



OPERATION MANUAL

Air cooled refrigeration condensing unit

LREQ15B7Y1R
LREQ20B7Y1R

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The English text is the original instruction. Other languages are translations of the original instructions.

Thank you for purchasing this Daikin condensing unit. Carefully read this operation manual before using the condensing unit. It will tell you how to use the unit properly and help you if any trouble occurs.

Important information regarding the refrigerant used

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type : R410A

GWP ⁽¹⁾ value : 1975

⁽¹⁾ GWP = global warming potential

(Values are indicated in F-gas Regulations, Appendix I, parts 1 and 2.)
Periodical inspections for refrigerant leaks may be required depending on European or local legislation.

Please contact your local dealer for more information.

1. SAFETY PRECAUTIONS

To gain full advantage of the condensing unit's functions and to avoid malfunction due to mishandling, please read this operation manual carefully before use.

This condensing unit is classified under "appliances not accessible to the general public".

- The precautions described herein are classified as **WARNING** and **CAUTION**. They both contain important information regarding safety. Be sure to observe all precautions without fail.



WARNING Failure to follow these instructions properly may result in personal injury or loss of life.



CAUTION Failure to observe these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstances.

- After reading, keep this manual in a convenient place so that you can refer to it whenever necessary. If the equipment is transferred to a new user, be sure also to hand over the manual.



WARNING

Be aware that prolonged, direct exposure to cool or warm air from the air conditioner, or to air that is too cool or too warm can be harmful to your physical condition and health.

When the condensing unit is malfunctioning (giving off a burning odour, etc.) turn off the power to the unit and contact your local dealer.

Continued operation under such circumstances may result in a failure, electric shocks or fire hazards.

Consult your local dealer about installation work.

Doing the work yourself may result in water leakage, electric shocks or fire hazards.

Consult your local dealer regarding modification, repair and maintenance of the condensing unit.

Improper workmanship may result in water leakage, electric shocks or fire hazards.

Do not place objects, including rods, your fingers, etc., in the air inlet or outlet.

Injury may result due to contact with the condensing unit's highspeed fan blades.

Never touch the air outlet or the horizontal blades while the swing flap is in operation.

Fingers may become caught or the unit may break down.

Beware of fire in case of refrigerant leakage.

If the condensing unit is not operating correctly (i.e. the interior temperature of the condensing unit does not drop efficiently), refrigerant leakage could be the cause.

Consult your dealer for assistance.
The refrigerant used for the condensing unit is safe and normally does not leak.

However, if the refrigerant leaks and gets in contact with a naked burner, heater or cooker, it may generate hazardous compounds. Turn off the condensing unit and call the dealer. Make sure to turn on the condensing unit after the qualified service person confirms that the leakage is repaired.

Consult your local dealer regarding what to do in case of refrigerant leakage.

When the condensing unit is to be installed in a small room, it is necessary to take proper measures so that the amount of any leaked refrigerant does not exceed the concentration limit in the event of a leakage. Otherwise, this may lead to an accident due to oxygen depletion.

Contact professional personnel about attachment of accessories and be sure to use only accessories specified by the manufacturer.

If a defect results from your own workmanship, it may result in water leaks, electric shock or fire.

Consult your local dealer regarding relocation and reinstallation of the condensing unit.

Improper installation work may result in leakage, electric shocks or fire hazards.

Be sure to use fuses with the correct ampere reading.

Do not use improper fuses, copper or other wires as a substitute, as this may result in electric shock, fire, injury or damage to the unit.

Be sure to install an earth leakage breaker.

Failure to install an earth leakage breaker may result in electric shocks or fire.

Be sure to earth the unit.

Do not earth the unit to a utility pipe, lightning conductor or telephone earth lead. Imperfect earthing may result in electric shocks or fire.

A high surge current from lightning or other sources may cause damage to the condensing unit.

Consult the dealer if the condensing unit submerges owing to a natural disaster, such as a flood or typhoon.

Do not operate the condensing unit in that case, or otherwise a malfunction, electric shock, or fire may result.

Start or stop the air conditioner with the remote controller.

Never use the power circuit breaker for this purpose.

Otherwise, it may cause fire or water leakage.

Furthermore, because power failure compensation is set, the fan will rotate abruptly, which may result in injury.

Do not use the product in the atmosphere contaminated with oil vapor, such as cooking oil or machine oil vapor.

Oil vapor may cause crack damage, electric shocks, or fire.

Do not use the product in places with excessive oily smoke, such as cooking rooms, or in places with flammable gas, corrosive gas, or metal dust.

Using the product in such places may cause fire or product failures.

Do not use flammable materials (e.g., hairspray or insecticide) near the product.

Do not clean the product with organic solvents such as paint thinner.

The use of organic solvents may cause crack damage to the product, electric shocks, or fire.

Do not keep in the unit anything volatile or flammable.

Doing so may result in explosion or fire.

Be sure to use a dedicated power supply for the condensing unit.

The use of any other power supply may cause heat generation, fire, or product failures.

Consult your dealer regarding cleaning the inside of the condensing unit.

Improper cleaning may cause breakage of plastic parts, water leakage and other damage as well as electric shocks.



CAUTION

Do not use the condensing unit for purposes other than those for which it is intended.

Do not use the condensing unit for cooling precision instruments, works of art as this may adversely affect the performance, quality and/or longevity of the object concerned.

Do not use the unit for water cooling use.

Freezing may result.

Do not remove the unit's fan guard.

The guard protects against the unit's high speed fan, which may cause injury.

Do not locate around the unit anything that must stay dry.

Doing so may wet the area resulting from condensed water from the unit.

