

Read all instructions thoroughly

## INSTRUCTIONS

# Thermostatic Expansion Valve

Type **QCX·RCX**

**SAGINOMIYA**

### IMPORTANT

Failure to read and follow all Instructions carefully before installing or operating this expansion valve could cause personal injury and/or property damage. Save this instruction for future use. Confirm the safety and the validity of the product for your system before using.

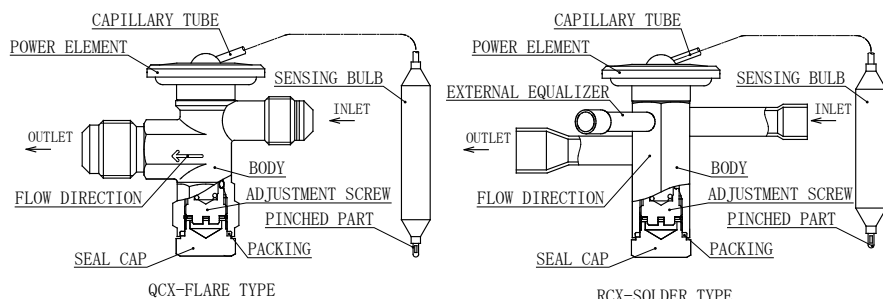
### CAUTION FOR SAFETY

#### ⚠ CAUTION

- Do not give the excess pressure (more than maximum working pressure) to the valve in order to avoid damage to the valve.
- When the valve is removed from the piping of the device, discharge any pressure by pump-down and make sure that there is no refrigerant remained in the valve before the removal action.
- Refrigerant leakage from the valve may cause oxygen deficiency. Proceed relating work after confirming safety sufficiently.

### DESIGNATION

Figure-1



### NUMBERING SYSTEM

- The catalog numbers indicate the types and functions of the valve as follows.
- Before using the valve, check the contents in the product indication.

Example: **QCX-09 34 B V C**

I: Type	QCX	Internal Equalizer Type
	RCX	External Equalizer Type
II: Capacity	09	0.9 USRT
III: Connection Size	34	3/8" Inlet pipe size 1/2" Outlet pipe size
IV: Connection Type	B	Flare Nut Connection
	D	Solder Connection
V: Refrigerant	U	R404A
	H	R407C
	V	R410A
	M	R134a
	C1	R448A/R449A
VI: Charge Type	SA	SA-Charge
	C	C-Charge
	SL	SL-Charge

### PRODUCT SPECIFICATION

Charge Type	C	SL	SA
Controllable Evaporating Temperature	R404A	-40 to 0°C	-60 to -25°C
	R407C		-40 to 10°C
	R410A	-40 to -10°C	
	R134a	-30 to 10°C	
	R448A/R449A	-40 to 0°C	-60 to -25°C
MOP		-20	18°C
Maximum Working Pressure (MP)	3.0MPa		
Airtight Test Pressure	3.3MPa		
Temperature Condition T <sub>s</sub> : Power Element Temperature T <sub>a</sub> : Sensing Bulb Temperature	$T_s \geq T_a$	$T_s \geq T_a$	$T_s \geq T_a$
Maximum Working Temperature	MAX. 80°C		
Static Superheat (S.S.H.) Adjustment Range	1 to 7°C (R407C, R410A: 1 to 5°C)		
Heat-Pump Device	Not Applicable		
Hot Gas Defrosting Device	Applicable (Use at MP or less)		
Default Static Superheat Setting	5°C (R407C: 2°C)		

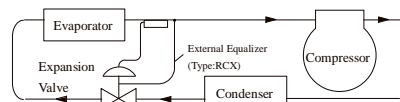
- Confirm if the specifications are appropriate for your application before using.
- Do not use the product under conditions that exceed the range of the specifications. Expansion valve may be damaged or function improperly.

### INSTALLATION INSTRUCTION

Follow the instructions below to avoid damaging or causing malfunction of the system.

- Install the expansion valve in vertical position with the power element on the top to position shown in figure-2 if possible. Otherwise, install the valve with the outlet side facing down for QCX series, and the external equalizer side facing down for RCX series.

Figure-2



- Make sure to install the valve in the correct orientation.
- For RCX, connect the external equalizer to the tubes with the diameter of 2 mm or larger.
- To prevent contamination from entering the pipes, which may lead to valve and external equalizer leaks, consider placing a strainer on the inlet connection side. (Recommended 100 meshes or higher)
- The sensing bulb must be attached to the suction line at the evaporator outlet with the copper wire or the copper mounting band tightly, and place the thermal protection cover to isolate it from the ambient temperature.
- Fix the capillary tube to avoid the resonance. It may cause cracking or damaging to the capillary tube.
- When brazing the expansion valve, wrap the valve body and the power element with a wet rag to keep the temperature lower than 120°C
- Also, fill an inert gas such as nitrogen in the pipes to avoid oxidation during brazing. Oxide scales may cause malfunctions and/or increase valve and external equalizer leakages. Do not let the inert gas flow when brazing. It may melt the resin parts in the expansion valve.
- During piping work, make sure that a wrench does not touch "power element part" in order to prevent damage or external leakage.
- After installation, perform an airtightness test to verify that the unit is properly air tightness. Do not apply higher pressure to the external equalizer than the entrance side during air tightness test. It may cause external equalizer leakage.
- Any cases listed below shall be excluded from the warranty.
  - Corrosion caused by hydrolysis of refrigerating oil.
  - Line clogging, increase of external equalizer leakage, operation failure, and erosion caused by contaminations and/or moisture in the system.

