TECHNICAL DATA
&
SERVICE MANUAL

FILE NO.

NEW OZONE ERA, KEEP THE GREEN WORLD
R407C

ASR 425 H / AER 425 SCLE
ASR 425 H / AER 425 SCL3E
ASR 436 H / AER 436 SCL3E
ASR 448 H / AER 448 SCL3E
ASR 425 H / AER 425 SHLE
ASR 425 H / AER 425 SHL3E
ASR 436 H / AER 436 SHL3E
ASR 448 H / AER 448 SHL3E

ACR 425 H / AER 425 SCLE
ACR 425 H / AER 425 SCL3E
ACR 436 H / AER 436 SCL3E
ACR 448 H / AER 448 SCL3E
ACR 425 H / AER 425 SHLE
ACR 425 H / AER 425 SHL3E
ACR 426 H / AER 436 SHL3E
ACR 448 H / AER 448 SHL3E

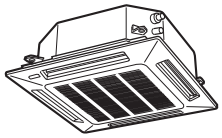
ADR 425 H / AER 425 SCLE
ADR 425 H / AER 425 SCL3E
ADR 436 H / AER 436 SCL3E
ADR 448 H / AER 448 SCL3E
ADR 425 H / AER 425 SHLE
ADR 425 H / AER 425 SHL3E
ADR 436 H / AER 436 SHL3E
ADR 448 H / AER 448 SHL3E

SPLIT SYSTEM AIR CONDITIONER

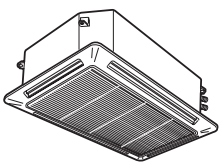
INDOOR MODEL No.	PRODUCT CODE No.
ASR 425 H	38 700 6951
ASR 436 H	38 700 6952
ASR 448 H	38 700 6953
ADR 425 H	38 700 6957
ADR 436 H	38 700 6958
ADR 448 H	38 700 6959
ACR 425 H	38 700 6954
ACR 436 H	38 700 6955
ACR 448 H	38 700 6956

OUTDOOR MODEL No.	PRODUCT CODE No.
AER 425 SCLE	38 700 7081
AER 425 SCL3E	38 700 7083
AER 436 SCL3E	38 700 7085
AER 448 SCL3E	38 700 7087
AER 425 SHLE	38 700 7082
AER 425 SHL3E	38 700 7084
AER 436 SHL3E	38 700 7086
AER 448 SHL3E	38 700 7088

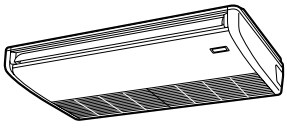
Indoor Unit



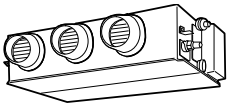
ASR 425 H



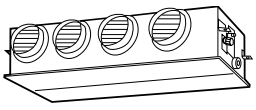
ASR 426 H
ASR 448 H



ACR 425 H
ACR 436 H
ACR 448 H

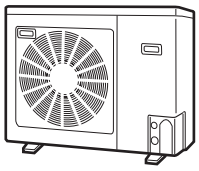


ADR 425 H

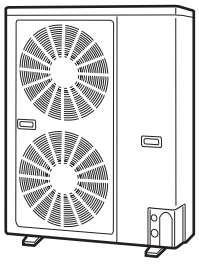


ADR 436 H
ADR 448 H

Outdoor Unit



AER 425 SCLE - AER 425 SCL3E
AER 425 SHLE - AER 425 SHL3E



AER 436 SCL3E - AER 448 SCL3E
AER 436 SHL3E - AER 448 SHL3E

Important

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must :

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing

…In a Room
Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

…In Moist or Uneven Locations
Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an area with High Winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Ventilate the room well, in the event that refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "narrow" or "wide" rather than as "liquid" or "gas".

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site when installation is finished. Check that no metal scraps or bits of wiring have been left inside the unit.

CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Contact of refrigerant gas with fire or heat can produce poisonous gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

WHO SHOULD USE THIS MANUAL

This service manual is made to assist the service technician apply his knowledge and training to this model air conditioner. This manual is written both for **experienced service persons** and **those who are new** to air conditioning service. To help those with less experience or who are new to this kind of unit we have included more explanations of basic procedures in simple language than is usual in some service manuals. The **experienced technician** will of course find he knows many of these things already and can go directly to the procedures and information he needs; the less experienced technician will better understand what to do even before he arrives on the job, and therefore be better able to work by himself as well as assist the more experienced technician.

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Introduction: *Read Me First!*

This manual will help you understand and service the air conditioner. To help you find the information you need, we have divided it into 5 main sections. Each section is divided into chapters with charts, tables and explanations to help you find and repair problems.

- ❑ **Section 1: Specifications,** tells you about the physical and electrical make up of the unit, as well as its heating and cooling capacities. Look in this section to find the correct values for components and functions.
- ❑ **Section 2: Processes and Functions,** explains each different part of the cooling and heating cycle, and how each control function reacts to changing conditions to keep the room at the set temperature range.
- ❑ **Section 3: Electrical Data**, which has fold-out schematic and wiring diagrams so you can find the parts you need to check when something is wrong, and see how they should be connected.
- ❑ **Section 4: Service Procedures,** has two main parts, a *diagnostic* chapter to help you find the specific component to replace or adjust, and a chapter with specific procedures and values to guide you in checking the electrical components in the unit.

HOW TO USE THIS MANUAL

You can use this manual both as a *reference* to find specific information about the capacity, functions and construction of this unit, and as a source of information to help you set up and maintain the unit.
When this unit is not working properly, and the cause is not known, you can use the procedures in **Section 3: Servicing Procedures** to find the problem, fix it, and restore the unit to its proper functioning.

This air conditioner has many helpful self diagnostic features to help you identify problem areas quickly.

So you will be ready when a problem happens, we suggest you look this manual over and become familiar with it by following these steps:

1. **Look at the TABLE OF CONTENTS** to get an idea of what is in this manual and where to find it.
2. **Look at the chapter about TROUBLE SHOOTING**, so you are familiar with the way the flow charts work. They are designed to guide you quickly through the possible causes for each kind of problem that is likely to happen to the Unit. Particularly read the introduction to this section, and the parts about the self-diagnosis and error codes which show on the display.
3. **Look at the chapter about CHECKING ELECTRICAL COMPONENTS.** You already know about most of these procedures. This chapter gives you the specific values and methods for these components. If you don't know some of these procedures, you can easily learn them here.
4. **Read the Instruction Manual!** The Instruction Manual is included here because it helps you help the user to set the temperature controls properly and know how to take care of any simple problems that may happen, as well as know when to call for service. The Instruction Manual also has illustrations, care, and installation information not found in the rest of the service manual. It is short, and if you read it carefully, you will be able to answer the customers questions easily, and also know the most efficient ways for setting times and temperatures.

Please use this manual to make your work easier, keep the air conditioner functioning well, and keep your customers satisfied.

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1

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 425 H		
	Outdoor Unit		AER 425 SCLE		
POWER SOURCE			220 - 230 - 240 V / 1 phase / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,140 / 1,020 / 840		
Moisture removal (High)		Liters/h	3.6		
ELECTRICAL RATINGS					
Voltage rating		V	220	230	240
Available voltage range		V	198 – 264		
Running amperes*		A	13.32	13.46	13.58
Max. running amperes**		A	14.66	14.72	14.76
Power input		kW	2.81	2.93	3
C.O.P		W / W	2.6	2.49	2.43
Max. starting amperes		A	69	72	75
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	37 / 35 / 31		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit (Include panel)		Outdoor unit
Unit dimensions	Height	mm (in.)	328 (12 - 29 / 32)		735 (28 - 30 / 32)
	Width	mm (in.)	860 (33 - 27 / 32)		940 (37)
	Depth	mm (in.)	860 (33 - 27 / 32)		340 (13 - 12 / 32)
Package dimensions			Body : ASR 425 H	Panel : ASG 0025	Outdoor unit
	Height mm (in.)		284 (11 - 6 / 32)	104 (4 - 3 / 32)	826 (32 - 17 / 32)
	Width mm (in.)		824 (32 - 14 / 32)	967 (38 - 2 / 32)	1,016 (40)
	Depth mm (in.)		833 (32 - 25 / 32)	999 (39 - 11 / 32)	416 (16 - 12 / 32)
Net weight	kg (lb.)		30 (66)		69 (152)
Shipping weight	kg (lb.)		27 (60)	8 (18)	75 (165)
Shipping volume	m^3 (cu. ft)		0.195 (6.9)	0.1 (3.5)	0.349 (12.3)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 425 H		
	Outdoor Unit		AER 425 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,140 / 1,020 / 840		
Moisture removal (High)		Liters/h	3.6		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	4.82	4.78	4.73
Max. running amperes**		A	5.67	5.68	5.69
Power input		kW	2.76	2.79	2.82
C.O.P		W / W	2.64	2.62	2.59
Max. starting amperes		A	27	29	30
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	37 / 35 / 31		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit (Include panel)		Outdoor unit
Unit dimensions	Height	mm (in.)	328 (12 - 29 / 32)		735 (28 - 30 / 32)
	Width	mm (in.)	860 (33 - 27 / 32)		940 (37)
	Depth	mm (in.)	860 (33 - 27 / 32)		340 (13 - 12 / 32)
Package dimensions			Body : ASR 425 H	Panel : ASG 0025	Outdoor unit
	Height mm (in.)		284 (11 - 6 / 32)	104 (4 - 3 / 32)	826 (32 - 17 / 32)
	Width mm (in.)		824 (32 - 14 / 32)	967 (38 - 2 / 32)	1,016 (40)
	Depth mm (in.)		833 (32 - 25 / 32)	999 (39 - 11 / 32)	416 (16 - 12 / 32)
Net weight	kg (lb.)		30 (66)		69 (152)
Shipping weight	kg (lb.)		27 (60)	8 (18)	75 (165)
Shipping volume	m^3 (cu. ft)		0.195 (6.9)	0.1 (3.5)	0.349 (12.3)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 436 H		
	Outdoor Unit		AER 436 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	10.6		
		BTU / h	36,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320		
Moisture removal (High)		Liters/h	4.6		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	7.01	7.02	7.05
Max. running amperes**		A	7.86	7.87	7.9
Power input		kW	3.92	3.97	4.02
C.O.P		W / W	2.7	2.67	2.64
Max. starting amperes		A	47	49	50
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	43 / 40 / 36		
	Outdoor - Hi	dB - A	53		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.0		
DIMENSIONS & WEIGHT			Indoor unit (Include panel)		Outdoor unit
Unit dimensions	Height	mm (in.)	358 (14 - 3 / 32)		1,235 (48 - 20 / 32)
	Width	mm (in.)	1,150 (45 - 9 / 32)		940 (37)
	Depth	mm (in.)	860 (33 - 27 / 32)		340 (13 - 12 / 32)
Package dimensions			Body : ASR 436 H	Panel : ASG 3648	Outdoor unit
	Height mm (in.)		316 (12 - 14 / 32)	104 (4 - 3 / 32)	1,326 (52 - 7 / 32)
	Width mm (in.)		1,114 (43 - 27 / 32)	1,257 (49 - 16 / 32)	1,016 (40)
	Depth mm (in.)		860 (33 - 27 / 32)	999 (39 - 11 / 32)	416 (16 - 12 / 32)
Net weight	kg (lb.)		38 (84)		104 (229)
Shipping weight	kg (lb.)		32 (71)	10 (22)	111 (245)
Shipping volume	m^3 (cu. ft)		0.303 (10.7)	0.131 (4.6)	0.56 (19.8)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 448 H		
	Outdoor Unit		AER 448 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	12.6		
		BTU / h	43,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320		
Moisture removal (High)		Liters/h	6.3		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	8.35	8.35	8.37
Max. running amperes**		A	9.47	9.47	9.49
Power input		kW	4.6	4.64	4.67
C.O.P		W / W	2.74	2.72	2.70
Max. starting amperes		A	53	56	58
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	43 / 40 / 36		
	Outdoor - Hi	dB - A	55		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.5		
DIMENSIONS & WEIGHT			Indoor unit (Include panel)		Outdoor unit
Unit dimensions	Height	mm (in.)	358 (14 - 3 / 32)		1,235 (48 - 20 / 32)
	Width	mm (in.)	1,150 (45 - 9 / 32)		940 (37)
	Depth	mm (in.)	860 (33 - 27 / 32)		340 (13 - 12 / 32)
Package dimensions		Body : SASR 448 H		Panel : ASG 3648	Outdoor unit
	Height mm (in.)	316 (12 - 14 / 32)		104 (4 - 3 / 32)	1,326 (52 - 7 / 32)
	Width mm (in.)	1,114 (43 - 27 / 32)		1,257 (49 - 16 / 32)	1,016 (40)
	Depth mm (in.)	860 (33 - 27 / 32)		999 (39 - 11 / 32)	416 (16 - 12 / 32)
Net weight	kg (lb.)	38 (84)			106 (234)
Shipping weight	kg (lb.)	32 (71)		10 (22)	113 (249)
Shipping volume	m^3 (cu. ft)	0.303 (10.7)		0.131 (4.6)	0.56 (19.8)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 425 H					
	Outdoor Unit		AER 425 SHLE					
POWER SOURCE			220 - 230 - 240 V / 1 phase / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	7.3			8.6		
		BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)		m^3/h	1,140 / 1,020 / 840					
Moisture removal (High)		Liters/h	3.6			—		
ELECTRICAL RATINGS								
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 – 264			198 – 264		
Running amperes*		A	13.32	13.46	13.58	14.69	14.64	14.57
Max. running amperes**		A	14.66	14.72	14.76	16.59	16.94	16.27
Power input		kW	2.81	2.93	3	3.07	3.14	3.21
C.O.P		W / W	2.6	2.49	2.43	2.8	2.74	2.68
Max. starting amperes		A	69	72	75	69	72	75
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)					
Compressor			Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	37 / 35 / 31					
	Outdoor - Hi	dB - A	52					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)					
	Wide tube	mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment		kg	R407C - 3.2					
DIMENSIONS & WEIGHT			Indoor unit (Include panel)			Outdoor unit		
Unit dimensions	Height	mm (in.)	328 (12 - 29 / 32)			735 (28 - 30 / 32)		
	Width	mm (in.)	860 (33 - 27 / 32)			940 (37)		
	Depth	mm (in.)	860 (33 - 27 / 32)			340 (13 - 12 / 32)		
Package dimensions		Body : ASR 425 H		Panel : ASG 0025		Outdoor unit		
	Height mm (in.)	284 (11 - 6 / 32)		104 (4 - 3 / 32)		826 (32 - 17 / 32)		
	Width mm (in.)	824 (32 - 14 / 32)		967 (38 - 2 / 32)		1,016 (40)		
	Depth mm (in.)	833 (32 - 25 / 32)		999 (39 - 11 / 32)		416 (16 - 12 / 32)		
Net weight	kg (lb.)	30 (66)				71 (157)		
Shipping weight	kg (lb.)	27 (60)		8 (18)		77 (170)		
Shipping volume	m^3 (cu. ft)	0.195 (6.9)		0.1 (3.5)		0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 425 H					
	Outdoor Unit		AER 425 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	7.3			8.6		
		BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)		m^3/h	1,140 / 1,020 / 840					
Moisture removal (High)		Liters/h	3.6			—		
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	4.82	4.78	4.73	5.31	5.21	5.12
Max. running amperes**		A	5.67	5.68	5.69	5.41	5.32	5.22
Power input		kW	2.76	2.79	2.82	3	3.03	3.06
C.O.P		W / W	2.64	2.62	2.59	2.87	2.84	2.81
Max. starting amperes		A	27	29	30	27	29	30
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)					
Compressor			Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	37 / 35 / 31					
	Outdoor - Hi	dB - A	52					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)					
	Wide tube	mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment		kg	R407C - 3.2					
DIMENSIONS & WEIGHT			Indoor unit (Include panel)			Outdoor unit		
Unit dimensions	Height	mm (in.)	328 (12 - 29 / 32)			735 (28 - 30 / 32)		
	Width	mm (in.)	860 (33 - 27 / 32)			940 (37)		
	Depth	mm (in.)	860 (33 - 27 / 32)			340 (13 - 12 / 32)		
Package dimensions		Body : ASR 425 H		Panel : ASG 0025		Outdoor unit		
	Height mm (in.)	284 (11 - 6 / 32)		104 (4 - 3 / 32)		826 (32 - 17 / 32)		
	Width mm (in.)	824 (32 - 14 / 32)		967 (38 - 2 / 32)		1,016 (40)		
	Depth mm (in.)	833 (32 - 25 / 32)		999 (39 - 11 / 32)		416 (16 - 12 / 32)		
Net weight	kg (lb.)	30 (66)				71 (157)		
Shipping weight	kg (lb.)	27 (60)		8 (18)		77 (170)		
Shipping volume	m^3 (cu. ft)	0.195 (6.9)		0.1 (3.5)		0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 436 H					
	Outdoor Unit		AER 436 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	10.6			12.5		
		BTU / h	36,000			42,700		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320					
Moisture removal (High)		Liters/h	4.6			—		
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	7.01	7.02	7.05	7.58	7.6	7.64
Max. running amperes**		A	7.86	7.87	7.9	7.98	8	8.04
Power input		kW	3.92	3.97	4.02	4.26	4.3	4.33
C.O.P		W / W	2.7	2.67	2.64	2.93	2.91	2.89
Max. starting amperes		A	47	49	50	47	49	50
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)					
Compressor			Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	43 / 40 / 36					
	Outdoor - Hi	dB - A	53					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)					
	Wide tube	mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment		kg	R407C - 4.0					
DIMENSIONS & WEIGHT			Indoor unit (Include panel)			Outdoor unit		
Unit dimensions	Height	mm (in.)	358 (14 - 3 / 32)			1,235 (48 - 20 / 32)		
	Width	mm (in.)	1,150 (45 - 9 / 32)			940 (37)		
	Depth	mm (in.)	860 (33 - 27 / 32)			340 (13 - 12 / 32)		
Package dimensions		Body : ASR 436 H		Panel : ASG 3648		Outdoor unit		
	Height mm (in.)	316 (12 - 14 / 32)		104 (4 - 3 / 32)		1,326 (52 - 7 / 32)		
	Width mm (in.)	1,114 (43 - 27 / 32)		1,257 (49 - 16 / 32)		1,016 (40)		
	Depth mm (in.)	860 (33 - 27 / 32)		999 (39 - 11 / 32)		416 (16 - 12 / 32)		
Net weight	kg (lb.)	38 (84)				106 (234)		
Shipping weight	kg (lb.)	32 (71)		10 (22)		113 (249)		
Shipping volume	m^3 (cu. ft)	0.303 (10.7)		0.131 (4.6)		0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

