

Read before Use

## Instruction Manual

# Pressure Actuated Water Regulating Valves

## Model: Type VWR



### 1. Preface

Thank you for purchasing Type VWR Pressure Actuated Water Regulating Valves.

**Read this instruction manual thoroughly before use, and ensure that the product is used within its rated specifications according to the manual.**

This product is supplied with a document containing a QR code for downloading the instruction manual. **Be sure to keep it in an easily accessible place for future reference. Always check the latest version of the instruction manual available on our website via the QR code before each use, paying particular attention to the safety precautions.**

### 2. Safety Precautions

#### ■ Warning and caution indications

Warnings and cautions in this instruction manual provide **important safety information**.

**To protect you and other people against danger or damage caused by improper use of the product, be sure to comply with these indications, as well as international standards (ISO/IEC), Japanese Industrial Standards (JIS)\*<sup>1</sup>, and other safety regulations\*<sup>2</sup>.**

\*1) IEC 60204-1: Safety of machinery -Electrical equipment of machines

IEC 60335-1: Household and similar electrical appliances -Safety-Part1 -General requirements

IEC 60335-2-24: Household and similar electrical appliances -Safety-Part2-24

IEC 60335-2-40: Household and similar electrical appliances -Safety-Part2-40

IEC 60335-2-89: Household and similar electrical appliances -Safety-Part2-89

ISO 5149: Refrigerating systems and heat pumps -Safety and environmental requirements Part 1 to 4, etc.

\*2) Industrial Safety and Health Act, High Pressure Gas Safety Act, EU Directives, Occupational Safety and Health Act, etc.



Indicates a hazardous situation that could result in serious injury<sup>(1)</sup> or death if the product is handled improperly.



Indicates a hazardous situation that could result in injury<sup>(2)</sup> or property damage<sup>(3)</sup> if the product is handled improperly.

(1) **Serious injury** refers to blindness, injury, burn (high-temperature, low-temperature), electric shock, bone fracture, or poisoning that leaves aftereffects and requires hospitalization and/or extended medical treatment.

(2) **Injury** refers to injury, burn, or electric shock that does not require hospitalization or extended medical treatment.

(3) **Property damage** refers to any damage affecting a house, household property, livestock, and/or pets.

## Explanations of symbols

| Symbol             | Description                                                                                                                                       | Example                                                                                                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prohibition</b> |  Indicates prohibited actions for handling the product.          |  General prohibition<br> Prohibited: Disassembly  |
| <b>Warning</b>     |  Indicates the hazards and precautions for handling the product. |  General caution                                                                                                                     |
| <b>Instruction</b> |  Indicates the instructions for handling the product.            |  General instruction<br> Protective gear required |

|  <b>WARNING</b> |                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Do not apply pressure exceeding the specified limits during leak testing or refrigerant charging. Also, make sure that liquid does not become trapped inside. Failure to do so may result in equipment damage or injury due to scattered parts. |
|                 | Do not use the product if it has been dropped or subjected to impact. Doing so may impair sealing integrity and lead to accidents caused by refrigerant leakage.                                                                                |
|               | Always wear appropriate protective gear such as safety shoes and gloves when working. Failure to do so may result in injury or burns.                                                                                                           |
|               | Refrigerant leakage may cause fire or suffocation. Perform work in a well-ventilated area and follow the correct procedures for refrigerant charging and recovery.                                                                              |
|               | Use the product only under the conditions described in the instruction manual, and perform periodic maintenance. Harsh environments or prolonged use may impair sealing integrity.                                                              |

|  <b>CAUTION</b> |                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | When transporting the product, avoid awkward postures, use lifting aids, and ensure sufficient working space. Excessive strain may harm your health.                       |
|                 | The surface of the product may become very hot during or immediately after use. Do not touch it with bare hands, and wear protective gear such as gloves to prevent burns. |