After prolonged use, check the unit stand and its mounts for damage.

If left in a damaged condition, the unit may fall and cause injury.

Do not place flammable sprays or operate spray containers near the unit as this may result in fire.

Do not put flammable containers, such as spray cans, within 1 m from the air outlet.

The containers may explode because the warm air output of the indoor or outdoor unit will affect them.

Before cleaning, be sure to stop unit operation, turn the power circuit breaker off or remove the power cord.

Otherwise, an electric shock and injury may result.

To avoid electric shocks, do not operate with wet hands.

Do not allow a child to mount on the outdoor unit or avoid placing any object on it.

Falling or tumbling may result in injury.

Do not wash the condensing unit with water, as this may result in electric shocks or fire.

Do not place water containers (flower vases, flowerpot, etc.) on the unit, as this may result in electric shocks or fire.

Do not install the condensing unit at any place where there is a danger of flammable gas leakage.

In the event of a gas leakage, build-up of gas near the condensing unit may result in fire hazards.

Perform drain piping to ensure perfect drainage.

Imperfect drainage may result in water leakage.

The appliance is not intended for use by unattended young children or persons who are incompetent to operate condensing unit.

It may result in injury or electric shock.

Children should be watched so that they do not play with the unit.

Accidental operation by a child may result in injury or electric shock.

To avoid injury, do not touch the air inlet or aluminium fins of the unit.

Do not place objects in direct proximity of the condensing unit and do not let leaves and other debris accumulate around the unit.

Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

Do not block air inlets nor outlets.

Impaired airflow may result in insufficient performance or trouble.

Do not let children play on or around the outdoor unit.

If they touch the unit carelessly, injury may be caused.

Turn off the power when the unit is not to be used for long periods of time.

Otherwise, the unit may get hot or catch on fire due to dust accumulation.

Do not touch the aluminium fin directly at the time of cleaning.

Doing so may result in injury.

[Installation site]

Is the unit installed in a well-ventilated place with no obstacles around?

Do not use the product in the following places.

- Places with mineral oil, such as cutting oil.
- Places directly exposed to seawater spray and briny air.
- Places where sulphide gas is generated, such as hot springs.
- Places with radical voltage fluctuations, such as factories.
- In vehicles or on board ships.
- Places with sprays of oil or excessive steam, such as kitchens.
- Places with machines generating electromagnetic waves.
- Places with acid gas, alkaline gas, or steam.
- Places with poor drainage.
- Places in potentially explosive atmosphere.

Install the unit, power supply wiring, transmission wiring and refrigerant piping at least 1.5 meter away from televisions, radios and stereo sets.

Otherwise, the picture and sound may be interfered with noise.

Are snow protection measures taken?

For detailed arrangements, such as the installation of a snow protection hood, consult your dealer.

Is there no clearance around the through hole between the internal and external units?

The chilled air will leak from the clearance and the cooling efficiency of the unit will be degraded.

Is service space secured?

If the target evaporating temperature is $\leq -20^{\circ}\text{C}$, adding refrigerant oil may be required. Failure to do so may lead to compressor malfunction. If you change the target evaporating temperature from $\geq -20^{\circ}\text{C}$ to $\leq -20^{\circ}\text{C}$, it may also be required to add refrigerant oil. In this case, contact your dealer.

After refrigerant oil has been added, the target evaporating temperature cannot be changed to $\geq -20^{\circ}\text{C}$.

Refer to the installation manual for more information.

[Electrical work]

Do not attempt to conduct electrical work or grounding work unless you are licensed to do so.

Consult with your dealer for electrical work and grounding work.

Check that the power supply is suitable to the unit and that an exclusive circuit is provided to the unit.

Check the electric capacity and voltage.

Refer to the installation manual for more information.

[Refrigerant]

- This product contains fluorinated gases covered by the Kyoto protocol.

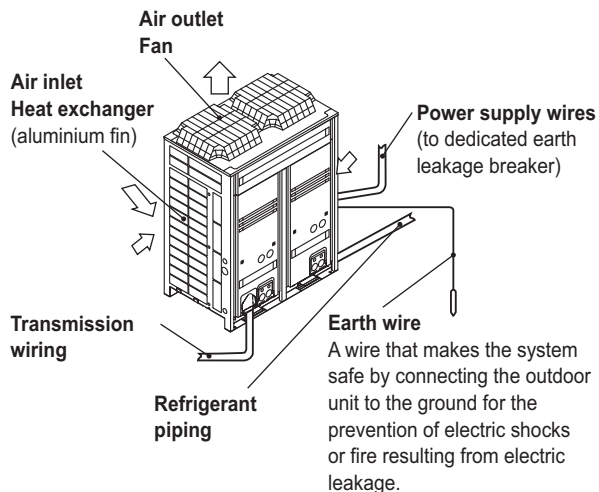
Type of refrigerant: R410A, GWP value: 1975

Periodical inspections on refrigerant leakages may be required depending on European or local legislation. Please contact your installer for more information.

- The total maximum refrigerant charge of a Multi-ZEAS system must be less than 100 kg, this to be in accordance with CE requirements (EN603350-2-40 standard). This means that in case the calculated total refrigerant charge is equal to or more than 95 kg you must divide your multiple outdoor system into smaller independent systems, each containing less than 95 kg refrigerant charge.

2. NAME OF PART

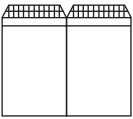
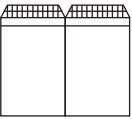
In the case of LREQ15, LREQ20



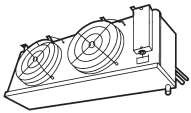
3. SYSTEM CONFIGURATION

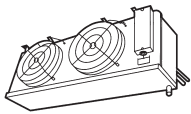
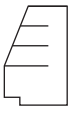
The condensing unit has the following system configuration.