4-Way Air Discharge Semi-concealed Type

MODEL No.	Indoor Unit		ASR 448 H					
	Outdoor Unit		AER 448 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	12.6			15.3		
		BTU / h	43,000			52,200		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320					
Moisture removal (High)		Liters/h	6.3			—		
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	8.35	8.35	8.37	9.48	9.49	9.52
Max. running amperes**		A	9.47	9.47	9.49	9.99	10	10.02
Power input		kW	4.6	4.64	4.67	5.46	5.5	5.53
C.O.P		W / W	2.74	2.72	2.7	2.8	2.78	2.77
Max. starting amperes		A	53	56	58	53	56	58
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 25 cm above drain connection (25A, OD32 mm)					
Compressor			Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	43 / 40 / 36					
	Outdoor - Hi	dB - A	55					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)					
	Wide tube	mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment		kg	R407C - 4.5					
DIMENSIONS & WEIGHT			Indoor unit (Include panel)			Outdoor unit		
Unit dimensions	Height	mm (in.)	358 (14 - 3 / 32)			1,235 (48 - 20 / 32)		
	Width	mm (in.)	1,150 (45 - 9 / 32)			940 (37)		
	Depth	mm (in.)	860 (33 - 27 / 32)			340 (13 - 12 / 32)		
Package dimensions		Body : ASR 448 H		Panel : ASG 3648		Outdoor unit		
	Height mm (in.)	316 (12 - 14 / 32)		104 (4 - 3 / 32)		1,326 (52 - 7 / 32)		
	Width mm (in.)	1,114 (43 - 27 / 32)		1,257 (49 - 16 / 32)		1,016 (40)		
	Depth mm (in.)	860 (33 - 27 / 32)		999 (39 - 11 / 32)		416 (16 - 12 / 32)		
Net weight	kg (lb.)	38 (84)				108 (238)		
Shipping weight	kg (lb.)	32 (71)		10 (22)		115 (254)		
Shipping volume	m^3 (cu. ft)	0.303 (10.7)		0.131 (4.6)		0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 425 H		
	Outdoor Unit		AER 425 SCLE		
POWER SOURCE			220 - 230 - 240 V / 1 phase / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 960 / 840		
Moisture removal (High)		Liters/h	3.5		
ELECTRICAL RATINGS					
Voltage rating		V	220	230	240
Available voltage range		V	198 – 264		
Running amperes*		A	13.15	13.27	13.38
Max. running amperes**		A	14.49	14.53	14.56
Power input		kW	2.77	2.89	2.95
Power factor		%	95.7	94.7	91.9
C.O.P		W / W	2.64	2.53	2.47
Max. starting amperes		A	69	72	75
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			No (20A, OD26 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	39 / 37 / 34		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	190 (7 - 15 / 32)	735 (28 - 30 / 32)	
	Width	mm (in.)	1,300 (51 - 6 / 32)	940 (37)	
	Depth	mm (in.)	670 (26 - 12 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	266 (10 - 15 / 32)	826 (32 - 17 / 32)	
	Width	mm (in.)	1,403 (55 - 8 / 32)	1,016 (40)	
	Depth	mm (in.)	789 (31 - 2 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	26 (57)	69 (152)	
Shipping weight		kg (lb.)	32 (71)	75 (165)	
Shipping volume		m^3 (cu. ft)	0.294 (10.4)	0.349 (12.3)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 425 H		
	Outdoor Unit		AER 425 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 960 / 840		
Moisture removal (High)		Liters/h	3.5		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	4.77	4.72	4.67
Max. running amperes**		A	5.62	5.63	5.64
Power input		kW	2.72	2.75	2.77
Power factor		%	86.6	84.1	82.5
C.O.P		W / W	2.68	2.65	2.64
Max. starting amperes		A	27	29	30
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			No (20A, OD26 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	39 / 37 / 34		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	190 (7 - 15 / 32)	735 (28 - 30 / 32)	
	Width	mm (in.)	1,300 (51 - 6 / 32)	940 (37)	
	Depth	mm (in.)	670 (26 - 12 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	266 (10 - 15 / 32)	826 (32 - 17 / 32)	
	Width	mm (in.)	1,403 (55 - 8 / 32)	1,016 (40)	
	Depth	mm (in.)	789 (31 - 2 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	26 (57)	69 (152)	
Shipping weight		kg (lb.)	32 (71)	75 (165)	
Shipping volume		m^3 (cu. ft)	0.294 (10.4)	0.349 (12.3)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 436 H		
	Outdoor Unit		AER 436 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	10.6		
		BTU / h	36,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,800 / 1,560 / 1,200		
Moisture removal (High)		Liters/h	4.7		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	7.01	7.02	7.06
Max. running amperes**		A	7.86	7.88	7.91
Power input		kW	3.92	3.97	4.02
Power factor		%	85	81.6	79.2
C.O.P		W / W	2.7	2.67	2.64
Max. starting amperes		A	47	49	50
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			No (20A, OD26 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	42 / 40 / 35		
	Outdoor - Hi	dB - A	53		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.0		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	240 (9 - 14 / 32)	1,235 (48 - 20 / 32)	
	Width	mm (in.)	1,575 (62)	940 (37)	
	Depth	mm (in.)	670 (26 - 12 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	317 (12 - 15 / 32)	1,326 (52 - 7 / 32)	
	Width	mm (in.)	1,678 (66 - 2 / 32)	1,016 (40)	
	Depth	mm (in.)	789 (31 - 2 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	38 (84)	104 (229)	
Shipping weight		kg (lb.)	44 (97)	111 (245)	
Shipping volume		m^3 (cu. ft)	0.42 (14.8)	0.56 (19.8)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 448 H		
	Outdoor Unit		AER 448 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	12.6		
		BTU / h	43,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320		
Moisture removal (High)		Liters/h	5.9		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	8.35	8.35	8.38
Max. running amperes**		A	9.47	9.48	9.5
Power input		kW	4.6	4.64	4.67
Power factor		%	83.7	80.2	80.4
C.O.P		W / W	2.74	2.72	2.7
Max. starting amperes		A	53	56	58
FEATURES					
Controls / Thermostat control			Microprocessor / I.C. thermostat		
Timer			ON / OFF 72-hours	ON/OFF 24-hours & Program	
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			Automatic (Remote control)		
Air filter			Washable, easy access, long life (2,500 hr)		
Remote controller (Option)			Wired : REM HW A	Wireless : REM CLR A	
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			No (20A, OD26 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	44 / 41 / 37		
	Outdoor - Hi	dB - A	55		
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.5		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	240 (9 - 14 / 32)	1,235 (48 - 20 / 32)	
	Width	mm (in.)	1,575 (62)	940 (37)	
	Depth	mm (in.)	670 (26 - 12 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	317 (12 - 15 / 32)	1,326 (52 - 7 / 32)	
	Width	mm (in.)	1,678 (66 - 2 / 32)	1,016 (40)	
	Depth	mm (in.)	789 (31 - 2 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	38 (84)	106 (234)	
Shipping weight		kg (lb.)	44 (97)	113 (249)	
Shipping volume		m^3 (cu. ft)	0.42 (14.8)	0.56 (19.8)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 425 H					
	Outdoor Unit		AER 425 SHLE					
POWER SOURCE			220 - 230 - 240 V / 1 phase / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	7.3			8.6		
		BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 960 / 840					
Moisture removal (High)		Liters/h	3.5			—		
ELECTRICAL RATINGS								
Voltage rating		V	220	230	240	220	230	240
Available voltage range		V	198 – 264			198 – 264		
Running amperes*		A	13.15	13.27	13.38	14.65	14.58	14.49
Max. running amperes**		A	14.49	14.53	14.56	16.55	16.38	16.19
Power input		kW	2.77	2.89	2.95	3.06	3.13	3.19
Power factor		%	95.7	94.7	91.9	94.9	93.3	91.7
C.O.P		W / W	2.64	2.53	2.47	2.81	2.75	2.7
Max. starting amperes		A	69	72	75	69	72	75
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			No (20A, OD26 mm)					
Compressor			Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	39 / 37 / 34					
	Outdoor - Hi	dB - A	52					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)					
	Wide tube	mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment		kg	R407C - 3.2					
DIMENSIONS & WEIGHT			Indoor unit			Outdoor unit		
Unit dimensions	Height	mm (in.)	190 (7 - 15 / 32)			735 (28 - 30 / 32)		
	Width	mm (in.)	1,300 (51 - 6 / 32)			940 (37)		
	Depth	mm (in.)	670 (26 - 12 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height	mm (in.)	266 (10 - 15 / 32)			826 (32 - 17 / 32)		
	Width	mm (in.)	1,403 (55 - 8 / 32)			1,016 (40)		
	Depth	mm (in.)	789 (31 - 2 / 32)			416 (16 - 12 / 32)		
Net weight		kg (lb.)	26 (57)			71 (157)		
Shipping weight		kg (lb.)	32 (71)			77 (170)		
Shipping volume		m^3 (cu. ft)	0.294 (10.4)			0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit			ACR 425 H					
	Outdoor Unit			AER 425 SHL3E					
POWER SOURCE				380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE				Cooling			Heating		
Capacity			kW	7.3			8.6		
			BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)			m^3/h	1,080 / 960 / 840					
Moisture removal (High)			Liters/h	3.5			—		
ELECTRICAL RATINGS									
Voltage rating			V	380	400	415	380	400	415
Available voltage range			V	342 – 456			342 – 456		
Running amperes*			A	4.77	4.72	4.67	4.9	4.8	4.7
Max. running amperes**			A	5.62	5.63	5.64	5.7	5.5	5.3
Power input			kW	2.72	2.75	2.77	2.81	2.82	2.85
Power factor			%	86.6	84.1	82.5	87.1	84.8	84.4
C.O.P			W / W	2.68	2.65	2.64	3.06	3.05	3.02
Max. starting amperes			A	27	29	30	27	29	30
FEATURES									
Controls / Thermostat control				Microprocessor / I.C. thermostat					
Timer				ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor				3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)				Automatic (Remote control)					
Air filter				Washable, easy access, long life (2,500 hr)					
Remote controller (Option)				Wired : REM HW A			Wireless : REM HL A		
Refrigerant control				Electronic expansion valve					
Drain pump (Drain connection)				No (20A, OD26 mm)					
Compressor				Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo		dB - A	39 / 37 / 34					
	Outdoor - Hi		dB - A	52					
Color (Approximate value)	Indoor			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING									
Limit of tubing length			m (ft.)	50 (164)					
Limit of tubing length at shipment			m (ft.)	30 (98)					
Limit of elevation difference between the two units			m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube		mm (in.)	6.35 (1 / 4)					
	Wide tube		mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment			kg	R407C - 3.2					
DIMENSIONS & WEIGHT				Indoor unit			Outdoor unit		
Unit dimensions	Height		mm (in.)	190 (7 - 15 / 32)			735 (28 - 30 / 32)		
	Width		mm (in.)	1,300 (51 - 6 / 32)			940 (37)		
	Depth		mm (in.)	670 (26 - 12 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height		mm (in.)	266 (10 - 15 / 32)			826 (32 - 17 / 32)		
	Width		mm (in.)	1,403 (55 - 8 / 32)			1,016 (40)		
	Depth		mm (in.)	789 (31 - 2 / 32)			416 (16 - 12 / 32)		
Net weight			kg (lb.)	26 (57)			71 (157)		
Shipping weight			kg (lb.)	32 (71)			77 (170)		
Shipping volume			m^3 (cu. ft)	0.294 (10.4)			0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit			ACR 436 H					
	Outdoor Unit			AER 436 SHL3E					
POWER SOURCE				380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE				Cooling			Heating		
Capacity			kW	10.6			12.5		
			BTU / h	36,000			42,700		
Air circulation (Hi / Me / Lo)			m^3/h	1,800 / 1,560 / 1,200					
Moisture removal (High)			Liters/h	4.7			—		
ELECTRICAL RATINGS									
Voltage rating			V	380	400	415	380	400	415
Available voltage range			V	342 – 456			342 – 456		
Running amperes*			A	7.01	7.02	7.06	5.4	5.2	5.1
Max. running amperes**			A	7.86	7.88	7.91	6	6	5.9
Power input			kW	3.92	3.97	4.02	3.16	3.19	3.23
Power factor			%	85	81.6	79.2	88.9	88.5	88.1
C.O.P			W / W	2.7	2.67	2.64	3.96	3.92	3.87
Max. starting amperes			A	47	49	50	47	49	50
FEATURES									
Controls / Thermostat control				Microprocessor / I.C. thermostat					
Timer				ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor				3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)				Automatic (Remote control)					
Air filter				Washable, easy access, long life (2,500 hr)					
Remote controller (Option)				Wired : REM HW A			Wireless : REM HL A		
Refrigerant control				Electronic expansion valve					
Drain pump (Drain connection)				No (20A, OD26 mm)					
Compressor				Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo		dB - A	42 / 40 / 35					
	Outdoor - Hi		dB - A	53					
Color (Approximate value)	Indoor			Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING									
Limit of tubing length			m (ft.)	50 (164)					
Limit of tubing length at shipment			m (ft.)	30 (98)					
Limit of elevation difference between the two units			m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube		mm (in.)	9.52 (3 / 8)					
	Wide tube		mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment			kg	R407C - 4.0					
DIMENSIONS & WEIGHT				Indoor unit			Outdoor unit		
Unit dimensions	Height		mm (in.)	240 (9 - 14 / 32)			1,235 (48 - 20 / 32)		
	Width		mm (in.)	1,575 (62)			940 (37)		
	Depth		mm (in.)	670 (26 - 12 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height		mm (in.)	317 (12 - 15 / 32)			1,326 (52 - 7 / 32)		
	Width		mm (in.)	1,678 (66 - 2 / 32)			1,016 (40)		
	Depth		mm (in.)	789 (31 - 2 / 32)			416 (16 - 12 / 32)		
Net weight			kg (lb.)	38 (84)			106 (234)		
Shipping weight			kg (lb.)	44 (97)			113 (249)		
Shipping volume			m^3 (cu. ft)	0.42 (14.8)			0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Ceiling Mounted Type