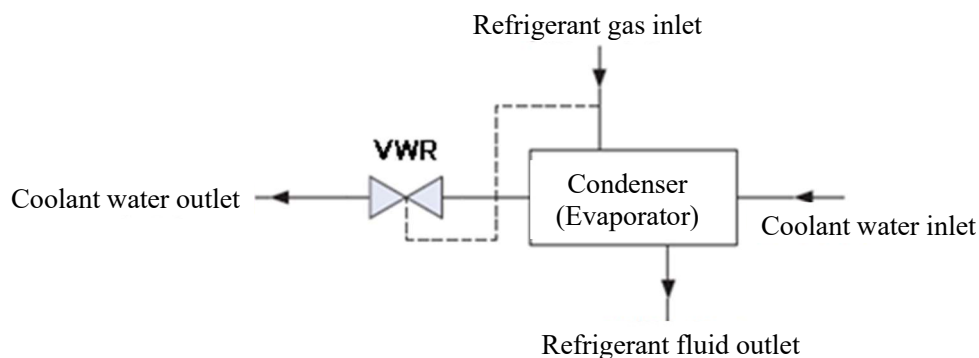
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### 3. Product Overview

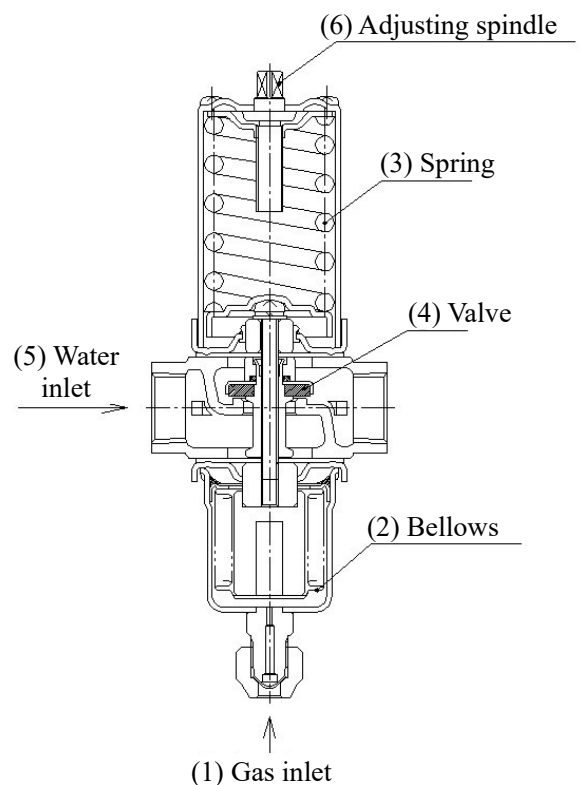
- This is a pressure-actuated water regulating valve that detects refrigerant pressure in water-cooled condensers and controls the amount of coolant water.
- It ensures stable operation of the refrigeration system and helps save coolant water.
- By installing this valve in the water circuit of a water-cooled condenser in refrigeration or air conditioning systems and adjusting the amount of coolant water, stable operation can be achieved while maintaining a constant condensing pressure.
- The valve begins to open at the setpoint (opening pressure). As the pressure rises, the valve opens gradually and the flow rate increases.
- Water regulating valves are generally installed on the outlet side of the condenser. Although they also function when installed on the inlet side, note that, depending on the condenser structure, there is a risk of high-pressure cutout.



#### ○ Operating description (Figure shows VWR-1504G)

Condensing pressure is introduced through the gas inlet (1). When the condensing pressure exceeds the setpoint (opening pressure) of the water regulating valve, the bellows (2) contracts against the spring (3) force. As the bellows (2) contracts, the valve (4) opens upward, allowing fluid to pass through the water inlet (5). As a result, the fluid is controlled in response to the pressure increase, maintaining system stability.

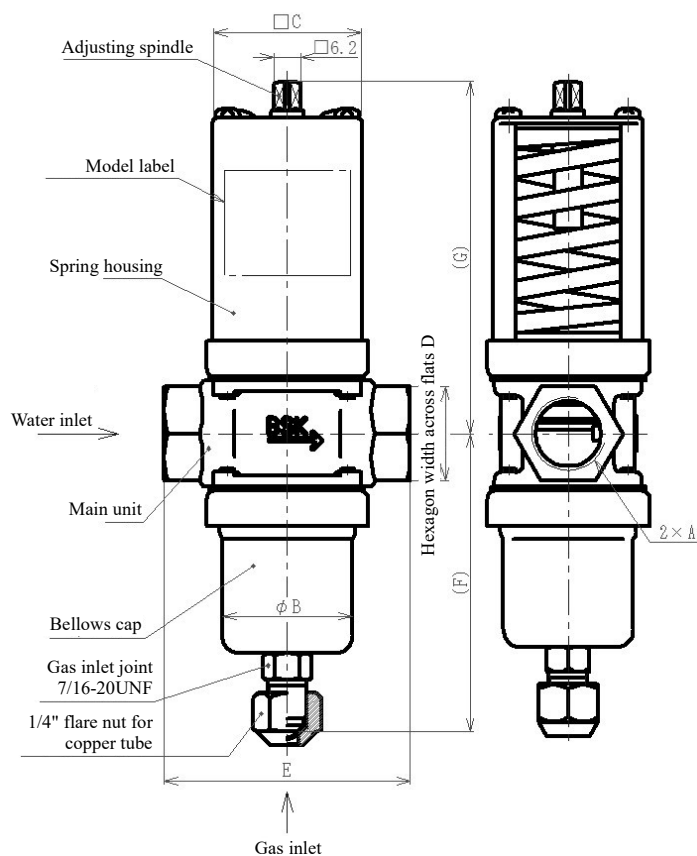
In addition, by turning the adjusting spindle (6) to adjust the spring (3) force, the setpoint (opening pressure) at which the valve (4) begins to open can be adjusted.