3-1 Air cooled condensing unit

Name	Master unit	Slave unit
Shape		

3-2 Other configuration equipment

Name	Indoor unit	
	Refrigeration	
	Unit cooler	Showcase
Shape		

Name	Indoor unit		Defrost control panel
	Freezing		
	Unit cooler	Showcase	
Shape			

For other configuration equipment, refer to the Operation Manuals of the respective pieces of equipment.

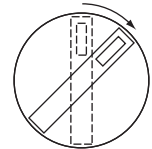
4. METHOD OF OPERATION/STOP

Preparations

- Turn on all the configuration equipment.
- Be sure to turn on the power at least 6 hours before starting the operation of the equipment for the machinery protection.

To start operation

REMOTE OFF ON



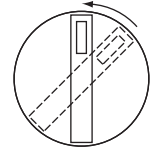
1. Set the operation switch of the master unit to ON.

Stop

2. Set the operation switch of the master unit to OFF.

To stop operation

REMOTE OFF ON



CAUTION

The unit must go through a stop movement before the unit is turned power off. Be sure to turn off the breaker after the operation switch is turned off. It is not possible to start and stop the system by operating the operation switch of the slave unit.

Note:

- The use of a remote switch is recommended if the operation of the unit is stopped frequently. Request your dealer for the installation of the remote switch.

5. BETTER USE

5-1 Turn off the power if the unit is not operated for a long time.

The unit will consume a power of several watts to several tens of watts if the power is on (see note). For the purpose of machine protection, however, be sure to turn on the power at least 6 hours before resuming the operation of the unit.



Note: The power consumption of the unit varies with the operating factors, such as the condensing unit model.

5-2 Install an alarm if operational errors are likely to degrade the commodities in storage.

The unit is provided with a terminal to output an alarm signal. If the system should malfunction and there is no alarm, the operation of the unit will be interrupted for a long time and damage to the commodities in storage may result. The installation of an alarm is recommended in order to take appropriate measures promptly in such cases. For details, consult your dealer.

6. CARE AND CLEANING METHOD

Be sure to stop the operation of the unit with the operation switch and turn off the power (i.e., turn off the earth leakage breaker) before starting the maintenance of the unit.



CAUTION

Do not touch the aluminium fin directly at the time of cleaning.

Doing so may result in injury.

Do not wash the condensing unit with water, as this may result in electric shocks or fire.

Before cleaning, be sure to stop unit operation, turn the power circuit breaker off or remove the power cord. Otherwise, an electric shock and injury may result.

- Request your dealer for heat exchanger cleaning periodically.

7. TROUBLESHOOTING

7-1 The following cases are not malfunctions.

1. The unit does not operate.

- The unit is restarted immediately after the unit comes to a stop. The unit is under control in order not to impose a heavy duty on the machinery parts. The operation of the unit will start in 1 to 5 minutes.
- The unit has been just turned on. The microprocessor requires preparations. Wait for approximately two minutes.

2. The unit does not come to a stop.

- The operation switch was turned off a while ago. The unit operates for a while before the unit comes to a stop in order to protect the machinery parts. The unit will come to a stop after the operation is over.

3. The unit generates noise.

- The unit in cooling operation generates low hissing sound continuously. This is the sound of gas (refrigerant) flowing in the condensing unit.
- The unit generates hissing sound immediately after the unit starts operating or comes to a stop. This is the sound of gas (refrigerant) flowing.
- The unit rattles when the unit is operated and stopped repeatedly. This is the sound of gas (refrigerant) flowing inside the condensing unit.

4. The outdoor fan does not rotate.

- The unit is in operation. The fan is under RPM control in order to maintain the optimum operation of the product.

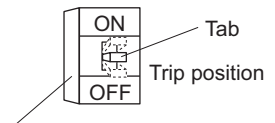
5. Neither the compressor of the outdoor unit nor the outdoor fan comes to a stop.

- The phenomenon occurs after the unit comes to a stop. The compressor and outdoor fan continue operating in order to prevent the detention of refrigerant oil and refrigerant. They will come to a stop in about 5 to 10 minutes.

7-2 Check before requesting servicing.

1. The unit does not operate at all.

- Has the power supply fuse not blown out?
Turn off the power. (Consult your dealer for the replacement of the power supply fuse.)
- Is the power circuit breaker not turned off?
Turn on the power if the knob of the power circuit breaker is set to the OFF position.
Do not turn on the power if the knob of the power circuit breaker is set to the trip position. (Consult your dealer.)



Power circuit breaker
(earth leakage breaker)

- Is there no blackout?
Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after the power supply is recovered.
 - Are all the power supplies turned on?
Turn all the power on.
- #### 2. The unit comes to a stop soon after the unit starts operating.
- Do obstacles not block the air inlet or outlet of the outdoor unit or indoor unit?
Remove the obstacles.
- #### 3. The cooling operation of the unit is bad.
- Does the indoor unit (unit cooler and showcase) not have much frost?
Defrost manually or shorten the cycle of defrosting operation.
 - Are there not too many articles inside?
Reduce the number of articles.
 - Is the circulation of cold air in the indoor unit (unit cooler and showcase) smooth?
Change the allocation of the articles.
 - Is there not much dust on the heat exchanger of the outdoor unit?
Remove the dust with a brush or vacuum cleaner without using water or consult your dealer.
 - Is cold air not leaking outside?
Stop the leakage of cold air.
 - Is the set temperature in the indoor unit (unit cooler and showcase) not too high?
Set the temperature appropriately.
 - Are high-temperature articles not stored?
Store them after they are once cooled off.
 - Is the opening time of the door not long?
Minimize the opening time of the door.