MODEL No.	Indoor Unit		ACR 448 H					
	Outdoor Unit		AER 448 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	12.6			15.3		
		BTU / h	43,000			52,200		
Air circulation (Hi / Me / Lo)		m^3/h	1,920 / 1,680 / 1,320					
Moisture removal (High)		Liters/h	5.9			—		
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	8.35	8.35	8.38	9.54	9.54	9.56
Max. running amperes**		A	9.47	9.48	9.5	10.05	10.05	10.07
Power input		kW	4.6	4.64	4.67	5.5	5.54	5.57
Power factor		%	83.7	80.2	77.5	87.6	83.8	81.1
C.O.P		W / W	2.74	2.72	2.7	2.78	2.76	2.75
Max. starting amperes		A	53	56	58	53	56	58
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours			ON/OFF 24-hours & Program		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)					
Airflow direction (Indoor)			Automatic (Remote control)					
Air filter			Washable, easy access, long life (2,500 hr)					
Remote controller (Option)			Wired : REM HW A			Wireless : REM HL A		
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			No (20A, OD26 mm)					
Compressor			Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	44 / 41 / 37					
	Outdoor - Hi	dB - A	55					
Color (Approximate value)	Indoor		Munsell 10Y9.3 / 0.4, RAL 9010-GL					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)					
	Wide tube	mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment		kg	R407C - 4.5					
DIMENSIONS & WEIGHT			Indoor unit			Outdoor unit		
Unit dimensions	Height	mm (in.)	240 (9 - 14 / 32)			1,235 (48 - 20 / 32)		
	Width	mm (in.)	1,575 (62)			940 (37)		
	Depth	mm (in.)	670 (26 - 12 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height	mm (in.)	317 (12 - 15 / 32)			1,326 (52 - 7 / 32)		
	Width	mm (in.)	1,678 (66 - 2 / 32)			1,016 (40)		
	Depth	mm (in.)	789 (31 - 2 / 32)			416 (16 - 12 / 32)		
Net weight		kg (lb.)	38 (84)			108 (238)		
Shipping weight		kg (lb.)	44 (97)			115 (254)		
Shipping volume		m^3 (cu. ft)	0.42 (14.8)			0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 425 H		
	Outdoor Unit		AER 425 SCLE		
POWER SOURCE			220 - 230 - 240 V / 1 phase / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 900 / 780		
Moisture removal (High)		Liters/h	3.5		
External static pressure (High)		mmAq(Pa)	5.1 (50) : at shipment, 9.4 (92) : using the booster cable		
ELECTRICAL RATINGS					
Voltage rating		VAC	220	230	240
Available voltage range		VAC	198 – 264		
Running amperes*		A	14.65	14.6	14.54
Max. running amperes**		A	15.65	15.5	15.44
Power input		kW	3.01	3.14	3.21
Power factor		%	93.4	93.5	92
C.O.P		W / W	2.43	2.32	2.27
Max. starting amperes		A	69	72	75
FEATURES					
Controls / Thermostat control			Microprocessor		
Timer			ON / OFF 72-hours		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			—		
Air filter			Field supply		
Remote controller (Option)			Wired : REM HW A		
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	34 / 30 / 27, (38 / 34 / 30 : using the booster cable)		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		—		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)	735 (28 - 30 / 32)	
	Width	mm (in.)	1,000 (39 - 12 / 32)	940 (37)	
	Depth	mm (in.)	630 (24 - 26 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)	826 (32 - 17 / 32)	
	Width	mm (in.)	1,191 (46 - 28 / 32)	1,016 (40)	
	Depth	mm (in.)	783 (30 - 26 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	32 (71)	69 (152)	
Shipping weight		kg (lb.)	37 (82)	75 (165)	
Shipping volume		m^3 (cu. ft)	0.334 (11.8)	0.349 (12.3)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 425 H		
	Outdoor Unit		AER 425 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	7.3		
		BTU / h	25,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 900 / 780		
Moisture removal (High)		Liters/h	3.5		
External static pressure (High)		mmAq(Pa)	5.1 (50) : at shipment, 9.4 (92) : using the booster cable		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	5.14	5.05	5.00
Max. running amperes**		A	5.74	5.75	5.76
Power input		kW	2.96	3.00	3.03
Power factor		%	87.5	85.7	84.3
C.O.P		W / W	2.47	2.43	2.41
Max. starting amperes		A	27	29	30
FEATURES					
Controls / Thermostat control			Microprocessor		
Timer			ON / OFF 72-hours		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			—		
Air filter			Field supply		
Remote controller (Option)			Wired : REM HW A		
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)		
Compressor			Rotary (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	34 / 30 / 27, (38 / 34 / 30 : using the booster cable)		
	Outdoor - Hi	dB - A	52		
Color (Approximate value)	Indoor		—		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)		
	Wide tube	mm (in.)	15.88 (5 / 8)		
Refrigerant amount at shipment		kg	R407C - 3.2		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)	735 (28 - 30 / 32)	
	Width	mm (in.)	1,000 (39 - 12 / 32)	940 (37)	
	Depth	mm (in.)	630 (24 - 26 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)	826 (32 - 17 / 32)	
	Width	mm (in.)	1,191 (46 - 28 / 32)	1,016 (40)	
	Depth	mm (in.)	783 (30 - 26 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	32 (71)	69 (152)	
Shipping weight		kg (lb.)	37 (82)	75 (165)	
Shipping volume		m^3 (cu. ft)	0.334 (11.8)	0.349 (12.3)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 436 H		
	Outdoor Unit		AER 436 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	10.6		
		BTU / h	36,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,800 / 1,560 / 1,260		
Moisture removal (High)		Liters/h	4.2		
External static pressure (High)		mmAq(Pa)	8.1 (79) : at shipment, 12.4 (122) : using the booster cable		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	7.15	7.16	7.19
Max. running amperes**		A	8.01	8.02	8.04
Power input		kW	4.03	4.09	4.14
Power factor		%	85.6	82.5	80.1
C.O.P		W / W	2.63	2.59	2.56
Max. starting amperes		A	47	49	50
FEATURES					
Controls / Thermostat control			Microprocessor		
Timer			ON / OFF 72-hours		
Fan speeds Indoor / Outdoor			3 and Automatic control / 3 (Auto)		
Airflow direction (Indoor)			—		
Air filter			Field supply		
Remote controller (Option)			Wired : REM HW A		
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	38 / 33 / 31, (42 / 38 / 33 : using the booster cable)		
	Outdoor - Hi	dB - A	53		
Color (Approximate value)	Indoor		—		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.0		
DIMENSIONS & WEIGHT				Indoor unit	Outdoor unit
Unit dimensions	Height	mm (in.)		310 (12 - 7 / 32)	1,235 (48 - 20 / 32)
	Width	mm (in.)		1,480 (58 - 9 / 32)	940 (37)
	Depth	mm (in.)		630 (24 - 26 / 32)	340 (13 - 12 / 32)
Package dimensions	Height	mm (in.)		358 (14 - 3 / 32)	1,326 (52 - 7 / 32)
	Width	mm (in.)		1,671 (65 - 25 / 32)	1,016 (40)
	Depth	mm (in.)		783 (30 - 26 / 32)	416 (16 - 12 / 32)
Net weight		kg (lb.)		47 (104)	104 (229)
Shipping weight		kg (lb.)		52 (115)	111 (245)
Shipping volume		m^3 (cu. ft)		0.468 (16.5)	0.56 (19.8)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 448 H		
	Outdoor Unit		AER 448 SCL3E		
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz		
PERFORMANCE			Cooling		
Capacity		kW	12.6		
		BTU / h	43,000		
Air circulation (Hi / Me / Lo)		m^3/h	1,980 / 1,800 / 1,500		
Moisture removal (High)		Liters/h	5.4		
External static pressure (High)		mmAq(Pa)	8.0 (78) : at shipment, 11.5 (113) : using the booster cable		
ELECTRICAL RATINGS					
Voltage rating		V	380	400	415
Available voltage range		V	342 – 456		
Running amperes*		A	8.49	8.49	8.51
Max. running amperes**		A	9.62	9.62	9.63
Power input		kW	4.71	4.76	4.79
Power factor		%	84.3	80.9	78.3
C.O.P		W / W	2.68	2.65	2.63
Max. starting amperes		A	53	56	58
FEATURES					
Controls / Thermostat control			Microprocessor		
Timer			ON / OFF 72-hours		
Fan speeds Indoor / Outdoor			3 and Automatic control / 2 (Auto)		
Airflow direction (Indoor)			—		
Air filter			Field supply		
Remote controller (Option)			Wired : REM HW A		
Refrigerant control			Electronic expansion valve		
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)		
Compressor			Scroll (Sanyo)		
Operation sound	Indoor - Hi/Me/Lo	dB - A	40 / 37 / 33, (44 / 40 / 37 : using the booster cable)		
	Outdoor - Hi	dB - A	55		
Color (Approximate value)	Indoor		—		
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL		
REFRIGERANT TUBING					
Limit of tubing length		m (ft.)	50 (164)		
Limit of tubing length at shipment		m (ft.)	30 (98)		
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)		
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)		
	Wide tube	mm (in.)	19.05 (3 / 4)		
Refrigerant amount at shipment		kg	R407C - 4.5		
DIMENSIONS & WEIGHT			Indoor unit	Outdoor unit	
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)	1,235 (48 - 20 / 32)	
	Width	mm (in.)	1,480 (58 - 9 / 32)	940 (37)	
	Depth	mm (in.)	630 (24 - 26 / 32)	340 (13 - 12 / 32)	
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)	1,326 (52 - 7 / 32)	
	Width	mm (in.)	1,671 (65 - 25 / 32)	1,016 (40)	
	Depth	mm (in.)	783 (30 - 26 / 32)	416 (16 - 12 / 32)	
Net weight		kg (lb.)	47 (104)	106 (234)	
Shipping weight		kg (lb.)	52 (115)	113 (249)	
Shipping volume		m^3 (cu. ft)	0.468 (16.5)	0.56 (19.8)	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit			ADR 425 H					
	Outdoor Unit			AER 425 SHLE					
POWER SOURCE				220 - 230 - 240 V / 1 phase / 50 Hz					
PERFORMANCE				Cooling			Heating		
Capacity			kW	7.3			8.6		
			BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)			m^3/h	1,080 / 900 / 780					
Moisture removal (High)			Liters/h	3.5			—		
External static pressure (High)			mmAq(Pa)	5.1 (50) : at shipment, 9.4 (92) : using the booster cable					
ELECTRICAL RATINGS									
Voltage rating			V	220	230	240	220	230	240
Available voltage range			V	198 – 264			198 – 264		
Running amperes*			A	14.65	14.6	14.54	15.6	15.45	15.39
Max. running amperes**			A	15.65	15.5	15.44	17.4	17.15	16.99
Power input			kW	3.01	3.14	3.21	3.25	3.32	3.4
Power factor			%	93.4	93.5	92	94.7	93.4	92.1
C.O.P			W / W	2.43	2.32	2.27	2.65	2.59	2.53
Max. starting amperes			A	69	72	75	69	72	75
FEATURES									
Controls / Thermostat control				Microprocessor / I.C. thermostat					
Timer				ON / OFF 72-hours					
Fan speeds Indoor / Outdoor				3 and Automatic control / 2 (Auto)					
Airflow direction (Indoor)				—					
Air filter				Field supply					
Remote controller (Option)				Wired : REM HW A					
Refrigerant control				Electronic expansion valve					
Drain pump (Drain connection)				Max. head 75 cm above unit bottom (25A, OD32 mm)					
Compressor				Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo		dB - A	34 / 30 / 27, (38 / 34 / 30 : using the booster cable)					
	Outdoor - Hi		dB - A	52					
Color (Approximate value)	Indoor			—					
	Outdoor			Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING									
Limit of tubing length			m (ft.)	50 (164)					
Limit of tubing length at shipment			m (ft.)	30 (98)					
Limit of elevation difference between the two units			m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube		mm (in.)	6.35 (1 / 4)					
	Wide tube		mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment			kg	R407C - 3.2					
DIMENSIONS & WEIGHT				Indoor unit			Outdoor unit		
Unit dimensions	Height		mm (in.)	310 (12 - 7 / 32)			735 (28 - 30 / 32)		
	Width		mm (in.)	1,000 (39 - 12 / 32)			940 (37)		
	Depth		mm (in.)	630 (24 - 26 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height		mm (in.)	358 (14 - 3 / 32)			826 (32 - 17 / 32)		
	Width		mm (in.)	1,191 (46 - 28 / 32)			1,016 (40)		
	Depth		mm (in.)	783 (30 - 26 / 32)			416 (16 - 12 / 32)		
Net weight			kg (lb.)	32 (71)			71 (157)		
Shipping weight			kg (lb.)	37 (82)			77 (170)		
Shipping volume			m^3 (cu. ft)	0.334 (11.8)			0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 425 H					
	Outdoor Unit		AER 425 HL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	7.3			8.6		
		BTU / h	25,000			29,300		
Air circulation (Hi / Me / Lo)		m^3/h	1,080 / 900 / 780					
Moisture removal (High)		Liters/h	3.5			—		
External static pressure (High)		mmAq(Pa)	5.1 (50) : at shipment, 9.4 (92) : using the booster cable					
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	5.14	5.05	5	5.42	5.33	5.24
Max. running amperes**		A	5.74	5.75	5.76	5.53	5.43	5.34
Power input		kW	2.96	3.00	3.03	3.09	3.12	3.16
Power factor		%	87.5	85.7	84.3	86.6	84.5	83.9
C.O.P		W / W	2.47	2.43	2.41	2.78	2.76	2.72
Max. starting amperes		A	27	29	30	27	29	30
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours					
Fan speeds Indoor / Outdoor			3 and Automatic control / 2 (Auto)					
Airflow direction (Indoor)			—					
Air filter			Field supply					
Remote controller (Option)			Wired : REM HW A					
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)					
Compressor			Rotary (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	34 / 30 / 27, (38 / 34 / 30 : using the booster cable)					
	Outdoor - Hi	dB - A	52					
Color (Approximate value)	Indoor		—					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	6.35 (1 / 4)					
	Wide tube	mm (in.)	15.88 (5 / 8)					
Refrigerant amount at shipment		kg	R407C - 3.2					
DIMENSIONS & WEIGHT			Indoor unit			Outdoor unit		
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)			735 (28 - 30 / 32)		
	Width	mm (in.)	1,000 (39 - 12 / 32)			940 (37)		
	Depth	mm (in.)	630 (24 - 26 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)			826 (32 - 17 / 32)		
	Width	mm (in.)	1,191 (46 - 28 / 32)			1,016 (40)		
	Depth	mm (in.)	783 (30 - 26 / 32)			416 (16 - 12 / 32)		
Net weight		kg (lb.)	32 (71)			71 (157)		
Shipping weight		kg (lb.)	37 (82)			77 (170)		
Shipping volume		m^3 (cu. ft)	0.334 (11.8)			0.349 (12.3)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-1 Unit Specifications

