

**HITACHI**  
Inspire the Next

# High Efficiency Inverter Controlled Centrifugal Chiller



**GXG-SIT/GSG-SIT Series**

1055 ~ 3516kW  
(300 ~ 1000USRT)

**HFC134a**





# Hitachi High Efficiency Inverter Controlled Centrifugal Chiller

## GXG-SIT / GSG-SIT Series

Hitachi inverter centrifugal chillers GXG-SIT/GSG-SIT Series realize energy-saving operation throughout the year utilizing variable motor speed control with inverter unit, drastically improving partial load efficiency under low cooling water temperature condition in off-peak seasons.

In addition, GXG-SIT/GSG-SIT have many excellent features such as compact design and high reliability, etc., and it is also possible to improve efficiency with flexible combination of compressors and heat exchangers.

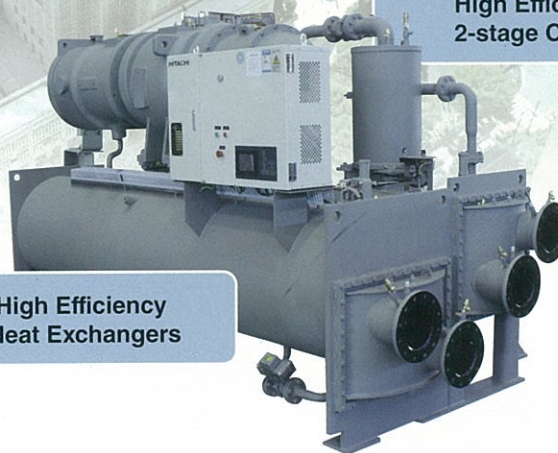
Excellent Efficiency throughout the Year



High Efficiency 2-stage Compressor

Max. Partial Load COP <sup>†</sup>  
**21.4**

High Efficiency Heat Exchangers

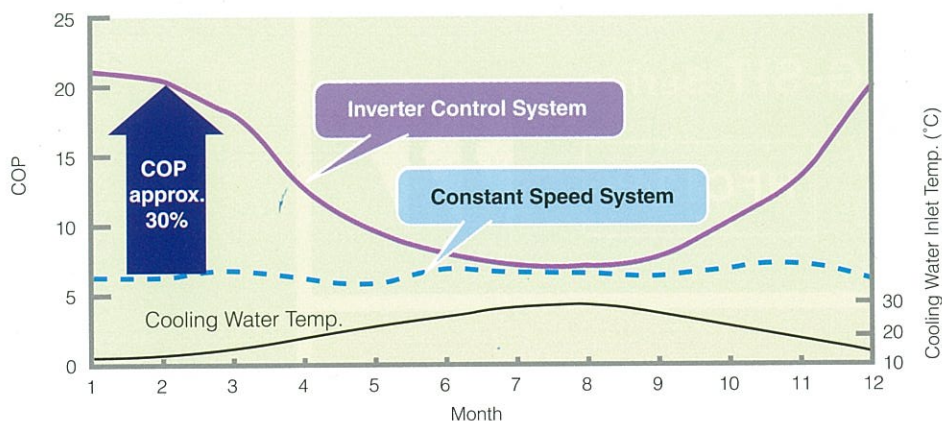


### COP during winter season is improved to maximum 330%.

GXG-SIT/GSG-SIT Series can be operated stably even in the very low cooling water temperature. In accordance with the cooling water temperature by seasons, the chillers can

maintain highly efficient operation with variable speed control of compressor. Therefore, the chillers are recommended for the customers who need the cooling operation throughout the year.