7-3 Consult your dealer in the following cases.



WARNING

When the condensing unit is malfunctioning (giving off a burning odor, etc.) turn off the power to the unit and contact your local dealer.

Continued operation under such circumstances may result in a failure, electric shocks or fire hazards.

- Safety devices, such as the fuse, breaker, and earth leakage breaker, frequently operate or the operation of the operation switch is not stable.
Contact your dealer after turning the power off.
- Turn off the power and consult your dealer if symptoms other than the above are noticed or the equipment does not go into normal operation after taking the steps specified in 7-2.

8. INSPECTION

The preventive maintenance of the unit is required in order not to damage commercial products. Request a contractor authorized by our dealer for inspection.

Refer to information on "Maintenance inspection" on page 6 for maintenance inspection.

9. PRODUCT MODELS AND MAIN SPECIFICATIONS

9-1 Models and Main Specifications.

Model			LREQ30BY1		LREQ40BY1	
			LREQ15B7Y1R	LREQ15B7Y1R	LREQ20B7Y1R	LREQ20B7Y1R
Power supply			3 phase 50 Hz 380–415 V			
Refrigerant			R410A			
Operating condition	Evaporating temperature		−45°C~+10°C			
	Outdoor temperature		−20°C~+43°C			
Outer dimensions (H×W×D) (mm)			1680 × 1240 × 765	1680 × 1240 × 765	1680 × 1240 × 765	1680 × 1240 × 765
Product mass			331 kg	331 kg	337 kg	337 kg
Connecting refrigerant piping	Liquid pipe		Ø19.1			
	Gas pipe		Ø41.3			
Design pressure	High-pressure side	(bar)	38	38	38	38
		(MPa)	3.8	3.8	3.8	3.8
	Low-pressure side	(bar)	25	25	25	25
		(MPa)	2.5	2.5	2.5	2.5

Note:

*1. Values are subject to change without notice for product improvements.

*2. When the outdoor temperature is low, the temperature reading may be below the target evaporating temperature set for the protection of the unit.

*3. The sound pressure level is less than 70 dB(A).

10. AFTER-SALE SERVICE

10-1 After-sale service



Consult your local dealer regarding modification, repair and maintenance of the condensing unit.

Improper workmanship may result in water leakage, electric shocks or fire hazards.

Consult your local dealer regarding relocation and reinstallation of the condensing unit.

Improper installation work may result in leakage, electric shocks or fire hazards.

Beware of fire in case of refrigerant leakage.

If the condensing unit is not operating correctly (i.e. the interior temperature of the condensing unit does not drop efficiently), refrigerant leakage could be the cause.

Consult your dealer for assistance.

The refrigerant used for the condensing unit is safe and normally does not leak.

However, if the refrigerant leaks and gets in contact with a naked burner, heater or cooker, it may generate hazardous compounds. Turn off the condensing unit and call the dealer. Make sure to turn on the condensing unit after the qualified service person confirms that the leakage is repaired.

1. Inform your dealer of the following items when you request repairs.

- Model name Described in the warranty card.
- Serial number and date of installation Described in the warranty card.
- Defective condition – as precise as possible
- Your address, name, and telephone number

2. Repairs after expiration of warranty period

Consult your dealer. Onerous repairs will be possible if the unit can maintain its original functions after the repairs are made.

3. Maintenance inspection

The interior of the refrigeration condensing unit will become dirty and its performance may be degraded if it is used for several seasons.

The disassembly and internal cleaning of the unit requires specialized techniques. Therefore, our dealer recommends an onerous maintenance inspection besides usual maintenance services.

For details, consult your dealer.

Keep in mind that our dealer's warranty may not cover malfunctions resulting from the disassembly or internal cleaning of the unit conducted by contractors not authorized by our dealer.

4. Relocation and disposal

- Contact your dealer for removing and reinstalling the system condensing unit since they require technical expertise.
- The system condensing unit uses fluorocarbon refrigerant. Contact your dealer for discarding the system condensing unit since it is required by law to collect, transport and discard the refrigerant in accordance with relevant local and national regulations.
- In either case, consult your dealer.

5. Inquiries

Contact your dealer for after-sale services.

10-2 Onerous repairs

(Outside scope of warranty coverage)

10-2-1 Accidents resulting from use beyond standards for use

- Use beyond Limits
- Applications other than its designed purpose of use or modification.

Standards for use

Condensing unit

Item		Standard for use
Refrigerant		R410A (*5)
Refrigeration oil		Daphne FVC68D (*6)
Range of evaporating temperature (Te)		-45°C ~ +10°C (*2)(*8)
Range of outdoor temperature		-20°C ~ +43°C (*4)
Suction gas superheated degree		10 K or higher (*7)
Suction gas temperature		20°C or lower
Power supply	Voltage regulation	within ±10% of rated voltage
	Voltage imbalance rate	within ±2% of rated voltage
	Frequency regulation	within ±2% of rated frequency
Compressor ON/OFF frequency		6 times or less/hour
Connection piping length (equivalent piping length) (*1)		130 m or lower (Te ≥ -20)
		100 m or lower (Te < -20))
Max. difference in height between indoor and outdoor units		35 m or lower (*3) (When the condensing unit is installed higher than the refrigeration-side)
		10 m or lower (When the condensing unit is installed lower than the refrigeration-side)
Installation space		According to the installation service space
Total indoor unit capacity		Starting from an outdoor temperature of 32°C, the total indoor unit capacity needs to be ≥50% of the total outdoor unit capacity
Outdoor unit multi-connection piping kit		To split up the gas piping and connect it to the different outdoor units, the use of the outdoor unit multi-connection piping kit (EKHRQZM) is required