### 3. Product Overview

#### ○ Part names and external dimensions

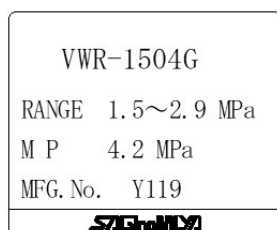
- Taper pipe threads (Figure shows VWR-1504G)



#### ○ Dimension table

| Joint shape | A      | B  | C  | D  | E  | F  | G   |
|-------------|--------|----|----|----|----|----|-----|
| 03G         | Rc 3/8 | 31 | 40 | 22 | 55 | 72 | 91  |
| 04G         | Rc 1/2 | 37 | 42 | 27 | 70 | 83 | 100 |
| 06G         | Rc 3/4 | 37 | 42 | 32 | 80 | 87 | 104 |

#### ○ Examples of label information



MFG. No. Y 11 9  
 2019 (year)  
 11 (day)  
 November (month)  
 X...October /  
 Y...November /  
 Z...December

#### Information on the label

RANGE ..... Adjustment range  
 MP ..... Max. working pressure  
 MFG.No..... Serial number

#### ○ Model designation and numbering system

| No. | Item                             | Remarks                               |
|-----|----------------------------------|---------------------------------------|
| I   | Type                             | See p.6 for the specifications table. |
| II  | Port size                        | See p.6 for the specifications table. |
| III | Connection tube O.D.             | See p.5 for the dimension table.      |
| IV  | Joint shape                      | G...Taper pipe threads                |
| V   | Rubber material for wetted parts | E...EPDM                              |
| VI  | Metal material for wetted parts  | S...Stainless steel                   |

## 4. Specifications

### 4. Specifications

| Specifications table                             |                    |                                                                        |                                                                                                         |     |
|--------------------------------------------------|--------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----|
| Product name                                     |                    | Type VWR Pressure Actuated Water Regulating Valve                      |                                                                                                         |     |
| Type                                             |                    | See the label on the front of the product (See p. 5 for the location). |                                                                                                         |     |
| Purpose of the control device                    |                    | Flow rate adjustment of coolant water for condensing pressure control  |                                                                                                         |     |
| Joint shape                                      |                    | Taper pipe threads                                                     |                                                                                                         |     |
|                                                  |                    | 03G                                                                    | 04G                                                                                                     | 06G |
| Valve opening setpoint (factory-set value) [MPa] |                    | 2.4                                                                    |                                                                                                         |     |
| Adjustment range [MPa]                           |                    | 1.5 to 2.9                                                             |                                                                                                         |     |
| Max. working pressure [MPa]                      | Main unit          | 1                                                                      |                                                                                                         |     |
|                                                  | Bellows            | 4.2                                                                    |                                                                                                         |     |
| Leak test pressure [MPa]                         | Main unit          | 1 (Hydrostatic pressure)                                               |                                                                                                         |     |
|                                                  | Bellows            | 4.5 (Pneumatic pressure)                                               |                                                                                                         |     |
| Water test pressure [MPa]                        | Main unit only     | 1.75 (Hydrostatic pressure)                                            |                                                                                                         |     |
| Fluid temperature range [°C]                     |                    | 0 to 60 (No fluid freezing)                                            |                                                                                                         |     |
| Ambient temperature [°C]                         |                    | -20 to 60 (No fluid freezing)                                          |                                                                                                         |     |
| Fluid*                                           | Coolant water side |                                                                        | Water                                                                                                   |     |
|                                                  | Refrigerant side   | Refrigerant type: A1                                                   | R134a, R404A, R407A, R407C, R407F, R407H, R448A, R449A, R449B, R450A, R452A, R463A, R513A, R515B, R507A |     |
|                                                  |                    | Refrigerant type: A2L                                                  | R32, R1234yf, R1234ze(E), R452B, R454A, R454B, R454C, R455A, R516A                                      |     |
| Main unit material                               |                    | Cast bronze                                                            |                                                                                                         |     |
| Port size [mm]                                   |                    | 12                                                                     | 15                                                                                                      | 19  |
| Max. flow rate (ΔP = 0.05 MPa) [L/min]           |                    | 15                                                                     | 30                                                                                                      | 60  |
| Product weight [kg]                              |                    | 0.7                                                                    | 0.9                                                                                                     | 1   |
| Product installation method                      |                    | See p.8.                                                               |                                                                                                         |     |

