



# ***Technical Sales Guide***

## **AIR SOURCE HEAT PUMP WATER HEATER**

(GC202405-I)

TECHNICAL SALES GUIDE-50Hz

CAPACITY RANGE: 2.3kW

AMBIENT OPERATION RANGE : -7~45°C



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## 1. PRODUCT LIST

| Model                 | Heating capacity (W)            | Power Supply     | Appearance                                                                           |
|-----------------------|---------------------------------|------------------|--------------------------------------------------------------------------------------|
| GRS-2.3Pd/TD200ANpH-K | 2300W+2000W (electrical heater) | 220V-240V ~ 50Hz |   |
| GRS-2.3Pd/TD270ANpH-K | 2300W+2000W (electrical heater) | 220V-240V ~ 50Hz |  |

## 2. NOMENCLATURE

| GRS | - | 2.3 | □ | Pd | □ | / | T | D | 200 | A | □  | □  | Np | H  | □  | □  | - | K  |
|-----|---|-----|---|----|---|---|---|---|-----|---|----|----|----|----|----|----|---|----|
| 1   |   | 2   | 3 | 4  | 5 |   | 6 | 7 | 8   | 9 | 10 | 11 | 12 | 13 | 14 | 15 |   | 16 |

| No. | Description                 | Options                                                                                                                                  |
|-----|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Product code                | GRS—Heat pump water heater                                                                                                               |
| 2   | Heating capacity code       | Heating capacity (Unit: kW)                                                                                                              |
| 3   | Compressor system           | Single system – Omit; Dual system – S                                                                                                    |
| 4   | Functions characteristics 1 | Fixed frequency – Omit; Inverter – P; DC Inverter – Pd; Fixed frequency modular – M; AC Inverter modular – PM; DC Inverter modular – PdM |
| 5   | Functions characteristics 2 | Normal type – Omit; Low temperature heat pump – Re                                                                                       |
| 6   | Water tank material         | Stainless Steel – Omit; T –Enameled steel                                                                                                |
| 7   | Function code               | No electric heating function – Omit; With electric heating function – D                                                                  |
| 8   | Water tank capacity         | Capacity of water tank; Unit: (L)                                                                                                        |

| No. | Description          | Options                                                                                                                                                                                                                                                                          |
|-----|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9   | Design code          | A—LCJW: floor standing type; outer coil pipe static heating type;<br>B—BCJW: wall-mounted type; outer coil pipe static heating type;<br>C—LCJ: floor standing type; built-in coil pipe static heating type;<br>D—BCJ: wall-mounted type; built-in coil pipe static heating type; |
| 10  | Water tank shape     | Round – Omit; Square – F                                                                                                                                                                                                                                                         |
| 11  | Inner tank number    | Single – Omit; Double – 2                                                                                                                                                                                                                                                        |
| 12  | Refrigerant          | R22 – Omit; R407c – N; R410A – Na; R134a – Nb; R32 – Nh; R290- Np                                                                                                                                                                                                                |
| 13  | Design Serial number | A, B, C...or A1, A2..., B1, B2...                                                                                                                                                                                                                                                |
| 14  | Backwater function   | No – Omit; Yes – H                                                                                                                                                                                                                                                               |
| 15  | E-commerce code      | Non-e-commerce models – Omit; E-commerce models – D                                                                                                                                                                                                                              |
| 16  | Power code           | M—380-415V 3PH~50Hz; K—220V-240V 1PH~50Hz; D—220V-240V 1PH~60Hz ...                                                                                                                                                                                                              |

## 3. INTRODUCTIONS TO COMPONENTS

| No. | Name                       | Function                                                                                                                            |
|-----|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Compressor                 | Increases pressure for the refrigerant and provides driving force for circular flow of the refrigerant as a main driving component. |
| 2   | Four-way valve             | Reverses flow direction of the refrigerant when the system switches between the normal heat up mode and defrosting mode.            |
| 3   | Water tank                 | Provides heat exchange channel for refrigerant and water and stores hot water for daily use.                                        |
| 4   | Electronic expansion valve | Speeds up high-pressure and high-temperature refrigerant and reduces pressure and adjusts the circulation amount of coolant.        |
| 5   | Finned tube exchanger      | Provides heat exchange channel for refrigerant and air.                                                                             |
| 6   | Fan motor                  | Enhances heat exchange on the air side of the finned tube exchange and provides a low-temperature heat source continuously.         |
| 7   | Filter                     | Filters impurities in refrigerant to protect components with small diameter.                                                        |