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 436 H					
	Outdoor Unit		AER 436 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	10.6			12.5		
		BTU / h	36,000			42,700		
Air circulation (Hi / Me / Lo)		m^3/h	1,800 / 1,560 / 1,260					
Moisture removal (High)		Liters/h	4.2			—		
External static pressure (High)		mmAq(Pa)	8.1 (79) : at shipment, 12.4 (122) : using the booster cable					
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	7.15	7.16	7.19	7.79	7.8	7.83
Max. running amperes**		A	8.01	8.02	8.04	8.19	8.20	8.23
Power input		kW	4.03	4.09	4.14	4.42	4.47	4.50
Power factor		%	85.6	82.5	80.1	86.2	82.7	80
C.O.P		W / W	2.63	2.59	2.56	2.83	2.8	2.78
Max. starting amperes		A	47	49	50	47	49	50
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours					
Fan speeds Indoor / Outdoor			3 and Automatic control / 2 (Auto)					
Airflow direction (Indoor)			—					
Air filter			Field supply					
Remote controller (Option)			Wired : REM HW A					
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)					
Compressor			Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	38 / 33 / 31, (42 / 38 / 33 : using the booster cable)					
	Outdoor - Hi	dB - A	53					
Color (Approximate value)	Indoor		—					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)					
	Wide tube	mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment		kg	R407C - 4.0					
DIMENSIONS & WEIGHT			Indoor unit			Outdoor unit		
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)			1,235 (48 - 20 / 32)		
	Width	mm (in.)	1,480 (58 - 9 / 32)			940 (37)		
	Depth	mm (in.)	630 (24 - 26 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)			1,326 (52 - 7 / 32)		
	Width	mm (in.)	1,671 (65 - 25 / 32)			1,016 (40)		
	Depth	mm (in.)	783 (30 - 26 / 32)			416 (16 - 12 / 32)		
Net weight		kg (lb.)	47 (104)			106 (234)		
Shipping weight		kg (lb.)	52 (115)			113 (249)		
Shipping volume		m^3 (cu. ft)	0.468 (16.5)			0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

Unit Specifications 1-1

Concealed Duct Type

MODEL No.	Indoor Unit		ADR 448 H					
	Outdoor Unit		AER 448 SHL3E					
POWER SOURCE			380 - 400 - 415 V / 3N / 50 Hz					
PERFORMANCE			Cooling			Heating		
Capacity		kW	12.6			15.3		
		BTU / h	43,000			52,200		
Air circulation (Hi / Me / Lo)		m^3/h	1,980 / 1,800 / 1,500					
Moisture removal (High)		Liters/h	5.4			—		
External static pressure (High)		mmAq(Pa)	8.0 (78) : at shipment, 11.5 (113) : using the booster cable					
ELECTRICAL RATINGS								
Voltage rating		V	380	400	415	380	400	415
Available voltage range		V	342 – 456			342 – 456		
Running amperes*		A	8.49	8.49	8.51	9.69	9.69	9.71
Max. running amperes**		A	9.62	9.62	9.63	10.20	10.20	10.21
Power input		kW	4.71	4.76	4.79	5.62	5.66	5.70
Power factor		%	84.3	80.9	78.3	88.1	84.3	81.7
C.O.P		W / W	2.68	2.65	2.63	2.72	2.7	2.68
Max. starting amperes		A	53	56	58	53	56	58
FEATURES								
Controls / Thermostat control			Microprocessor / I.C. thermostat					
Timer			ON / OFF 72-hours					
Fan speeds Indoor / Outdoor			3 and Automatic control / 2 (Auto)					
Airflow direction (Indoor)			—					
Air filter			Field supply					
Remote controller (Option)			Wired : REM HW A					
Refrigerant control			Electronic expansion valve					
Drain pump (Drain connection)			Max. head 75 cm above unit bottom (25A, OD32 mm)					
Compressor			Scroll (Sanyo)					
Operation sound	Indoor - Hi/Me/Lo	dB - A	40 / 37 / 33, (44 / 40 / 37 : using the booster cable)					
	Outdoor - Hi	dB - A	55					
Color (Approximate value)	Indoor		—					
	Outdoor		Munsell 5Y8.4 / 0.5, RAL 9002-GL					
REFRIGERANT TUBING								
Limit of tubing length		m (ft.)	50 (164)					
Limit of tubing length at shipment		m (ft.)	30 (98)					
Limit of elevation difference between the two units		m (ft.)	Outdoor unit is higher than indoor unit : 50 (164) Outdoor unit is lower than indoor unit : 30 (98)					
Refrigerant tube outer diameter	Narrow tube	mm (in.)	9.52 (3 / 8)					
	Wide tube	mm (in.)	19.05 (3 / 4)					
Refrigerant amount at shipment		kg	R407C - 4.5					
DIMENSIONS & WEIGHT			Indoor unit			Outdoor unit		
Unit dimensions	Height	mm (in.)	310 (12 - 7 / 32)			1,235 (48 - 20 / 32)		
	Width	mm (in.)	1,480 (58 - 9 / 32)			940 (37)		
	Depth	mm (in.)	630 (24 - 26 / 32)			340 (13 - 12 / 32)		
Package dimensions	Height	mm (in.)	358 (14 - 3 / 32)			1,326 (52 - 7 / 32)		
	Width	mm (in.)	1,671 (65 - 25 / 32)			1,016 (40)		
	Depth	mm (in.)	783 (30 - 26 / 32)			416 (16 - 12 / 32)		
Net weight		kg (lb.)	47 (104)			108 (238)		
Shipping weight		kg (lb.)	52 (115)			115 (254)		
Shipping volume		m^3 (cu. ft)	0.468 (16.5)			0.56 (19.8)		

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:
Rating conditions (*): Indoor air temperature 27 °C DB / 19 °C WB, Outdoor air temperature 35 °C DB
Full load conditions (**): Indoor air temperature 32 °C DB / 23 °C WB, Outdoor air temperature 43 °C DB
Heating:
Rating conditions (*): Indoor air temperature 20 °C DB, Outdoor air temperature 7 °C DB / 6 °C WB
Full load conditions (**): Indoor air temperature 24 °C DB, Outdoor air temperature 24 °C DB / 15.5 °C WB

1-2 Major Component Specifications

(A) Indoor Units : 4-Way Air Discharge Semi-concealed Type

MODEL No.			ASR 425 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Turbo (1 … ø 490)
Fan motor			
Model…Nominal output		W	SFG6X-41A5P … 40 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	6 … 470
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 114.0 ORG – YEL : 66.4 WHT – VLT : 23.9 WHT – PNK : 77.4 VLT – ORG : 12.4 YEL – BLK : 82.1
Safety device			
Operating temperature	Open °C		130 ± 8
	Close °C		(79 ± 15)
Run capacitor		VAC, μF	440 V , 4 μF
Electronic expansion valve			
Coil			DKV-MOZS582E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46, YEL – GRY : 46 RED – GRY : 46, BLK – GRY : 46
Valve body			IKV-24D12
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	2 … 1.5
Face area		m^2	0.295
Panel			
Model No.			ASG 0025
Dew proof heater			240 V, 26 W
Auto louver motor			M2LB24ZA12
Auto louver motor…Rated		V, W, rpm.	240 VAC, 3W, 2.5 rpm
Coil resistance (at 25 °C)		Ω	15.620 Ω ± 15 %
Drain Pump			WP20SL - 21
Rated		VAC, W	AC230 V, 50 Hz, 14.7 W
Total head & capacity			400 mm, 600 cc/min

1-2 Major Component Specifications

(A) Indoor Units : 4-Way Air Discharge Semi-concealed Type

MODEL No.			ASR 436 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Turbo (1 … ø 490)
Fan motor			
Model…Nominal output		W	SFG6X-61A3P…60 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	6 … 530
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 71.1 ORG – YEL : 22.7 WHT – VLT : 8.7 VLT – PNK : 43.2 VLT – ORG : 13.3 YEL – BLK : 126.7
Safety device			
Operating temperature	Open °C		130 ± 8
	Close °C		(79 ± 15)
Run capacitor		VAC, μF	440 V , 6 μF
Electronic expansion valve			
Coil			EKV-MOZS584E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV-30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	2…1.5
Face area		m^2	0.479
Panel			
Model No.			ASG 3648
Dew proof heater			240 V, 31 W
Auto louver motor			M2LB24ZA12
Auto louver motor…Rated		V, W, rpm.	240 VAC, 3W, 2.5 rpm
Coil resistance (at 25 °C)		Ω	15.620 Ω ± 15 %
Drain Pump			WP20SL - 21
Rated		VAC, W	AC230 V, 50 Hz, 14.7 W
Total head & capacity			400 mm, 600 cc/min

1-2 Major Component Specifications

(A) Indoor Units : 4-Way Air Discharge Semi-concealed Type

MODEL No.			ASR 448 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Turbo (1 … ø 490)
Fan motor			
Model…Nominal output		W	SFG6X-61A3P…60 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	6 … 530
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 71.1 ORG – YEL : 22.7 WHT – VLT : 8.7 VLT – PNK : 43.2 VLT – ORG : 13.3 YEL – BLK : 126.7
Safety device			
Operating temperature	Open °C		130 ± 8
	Close °C		(79 ± 15)
Run capacitor		VAC, μF	440 V , 6 μF
Electronic expansion valve			
Coil			EKV-MOZS584E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV-30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	2…1.5
Face area		m^2	0.479
Panel			
Model No.			ASG 3648
Dew proof heater			240 V, 31 W
Auto louver motor			M2LB24ZA12
Auto louver motor…Rated		V, W, rpm.	240 VAC, 3W, 2.5 rpm
Coil resistance (at 25 °C)		Ω	15.620 Ω ± 15 %
Drain Pump			WP20SL - 21
Rated		VAC, W	230 V, 50 Hz, 14.7 W
Total head & capacity			400 mm, 600 cc/min

1-2 Major Component Specifications

(A) Indoor Units : Ceiling Mounted Type

MODEL No.			ACR 425 H
Source			220 - 230 - 240 V / 1 phase / 50 Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (4 … ø 130)
Fan motor			
Model…Nominal output		W	SR4X-51A6P … 50 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4 … 1,172
Coil resistance (Ambient temperature 20 °C)		Ω	BRN – WHT : 111.0 ORG – YEL : 16.7 WHT – VLT : 35.4 YEL – BLK : 136.6 VLT – ORG : 13.4 BLK – PNK : 23.9
Safety device			
Operating temperature	Open °C		130 ± 8
	Close °C		(79 ± 15)
Run capacitor		VAC, μF	440 V, 1.5 μF
Electronic expansion valve			
Coil			DKV - MOZS582E0
Coil resistance (at 20 °C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			IKV-24D12
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3 … 1.7
Face area		m^2	0.168
Auto louver motor			MT8 - 3C
Auto louver motor…Rated		VAC, Hz, W, rpm.	220 – 240 V, 50 Hz, 3 W, 3.3 rpm.
Coil resistance (at 25 °C)		Ω	16.430 Ω ± 8 %

1-2 Major Component Specifications

(A) Indoor Units : Ceiling Mounted Type

MODEL No.			ACR 436 H
Source			220 - 230 - 240 V / 1 phase / 50 Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (4 … ø 150)
Fan motor			
Model…Nominal output		W	KFG4X-101C6P…100 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4…1,015
Coil resistance (Ambient temperature 20 °C)		Ω	BRN – WHT : 61.05 ORG – YEL : 13.23 WHT – VLT : 9.955 YEL – BLK : 19.25 VLT – ORG : 9.576 BLK – PNK : 10.81
Safety device			
Operating temperature	Open	°C	130 ± 8
	Close	°C	(79 ± 15)
Run capacitor		VAC, μF	440 V, 4.0 μF
Electronic expansion valve			
Coil			EKV - MOZS584E0
Coil resistance (at 20 °C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV - 30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3 … 1.7
Face area		m^2	0.326
Auto louver motor			MT8 - 3C
Auto louver motor…Rated	VAC, Hz, W, rpm.		220 – 240 V, 50 Hz, 3 W, 3.3 rpm.
Coil resistance (at 25 °C)		Ω	16.430 Ω ± 8 %

1-2 Major Component Specifications

(A) Indoor Units : Ceiling Mounted Type

MODEL No.			ACR 448 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (4…ø150)
Fan motor			
Model…Nominal output		W	KFG4X-101C6P…100 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4…1,070
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 61.05 ORG – YEL : 13.23 WHT – VLT : 9.955 YEL – BLK : 19.25 VLT – ORG : 9.576 BLK – PNK : 10.81
Safety device			
Operating temperature	Open	°C	130 ± 8
	Close	°C	(79 ± 15)
Run capacitor		VAC, μF	440 V, 5.0 μF
Electronic expansion valve			
Coil			EKV - MOZS584E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV - 30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3…1.7
Face area		m^2	0.326
Auto louver motor			MT8 - 3C
Auto louver motor…Rated	VAC, Hz, W, rpm.		220 – 240 V, 50Hz, 3 W, 3.3 rpm.
Coil resistance (at 25°C)		Ω	16.430 Ω ± 8 %

1-2 Major Component Specifications

(A) Indoor Units : Concealed Duct Type

MODEL No.			ADR 425 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (2 … ø 190)
Fan motor			
Model…Nominal output		W	KFC4X-71B5P … 70 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4 … 1,063
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 74.72 ORG – YEL : 9.588 WHT – VLT : 19.14 YEL – BLK : 10.52 VLT – ORG : 10.52 BLK – PNK : 21.72
Safety device			
Operating temperature	Open °C		130 ± 5
	Close °C		(115 ± 5)
Run capacitor		VAC, μF	440 VAC, 5 μF
Electronic expansion valve			
Coil			DKV-MOZS697E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			IKV-24D12
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3 … 1.7
Face area		m^2	0.189
Drain pump			PJV-1,422
Rated		VAC, W	AC 230 V, 50 Hz, 12 W
Total head & capacity			500 mm, 400 cc/min

1-2 Major Component Specifications

(A) Indoor Units : Concealed Duct Type

MODEL No.			ADR 436 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (3 … ø 190)
Fan motor			
Model…Nominal output		W	KFC4X-141A5P…160 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4 … 1,207
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 25.79 WHT – VLT : 5.086 VLT – ORG : 8.626 ORG – YEL : 5.792 YEL – BLK : 6.746 PNK – VLT : 6.361
Safety device			
Operating temperature	Open °C		130 ± 5
	Close °C		(115 ± 5)
Run capacitor	VAC, μF		440 VAC, 8 μF
Electronic expansion valve			
Coil			EKV-MOZS698E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV-30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3 … 2.0
Face area		m^2	0.308
Drain pump			PJV-1,422
Rated	VAC, W		AC 230 V, 50 Hz, 12 W
Total head & capacity			500 mm, 400 cc/min