#### ● COP Characteristics throughout the year

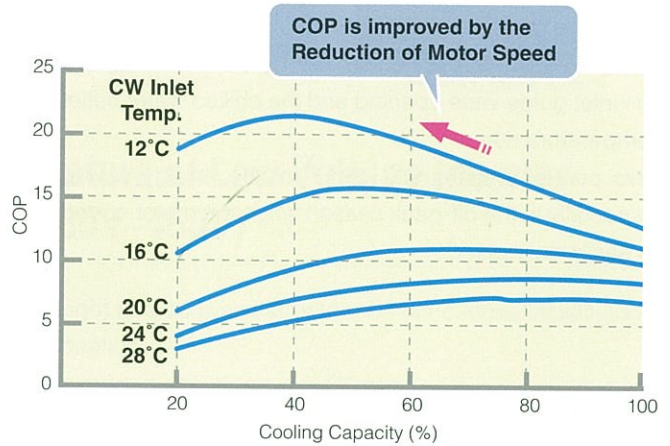
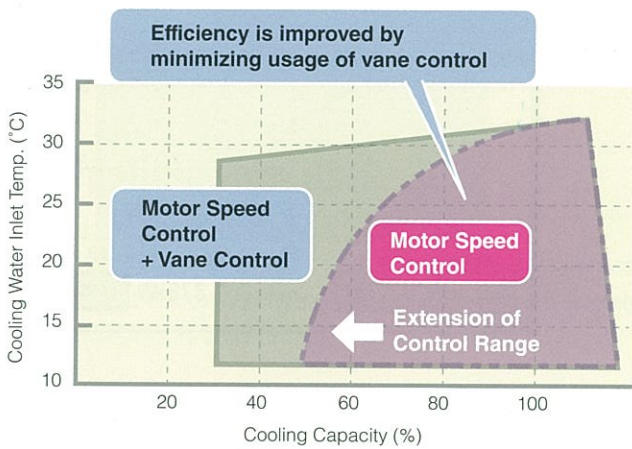
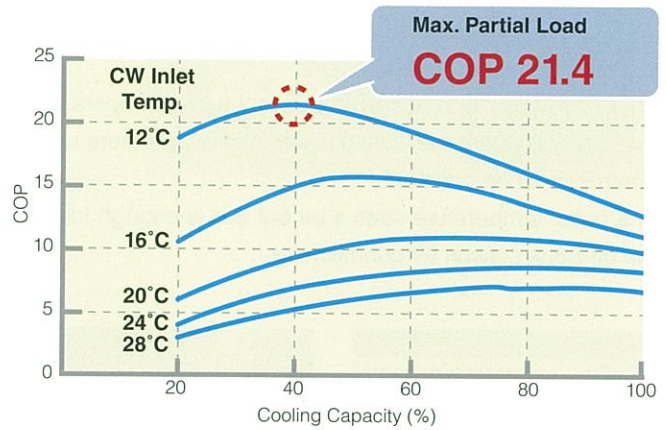




## Excellent COP at Partial Load

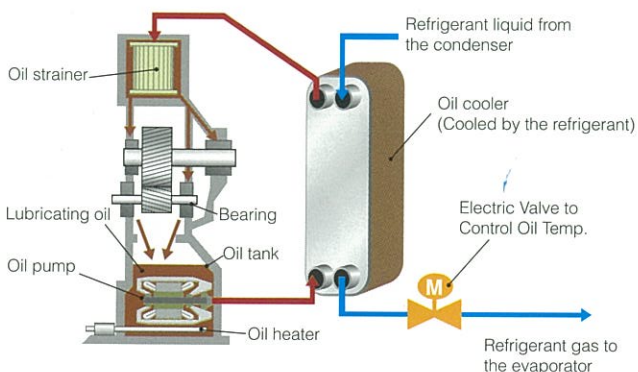
Various technologies such as newly developed high efficiency economizer (cyclonic system), etc. enabled drastic improvement of the efficiency at partial load with low cooling water temperature.

Improvement of the oil supply temperature control and the automatic oil recovery enables extension of the motor speed control range at low cooling water inlet temperature.



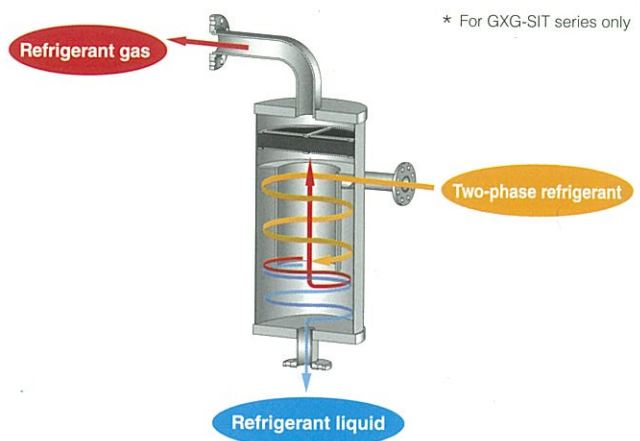
## Improvement of the Oil Supply Temperature Control

When the compressor rotation speed is low, the friction heat generated at bearings decreases. Therefore, refrigerant flow to oil cooler is controlled to keep the oil temperature property.