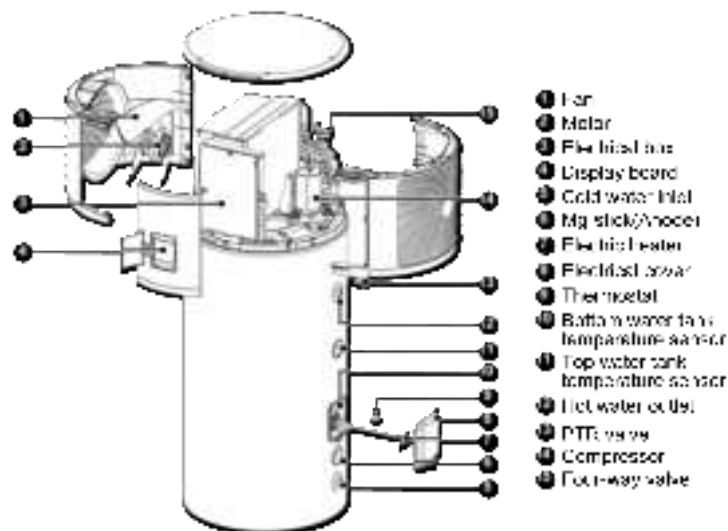


Fig.3-1 Diagram of Parts

## 4. PRODUCT PARAMETERS

| Model                           | GRS-2.3Pd/TD200ANpH-K       | GRS-2.3Pd/TD270ANpH-K       |
|---------------------------------|-----------------------------|-----------------------------|
| Rated water storage capacity    | 206L                        | 270L                        |
| Heat pump heating capacity      | 2300W                       | 2300W                       |
| Rated input power               | 426W                        | 426W                        |
| Electric heater power           | 2000W                       | 2000W                       |
| Maximum input power             | 830W+2000W(Electric heater) | 830W+2000W(Electric heater) |
| Power supply                    | 220-240V ~ 50Hz             | 220-240V ~ 50Hz             |
| Water outlet temperature        | 35°C~70°C                   | 35°C~70°C                   |
| Heat pump operating range       | -7~45°C                     | -7~45°C                     |
| Inlet/Outlet connector diameter | DN15                        | DN15                        |
| Water-proof grade               | IPX4                        | IPX4                        |
| Refrigerant                     | R290 (330g)                 | R290 (330g)                 |
| Sound pressure level            | 44dB(A)                     | 44dB(A)                     |
| Dimension (W×D×H)               | 663mm×670mm×1643mm          | 663mm×670mm×1924mm          |
| Net weight                      | 97kg                        | 109kg                       |

### NOTES:

- ① Product conforms to AS 3498:2020 and AS/NZS 2712:2007.
- ② Test conditions: Outdoor ambient temperature 20/15°C (DB/WB); Water temperature from 10°C up to 55°C.
- ③ Under BOOST Mode, electric heater helps to heat water.
- ④ Please refer to the nameplate for the exact data as this table is subject to change.

## 5. PRODUCE PERFORMANCE CURVES

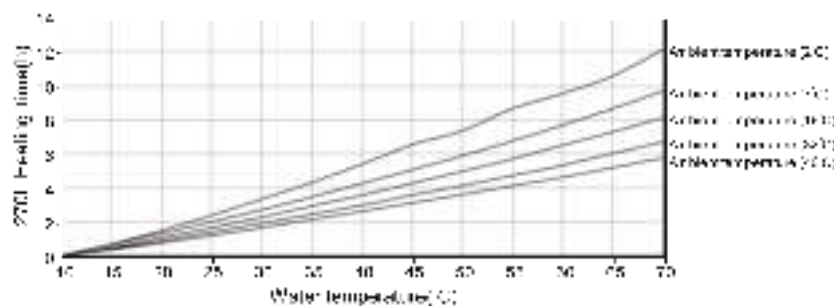


Fig. 5-1 GRS-2.3Pd/TD270ANpH-K heating time to different hot water target temperatures for different ambient temperatures (Only heat pump)