#### Notes

- The table above lists the specifications for standard models. For specifications of special models with a "Q" appended to the end of the catalog No., contact us.
- \* The fluid must be non-corrosive to copper alloys and wetted part materials.

### 5. Handling and Storage

★ Observe the following when handling the product:

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Use the product only under the conditions described in the instruction manual. Also, perform periodic maintenance. Exposure to harsh conditions beyond the specified operating conditions or prolonged use may degrade the sealing integrity of the product. In addition, leaked refrigerant may cause fire or suffocation. |
|                 | When transporting a heavy product, wear appropriate protective gear, such as safety shoes, to ensure safety. Failure to do so may result in serious injury, such as a bone fracture, if the product falls or tips over.                                                                                                     |

|  <b>CAUTION</b> |                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | When transporting a heavy product, take all necessary safety precautions, use appropriate lifting aids, and ensure sufficient working space. Transporting the product in an awkward posture may place excessive strain on the body and harm your health. |

- Do not drop the product.  
Doing so may cause the water regulating valve to fail, malfunction, or fail prematurely.
- Do not store the product in locations subject to vibration or impact.  
Doing so may cause the water regulating valve to fail, malfunction, or fail prematurely.
- Do not store the product with a load applied to the main unit or joint.  
Doing so may deform the main unit or joint, causing the water regulating valve to fail, malfunction, or fail prematurely.
- When storing the product, avoid direct sunlight and keep it in a well-ventilated place.  
Deterioration of parts may cause failure, malfunction, or premature failure.
- For the product stored for more than one year, verify operation before use.  
After the product is put into service, periodic operational checks are recommended.
- Secure a space for maintenance.  
Allow sufficient space for maintenance and inspection.
- Only allow water to flow through the main unit.  
Do not use corrosive fluids, refrigerants, or flammable gases, as they may cause an accident.
- On the bellows cap side, use a fluid that does not corrode copper alloys, or use a fluorocarbon refrigerant. Do not use corrosive fluids or toxic gases, as they may cause an accident.
- Keep the gas pressure on the bellows cap side at or below the MP pressure indicated on the nameplate.  
Exceeding the MP pressure may cause pressure rupture.
- Never use the product if the bellows cap has been accidentally deformed.  
There is a risk of refrigerant leakage.
- Ensure that pressure pulsation is not transmitted to the bellows cap.  
Severe pulsation may shorten the service life of the bellows.
- Prevent water hammer from occurring in the piping system.  
Abnormally high pressure caused by water hammer acting on the water regulating valve may cause water leakage.
- Use the product within the specifications described in the instruction manual.

## 6. Assembly

★ Observe the following when assembling the product:

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Do not use the product if it has been dropped or subjected to impact.<br>If any part related to sealing integrity is damaged, refrigerant leakage may cause fire or suffocation.                                                                                                                                                                                                                                                                                                                                    |
|                 | When assembling the product, do not allow liquid to become trapped inside the product. If the temperature changes while liquid is trapped inside, the pressure may rise rapidly, causing damage to the product or refrigerant leakage and leading to serious accidents such as fire or suffocation. Before beginning work, always check the condition inside the piping and ensure a safe inspection environment.                                                                                                   |
|                 | When performing leak tests or charging refrigerant, do not apply pressure exceeding the limits specified in the instruction manual. Applying abnormal pressure beyond the specified limits may cause the equipment or piping to rupture, resulting in injury from scattered parts or suffocation due to leaked refrigerant. Before beginning work, be sure to check the specifications and pressure range of the equipment to be used, take all necessary safety precautions, and wear appropriate protective gear. |
|               | When handling refrigerant gas, work in a well-ventilated area in preparation for possible leakage. Leaked gas may reduce the oxygen concentration and cause suffocation.                                                                                                                                                                                                                                                                                                                                            |
|               | When unpacking or installing the product, wear appropriate protective gear (work gloves, etc.) to ensure safety. There is a risk of injury from sharp edges on the packaging box, product, or tools.                                                                                                                                                                                                                                                                                                                |

