

**FRIGO SCREW K:** Packaged water cooled liquid chillers for indoor installation, equipped with screw compressor and plate heat exchangers  
Cooling Capacity: 186 ÷ 656 kW



## FRIGO SCREW K

rcgroupairconditioning



### MAIN FEATURES

- Water cooled liquid chiller.
- 13 models available, for a wide selection opportunity.
- Average step of 35kW.
- EER up to 4,76.
- ESEER up to 5,53.
- Single screw compressor.
- R134a Refrigerant charge.
- Electronic expansion valve.
- Plate type heat exchangers.
- Suitable for indoor installation.

### MAIN BENEFITS

- High ESEER.
- Availability of kit for the reduction of the noise.
- Reduced footprint.
- Easily of maintenance.
- Eurovent Certification.

### HEAVY DUTY APPLICATIONS

The machines are particularly suitable for installation in marine applications.

### INDOOR INSTALLATION

The machines are designed for indoor installation.

### ELECTRONIC EXPANSION VALVE

The electronic expansion valves are synonymous of an higher energy efficiency and stability of the system.

### WORKING LIMITS IN COOLING MODE

Evaporator chilled water outlet temperature: -10÷15°C

Condenser outlet water temperature: 19÷63°C

## COMPONENTS

### FRAMEWORK

- Base and self supporting frame in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Colour: RAL 9002

### COMPRESSOR

- Twin screw semi-hermetic compressor with highly efficient screw profile and high peripheral speed, optimized for R134a refrigerant.
- Integrated discharge check valve.
- Flanged-on oil separator.
- Integrated overpressure valve.
- Replaceable cartridge type oil filter.
- Oil flow switch.
- Valves for oil filling and discharge.
- Sight glass
- Electronic protection device that includes:
  - Electric motor thermal protection via internal winding temperature sensors.
  - Phase sequence electronic relay
  - Sensor on refrigerant discharge for temperature monitoring,
- 2-pole 3-phase electric motor with Part-Winding starting from model 190 V1 up to model 270 V1 included.
- 2-pole 3-phase electric motor with Star / Delta starting for all other machines.
- Stepless capacity control, 50÷100% for each compressor.
- Crankcase heater.
- Terminal box with IP54 enclosure class.
- Rubber supports.

### EVAPORATOR

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel.
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- From model 360 V1 up to model 660 V1 the unit is equipped with two evaporators. The parallel of the hydraulic circuit is at Customer care.
- Threaded hydraulic connections or with grooved end arranged for flexible joint (the flexible joint and the adapter pipe are optional accessories).

### CONDENSER

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel.
- Anticondensate insulation made of polyurethane.
- From model 360 V1 up to model 660 V1 the unit is equipped with two condensers. The parallel of the hydraulic circuit is at Customer care.
- Threaded hydraulic connections or with grooved end arranged for flexible joint (the flexible joint and the adapter pipe are optional accessories).

### REFRIGERANT CIRCUIT

- Electronic expansion valve that allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure.
- Sight glass.
- Filter dryer on liquid line.
- Service valves on liquid line.
- Service valves on gas discharge.
- Safety valve on low pressure side.
- Safety valve on high pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Plastic capillary hoses for pressure sensors connection.
- R134a refrigerant charge.

### ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety.
- Fuses for compressor.
- Contactors for compressor (2 contactors for Part-Winding start system – 3 contactors for Star / Delta start system).
- Compressor Part-Winding start system from model 190 V1 up to model 270 V1 included.
- Compressor Star / Delta start system for all other machines.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply: 400/3/50.

### CONTROL SYSTEM

- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
  - Voltage free contact for remote general alarm.
  - Main components hour-meter.
  - Integrated "Data logger" function for the recording of events and alarms.
  - Nonvolatile "Flash" memory for data storage.
  - Menu with protection password.