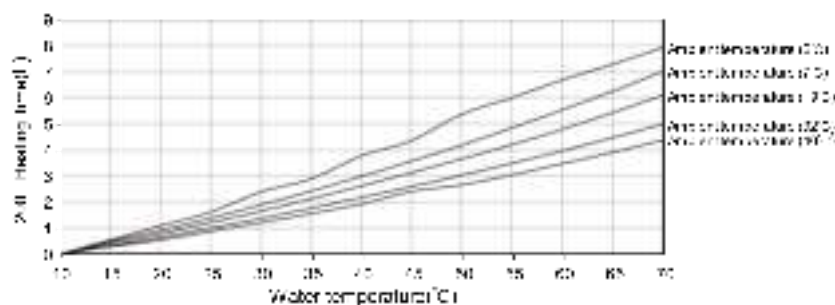


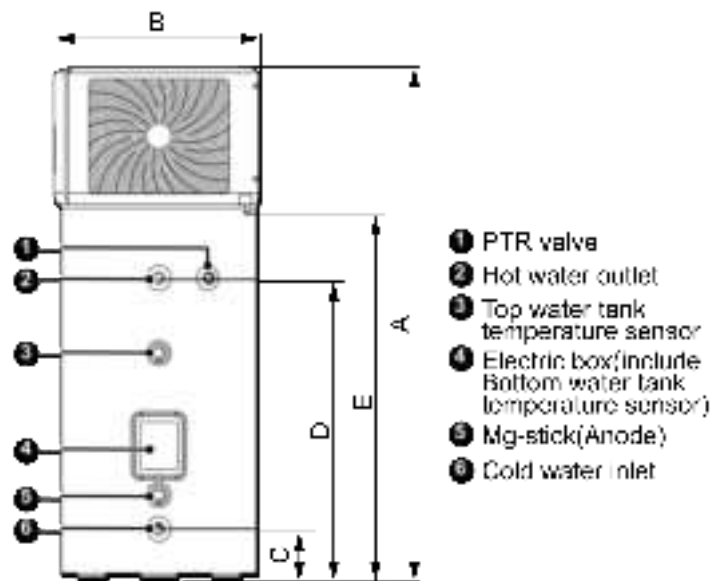
Fig.5-2 GRS-2.3Pd/TD200ANpH-K heating time to different hot water target temperatures for different ambient temperatures (Only heat pump)

## NOTES:

- ①The above curve data are fitted based on the test parameters of Gree Laboratory(The test conditions are: initial water temperature: 10℃ , power supply: 230V ~ 50Hz; in a new unit with clean heat exchangers). So there will be about 5% tolerance and the curves are for reference only.
- ②When the electrical heater and heat pump are together started to heating the heating time of GRS-2.3Pd/TD270ANpH-K and GRS-2.3Pd/TD200ANpH-K will be decreased. On the other hand, COP will decrease and power consumption will increase.

## 6. DIMENSION PARAMETERS

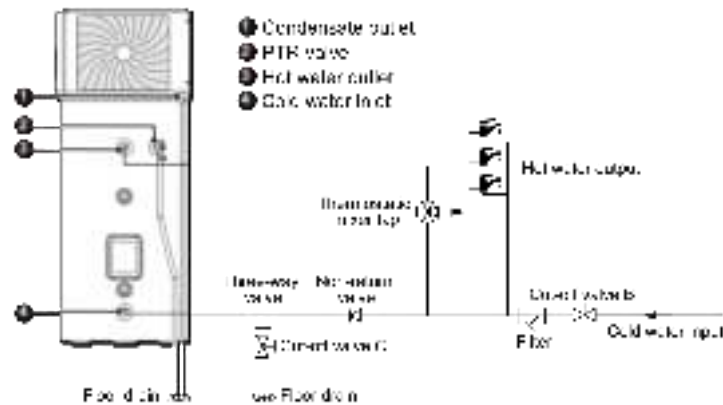
Unit: mm



| Parameter \ Model | GRS-2.3Pd/TD200ANpH-K | GRS-2.3Pd/TD270ANpH-K |
|-------------------|-----------------------|-----------------------|
| A                 | 1643                  | 1924                  |
| B                 | 663                   | 663                   |
| C                 | 156                   | 156                   |
| D                 | 964                   | 1235                  |
| E                 | 1177                  | 1458                  |