## Newly Developed Economizer

Improvement of vapor-liquid separation performance and significant downsizing are realized by the use of Newly-developed economizer. (cyclonic system)



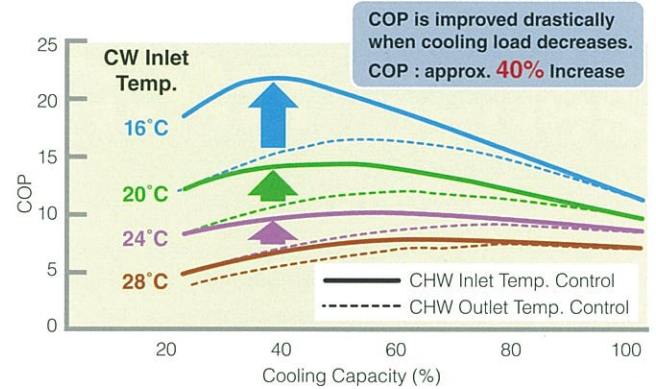


# Energy & Power Saving Operation Functions

## “Eco Mode” Operation (Chilled Water Inlet Temp. Control)

The chiller is usually controlled so the chilled water outlet temperature to be constant. This "Eco Mode" operation introduces the inlet temperature control, where the chilled water inlet temperature is controlled to be constant. The outlet temperature rises a bit but this is enough for the off-peak season air conditioning.

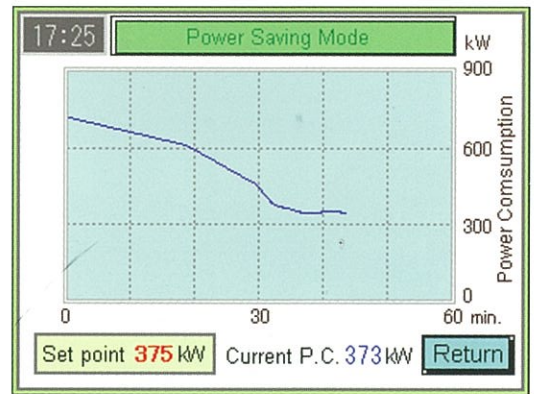
## ● Comparison of Characteristics between CHW Outlet/Inlet Temp. Control



## “Energy Saving Mode” Operation (Peak Cut Operation) (option)

Once the target motor power consumption is set, the chiller is automatically controlled by the motor speed, the inlet guide vane opening and the chilled water outlet temperature rise. This control is extremely useful for the energy saving especially in the off-peak season when the motor speed is easily decreased.

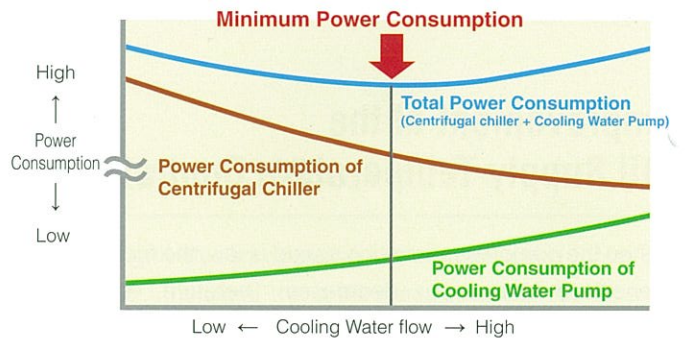
## ● Energy Saving Mode Setting Screen



## Cooling Water Variable Flow Operation (option)

When the cooling water variable flow control is applied, the cooling water flow rate is automatically calculated so the total power consumption of the compressor motor and the cooling water pump motor becomes minimum.