### HYDRAULIC CONNECTIONS OF HEAT EXCHANGERS

- Heat exchangers threaded hydraulic connections ISO 228/1 – G M, available up to a diameter of 3" included.
- Pipes threaded hydraulic connections ISO 7/1 – R, available up to a diameter of 3" included.
- The hydraulic connections with flange (FL) are not supplied with counter flange.
- The hydraulic connections with grooved end are not supplied with flexible joint (optional accessory).

## OPTIONAL ACCESSORIES

FRIGO SCREW K	190 V1	210 V1	240 V1	250 V1	270 V1	310 V1	360 V1	410 V1	470 V1	500 V1	530 V1	580 V1	660 V1
171 - Rubber antivibration holders (kit)	•	•	•	•	•	•	•	•	•	•	•	•	•
118 - Kit brine A	-	-	-	-	-	-	-	-	-	•	•	•	•
119 - Kit brine B	•	•	•	•	•	•	•	•	•	•	•	•	•
Evaporator flexible joint with adapter pipe (solder type)	•	•	•	•	•	•	•	•	•	•	•	•	•
Evaporator flexible joint with adapter for flange connection	•	•	•	•	•	•	•	•	•	•	•	•	•
Condenser flexible joint with adapter pipe (solder type)	•	•	•	•	•	•	•	•	•	•	•	•	•
Condenser flexible joint with adapter for flange connection	•	•	•	•	•	•	•	•	•	•	•	•	•
731 - Safety water flow switch	•	•	•	•	•	•	•	•	•	•	•	•	•
650 - Compressor thermal relay	•	•	•	•	•	•	•	•	•	•	•	•	•
605 - Compr. power factor capacitor - 0,9	•	•	•	•	•	•	•	•	•	•	•	•	•
550 - Stop valve on compressor suction line	•	•	•	•	•	•	•	•	•	•	•	•	•
610 - Noise deadening cup on compressor	•	•	•	•	•	•	•	•	•	•	•	•	•
919 - Clock card	•	•	•	•	•	•	•	•	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•	•	•	•	•	•	•	•	•
926 - LON Serial board	•	•	•	•	•	•	•	•	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•	•	•	•	•	•	•	•	•
942 - Serial card for GSM Modem	•	•	•	•	•	•	•	•	•	•	•	•	•
943 - Data Logger	•	•	•	•	•	•	•	•	•	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•	•	•	•	•	•	•	•	•
962 - Kit modem GSM	•	•	•	•	•	•	•	•	•	•	•	•	•
957 - Plantwatch without modem	•	•	•	•	•	•	•	•	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•	•	•	•	•	•	•	•	•

• available accessory; - not available accessory

## TECHNICAL DATA FRIGO SCREW K

FRIGO SCREW K		190 V1	210 V1	240 V1	250 V1	270 V1	310 V1	360 V1	410 V1	
STANDARD	Cooling capacity (1)	kW	186	207	231	249	263	307	354	411
	Unit power input	kW	39,2	43,5	48,7	52,3	55,7	65,0	74,8	86,9
	Evaporator water flow rate	m³/h	31,9	35,6	39,7	42,8	45,2	52,6	60,7	70,5
	Evaporator pressure drop	kPa	18	22	20	18	27	31	32	33
	Condenser water flow rate	m³/h	38,9	43,3	48,4	52,1	55,1	63,0	73,9	84,0
	Condenser pressure drop	kPa	6	5	5	5	7	7	8	8
	Compressors		twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw	twin-screw
	Quantity	n.	1	1	1	1	1	1	1	1
	Capacity control	%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	15	16	17	17	15	16	37	42
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	102,5	117,8	134,8	144,1	165,2	183,4	207,0	237,1
	Unit starting current (LRA)	A	280	351	495	495	646	361	361	374
	EER (1)	kW/kW	4,75	4,76	4,74	4,76	4,72	4,72	4,73	4,73
	ESEER		5,33	5,32	5,32	5,36	5,36	5,33	5,35	5,36
	Sound power level [Lw] (2)	dB(A)	88,1	89,1	93,1	93,1	93,1	96,1	97,4	97,4
	Average sound pressure level [Lpm] (3)	dB(A)	71,0	72,0	76,0	76,0	76,0	79,0	80,0	80,0
	Net weight	kg	1399	1423	1465	1476	1689	1733	1750	2117
OPT	Hydraulic connections									
	Evaporator / Condenser IN/OUT - OD (4)	Ø mm	88,9	88,9	88,9	88,9	88,9	88,9	2x88,9	2x88,9
	Compressor soundproof box									
	Sound power level [Lw] (2)	dB(A)	85,1	86,1	90,1	90,1	90,1	93,1	94,4	94,4
	Average sound pressure level [Lpm] (3)	dB(A)	68,0	69,0	73,0	73,0	73,0	76,0	77,0	77,0