## 7. INSTALLATION

### 7.1 Unit Installation Diagram

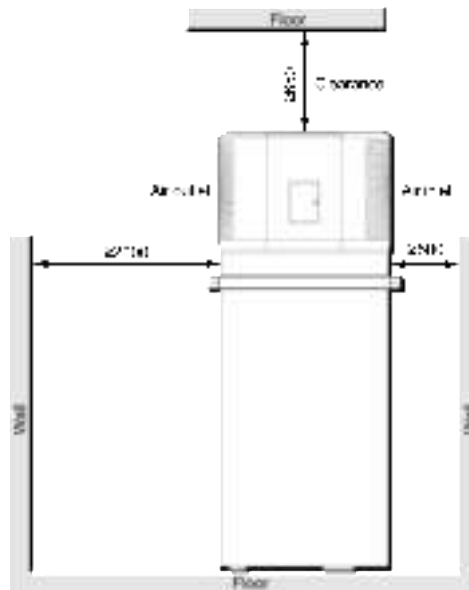


#### WARNING!

- To ensure water safety, Insulation plastic pipes such as PPR pipes are recommended to be used. The PPR pipe length at the water inlet and outlet is determined as per the formula:  $L \geq 70 \times R^2$ , wherein L indicate the pipe length, and R indicates the inner diameter of the pipe (unit: cm). The pipes should be insulated properly. No metal pipe is allowed.

### 7.2 Installtion Dimension

Unit: mm



### 7.3 Installation Requirements

- (1) Ensure that the sound and airflow of the unit will not affect people, animals, or plants, etc.
- (2) Ensure that the unit has good ventilation. If a canopy is installed to protect the unit, it should be noted that heat dissipation and heat absorption shouldn't be affected.
- (3) The unit should be installed in a place with a solid foundation and make sure that the unit is installed upright. The impact of strong wind, typhoon and earthquake or other natural disasters should be fully considered, and the installation should be reinforced.

- (4) Ensure the reliable connection of the drain pipe of the unit and lead the drain pipe to a proper place for drainage.
- (5) The unit must be installed in a place with rain and sun shading devices where it can be sheltered from rain.
- (6) The unit and water system piping and valves should be installed as far as possible in the ambient temperature above 0°C, and preferably installed near the main hot water point.
- (7) In order to avoid inconvenience or property damage to user due to water leakage caused by improper connection of water pipe or normal water release of safety valve, it is forbidden to install the unit in a place without good drainage.
- (8) The unit shall be located upright. The installation ground must be flat and spacious, and the foundation shall be solid enough to bear four times of the weight of the unit after the unit being filled with water. It is strictly forbidden to hang the unit or hang it on an external wall. When installing the unit, it's necessary to use fixing belt to protect the unit. If the unit is installed in areas with strong winds, typhoons, or earthquakes, in addition to using fixing belt for installation, additional reinforcement measures must be taken to prevent the unit from tipping over under external forces, thus causing unnecessary unit damage or personal injury. The fixing belt of the unit only serves as an auxiliary fixation and cannot bear the weight of water tank.
- (9) The water quality for the air source water heater should comply with the local sanitation standard for the domestic drinking water and refer to the following water quality requirements.

Table 7.3-1 Water Quality Requirements

|                                                            |         |                                           |                          |
|------------------------------------------------------------|---------|-------------------------------------------|--------------------------|
| pH (25°C)                                                  | 6.8~8.0 | Turbidity (scattering turbidity unit)/NTU | <1                       |
| Chloride/(mg/L)                                            | <50     | Iron/(mg/L)                               | <0.3                     |
| Sulfate/(mg/L)                                             | <50     | Silica (SiO <sub>2</sub> )/(mg/L)         | <30                      |
| Total hardness (calculated in CaCO <sub>3</sub> )/(mg/L)   | <70     | Nitrate (calculated in N)/(mg/L)          | <10                      |
| Conductivity (25°C)/(μs/cm)                                | <300    | Ammonia nitrogen (calculated in N)/(mg/L) | <1.0                     |
| Total alkalinity (calculated in CaCO <sub>3</sub> )/(mg/L) | <50     | Sulfide/(mg/L)                            | Shall not to be detected |