1-2 Major Component Specifications

(A) Indoor Units : Concealed Duct Type

MODEL No.			ADR 448 H
Source			220 - 230 - 240 V / 1 phase / 50Hz
Controller P.C.B. Ass'y			CR-X253GH (Microprocessor)
Fan (Number…diameter)		mm	Centrifugal (3 … ø 190)
Fan motor			
Model…Nominal output		W	KFC4X-141A5P…160 W
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole…r.p.m. (230 V, High)		rpm.	4 … 1,207
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 25.79 WHT – VLT : 5.086 VLT – ORG : 8.626 ORG – YEL : 5.792 YEL – BLK : 6.746 ORG – VLT : 6.361
Safety device			
Operating temperature	Open	°C	130 ± 5
	Close	°C	(115 ± 5)
Run capacitor		VAC, μF	440 VAC, 8 μF
Electronic expansion valve			
Coil			EKV-MOZS698E0
Coil resistance (at 20°C)		Ω	ORG – GRY : 46 , YEL – GRY : 46 RED – GRY : 46 , BLK – GRY : 46
Valve body			HKV-30D16
Heat exchanger			
Coil			Aluminum plate fin / Copper tube
Rows…fin pitch		mm	3 … 2.0
Face area		m^2	0.308
Drain pump			PJV-1,422
Rated		VAC, W	AC 230 V, 50 Hz, 12 W
Total head & capacity			500 mm, 400 cc/min

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 425 SCLE
Source			**220 - 230 - 240 V / 1 phase / 50 Hz**
Controller P.C.B. Ass'y			CR - CR253GHL5 (Microprocessor)
Control circuit fuse			250 V, 3.15 A
Compressor			Rotary (Hermetic)
Model ..... number			C - RN220H5B
Source			220 - 240 V / 1 phase / 50 Hz
Nominal output		W	2200
Compressor oil		cc	1500
Coil resistance (Ambient temperature 25 °C)		Ω	C – R : 0.76 , R – S : 3.52 C – S : 2.76
Safety devices			
Overload relay models			Internal type
Operating temperature	Open	°C	160 ± 5
	Close	°C	87 ± 11
Crank case heater			240V, 25 W
Refrigerant amount at shipment		kg	R407C - 3.2
High pressure switch			ACB - 1TB07
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ MPa)
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 MPa)
Fan			Propeller
Number...diameter		mm	1 ..... ø460
Air circulation (Hi)		m^3/h	45
Fan speeds			3 (AUTO)
Fan motor			
Model			KFC6T - 91C5P
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252
Nominal output		W	70
Coil resistance (Ambient temperature 20°C)		Ω	WHT – BRN : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2
Safety device			Internal type
Operating temperature	Open	°C	130 ± 8
	Close	°C	79 ± 15
Run capacitor	VAC,	µF	440 V, 6 µF
Heat exchange			
Coil			Aluminium plate fin / Copper tube
Rows ..... fin pitch		mm	2 ..... 1.8
Face area		m^2	0.616

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 425 SHLE
Source			**220 - 230 - 240 V / 1 phase / 50 Hz**
Controller P.C.B. Ass'y			CR - CR253GHL5 (Microprocessor)
Control circuit fuse			250 V, 3.15 A
Compressor			Rotary (Hermetic)
Model ..... number			C - RN220H5B
Source			220 - 240 V / 1 phase / 50 Hz
Nominal output		W	2200
Compressor oil		cc	1500
Coil resistance (Ambient temperature 25 °C)		Ω	C – R : 0.76 , R – S : 3.52 C – S : 2.76
Safety devices			
Overload relay models			Internal type
Operating temperature	Open	°C	160 ± 5
	Close	°C	87 ± 11
Crank case heater			240V, 25 W
Refrigerant amount at shipment		kg	R407C - 3.2
High pressure switch			ACB - 1TB07
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ MPa)
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 MPa)
Fan			Propeller
Number...diameter		mm	1 ..... ø460
Air circulation (Hi)		m^3/h	45
Fan speeds			3 (AUTO)
Fan motor			
Model			KFC6T - 91C5P
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252
Nominal output		W	70
Coil resistance (Ambient temperature 20°C)		Ω	WHT – BRN : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2
Safety device			Internal type
Operating temperature	Open	°C	130 ± 8
	Close	°C	79 ± 15
Run capacitor	VAC,	µF	440 V, 6 µF
Heat exchange			
Coil			Aluminium plate fin / Copper tube
Rows ..... fin pitch		mm	2 ..... 1.8
Face area		m^2	0.616

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 425 SCL3E
Source			**380 - 400 - 415 V / 3 phase / 50 Hz**
Controller P.C.B. Ass'y			CR - CR483GHL8 (Microprocessor)
Control circuit fuse			250 V, 3.15 A
Compressor			Rotary (Hermetic)
Model ..... number			C - RN223H8D
Source			380 - 400 - 415 V / 3 phase / 50 Hz
Nominal output		W	2400
Compressor oil		cc	1350
Coil resistance (Ambient temperature 25 °C)		Ω	T – R : 5.77 , R – S : 5.66 S – T : 5.38
Safety devices			
Overload relay models			Internal type
Operating temperature	Open	°C	120 ± 5
	Close	°C	98 ± 11
Crank case heater			240V, 25 W
Refrigerant amount at shipment		kg	R407C - 3.2
High pressure switch			ACB - 1TB07
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ MPa)
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 MPa)
Fan			Propeller
Number...diameter		mm	1 ..... ø460
Air circulation (Hi)		m^3/h	45
Fan speeds			3 (AUTO)
Fan motor			
Model			KFC6T - 91C5P
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252
Nominal output		W	70
Coil resistance (Ambient temperature 20°C)		Ω	WHT – BRN : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2
Safety device			Internal type
Operating temperature	Open	°C	130 ± 8
	Close	°C	79 ± 15
Run capacitor	VAC,	µF	440 V, 6 µF
Heat exchange			
Coil			Aluminium plate fin / Copper tube
Rows ..... fin pitch		mm	2 ..... 1.8
Face area		m^2	0.616

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 425 SHL3E
Source			**380 - 400 - 415 V / 3 phase / 50 Hz**
Controller P.C.B. Ass'y			CR - CR483GHL8 (Microprocessor)
Control circuit fuse			250 V, 3.15 A
Compressor			Rotary (Hermetic)
Model ..... number			C - RN223H8D
Source			380 - 400 - 415 V / 3 phase / 50 Hz
Nominal output		W	2400
Compressor oil		cc	1350
Coil resistance (Ambient temperature 25 °C)		Ω	T – R : 5.77 , R – S : 5.66 S – T : 5.38
Safety devices			
Overload relay models			Internal type
Operating temperature	Open	°C	120 ± 5
	Close	°C	98 ± 11
Crank case heater			240V, 25 W
Refrigerant amount at shipment		kg	R407C - 3.2
High pressure switch			ACB - 1TB07
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ MPa)
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 MPa)
Fan			Propeller
Number...diameter		mm	1 ..... ø460
Air circulation (Hi)		m^3/h	45
Fan speeds			3 (AUTO)
Fan motor			
Model			KFC6T - 91C5P
Source			220 - 230 - 240 V / 1 phase / 50 Hz
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252
Nominal output		W	70
Coil resistance (Ambient temperature 20°C)		Ω	WHT – BRN : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2
Safety device			Internal type
Operating temperature	Open	°C	130 ± 8
	Close	°C	79 ± 15
Run capacitor	VAC,	µF	440 V, 6 µF
Heat exchange			
Coil			Aluminium plate fin / Copper tube
Rows ..... fin pitch		mm	2 ..... 1.8
Face area		m^2	0.616

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 436 SCL3E	AER 448 SCL3E
Source			**380 - 400 - 415 V / 3 phase / 50 Hz**	
Controller P.C.B. Ass'y			CR - CR483GHL8 (Microprocessor)	
Control circuit fuse			250 V, 3.15 A	
Compressor			Scroll (Hermetic)	
Model ..... number			C - SBN303H8A	C - SBN373H8A
Source			380 - 400 - 415 V / 3 phase / 50 Hz	
Nominal output		W	2,400	3,700
Compressor oil		cc	1,700	1,700
Coil resistance (Ambient temperature 25 °C)		Ω	T – R : 3.177 , R – S : 3.177 S – T : 2.966	T – R : 2.806 , R – S : 2.806 S – T : 2.651
Crank case heater			240 V, 32 W	240 V, 32 W
Safety devices				
Overload relay models			Internal type	
Operating temperature	Open	°C	155 ± 5	145 ± 5
	Close	°C	61 ± 9	61 ± 9
Refrigerant amount at shipment		kg	R407C - 4.0	R407C - 4.5
High pressure switch			ACB - 1TB07	
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ Mpa)	
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 Mpa)	
Low pressure switch			LCB - JA89	
Set pressure	OFF	kg/cm^2	0.5 ± 0.3 (0.05 ± 0.03 Mpa)	
	ON	kg/cm^2	1.5 ± 0.3 (0.15 ± 0.03 Mpa)	
Fan			Propeller	
Number...diameter		mm	2 ..... ø460	
Air circulation		m^3/h	81	
Fan speeds			3 (AUTO)	
Fan motor				
Model			KFC6T - 91C5P × 2	
Source			220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252	
Nominal output		W	70 W × 2	
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2	
Safety device			Internal type	
Operating temperature	Open	°C	130 ± 8	
	Close	°C	79 ± 15	
Run capacitor	VAC,	μF	440 V, 6 μF × 2	
Heat exchange				
Coil			Aluminium plate fin / Copper tube	
Rows ..... fin pitch		mm	2 ..... 2.0	2 ..... 1.8
Face area		m^2	1.08	

1-2 Major Component Specifications

(B) Outdoor Unit

MODEL No.			AER 436 SHL3E	AER 448 SHL3E
Source			**380 - 400 - 415 V / 3 phase / 50 Hz**	
Controller P.C.B. Ass'y			CR - CR483GHL8 (Microprocessor)	
Control circuit fuse			250 V, 3.15 A	
Compressor			Scroll (Hermetic)	
Model ..... number			C - SBN303H8A	C - SBN373H8A
Source			380 - 400 - 415 V / 3 phase / 50 Hz	
Nominal output		W	2,400	3,700
Compressor oil		cc	1,700	1,700
Coil resistance (Ambient temperature 25 °C)		Ω	T – R : 3.177 , R – S : 3.177 S – T : 2.966	T – R : 2.806 , R – S : 2.806 S – T : 2.651
Crank case heater			240 V, 32 W	240 V, 32 W
Safety devices				
Overload relay models			Internal type	
Operating temperature	Open	°C	155 ± 5	145 ± 5
	Close	°C	61 ± 9	61 ± 9
Refrigerant amount at shipment		kg	R407C - 4.0	R407C - 4.5
High pressure switch			ACB - 1TB07	
Set pressure	OFF	kg/cm^2	$32^{+0}_{-1.5}$ ($3.2^{+0}_{-0.15}$ Mpa)	
	ON	kg/cm^2	24 ± 2.0 (2.4 ± 0.2 Mpa)	
Low pressure switch			LCB - JA89	
Set pressure	OFF	kg/cm^2	0.5 ± 0.3 (0.05 ± 0.03 Mpa)	
	ON	kg/cm^2	1.5 ± 0.3 (0.15 ± 0.03 Mpa)	
Fan			Propeller	
Number...diameter		mm	2 ..... ø460	
Air circulation		m^3/h	81	
Fan speeds			3 (AUTO)	
Fan motor				
Model			KFC6T - 91C5P × 2	
Source			220 - 230 - 240 V / 1 phase / 50 Hz	
No. of pole ..... rpm (230V, High / Med. / Low)			6...772 / 376 / 252	
Nominal output		W	70 W × 2	
Coil resistance (Ambient temperature 20°C)		Ω	BRN – WHT : 127.3 , VLT – YEL : 15.0 WHT – VLT : 56.7 , YEL – PNK : 7.2	
Safety device			Internal type	
Operating temperature	Open	°C	130 ± 8	
	Close	°C	79 ± 15	
Run capacitor	VAC,	μF	440 V, 6 μF × 2	
Heat exchange				
Coil			Aluminium plate fin / Copper tube	
Rows ..... fin pitch		mm	2 ..... 2.0	2 ..... 1.8
Face area		m^2	1.08	

1-3 Other Component Specifications

4-Way Air Discharge Semi-concealed Type

MODEL NO.	Indoor Unit		ASR 425 ~ 448H
Power Transformer			ATR-II215TA
Rated			
Primary		VAC, Hz	230 V, 50 Hz
Secondary			10.2 V 1.4 A
			14 V 0.5 A
Coil resistance		Ω	WHT – WHT : 84 , BRN – BRN : 0.7 RED – RED : 2.7
Thermal cut off temperature		˚C	145
Thermistor (Coil sensor) : TH2, 3, 4			PB3M-41E-S4 , PBC-41E-S25 , PBC-41E-S26 , PBC-41E-S36
Resistance		KΩ	-10 ˚C : 23.7 ± 5 % , 20 ˚C : 6.5 ± 5 % -5 ˚C : 18.8 ± 5 % , 30 ˚C : 4.4 ± 5 % 0 ˚C : 15.0 ± 5 % , 40 ˚C : 3.1 ± 5 % 5 ˚C : 12.1 ± 5 % , 45 ˚C : 2.6 ± 5 % 10 ˚C : 9.7 ± 5 %
Thermistor (Room sensor) : TH1			KTEC-35-S6
Resistance		KΩ	0 ˚C :16.5 ± 5 % , 40 ˚C : 2.7 ± 5 % 5 ˚C :12.8 ± 5 % , 45 ˚C : 2.2 ± 5 % 10 ˚C :10.0 ± 5 % , 50 ˚C : 1.8 ± 5 % 20 ˚C : 6.3 ± 5 % , 55 ˚C : 1.5 ± 5 % 30 ˚C : 4.0 ± 5 %
Electronic expansion valve			
Valve body			IKV-24D12 (ASR 425 H) HKV-30D16 (ASR 436 H - ASR 448 H)
Coil			DKV-MOZS582E0 (ASR 425 H) EKV-MOZS584E0 (ASR 436 H - ASR 448 H)
Drain pump			WP20SL-21
Rated			230 V, 14.7 W
Float switch			FS-0218-102 (ASR 425 H) FS-0218-103 (ASR 436 H - ASR 448 H)
Rated (Contact rated)			DC 12 V, 25 W

1-3 Other Component Specifications

Ceiling Mounted Type

MODEL NO.	Indoor Unit		ACR 425 ~ 448H
Power Transformer			ATR-II215TB
Rated			
Primary		VAC, Hz	230 V, 50 Hz
Secondary			10.2 V 1.4 A
			14 V 0.5 A
Coil resistance		Ω	WHT –WHT : 110 , BRN – BRN : 0.5 RED – RED : 2.3
Thermal cut off temperature		˚C	145
Thermistor (Coil sensor) : TH2, 3, 4			PB3M-41E-S6 , PBC-41E-S14 , PBC-41E-S25
Resistance		KΩ	-10 ˚C : 23.7 ± 5 % , 20 ˚C : 6.5 ± 5 % -5 ˚C : 18.8 ± 5 % , 30 ˚C : 4.4 ± 5 % 0 ˚C : 15.0 ± 5 % , 40 ˚C : 3.1 ± 5 % 5 ˚C : 12.1 ± 5 % , 45 ˚C : 2.6 ± 5 % 10 ˚C : 9.7 ± 5 %
Thermistor (Room sensor) : TH1			KTEC-35-S6
Resistance		KΩ	0 ˚C :16.5 ± 5 % , 40 ˚C : 2.7 ± 5 % 5 ˚C :12.8 ± 5 % , 45 ˚C : 2.2 ± 5 % 10 ˚C :10.0 ± 5 % , 50 ˚C : 1.8 ± 5 % 20 ˚C : 6.3 ± 5 % , 55 ˚C : 1.5 ± 5 % 30 ˚C : 4.0 ± 5 %
Electronic expansion valve			
Valve body			IKV-24D12 (ACR 425 H) HKV-30D16 (ACR 436 H - ACR 448 H)
Coil			DKV-MOZS582E0 (ACR 425 H) EKV-MOZS584E0 (ACR 436 H - ACR 448 H)

