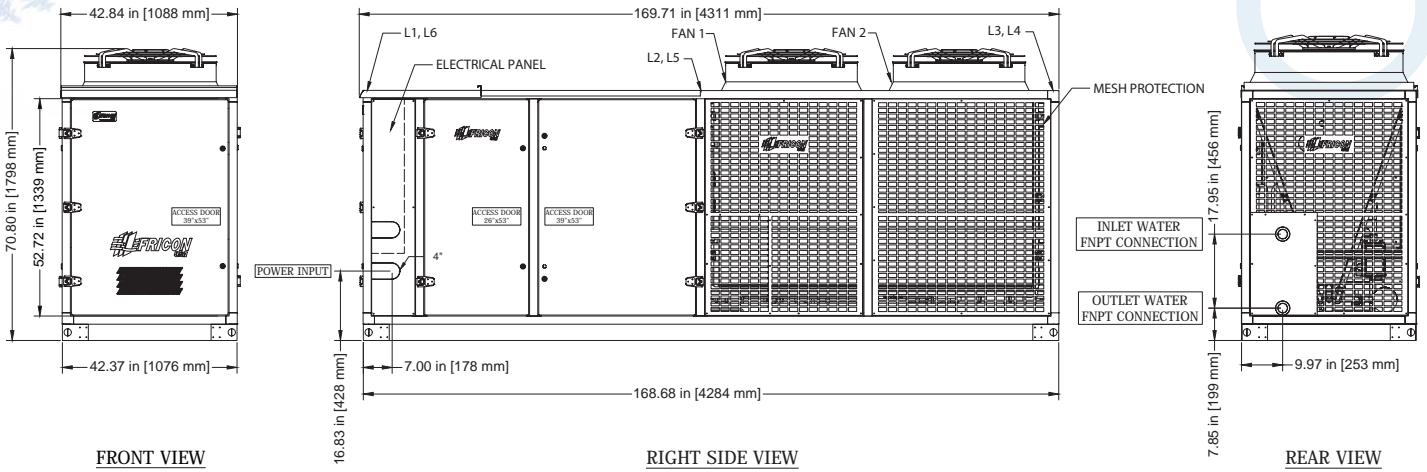
B) Single semi-hermetic compressor, 900mm EC type fans



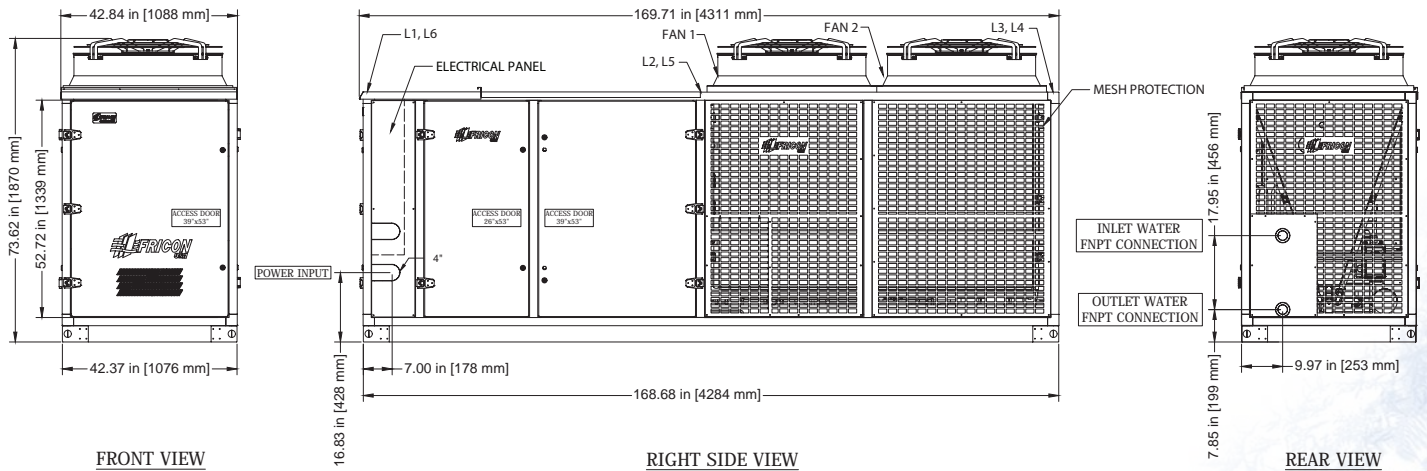
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FRAME TYPE / DRAWINGS REFERENCE