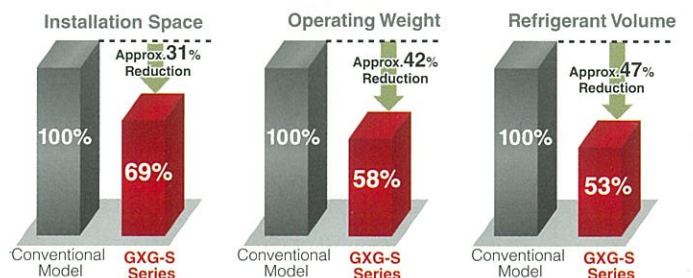
## ● Characteristics of Cooling Water Variable Flow Operation



# Top-class Compact Design and Light Weight Design

- The compact design greatly improves flexibility in installation.
- Realizing space saving of machine room.
- Easy carry-in to machine room.
- Suitable for replacement of long-operating chillers.
- Significant reduction of refrigerant volume.

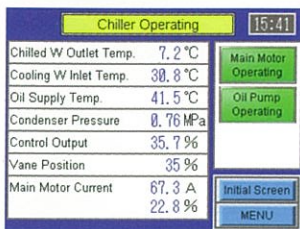
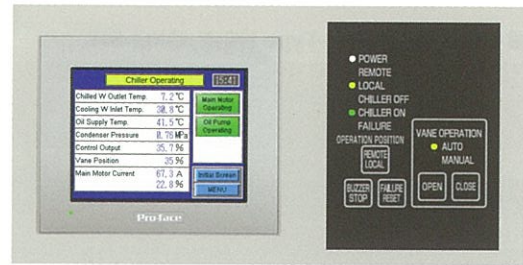
## ● Comparison of Chiller Size (Comparison of 1000RT models)



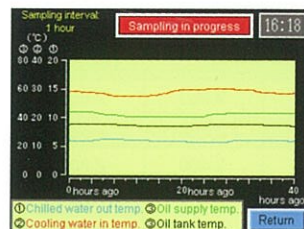


## Easy Operation with Touch Panel Type Control Panel

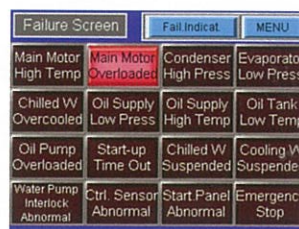
- Monitor various operating data
- Indicate trend graph during operation
- Trend data for max. 40 hours. (Updated every 1 hour)
- Indicate and store Operation history for the past 12 hours (Updated every hour)
- Indicate and store Failure and Alarm history (latest 6 times each)
- Show Handling Guide in case of failure
- Automatic restart function after instantaneous power failure (Option)
- Multilingual Languages Indication (Japanese, English, Chinese [Simplified, Traditional], Portuguese)



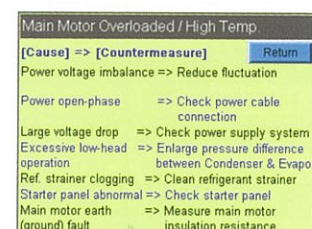
Operation screen



Trend data screen



Failure screen



Handling guide screen

## Compatible with BMS

Chiller control panel is equipped with RS485 communication port and compatible with Building Management System through MODBUS RTU protocol.

### Communication Item

#### Operation Condition

- Date (Year/Month/Day)
- Time (Hour/Min./Sec.)
- Chiller (operation/stop)
- Oil pump (operation/stop)
- Oil heater (operation/stop)
- Main motor (operation/stop)
- Low load stop (on/off)
- Restart restriction (on/off)
- Condenser pressure Limit (on/off)
- Failure (presence/absence)
- Chiller operation (remote/local)
- Chiller operating hours
- Main motor operating hours
- Oil pump operating hours
- Oil heater operating hours
- Chiller operation times
- Main motor operation times
- Failure times
- Failure information (\*1)

#### Operation Data

- Chilled water inlet temperature
- Chilled water outlet temperature
- Cooling water inlet temperature
- Cooling water outlet temperature
- Oil supply temperature
- Oil Tank temperature
- Main motor operating current (A)
- Main motor operating current (%)
- Vane position
- Control output for Vane position
- Condenser pressure
- Evaporator pressure
- Oil supply pressure

#### (\*1) Failure Information

- Main motor high temperature
- Main motor overloaded
- High condenser pressure
- Low evaporator pressure
- Chilled water overcooled
- Low oil supply pressure
- High oil supply temperature
- Low oil tank temperature
- Oil pump overloaded
- Start-up time out
- Starter panel abnormal
- Chilled water suspended
- Cooling water suspended
- Water pump interlock abnormal
- Control sensor abnormal
- Emergency stop

## Feature of Low Voltage Inverter (380V~460V)

- Light and compact structure do not choose installation location.
- Inverter is equipped with DC reactor to is moderate high frequency wave.