1-3 Other Component Specifications

Concealed Duct Type

MODEL NO.	Indoor Unit		ADR 425 ~ 448 H
Power Transformer			ATR-II215TB
Rated			
Primary		VAC, Hz	230 V, 50 Hz
Secondary			10.2 V 1.4 A
			14 V 0.5 A
Coil resistance		Ω	WHT –WHT : 110 , BRN – BRN : 0.5 RED – RED : 2.3
Thermal cut off temperature		˚C	145
Thermistor (Coil sensor) : TH2, 3, 4			PBC-41E-S36 , PBC-41E-S25
Resistance		KΩ	-10 ˚C : 23.7 ± 5 % , 20 ˚C : 6.5 ± 5 % -5 ˚C : 18.8 ± 5 % , 30 ˚C : 4.4 ± 5 % 0 ˚C : 15.0 ± 5 % , 40 ˚C : 3.1 ± 5 % 5 ˚C : 12.1 ± 5 % , 45 ˚C : 2.6 ± 5 % 10 ˚C : 9.7 ± 5 %
Thermistor (Room sensor) : TH1, 5			KTEC-35-S6, KTEC-35-S85
Resistance		KΩ	0 ˚C :16.5 ± 5 % , 40 ˚C : 2.7 ± 5 % 5 ˚C :12.8 ± 5 % , 45 ˚C : 2.2 ± 5 % 10 ˚C :10.0 ± 5 % , 50 ˚C : 1.8 ± 5 % 20 ˚C : 6.3 ± 5 % , 55 ˚C : 1.5 ± 5 % 30 ˚C : 4.0 ± 5 %
Electronic expansion valve			
Valve body			IKV-24D12 (ADR 425 H) HKV-30D16 (ADR 436 H - ADR 448 H)
Coil			DKV-MOZS697E0 (ADR 425 H) EKV-MOZS698E0 (ADR 436 H - ADR 448 H)
Drain pump			PTV-1422
Rated			AC 230 V, 12 W
Float switch			FS-0218-103
Rated (Contact rated)			DC 12 V, 25 W

1-3 Other Component Specifications

Outdoor Unit

MODEL NO.	Outdoor Unit		AER 425 SCLE - AER 425 SCL3E		
Power Transformer			ATR - I65B		
Rated					
Primary		VAC, Hz	230 V, 50 Hz		
Secondary			14 V, 0.4 A		
Coil resistance		Ω	WHT – WHT : 300	,	BRN – BRN : 2.2
Thermal cut off temperature		°C	145		
Thermistor (Coil sensor) : TH7			PBC - 41E - S4		
Coil resistance		kΩ	–10 °C : 23.7 – 5 °C : 18.8 0 °C : 15.0 5 °C : 12.1	, , , ,	10 °C : 9.7 20 °C : 6.5 30 °C : 4.4 40 °C : 3.1 45 °C : 2.6
Thermistor (Discharge gas sensor) : TH8			PTC - 51H - S1		
Coil resistance		kΩ	60 °C : 13.8 70 °C : 9.7 75 °C : 8.2 80 °C : 7.0 85 °C : 5.9	, , , , ,	90 °C : 5.1 100 °C : 3.8 110 °C : 2.8 120 °C : 2.2 130 °C : 1.7
Relay (Comp. Magnetic Contactor)			FC - 1SZ607		
Coil rated		VAC	220 - 240 V		
Contact rating		VAC, A	440 V, 13 A		
Coil resistance (at 25 °C)		Ω	—		
Solenoid coil or 4 way valve					
4 way valve			—		
Solenoid coil			—		

1-3 Other Component Specifications

Outdoor Unit

MODEL NO.	Outdoor Unit	AER 425 SHLE - AER 425 SHL3E
Power Transformer		ATR - I65B
Rated		
Primary	VAC, Hz	230 V, 50 Hz
Secondary		14 V, 0.4 A
Coil resistance	Ω	WHT – WHT : 300 , BRN – BRN : 2.2
Thermal cut off temperature	°C	145
Thermistor (Coil sensor) : TH6, 7		PBC - 41E - S26 , PBC - 41E - S4
Coil resistance	kΩ	–10 °C : 23.7 , 10 °C : 9.7 – 5 °C : 18.8 , 20 °C : 6.5 0 °C : 15.0 , 30 °C : 4.4 5 °C : 12.1 , 40 °C : 3.1 45 °C : 2.6
Thermistor (Discharge gas sensor) : TH8		PTC - 51H - S1
Coil resistance	kΩ	60 °C : 13.8 , 90 °C : 5.1 70 °C : 9.7 , 100 °C : 3.8 75 °C : 8.2 , 110 °C : 2.8 80 °C : 7.0 , 120 °C : 2.2 85 °C : 5.9 , 130 °C : 1.7
Relay (Comp. Magnetic Contactor)		FC - 1SZ607
Coil rated	VAC	220 - 240 V
Contact rating	VAC, A	440 V, 13 A
Coil resistance (at 25 °C)	Ω	—
Solenoid coil or 4 way valve		
4 way valve		CHV - 0201
Solenoid coil		CHV - 01AJ504D1

1-3 Other Component Specifications

Outdoor Unit

MODEL NO.	Outdoor Unit	AER 436 SCL3E - AER 448 SCL3E
Power Transformer		ATR - I65B
Rated		
Primary	VAC, Hz	230 V, 50 Hz
Secondary		14 V, 0.4 A
Coil resistance	Ω	WHT – WHT : 300 , BRN – BRN : 2.2
Thermal cut off temperature	°C	145
Thermistor (Coil sensor) : TH7		PBC - 41E - S4
Coil resistance	kΩ	–10 °C : 23.7 , 10 °C : 9.7 – 5 °C : 18.8 , 20 °C : 6.5 0 °C : 15.0 , 30 °C : 4.4 5 °C : 12.1 , 40 °C : 3.1 45 °C : 2.6
Thermistor (Discharge gas sensor) : TH8		PTC - 51H - S1
Coil resistance	kΩ	60 °C : 13.8 , 90 °C : 5.1 70 °C : 9.7 , 100 °C : 3.8 75 °C : 8.2 , 110 °C : 2.8 80 °C : 7.0 , 120 °C : 2.2 85 °C : 5.9 , 130 °C : 1.7
Relay (Comp. Magnetic Contactor)		FC - 1SZ607
Coil rated	VAC	220 - 240 V
Contact rating	VAC, A	440 V, 13 A
Coil resistance (at 25 °C)	Ω	—
Solenoid coil or 4 way valve		
4 way valve		—
Solenoid coil		—

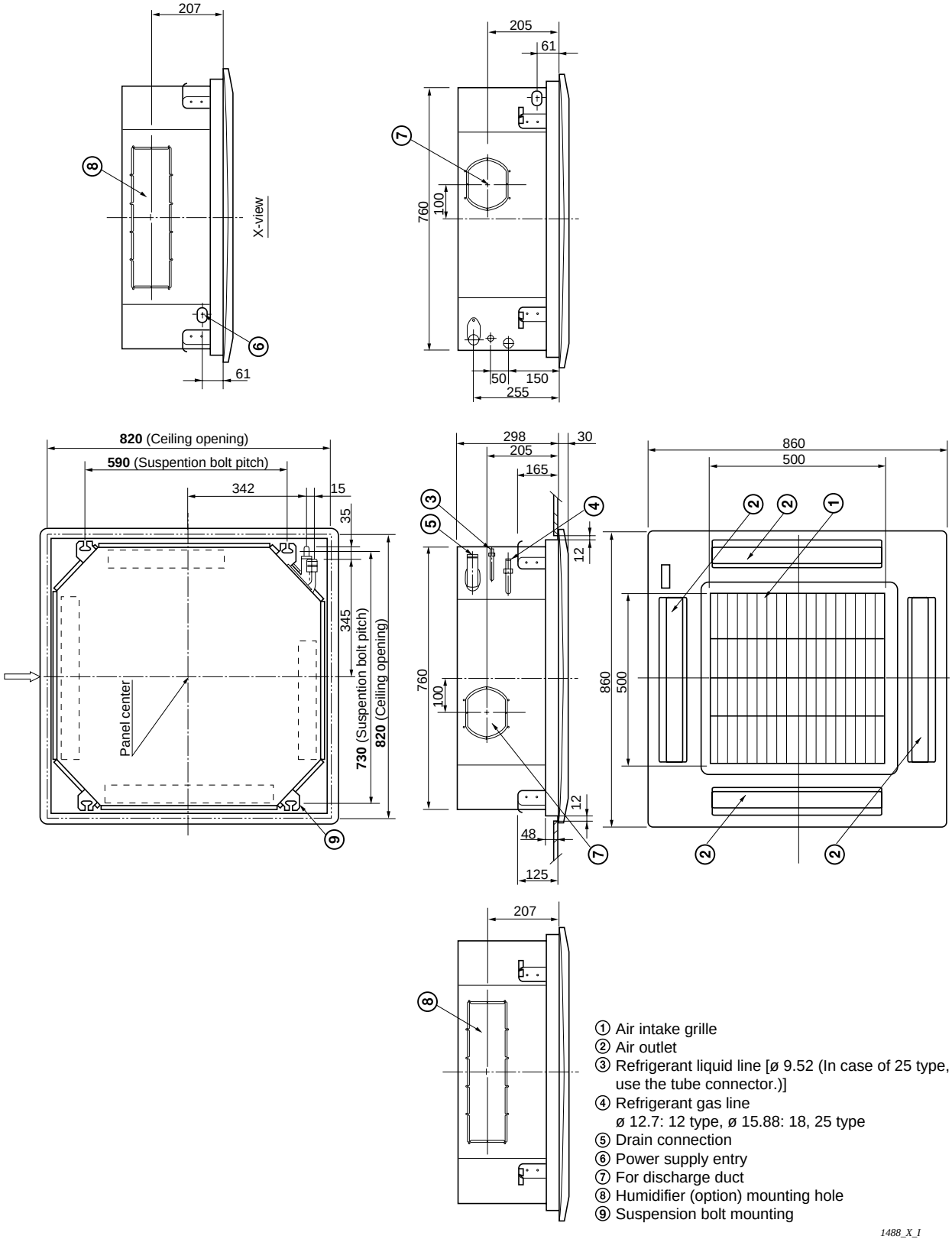
1-3 Other Component Specifications

Outdoor Unit

MODEL NO.	Outdoor Unit	AER 436 SHL3E	AER 448 SHL3E
Power Transformer		ATR - I65B	
Rated			
Primary	VAC, Hz	230 V, 50 Hz	
Secondary		14 V, 0.4 A	
Coil resistance	Ω	WHT – WHT : 300 ,	BRN – BRN : 2.2
Thermal cut off temperature	°C	145	
Thermistor (Coil sensor) : TH6, 7		PBC - 41E - S36 ,	PBC - 41E - S4
Coil resistance	kΩ	–10 °C : 23.7 , – 5 °C : 18.8 , 0 °C : 15.0 , 5 °C : 12.1 ,	10 °C : 9.7 20 °C : 6.5 30 °C : 4.4 40 °C : 3.1 45 °C : 2.6
Thermistor (Discharge gas sensor) : TH8		PTC - 51H - S1	
Coil resistance	kΩ	60 °C : 13.8 , 70 °C : 9.7 , 75 °C : 8.2 , 80 °C : 7.0 , 85 °C : 5.9 ,	90 °C : 5.1 100 °C : 3.8 110 °C : 2.8 120 °C : 2.2 130 °C : 1.7
Relay (Comp. Magnetic Contactor)		FC - 1SZ607	
Coil rated	VAC	220 - 240 V	
Contact rating	VAC, A	440 V, 13 A	
Coil resistance (at 25 °C)	Ω	—	
Solenoid coil or 4 way valve			
4 way valve		CHV - 0301	CHV - 0401
Solenoid coil		CHV - 01AJ504D1	

1-4 Dimensional Data

(A) Indoor Units : 4-Way Air Discharge Semi-concealed Type
25 Type

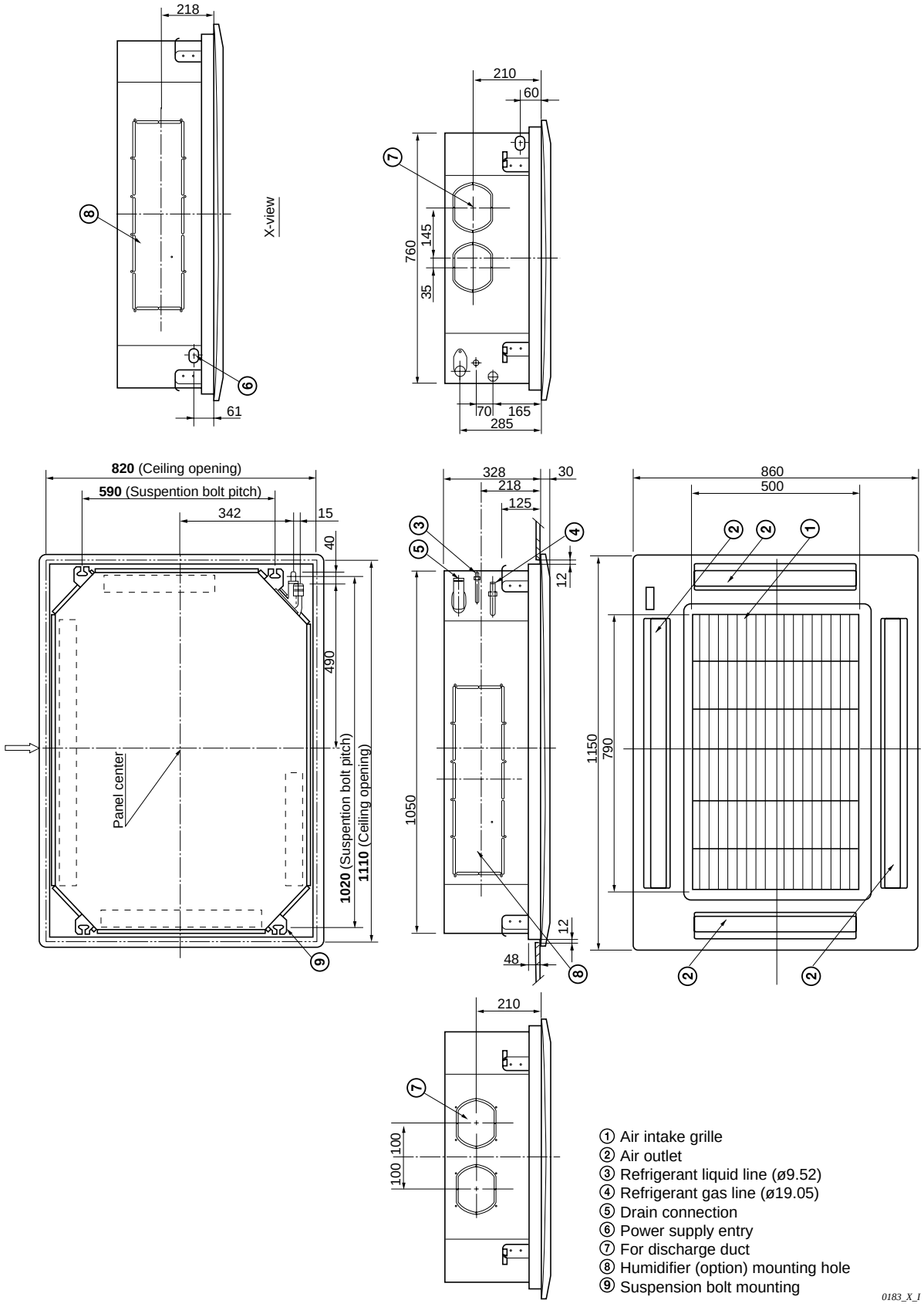


① Air intake grille
② Air outlet
③ Refrigerant liquid line [ø 9.52 (In case of 25 type, use the tube connector.)]
④ Refrigerant gas line
ø 12.7: 12 type, ø 15.88: 18, 25 type
⑤ Drain connection
⑥ Power supply entry
⑦ For discharge duct
⑧ Humidifier (option) mounting hole
⑨ Suspension bolt mounting