C) Single or dual semi-hermetic compressor(s), 800mm AC type fans with hydronic package

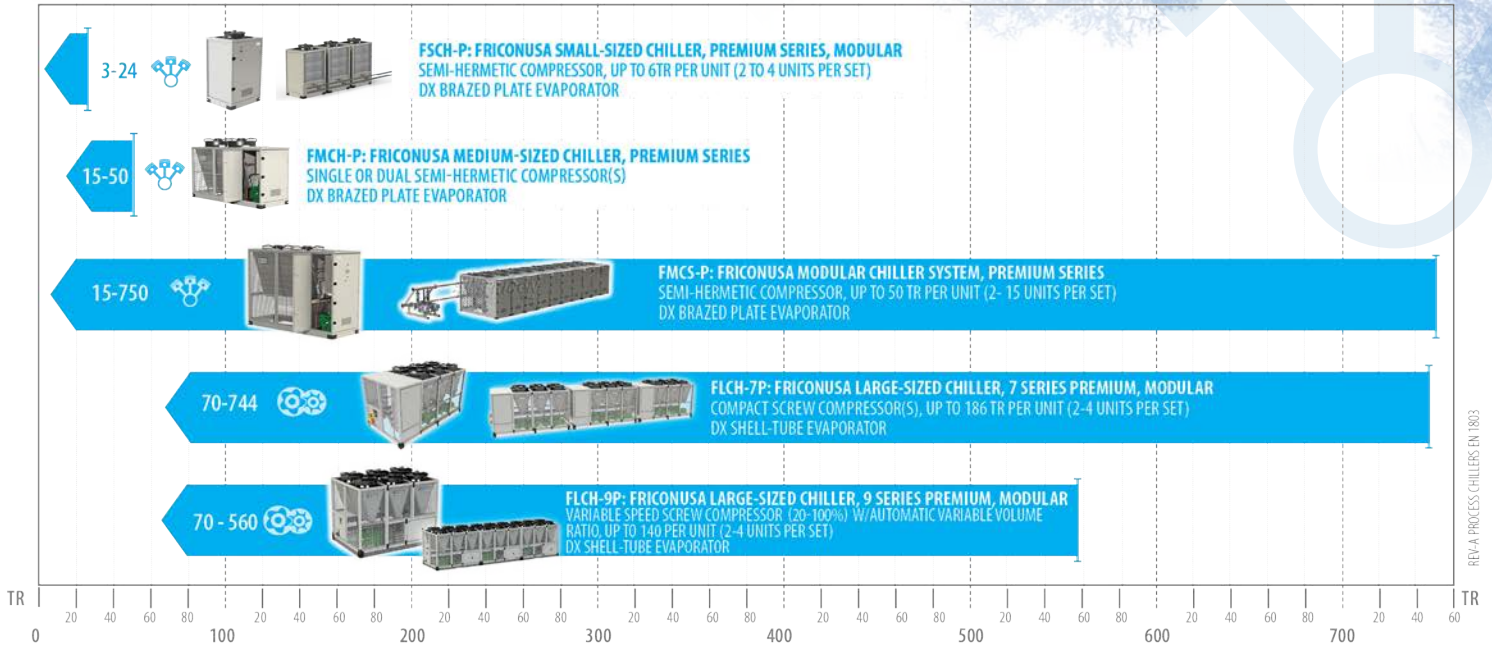


D) Single or dual semi-hermetic compressor(s), 900mm EC type fans with hydronic package



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FRICONUSA AIR COOLED CHILLERS FOR PROCESSES



REV-A PROCESS CHILLERS EN 1803