## Optional Items

- Min. cooling water inlet temperature 12°C (GXG-SIT), and 15°C (GSG-SIT)
- Variable chilled water flow rate (chilled water/cooling water)
- Max. working pressure up to 2.0MPa (evaporator/condenser)
- Min. cooling capacity 10%
- Marine type/hinged type water box (evaporator/condenser)
- Delivery in knockdown form (3 pieces – compressor, heat exchangers, control panel, 4 pieces)



# Specifications

## High Efficiency Type HC-F\_GXG-SIT

| Model           | Cooling Capacity |             | COP         | Overall Dimension |                 |                  |                     | Shipping Weight<br>kg | Operating Weight<br>kg |
|-----------------|------------------|-------------|-------------|-------------------|-----------------|------------------|---------------------|-----------------------|------------------------|
|                 | USRT             | kW          |             | Length (A)<br>mm  | Width (B)<br>mm | Height (C)<br>mm | Extubation<br>space |                       |                        |
| HC-F300GXG-SIT  | 200 – 300        | 703 – 1055  | 5.05 – 6.04 | 3,550             | 1,650           | 2,200            | 3,000               | 5,800                 | 7,200                  |
| HC-F350GXG-SIT  | 301 – 350        | 1058 – 1231 | 5.05 – 6.04 | 3,550             | 1,650           | 2,200            | 3,000               | 5,800                 | 7,300                  |
| HC-F400GXG-SIT  | 351 – 400        | 1234 – 1407 | 5.25 – 6.28 | 3,550             | 1,900           | 2,400            | 3,000               | 7,000                 | 8,500                  |
| HC-F450GXG-SIT  | 401 – 450        | 1410 – 1582 | 5.25 – 6.28 | 3,550             | 1,900           | 2,400            | 3,000               | 7,000                 | 8,600                  |
| HC-F500GXG-SIT  | 451 – 500        | 1586 – 1758 | 5.47 – 6.55 | 4,050             | 1,900           | 2,450            | 3,500               | 8,400                 | 9,900                  |
| HC-F550GXG-SIT  | 501 – 550        | 1762 – 1934 | 5.51 – 6.59 | 4,050             | 2,000           | 2,500            | 3,500               | 8,700                 | 10,400                 |
| HC-F600GXG-SIT  | 551 – 600        | 1937 – 2110 | 5.59 – 6.69 | 4,050             | 2,000           | 2,500            | 3,500               | 8,900                 | 10,500                 |
| HC-F650GXG-SIT  | 601 – 650        | 2113 – 2286 | 5.52 – 6.60 | 4,050             | 2,000           | 2,500            | 3,500               | 9,100                 | 10,900                 |
| HC-F700GXG-SIT  | 651 – 700        | 2289 – 2461 | 5.48 – 6.56 | 4,050             | 2,250           | 2,650            | 3,500               | 10,700                | 12,600                 |
| HC-F750GXG-SIT  | 701 – 750        | 2465 – 2637 | 5.54 – 6.62 | 4,050             | 2,250           | 2,650            | 3,500               | 10,700                | 12,700                 |
| HC-F800GXG-SIT  | 751 – 800        | 2641 – 2813 | 5.63 – 6.73 | 4,050             | 2,250           | 2,650            | 3,500               | 11,100                | 13,300                 |
| HC-F850GXG-SIT  | 801 – 850        | 2817 – 2989 | 5.48 – 6.56 | 4,050             | 2,400           | 2,800            | 3,500               | 12,200                | 14,500                 |
| HC-F900GXG-SIT  | 851 – 900        | 2992 – 3165 | 5.54 – 6.62 | 4,050             | 2,400           | 2,800            | 3,500               | 12,400                | 14,800                 |
| HC-F950GXG-SIT  | 901 – 950        | 3168 – 3340 | 5.55 – 6.63 | 4,050             | 2,400           | 2,800            | 3,500               | 12,400                | 14,900                 |
| HC-F1000GXG-SIT | 951 – 1000       | 3344 – 3516 | 5.69 – 6.81 | 4,550             | 2,400           | 2,800            | 4,000               | 13,900                | 16,900                 |