- Be sure to allow water to flow in the direction of the arrow on the main unit.  
Allowing water to flow in the opposite direction may result in loss of control.
- Do not paint the product.  
If paint enters the water regulating valve or adheres to the sliding part, it may cause failure or malfunction.
- Remove any dust or foreign matter from the piping.  
Failure to do so may cause valve leakage or malfunction.
- Ensure that excessive force is not applied to the product.  
Excessive force may cause fluid leakage due to damage or deformation.
- Do not use the product outdoors.  
Doing so may cause malfunction due to deterioration of parts or premature failure.

### ○ Installation method

The main unit can be installed in any orientation. When the product is used for condenser coolant water in a refrigeration unit, the water regulating valve functions whether it is installed on the inlet side or the outlet side of the condenser. Be sure to tighten the joints securely. The recommended tightening torque is as follows.

- Gas inlet joint... 16 N·m
- Main unit joint... See the table below.\*

| Shape  |      | Taper pipe threads |       |       |
|--------|------|--------------------|-------|-------|
| Type   | VWR- | 1203G              | 1504G | 2006G |
| Torque | N·m  | 30                 | 35    | 50    |

\* The tightening torque values are for reference only. Appropriate torque values vary depending on the material, ambient environment, and operating conditions, so use these values as a guideline. This information is provided for reference purposes only, and we assume no liability for any damage or malfunction resulting from the use of the torque values stated herein. Thank you for your understanding.