Restrictions for the refrigeration-side Note:

Connectable minimum load capacity	4.0 kW (Te ≥ -20) 3.2 kW (Te < -20)
Liquid solenoid valve installed upstream of expansion valve	For R410A, maximum operating pressure difference: 3.5 MPa or higher It is necessary to control the solenoid valves in indoor unit using "Operate unit" of outdoor unit
Defrost method	Hot gas defrost not possible After defrosting ends, resume operation of the refrigeration-side blower within 3 minutes or less
Restrictor	Use a thermal expansion valve for R410A

- *1. Connection piping length differs according to set value of evaporating temperature. The total internal volume of the connected indoor units may not exceed 80 l.
- *2. When the outdoor temperature is lower than evaporating temperature, evaporating temperature is lower than set evaporating temperature
- *3. Trap is required at 5 m intervals from outdoor unit.
- *4. If the outdoor units are installed in a location where the ambient temperature can drop below -10°C , install a windbreak board or a snowbreak hood. Refer to the service manual for more details.
- *5. Only use refrigerant R410A.
- *6. Only use the refrigerant oil listed in the Daikin service parts list.
- *7. Also applies to post-defrost operation.
- *8. If the target evaporating temperature is $\leq -20^{\circ}\text{C}$, adding refrigerant oil may be required.

10-2-2 Selection, installation, work failures specified below and other failures

Note: Asterisk-marked items show concrete examples.

1. Model selection failures

- A model not suitable for storage applications is selected.
 - * The cooling of products not reaching the target storage temperatures.
- Cooling overloading or underloading judged by our dealer.
 - * The frequency of stoppage is 6 or more times per hour or the set cooling temperature is not attained.

2. Installation failure (installation and environmental problems)

- The unit is not installed on a stable horizontal plane.
 - * The unit is not fixed securely.
- The environmental conditions of the place of installation differ from normal atmospheric conditions.
 - * Briny air environment, shore side, oil mist environment, kitchen exhaust side, other corrosive gas and adhesive mist environment.
- The place of installation had poor ventilation and heat dissipation.
 - * The machine took in exhausted air again.
- The required outdoor unit multi-connection piping kit was not used.
- The required windbreak board or snowbreak hood was not installed in case of outdoor temperatures $\leq -10^{\circ}\text{C}$.
- The instructions outlined in the installation manual were not followed correctly.

3. Work failure

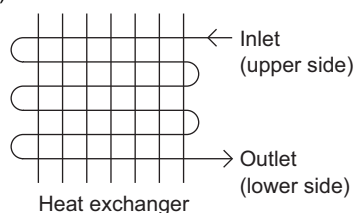
- The interior of the piping was not vacuum dried sufficiently.
 - * The clogging of the thin areas of the piping caused by icing.
- The interior of the piping was not sufficiently airtight.
 - * Leakage of refrigerant gas.
- The interior of the piping was contaminated with foreign substance.
 - * The clogging of the thin areas of the piping.
- The unit was adversely affected by on-site modification work.
 - * The use of the unit beyond the operating temperature range as a result of on-site modification.
- An accident resulted from the improper handling of the unit under installation work.
 - * The loosening or wobbling of the outer panel or broken or bent damage to the piping.
 - * The instructions regarding the addition of refrigerant oil were not followed correctly.
 - * Too much or too few refrigerant was charged into the system.