1488_X_I

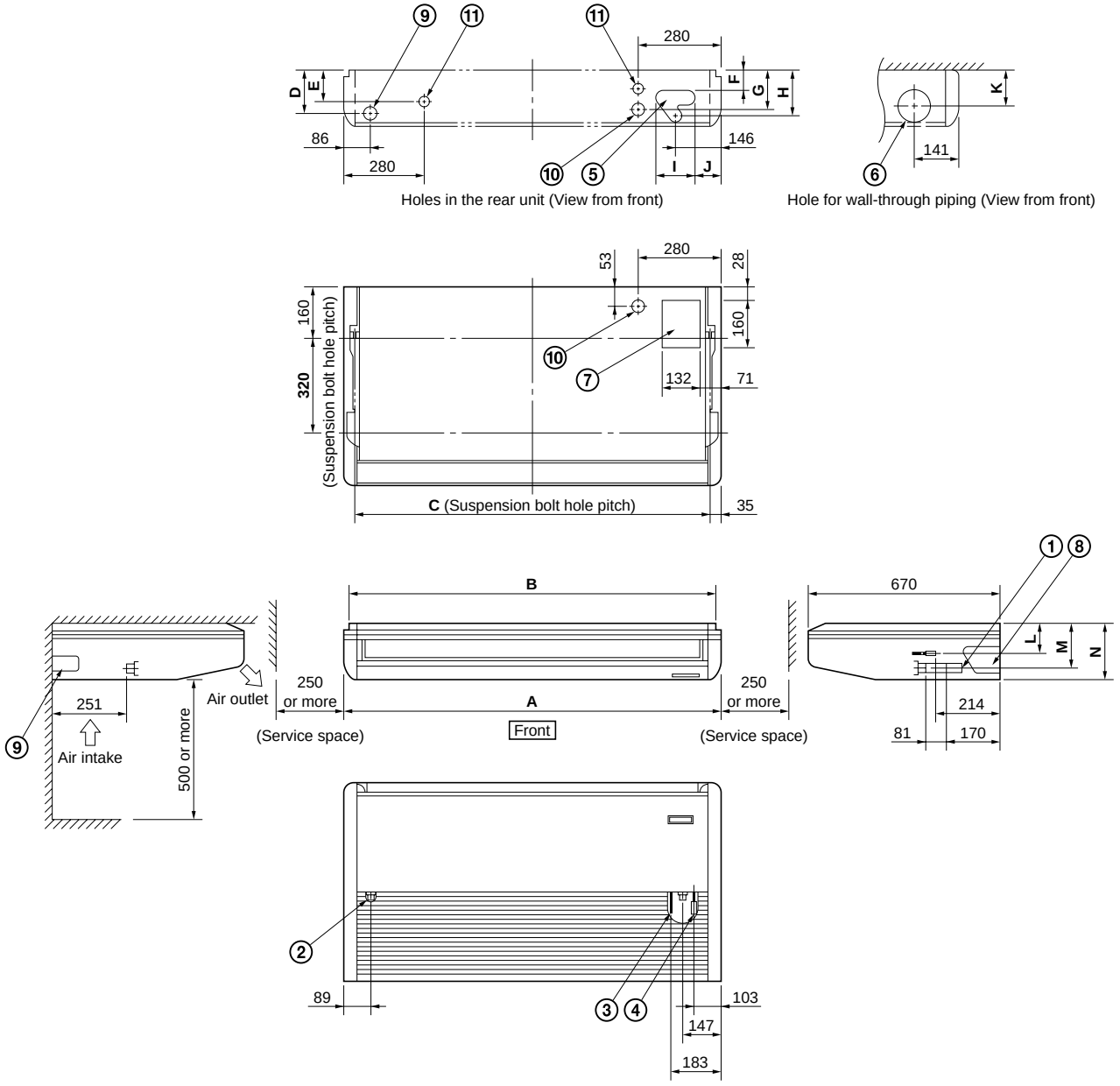
1-4 Dimensional Data

(A) Indoor Units : 4-Way Air Discharge Semi-concealed Type
36, 48 Type



1-4 Dimensional Data

(A) Indoor Units : Ceiling Mounted Type
25, 36, 48 Type



Dimension : mm

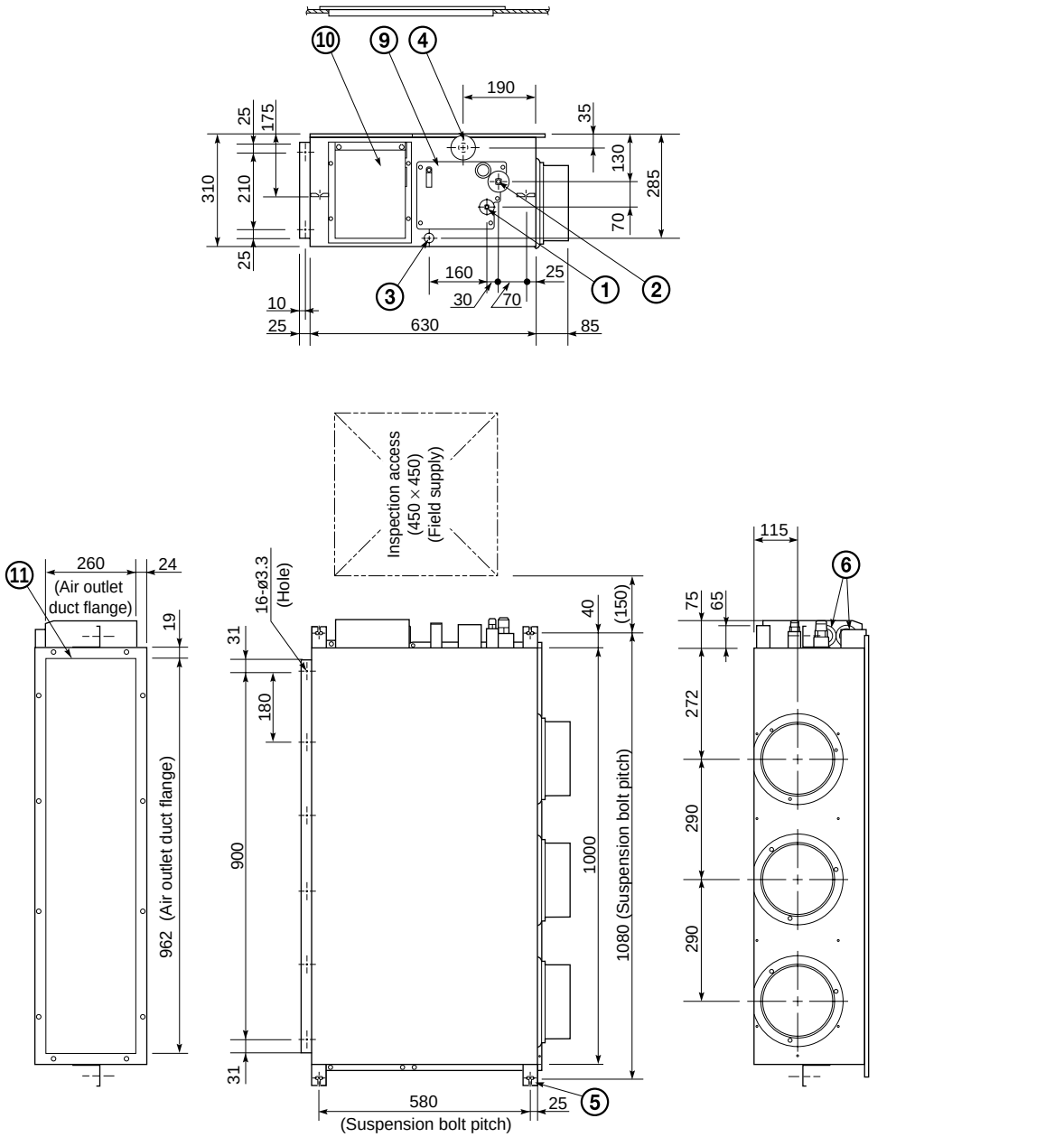
① Drain connection
② Drain connection for left side
③ Refrigerant liquid line (ø9.52)
④ Refrigerant gas line (18, 25 type: ø15.88 / 36, 48 type: ø19.05)
⑤ Hole for rear side refrigerant tubing
⑥ Hole for through-the-wall refrigerant tubing (ø100 hole)
⑦ Hole for upper side refrigerant tubing (Knockout hole)
⑧ Hole for right side refrigerant tubing (Knockout hole)
⑨ Hole for left side drain connection (Knockout hole)
⑩ Hole for power supply cord (Knockout hole ø40)
⑪ Hole for remote controller wiring

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
25 type	1,300	1,280	1,230	147	101	64	134	147	116	83	120	95	147	190
36, 48 type	1,575	1,555	1,505	197	151	114	184	197	121	80	170	140	197	240

1394_X_S

1-4 Dimensional Data

(A) Indoor Units : Concealed Duct Type
25 Type

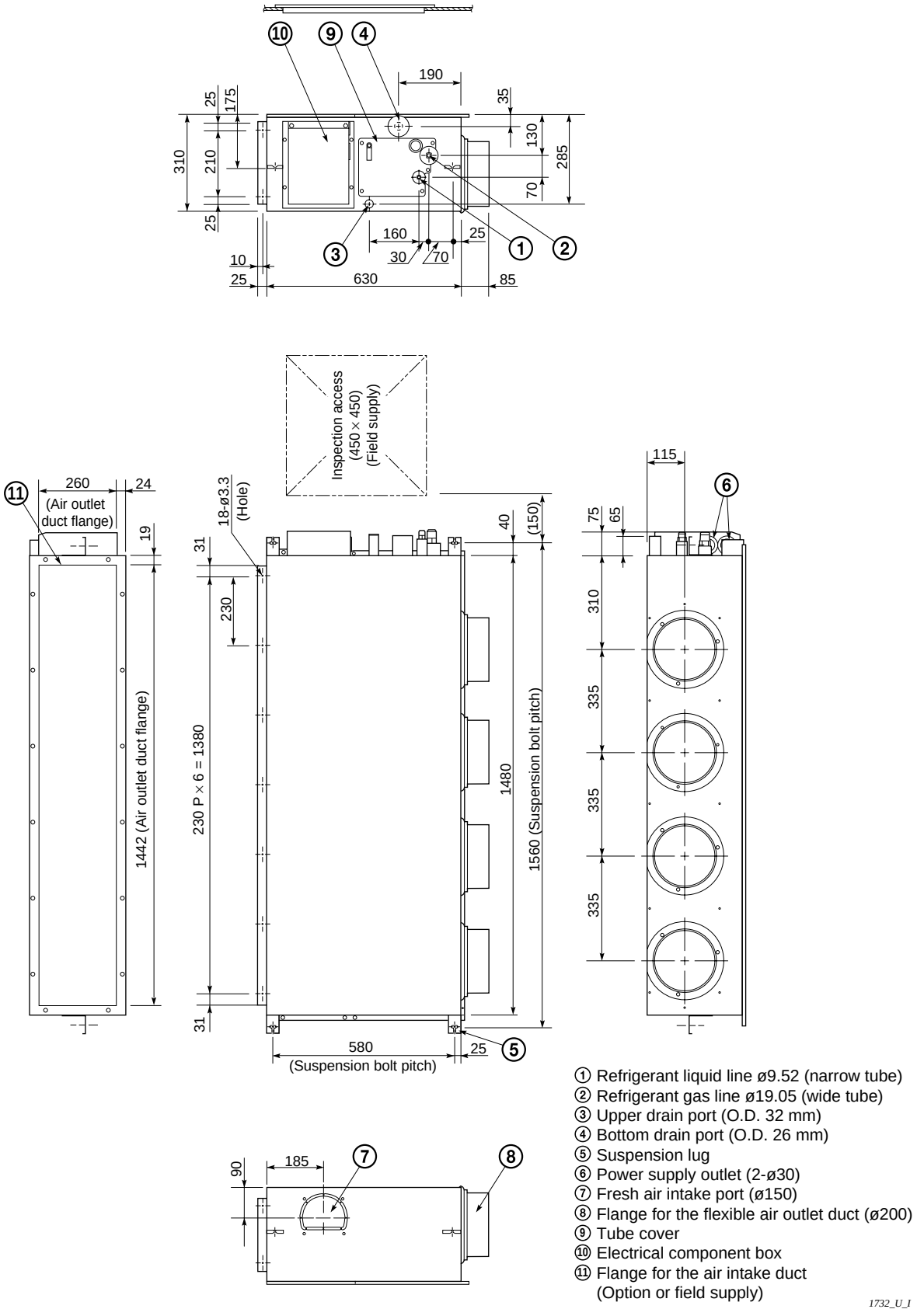


① Refrigerant liquid line ø9.52 (narrow tube)
(Use the tube connector)
② Refrigerant gas line ø15.88 (wide tube)
③ Upper drain port (O.D. 32 mm)
④ Bottom drain port (O.D. 26 mm)
⑤ Suspension lug
⑥ Power supply outlet (2-ø30)
⑦ Fresh air intake port (ø150)
⑧ Flange for the flexible air outlet duct (ø200)
⑨ Tube cover
⑩ Electrical component box
⑪ Flange for the air intake duct
(Option or field supply)