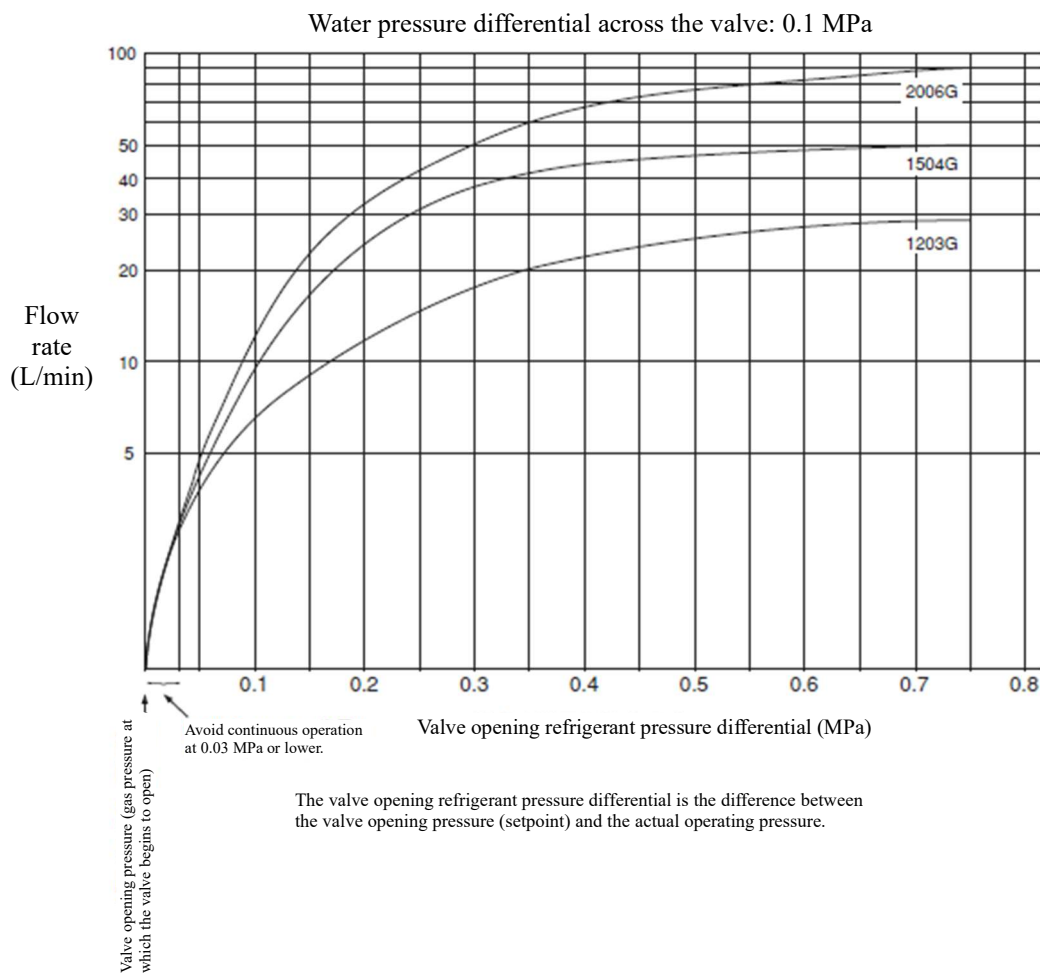
### 7. Settings

★ Observe the following when setting the product:

- Do not turn any screws other than the adjusting spindle.  
Doing so may cause water leakage from the water regulating valve or premature failure.
- Do not operate the valve continuously at a gas pressure near the opening pressure (within 0.03 MPa of the opening pressure).  
Doing so may cause the valve to open and close rapidly and repeatedly within a short period, resulting in abnormal noise and reduced service life.
- Do not set a value outside the adjustment range.  
Doing so may cause malfunction or premature failure.

○ Adjustment method

Turning the adjusting spindle counterclockwise when viewed from above increases the spring load and raises the setpoint at which coolant water begins to flow (opening pressure).



## 8. Operation

### Pressure differential correction factors

If the pressure differential across the valve is other than 0.1 MPa, multiply the values on the curves shown on the left by the factors in the table below.

| Pressure differential across the valve | Factor |
|----------------------------------------|--------|
| 0.03                                   | 0.55   |
| 0.05                                   | 0.7    |
| 0.07                                   | 0.8    |
| 0.1                                    | 1      |
| 0.2                                    | 1.4    |

### Change per revolution of the adjusting spindle

Approximate values are shown in the table below. Turning the spindle counterclockwise increases the setpoint, and turning it clockwise decreases the setpoint.

| Catalog No. |       | Change per revolution |
|-------------|-------|-----------------------|
| VWR-        | 1203G | Approx. 0.2 MPa       |
|             | 1504G |                       |
|             | 2006G |                       |

## 8. Operation

- ★ Observe the following when operating the product:

|                                                                                                  |                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>CAUTION</b> |                                                                                                                                                                                                                                                                |
|                 | The surface of the product may become very hot during or immediately after use. Avoid touching it directly with bare skin. Also, wear appropriate protective gear, such as gloves, when handling the product. Direct contact with the product may cause burns. |

- After installing the product correctly, be sure to perform a trial operation and confirm that the entire system functions properly before use.

## 9. Maintenance and Inspection

- ★ Observe the following when maintaining or inspecting the product:

|                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 | Never disassemble the product. Once disassembled, the product may lose sealing integrity, and refrigerant leakage may lead to serious accidents such as fire or suffocation.                                                                                                                                                                                                                                                                                                                    |
|                 | Use the product only under the conditions described in the instruction manual. Also, perform periodic maintenance. Exposure to harsh conditions beyond the specified operating conditions or prolonged use may degrade the sealing integrity of the product. In addition, leaked refrigerant may cause fire or suffocation.                                                                                                                                                                     |
|                 | Maintenance and inspection work must be performed by personnel with the appropriate skills.<br>Do not apply abnormal external force, such as using the products or pipe joints as scaffolding to climb. Excessive loads may damage the product, resulting in refrigerant leakage and leading to serious accidents such as fire or suffocation due to a decrease in oxygen concentration. Always check the product for abnormalities before and after work, and ensure safety before proceeding. |

- If a malfunction occurs, close the nearest valve and contact us without disassembling the product.