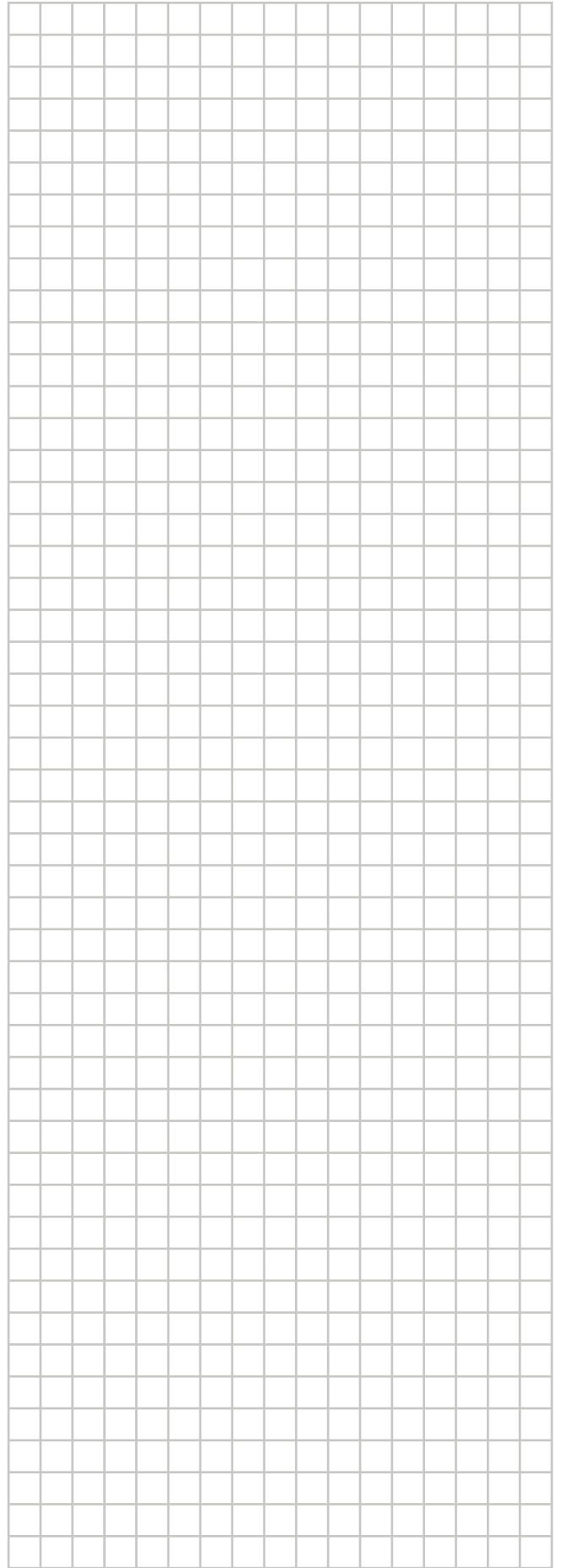
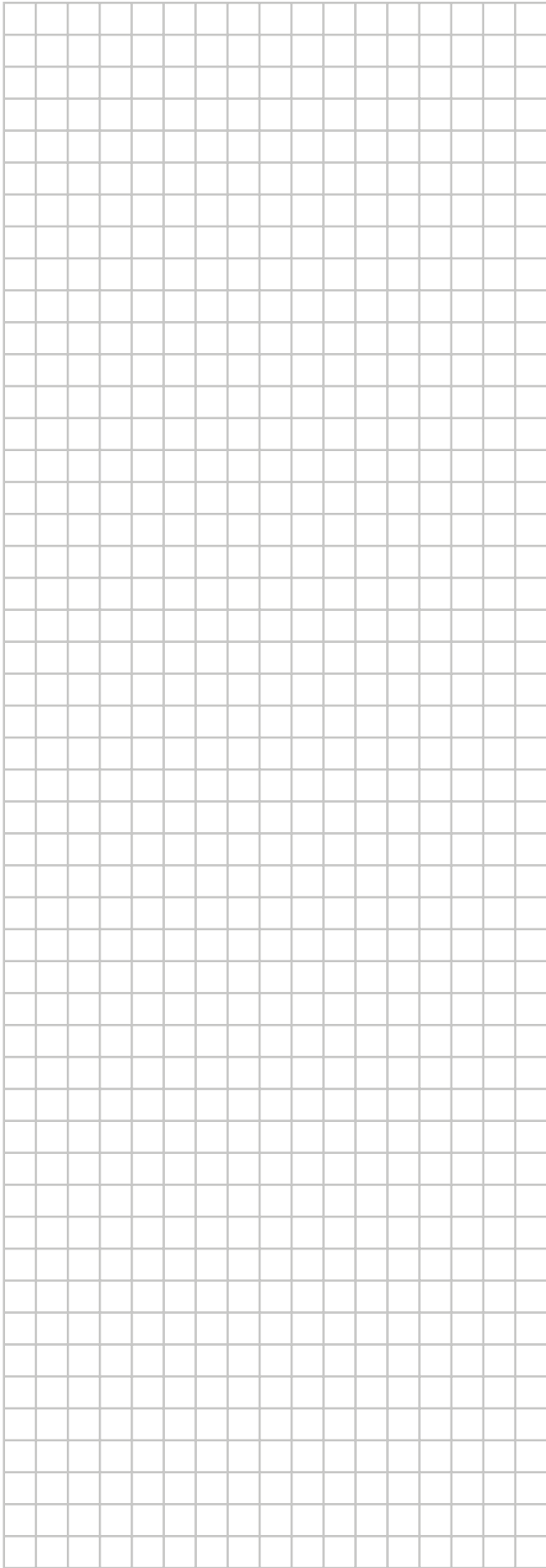
4. Operational failure