1. Referred to chilled water temperature 12/7°C and condenser water temperature 30/35°C according to Eurovent standard

2. Sound power level [Lw] according to ISO EN 9614 - 2

3. Average sound pressure level [Lp<sub>m</sub>] 1m far according to ISO EN 3744.

4. Hydraulic connection with grooved end. The flexible joint is an optional accessory.

# TECHNICAL DATA FRIGO SCREW K

FRIGO SCREW K		470 V1	500 V1	530 V1	580 V1	660 V1	
STANDARD	Cooling capacity (1)	kW	464	492	526	580	656
	Unit power input	kW	98,7	106,0	111,2	123,1	139,0
	Evaporator water flow rate	m³/h	79,6	84,4	90,3	99,5	113,0
	Evaporator pressure drop	kPa	35	32	31	28	19
	Condenser water flow rate	m³/h	95,0	103,0	110,0	121,0	137,0
	Condenser pressure drop	kPa	10	11	11	9	9
	Compressors		twin-screw	twin-screw	twin-screw	twin-screw	twin-screw
	Quantity	n.	1	1	1	1	1
	Capacity control	%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%	50 ... 100%
	Refrigerant		R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	48	53	58	64	69
	Gas circuits	n.	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	267,9	283,7	307,7	354,8	398,8
	Unit starting current (LRA)	A	453	543	595	703	783
	EER (1)	kW/kW	4,70	4,64	4,73	4,71	4,72
	ESEER		5,36	5,35	5,43	5,45	5,53
	Sound power level [Lw] (2)	dB(A)	96,4	98,4	98,4	99,6	99,6
	Average sound pressure level [Lpm] (3)	dB(A)	79,0	81,0	81,0	82,0	82,0
	Net weight	kg	2151	2177	2233	2616	2663
Hydraulic connections							
Evaporator / Condenser IN/OUT - OD (4)	Ø mm	2x88,9	2x88,9	2x88,9	2x88,9	2x88,9	
OPT	Compressor soundproof box						
	Sound power level [Lw] (2)	dB(A)	93,4	95,4	95,4	96,6	96,6
	Average sound pressure level [Lpm] (3)	dB(A)	76,0	78,0	78,0	79,0	79,0

1. Referred to chilled water temperature 12/7°C and condenser water temperature 30/35°C according to Eurovent standard
2. Sound power level [Lw] according to ISO EN 9614 - 2
3. Average sound pressure level [Lp<sub>m</sub>] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end. The flexible joint is an optional accessory.

## DIMENSIONS (mm)

### FRIGO SCREW K

	a	b	c
190 V1	2500	600	1790
210 V1	2500	600	1790
240 V1	2500	600	1790
250 V1	2500	600	1790
270 V1	2500	600	1790
310 V1	2500	600	1790
360 V1	2800	700	1790
410 V1	2800	700	1790
470 V1	2800	700	1790
500 V1	2800	700	1790
530 V1	2800	700	1790
580 V1	3100	700	1790
660 V1	3100	700	1790