## Compact Type HC-F\_GSG-SIT

| Model          | Cooling Capacity |             | COP         | Overall Dimension |                 |                  |                     | Shipping Weight<br>kg | Operating Weight<br>kg |
|----------------|------------------|-------------|-------------|-------------------|-----------------|------------------|---------------------|-----------------------|------------------------|
|                | USRT             | kW          |             | Length (A)<br>mm  | Width (B)<br>mm | Height (C)<br>mm | Extubation<br>space |                       |                        |
| HC-F300GSG-SIT | 200 – 300        | 703 – 1055  | 4.51 – 5.39 | 2,800             | 1,750           | 2,200            | 2,000               | 5,000                 | 6,200                  |
| HC-F350GSG-SIT | 301 – 350        | 1058 – 1231 | 4.57 – 5.47 | 2,900             | 2,070           | 2,300            | 2,000               | 6,200                 | 6,800                  |
| HC-F400GSG-SIT | 351 – 400        | 1234 – 1407 | 4.66 – 5.57 | 2,900             | 2,070           | 2,300            | 2,000               | 6,300                 | 7,000                  |
| HC-F450GSG-SIT | 401 – 450        | 1410 – 1582 | 4.69 – 5.61 | 3,190             | 2,070           | 2,350            | 2,500               | 7,600                 | 8,500                  |
| HC-F500GSG-SIT | 451 – 500        | 1586 – 1758 | 4.92 – 5.89 | 3,190             | 2,070           | 2,350            | 2,500               | 7,600                 | 8,500                  |
| HC-F550GSG-SIT | 501 – 550        | 1762 – 1934 | 4.90 – 5.86 | 3,190             | 2,080           | 2,350            | 2,500               | 7,700                 | 8,700                  |
| HC-F600GSG-SIT | 551 – 600        | 1937 – 2110 | 4.94 – 5.91 | 3,190             | 2,080           | 2,350            | 2,500               | 7,800                 | 8,800                  |
| HC-F650GSG-SIT | 601 – 650        | 2113 – 2286 | 4.97 – 5.94 | 3,490             | 2,090           | 2,430            | 2,800               | 9,200                 | 10,600                 |
| HC-F700GSG-SIT | 651 – 700        | 2289 – 2461 | 5.03 – 6.02 | 3,490             | 2,090           | 2,430            | 2,800               | 9,300                 | 10,700                 |
| HC-F750GSG-SIT | 701 – 750        | 2465 – 2637 | 5.07 – 6.06 | 3,490             | 2,090           | 2,430            | 2,800               | 9,400                 | 10,800                 |
| HC-F800GSG-SIT | 751 – 800        | 2641 – 2813 | 5.23 – 6.26 | 3,490             | 2,350           | 2,560            | 2,800               | 10,800                | 12,300                 |
| HC-F850GSG-SIT | 801 – 850        | 2817 – 2989 | 5.28 – 6.31 | 3,490             | 2,370           | 2,560            | 2,800               | 10,900                | 12,500                 |
| HC-F900GSG-SIT | 851 – 900        | 2992 – 3165 | 5.29 – 6.33 | 3,490             | 2,370           | 2,560            | 2,800               | 11,000                | 12,600                 |

## Inverter Panel

| Model   | Dimensions<br>(mm)  |       |        | Weight<br>(kg) |       |
|---------|---------------------|-------|--------|----------------|-------|
|         | Length              | Width | Height |                |       |
| GXG-SIT | HC-F300~400GXG-SIT  | 1,600 | 1,000  | 2,330          | 950   |
|         | HC-F450~600GXG-SIT  | 2,000 | 1,000  | 2,330          | 1,250 |
|         | HC-F650~750GXG-SIT  | 2,000 | 1,100  | 2,580          | 1,600 |
|         | HC-F800~1000GXG-SIT | 2,300 | 1,300  | 2,780          | 2,150 |
| GSG-SIT | HC-F300~350GSG-SIT  | 1,600 | 1,000  | 2,330          | 950   |
|         | HC-F400~550GSG-SIT  | 2,000 | 1,000  | 2,330          | 1,250 |
|         | HC-F600~700GSG-SIT  | 2,000 | 1,100  | 2,580          | 1,650 |
|         | HC-F750~900GSG-SIT  | 2,300 | 1,300  | 2,780          | 2,150 |

### REMARKS

\* Please consult with our sales staff or distributor for actual specifications for cooling capacity, expected kW input, and COP, depending on selected operating parameters.