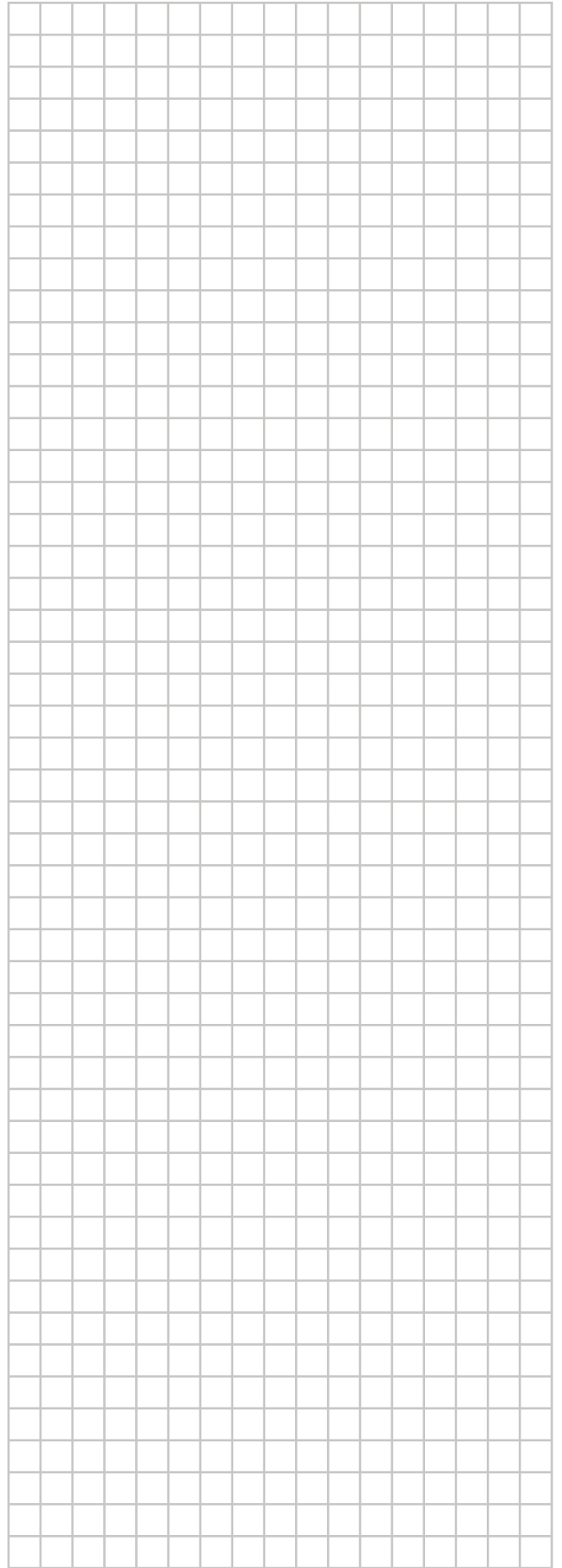
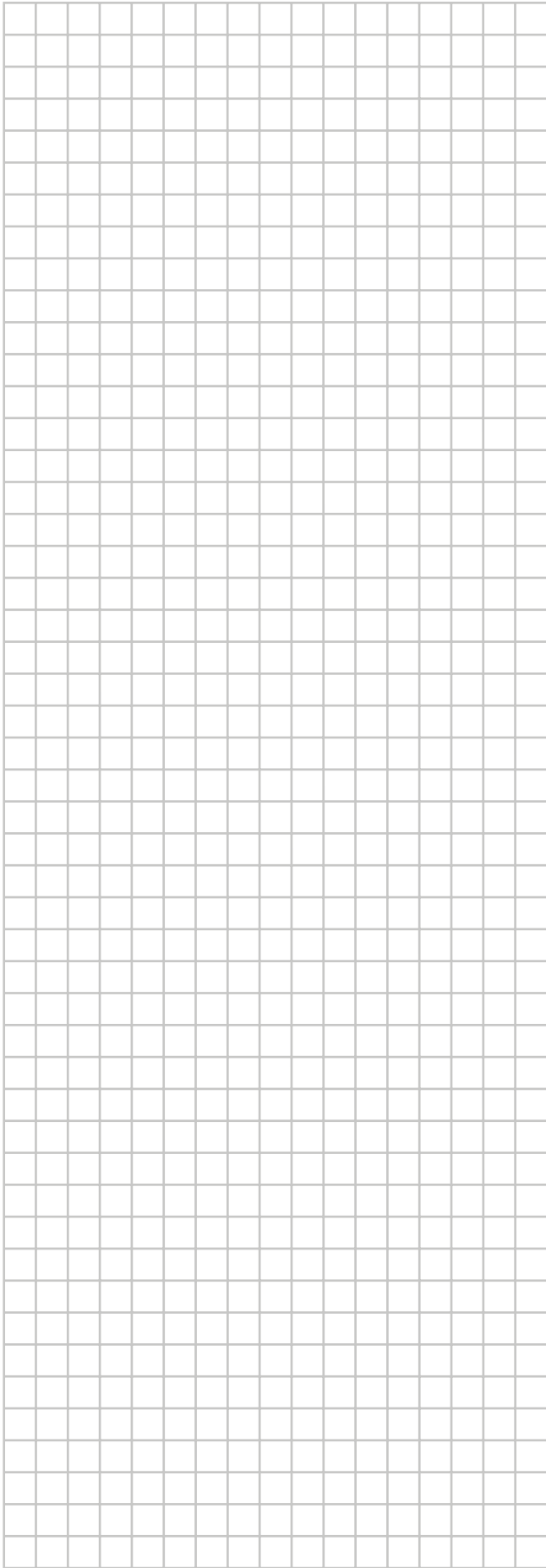
- Temperature settings for stored objects were wrong.
 - * The storage of vegetables at temperatures below 0°C .
- The periodical maintenance of the unit was neglected.
 - * The clogging of the air heat exchanger, rust generation from each part, gas leakage, and icing of the indoor unit (showcase and unit cooler).
- The following instructions regarding the addition of refrigerant oil were not followed correctly.
 - * If the target evaporating temperature is $\leq -20^{\circ}\text{C}$, adding refrigerant oil may be required.
 - * After refrigerant oil has been added, the target evaporating temperature cannot be changed to $\geq -20^{\circ}\text{C}$.
 - * If the target evaporating temperature is lowered by 5°C (starting from a target evaporating temperature of $\leq -20^{\circ}\text{C}$), it is required to recalculate the amount of refrigerant oil and add more if necessary.