## 7.4 Wiring



### WARNING!

- The appliance shall be installed in accordance with national wiring regulations, and installation of the unit must be done by qualified personnel.
- The power supply must comply with the specifications on the nameplate. The carrying capacity of the power supply, wires and sockets should be confirmed before installation.
- The fixed circuit must be equipped with a residual current device (RCD) and a circuit breaker with sufficient capacity to ensure that all poles are disconnected from the power supply when necessary. The action time of the residual current device (RCD) should be less than 0.1s.
- The unit must be grounded reliably. The grounding wire should connect with special device of buildings.
- The unit circuit must be at least 1.5m away from any inflammable surface.
- Separate fixed device for power supply must be used, and its structure shall match the power supply of water heater, and comply with relevant national and local standards.
- Do not use socket converters, cable extension cords or wiring boards to accommodate the power cord of water heater, no switch to other power cords to accommodate family power. Connect wires for the water heater separately and do not share the same circuit with other electrical appliances.
- Please see the electrical schematic diagram for exact details.
- If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. It is not allowed to reconnect the damaged power cord.

### 7.4.1 Selection of Power Cord Diameter and Circuit Breaker

Table 7.4-1 Unit Power Cord Configuration Table

| Model                 | Power supply  | Minimum sectional area (mm <sup>2</sup> ) of power cord |     |     | Circuit breaker (A) | Fuse capacity (A) |
|-----------------------|---------------|---------------------------------------------------------|-----|-----|---------------------|-------------------|
|                       |               | L                                                       | N   | PE  |                     |                   |
| GRS-2.3Pd/TD200ANpH-K | 220-240V~50Hz | 1.5                                                     | 1.5 | 1.5 | 16                  | 16                |
| GRS-2.3Pd/TD270ANpH-K |               |                                                         |     |     |                     |                   |

### 7.4.2 Wiring Diagram

- (1) The external wiring diagram of the unit is as follows. For the internal wiring diagram, please refer to the circuit diagram attached on the machine.
- (2) The following two installation methods can be used for the display board (wire controller).

If the wire controller needs to be installed in an indoor area other than the unit's panel, its wiring method should be in accordance with method I in the figure. If the wire controller needs to be installed on the unit's panel; its wiring method should be in accordance with method II in the figure.

(Note: Connect according to either method I or method II)

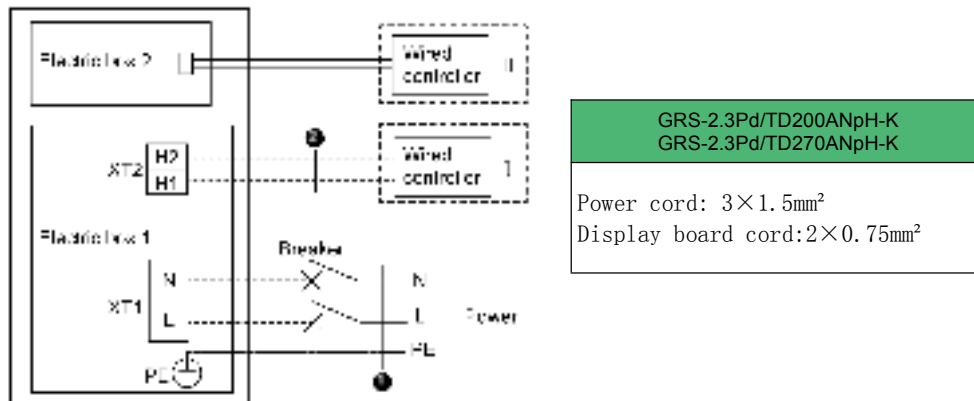


Fig.7.4-1 External wiring

### 7.4.3 Electrical Wiring and Connection Requirement

- (1) After completing wiring connection, the power cord and communication wires must be tightly pressed with a fixed wire clamp. The fixed wire clamp should be pressed on the outer sheath of the connection wire.
- (2) When arranging wiring connection for the external unit, the communication cord of wired controller shall be separated from the power cord. The minimum distance between the parallel wires shall be greater than 20cm. Otherwise, the communication of the unit might be abnormal. The strong and weak wires shall be covered separately with wire sleeves.