\* The above Specifications are subject to change without notice for technical improvements.

\* This table is applicable to chillers to be manufactured for normal water.

\* Capacity control range is 100% to approx. 20%.

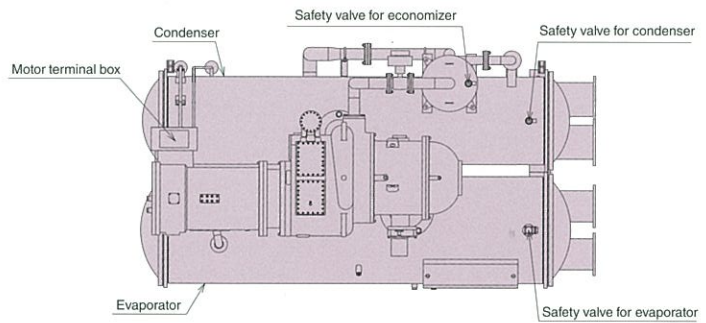
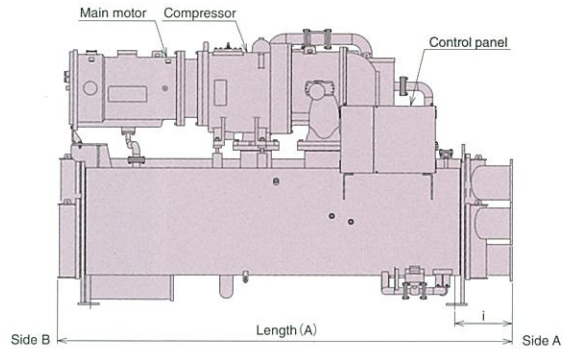
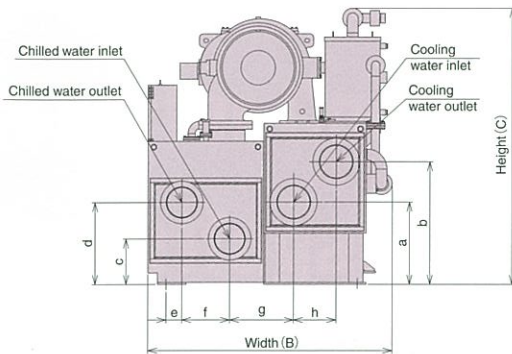
\* Fouling factor is assumed to be 0.018m<sup>2</sup>K/kW for chilled water and 0.044m<sup>2</sup>K/kW for cooling water.

\* Standard main power sources: 380V/400V/415V/440V/460V AC, 50Hz/60Hz, 3phase.

\* Maximum working pressure is 1.0MPa for both chilled water and cooling water. If higher maximum working pressure is required, please specify during inquiry. (Up to 2MPa is available.)



## Dimensional Outline Drawing



This dimensional outline drawing shows a standard nozzle location. Please consult with our sales staff or distributor in case of a 3-pass or 4-pass system.