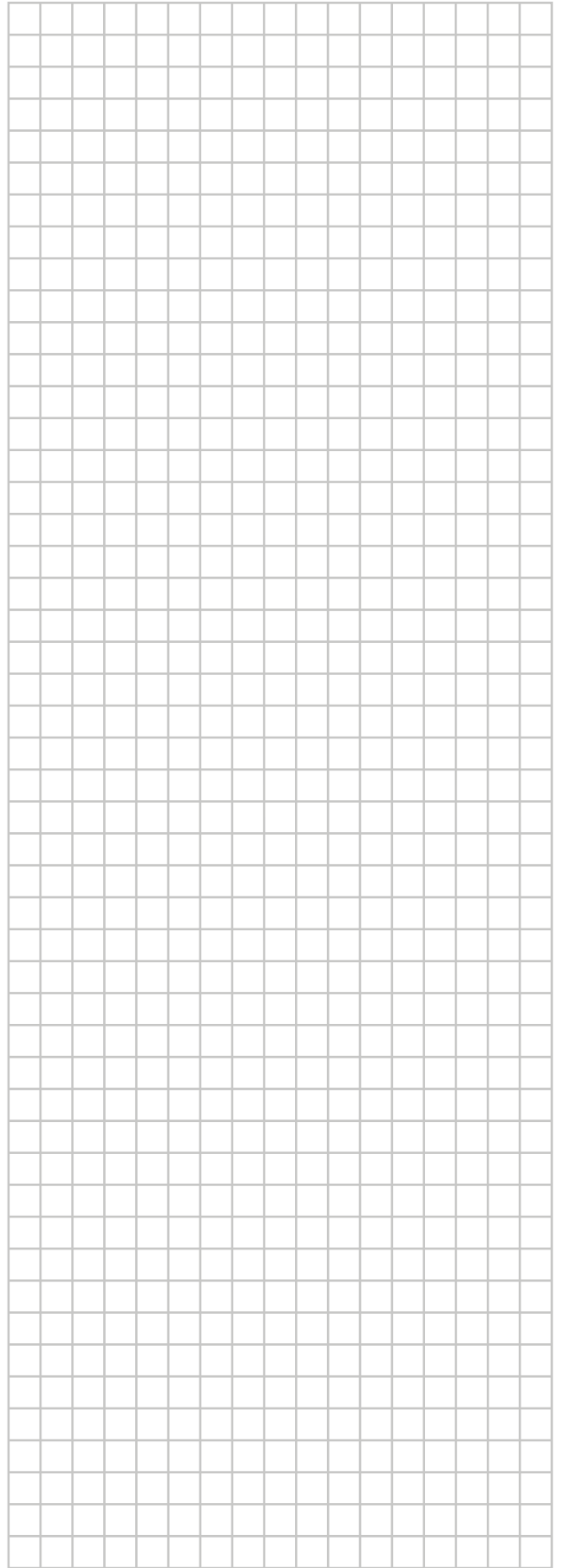
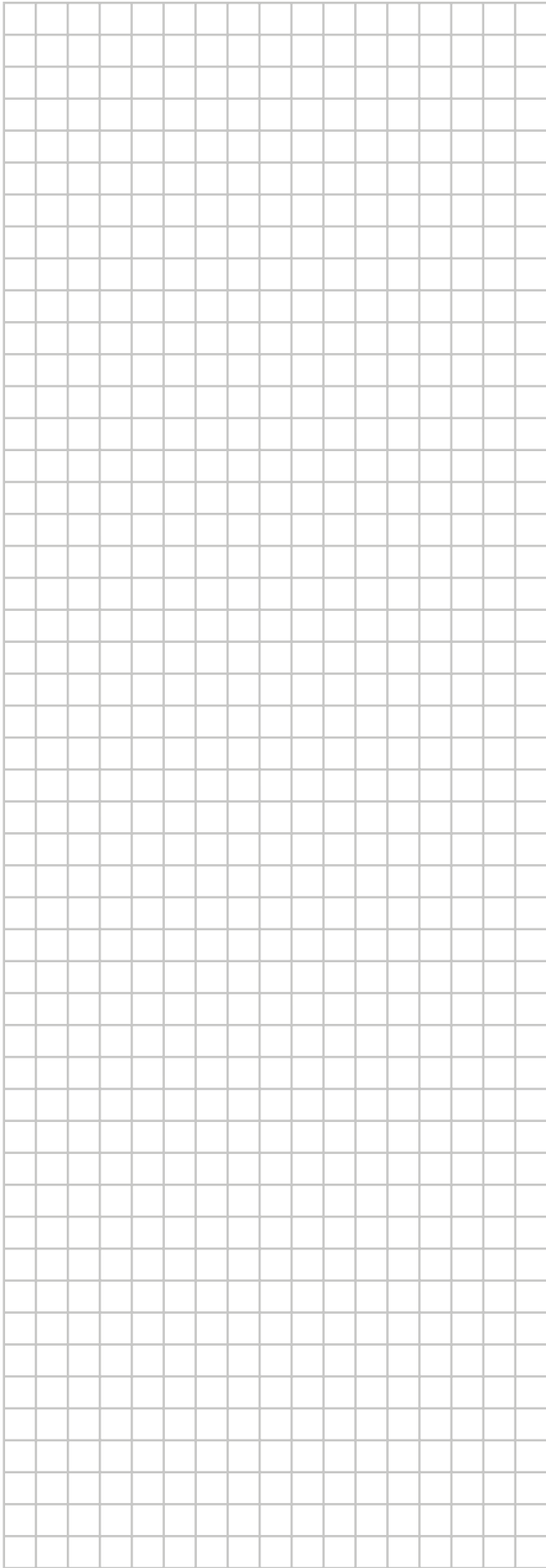
5. Others

- Improvements recommended by our dealer in advance were not accomplished.
 - * The simultaneous starting and stopping of a number of units.
- Accidents were caused by natural disaster or fire.
 - * Damage to electrical parts caused by lightning.
- There were other installation and operational problems beyond common sense.
 - * The use of the unit without heat insulation work on the piping.
- Work was conducted without keeping the following showcase restrictions.
 - <Showcase restrictions>
 - The installation of the thermostatic expansion valve and liquid supply solenoid valve (both of which are for R410A) on a showcase basis.
 - Thermal insulation of feeler tube of thermostatic expansion valve must be thermal insulated.
 - Install showcases on the same floor if the showcases are connected to a single outdoor unit.
 - Make sure that the outlet of piping used for the heat exchanger is located downward (as shown on the following figure).











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