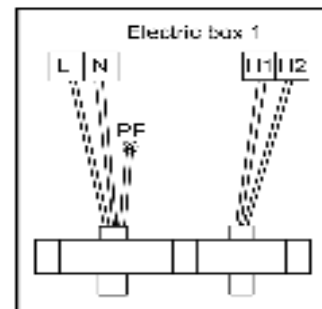


Fig.7.4-2 External wiring and fixing figure

### 7.4.4 Wired Controller Installation

The wire controller is installed on the front panel of the unit by default. When it needs to be adjusted to other places outside the unit, it is recommended that the length of the communication cable between the wired controller and the unit can't be more than 8m.

## 7.5 Commissioning Operation



### WARNING!

- Safety measures must be taken for operation. All personnel involved in commissioning and maintenance must master the safety regulations of construction and implement them in strict accordance with the regulations.
- The electrician, welder and other special types of operators must get the permission for the corresponding post. When performing related operations on the equipment, the power supply of the whole unit must be cut off. Meanwhile, operate the unit in strict accordance with related safety requirements.
- All installation and maintenance operations must comply with the product design requirements and national and local safety operation requirements. Illegal operations are strictly prohibited.

### 7.5.1 Check before Commissioning

After the air source water heater is installed, be sure to check the unit according to the following table.

Table 7.5-1 Unit Installation Checklist

| Items to be checked                                                                                                        | What may happen if the installation is improper                                                                          |
|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Whether the unit is installed reliably                                                                                     | The operation of the unit produces noise or vibration, and even causes danger such as falling                            |
| Whether there are obstacles at the air outlet and air inlet of the unit                                                    | The unit operates abnormally                                                                                             |
| Whether the cold water inlet pipe and hot water outlet pipe use PPR pipes                                                  | Safety hazard may happen                                                                                                 |
| Whether the safety valve of water tank is installed                                                                        | The operation pressure of water tank is high and there may be safety hazard.                                             |
| Whether a stabilizing valve is installed when the inlet pressure of water tank is too high                                 | The operation pressure of water tank is high. The safety valve continuously discharges water and produces abnormal noise |
| Whether all parts of the water pipeline have been properly insulated                                                       | The performance of the unit may be affected and the pipeline may be damaged by freezing                                  |
| Whether the power supply voltage is consistent with the product nameplate, and whether the wire type meets the regulations | The unit has malfunction or the parts are burned out                                                                     |

### 7.5.2 Trial Operation



### NOTE!

- The water tank of the unit must be filled with water before the unit can be powered on.

The whole unit can be debugged only after the unit has passed the installation inspection. The debugging steps are as follows:

- (1) Water recharge of the unit: refer to the installation tips label on the water tank of the unit to perform water recharge. Ensure that there is no water leakage in the pipelines, joints, etc.
- (2) Energization of the whole unit: After the unit is energized, observe whether the display of wired controller is normal. If there is no fault, it is normal.
- (3) System time calibration of wired controller: set the time according to the manual of the wired controller.
- (4) Operation of the whole unit: turn on the unit with the wired controller. When the wired controller displays heating icon, check whether the unit is operating normally. Normal judgement criterion: the fan is running normally, the whole unit is running stably without obvious vibration and abnormal noise. The unit can be delivered to the user after running for at least 20 minutes without abnormality.

## 8. MODEL SELECTION

The capacity of water tank for residential water heater system is 150L~300L in general. It can be calculated as following floor standing type water tank: Water tank capacity = (50~80) L×n (number of person).

Table 8-1 Model Selection Suggestion

| Applicable Range                  | Model                 |
|-----------------------------------|-----------------------|
| A family of three or four persons | GRS-2.3Pd/TD200ANpH-K |
| A family of four or five persons  | GRS-2.3Pd/TD270ANpH-K |

**NOTE:**

Above suggested range is just for reference, please select the appropriate model according to user's need.



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