### 10. Replacement

★ Observe the following when replacing the product:

|  <b>WARNING</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p>When replacing the product, recover the refrigerant from the refrigeration system and perform the work only after confirming that no refrigerant remains inside the product. If refrigerant recovery is incomplete, refrigerant may leak, causing fire due to ignition or suffocation due to a decrease in oxygen concentration.</p> <p>In addition, always follow the correct refrigerant recovery procedure, and thoroughly check the connections and control the recovered amount.</p> |
|                 | <p>When charging the product with refrigerant, before starting work, check the condition of the joint connections and the tightness of the threaded joints, and confirm that there is no leakage. In addition, perform the work in a well-ventilated area or in a location where adequate ventilation can be ensured so that refrigerant does not accumulate. Failure to take all necessary safety precautions may result in fire or suffocation due to refrigerant leakage.</p>             |

### 11. Disposal

- When you no longer need the product, dispose of it properly as industrial waste in accordance with the laws, regulations, and ordinances applicable in your area. Also, do not reuse any part of the product.

## CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as “Saginomiya”), truly appreciate your choosing Saginomiya’s product. When using Saginomiya’s own products and other products supplied by Saginomiya (hereinafter referred to as the “Product”), this document as provided below shall be applicable except to the extent that there is anything to the contrary in any applicable estimate, agreement, catalogue, specification, etc.

### ● CONFIRMATION OF OPERATION

All customers using the Product (hereinafter referred to as “Customers”) are requested to, after properly installing the Product, test the operation of the Product to confirm that all the systems in connection with the Product fully function.

In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers’ machinery or equipment due to improper installation of the Product, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (\*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (\*2).

(\*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure

(\*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of the Product

Be sure to confirm the proper operation of the Product and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of the Product caused by Saginomiya.

### ● RESTRICTIONS OF USE

The Product is designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but is not designed and manufactured for the purpose of using the Product for any instrument or system related to human life or health purposes.

Therefore, the use of the Product in fields related to items (1) through (3) below is not intended whatsoever.

Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Product under item (3).

- (1) In any field related to nuclear power and radiation;
- (2) In any field related to space or seafloor equipment;
- (3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using the Product under the fields related to items (1) through (10), (except for item (3), in relation to which the Product must never be used), please be sure to notify Saginomiya’s contact desk in charge of sales and obtain Saginomiya’s prior written approval for such use.

Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Product in relation to these fields if the Customers do not notify Saginomiya’s contact desk and obtain Saginomiya’s prior written approval.

- (4) Heating, cooling, and refrigeration/air conditioning equipment using flammable and/or toxic refrigerants, excluding A2L refrigerants as defined in ISO 817, or various industrial equipment using flammable and/or toxic fluids, excluding A2L refrigerants as defined in ISO 817;
- (5) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
- (6) Disaster-prevention or crime-prevention device;
- (7) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing;
- (8) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
- (9) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
- (10) Other machineries or equipment equivalent to those set forth in the above items (4) to (9) which require for high reliability and safety.
- (11) Machinery and equipment that are intended or expected to be used under conditions other than those specified in the catalogues and instruction manuals;

It is recommended to replace the Product within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on the Product.

### ● SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THE PRODUCT DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR (NOTE 1) OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS’ EQUIPMENT USING THE PRODUCT DUE TO A DEFECT OF THE PRODUCT; PROVIDED, HOWEVER, THAT IN ANY EVENT THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THE PRODUCT OR CUSTOMERS’ EQUIPMENT SHALL NOT EXCEED THE PRICE OF THE PRODUCT WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS’ EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

- (1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THE PRODUCT BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
- (2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THE PRODUCT;
- (3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THE PRODUCT MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
- (4) WHEN CAUSED BY THE USE OF THE PRODUCT IN VIOLATION OF THE ABOVE “RESTRICTIONS OF USE” OR “CONFIRMATION OF OPERATION”;
- (5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA’S SHIPMENT; OR
- (6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THE PRODUCT FROM INTERNET AUCTION, ETC.

(NOTE 1): IN THE CASE OF DANFOSS PRODUCTS, WITHIN EIGHTEEN (18) MONTHS FROM THE DATE OF MANUFACTURE.

**SAGINOMIYA**  
**SEISAKUSHO, INC.**

This document shall apply to any catalogue and instruction manual issued by Saginomiya on or after December 2025.

STF04001 Annex1a 2025.12

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The information in this instruction manual is current as of the date of publication and is subject to change without prior notice due to specification changes or improvements to the product.

We have made every effort to ensure its accuracy, but we shall not be responsible for any damages, direct or indirect, arising from errors, omissions, or use of the information.

**SAGINOMIYA**  
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