### ADJUSTMENT

- The superheat adjustment can be conducted by turning the adjustment screw for static superheat. Remove the seal cap and turn the adjustment screw with an appropriate screwdriver.
  - To increase the superheat... Turn the screw clockwise.
  - To decrease the superheat... Turn the screw counter-clockwise.

Pressure changing value per a complete screw turn is approximately 0.045MPa.

Before turning the adjustment screw, mark on the adjustment screw and the valve body to confirm Saginomiya's factory setting value on delivery.

### REFERENCE

**SAGINOMIYA**  
SEISAKUSHO, INC.

Shinjuku Garden Tower 22F  
8-2, Okubo 3-chome, Shinjuku-ku, Tokyo, 169-0072 Japar  
Tel : +81 3 6205 9123 Fax : +81 3 6205 9125  
E-mail : [inter@saginomiya.co.jp](mailto:inter@saginomiya.co.jp)  
URL : <http://www.saginomiya-global.com/en/>

- Do not turn the adjustment screw at excess torque to avoid damage.
- Even if the adjustment screw is turned for adjustment of superheat, the change will not be reflected immediately. After turning, take ten minutes interval to judge the adjusted condition.
- Some external leakage of refrigerant may be observed during "adjustment work of superheat" of the valve.
- Tighten the seal cap after superheat adjustment to prevent external leakage. Make sure that the packing is placed on the valve body, then tighten the seal cap with the torque of 12N·m. If external leakage is found, retighten it.
- Replace the packing if deteriorated.

### HANDLING

- Do not give any damage, flaw or deformation to the sensing bulb. It may lead to system malfunction by incomplete contact with the refrigerating system suction pipe.
- Do not apply an impact or a stress to the power element to avoid malfunction and external leakage.
- Do not bend or give an impact to the pinched part of capillary tube to avoid system malfunction.
- Do not carry or handle the capillary tube in a way of giving any stress to the brazing part. It may break the capillary tube.
- Handle carefully to avoid any damage to the flare joint when using flare type. Flaw or damage may cause external leakage.
- Do not hit or give any shock to the valve to avoid failure.
- Do not use the valve in the corrosive environment to avoid external leakage or damage.

### OPERATION CHECK

- Install and calibrate the product correctly and then check its operation to confirm correct function of the whole system.

### LIMIT ON APPLICATION

- The product is not designed nor manufactured for use in such equipment or system that is intended to be used under such circumstances that may affect human life. For application requiring extreme high reliability, please contact us.

### SCOPE OF WARRANTY

- Unless otherwise agreed by the parties, warranty period of the product shall be one year after date of delivery to buyer. In case of failure that is attributable to Saginomiya within such period, the product shall be repaired or replaced without charge. However, the warranty shall be invalid if any of followings are applicable to the cases.
  - Improper handling or application by user.
  - Modification or repair by other than Saginomiya.
  - Any failure to be caused by acts of God, fire, storm or the like war, riot or the like and other causes beyond the control of the company.

Warranty described in this paragraph means the warranty for the product itself and does not include warranty for any consequential damage arising out of or occasioned by a defect or failure of the product.

## CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as "Saginomiya"), truly appreciate your choosing Saginomiya's product (hereinafter referred to as this "Product").

When this Product is used, 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 this Product (hereinafter referred to as "Customers") are requested to, after properly installing this Product, test the operation of this Product to confirm that all the systems in connection with this 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 this 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 this Product

Be sure to confirm the proper operation of this 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 this Product caused by Saginomiya.

### ● RESTRICTIONS OF USE

This 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 this Product for any instrument or system related to human life or health purposes.

Therefore, the use of this 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 this 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 this Product under the fields related to items (1) through (10), (except for item (3), in relation to which this 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 this 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 air conditioning equipment that uses flammable and/or toxic refrigerants, or various industrial equipment that uses flammable and/or toxic fluids;
- (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.

It is recommended to replace this 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 this Product.

### ● SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THIS PRODUCT DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THIS PRODUCT DUE TO A DEFECT OF THIS PRODUCT; PROVIDED, HOWEVER, THAT IN ANY EVENT THE RATIO OF THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THIS PRODUCT OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THIS 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 THIS 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 THIS PRODUCT;
- (3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THIS PRODUCT MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
- (4) WHEN CAUSED BY THE USE OF THIS 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 THIS PRODUCT FROM INTERNET AUCTION, ETC.