### Positional Dimension of Water Piping

| Model           | Positional dimension of nozzle |       |     |     |     |     |     |     |     |
|-----------------|--------------------------------|-------|-----|-----|-----|-----|-----|-----|-----|
|                 | a                              | b     | c   | d   | e   | f   | g   | h   | i   |
| HC-F300GXG-SIT  | 673                            | 933   | 398 | 616 | 33  | 339 | 444 | 290 | 420 |
| HC-F350GXG-SIT  | 673                            | 933   | 398 | 616 | 33  | 339 | 444 | 290 | 420 |
| HC-F400GXG-SIT  | 715                            | 975   | 442 | 642 | 101 | 358 | 525 | 292 | 420 |
| HC-F450GXG-SIT  | 715                            | 975   | 442 | 642 | 101 | 358 | 525 | 292 | 420 |
| HC-F500GXG-SIT  | 714                            | 974   | 462 | 662 | 101 | 358 | 525 | 292 | 420 |
| HC-F550GXG-SIT  | 734                            | 1,027 | 474 | 695 | 102 | 400 | 535 | 320 | 420 |
| HC-F600GXG-SIT  | 734                            | 1,027 | 494 | 715 | 102 | 400 | 535 | 320 | 420 |
| HC-F650GXG-SIT  | 734                            | 1,027 | 494 | 715 | 102 | 400 | 535 | 320 | 420 |
| HC-F700GXG-SIT  | 810                            | 1,155 | 430 | 730 | 107 | 500 | 562 | 380 | 420 |
| HC-F750GXG-SIT  | 810                            | 1,155 | 430 | 730 | 107 | 500 | 562 | 380 | 420 |
| HC-F800GXG-SIT  | 810                            | 1,155 | 430 | 730 | 107 | 500 | 562 | 380 | 420 |
| HC-F850GXG-SIT  | 780                            | 1,160 | 435 | 795 | 139 | 480 | 640 | 380 | 420 |
| HC-F900GXG-SIT  | 780                            | 1,160 | 455 | 815 | 139 | 480 | 640 | 380 | 420 |
| HC-F950GXG-SIT  | 780                            | 1,160 | 455 | 815 | 139 | 480 | 640 | 380 | 420 |
| HC-F1000GXG-SIT | 780                            | 1,160 | 475 | 835 | 139 | 480 | 640 | 380 | 420 |

(unit: mm)

| Model          | Positional dimension of nozzle |     |     |     |     |     |     |     |     |
|----------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|                | a                              | b   | c   | d   | e   | f   | g   | h   | i   |
| HC-F300GSG-SIT | 432                            | 632 | 340 | 540 | 130 | 358 | 530 | 358 | 405 |
| HC-F350GSG-SIT | 432                            | 632 | 359 | 559 | 130 | 358 | 530 | 358 | 405 |
| HC-F400GSG-SIT | 432                            | 632 | 359 | 559 | 130 | 358 | 530 | 358 | 405 |
| HC-F450GSG-SIT | 378                            | 673 | 352 | 532 | 118 | 352 | 619 | 358 | 405 |
| HC-F500GSG-SIT | 378                            | 673 | 352 | 532 | 118 | 352 | 619 | 358 | 405 |
| HC-F550GSG-SIT | 378                            | 673 | 352 | 572 | 115 | 358 | 616 | 358 | 405 |
| HC-F600GSG-SIT | 378                            | 673 | 352 | 572 | 115 | 358 | 616 | 358 | 405 |
| HC-F650GSG-SIT | 432                            | 727 | 387 | 607 | 135 | 358 | 618 | 358 | 409 |
| HC-F700GSG-SIT | 432                            | 727 | 387 | 607 | 135 | 358 | 618 | 358 | 409 |
| HC-F750GSG-SIT | 432                            | 727 | 407 | 627 | 135 | 358 | 618 | 358 | 409 |
| HC-F800GSG-SIT | 404                            | 719 | 380 | 680 | 154 | 415 | 704 | 410 | 409 |
| HC-F850GSG-SIT | 404                            | 719 | 380 | 680 | 154 | 415 | 704 | 410 | 409 |
| HC-F900GSG-SIT | 404                            | 719 | 380 | 680 | 154 | 415 | 704 | 410 | 409 |

## Standard Scope of Supply

The following table shows the standard scope of supply, but the actual scope depends on the contract. Please consult with our sales staff or distributor.

| Item                       | Standard Scope   |
|----------------------------|--|
| <b>Main Equipment</b>      | Compressor, Main motor, Lubrication system, Heat exchanger   |
| <b>Auxiliary Equipment</b> | Safety device, Control panel, Standard accessories (Oil strainer elements, Gasket for oil strainer elements, Dryer), Inverter Unit   |
| <b>Coating</b>             | Chiller main unit: Anti-corrosive prime coating<br>Control panel: Finish coat (color: Munsell 5Y 8/1 gloss)<br>Starter (optional): Finish coat (color: Munsell 5Y 7/1 semigloss)   |
| <b>Out of Supply Scope</b> | Foundation work, Carrying-in, Installation, Piping work, Cold insulation, Primary and secondary side electrical wiring, Commissioning for total system, Forced-ventilation system, Outdoor discharge piping for safety valve, Counter flange, Bolt, Nut, Gasket, Foundationbolt, Refrigerant |

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