1731_U_I

1-4 Dimensional Data

(A) Indoor Units : Concealed Duct Type
36, 48 Type



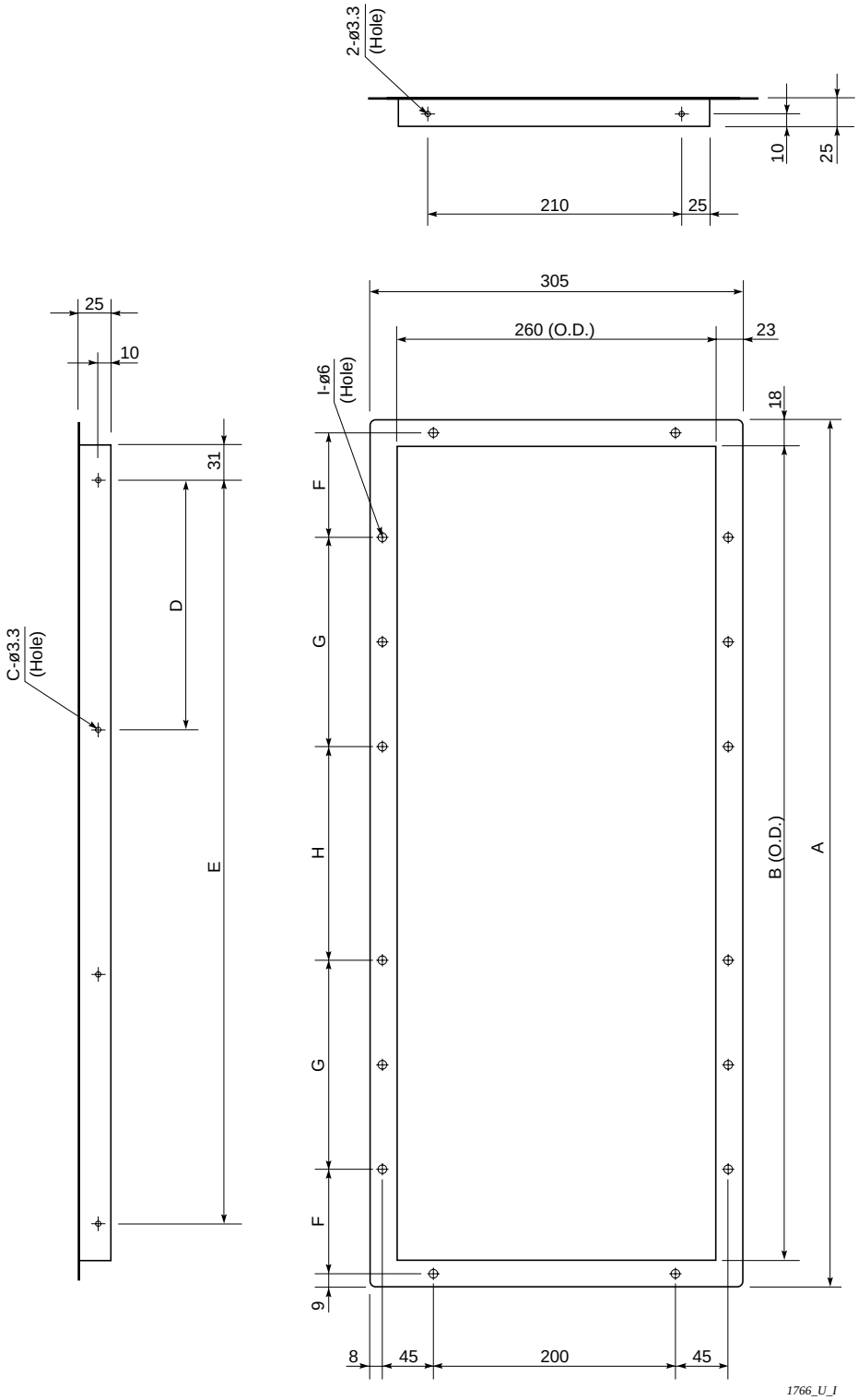
① Refrigerant liquid line ø9.52 (narrow tube)
② Refrigerant gas line ø19.05 (wide tube)
③ Upper drain port (O.D. 32 mm)
④ Bottom drain port (O.D. 26 mm)
⑤ Suspension lug
⑥ Power supply outlet (2-ø30)
⑦ Fresh air intake port (ø150)
⑧ Flange for the flexible air outlet duct (ø200)
⑨ Tube cover
⑩ Electrical component box
⑪ Flange for the air intake duct
(Option or field supply)

1732_U_I

1-4 Dimensional Data

■ Flange for the air intake duct (Field supply)

: For Concealed Duct Type

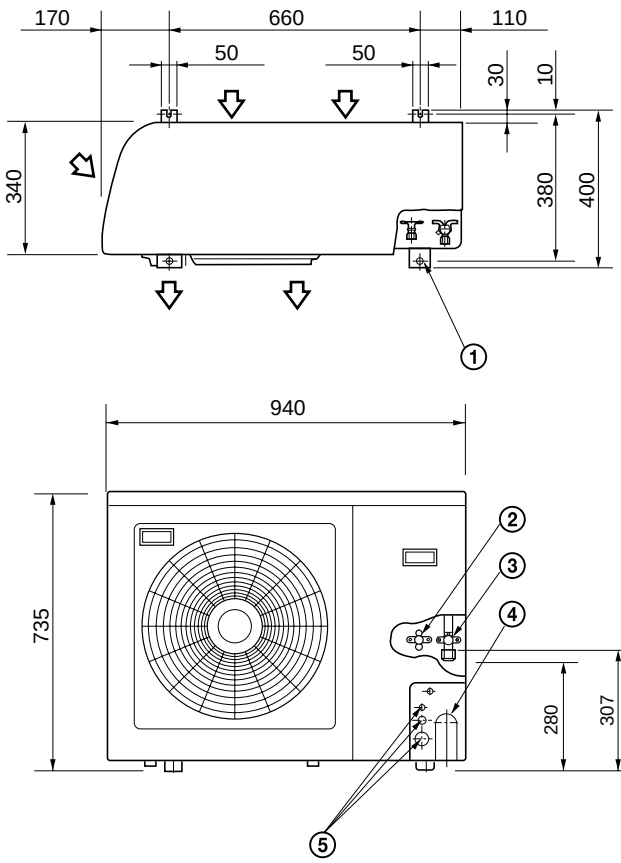


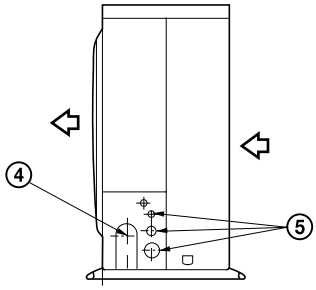
(mm)

	A	B	C	D	E	F	G	H	I
25 type	998	962	6	180	5 × 180P = 900	120	245 (245 × 1)	250	16
36, 48 type	1,478	1,442	7	230	6 × 230P = 1,380	120	490 (245 × 2)	240	20

1-4 Dimensional Data

(B) Outdoor Units : AER 425 SCLE - AER 425 SCL3E
AER 425 SHLE - AER 425 SHL3E





Dimension : mm

① Hole for anchor bolt (4-ø13)
② Refrigerant tube joint (narrow tube)
Flare connection 1/4 in (6.35 mm)
③ Refrigerant tube joint (wide tube)
Flare connection 5/8 in (15.88 mm)
④ Refrigerant tubing inlet
⑤ Power supply inlet

0411_C_S

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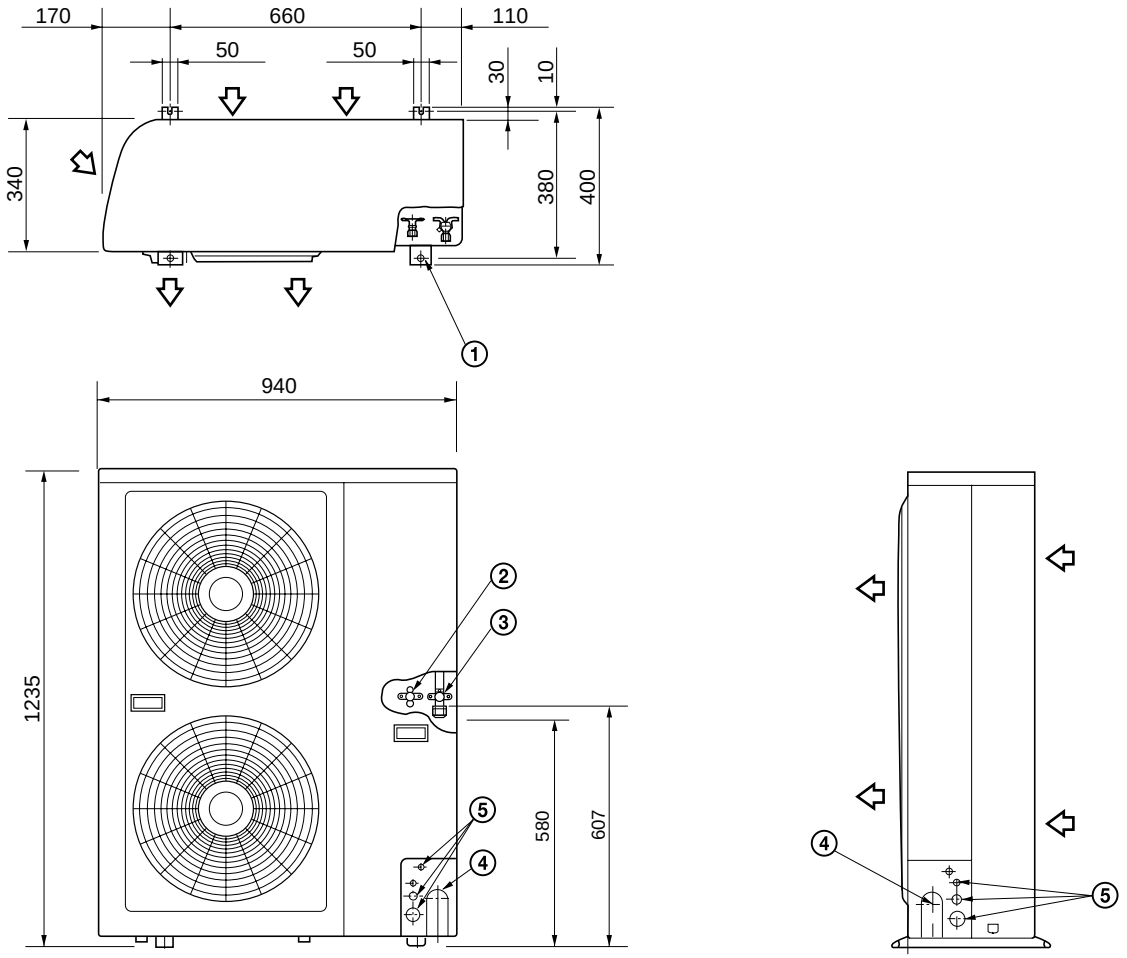
1-4 Dimensional Data

(B) Outdoor Units : AER 436 SCL3E - AER 436 SHL3E
AER 448 SCL3E - AER 448 SHL3E



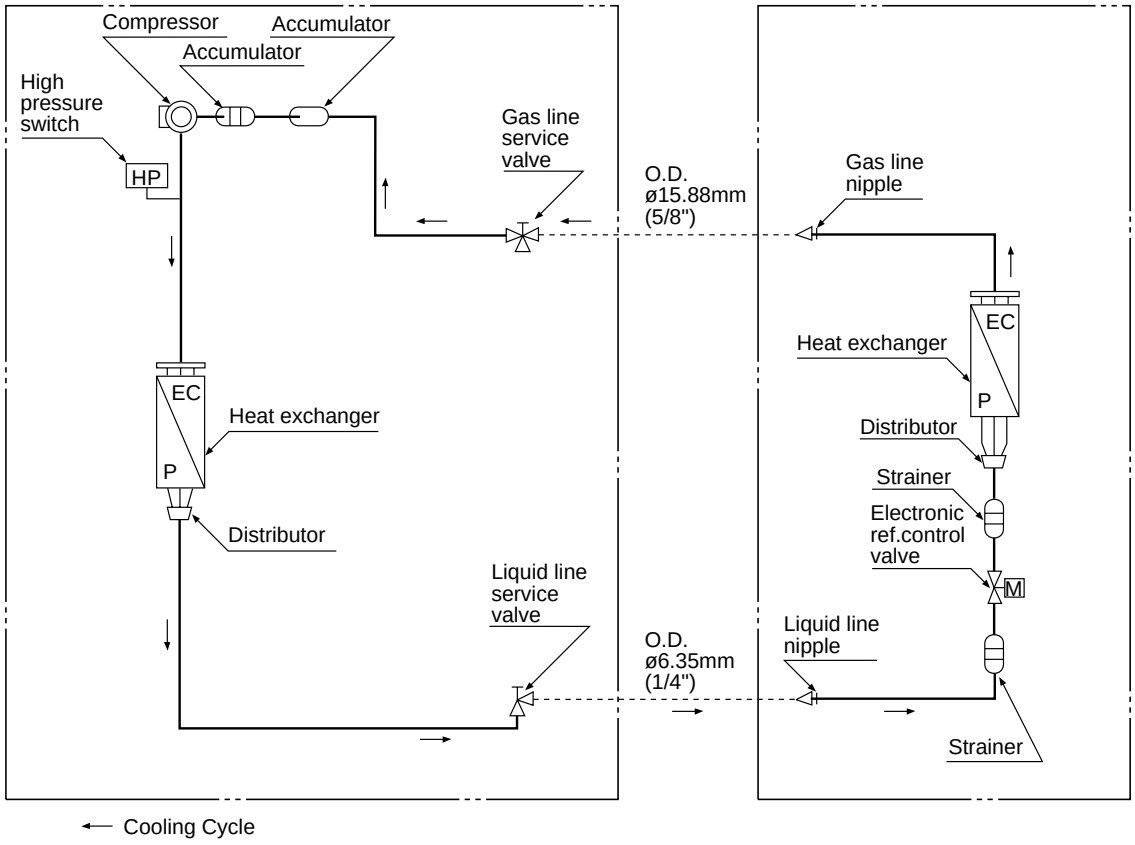
Dimension : mm

① Hole for anchor bolt (4-ø13)
② Refrigerant tube joint (narrow tube)
Flare connection 3/8 in (9.52 mm)
③ Refrigerant tube joint (wide tube)
Flare connection 3/4 in (19.05 mm)
④ Refrigerant tubing inlet
⑤ Power supply inlet

1553_C_S

1-5 Refrigerant Flow Diagram

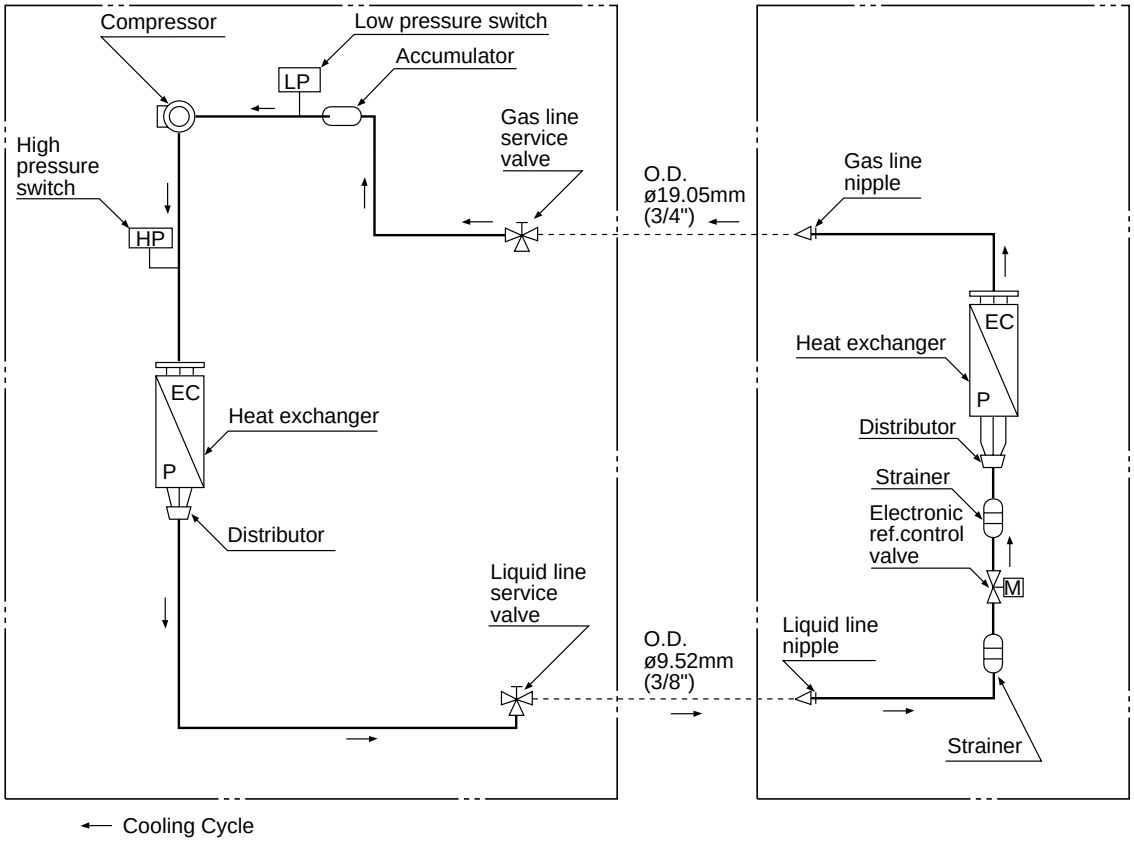
Outdoor Units : AER 425 SCLE **Indoor Unit : 25 Type**
AER 425 SCL3E



1549_C_S

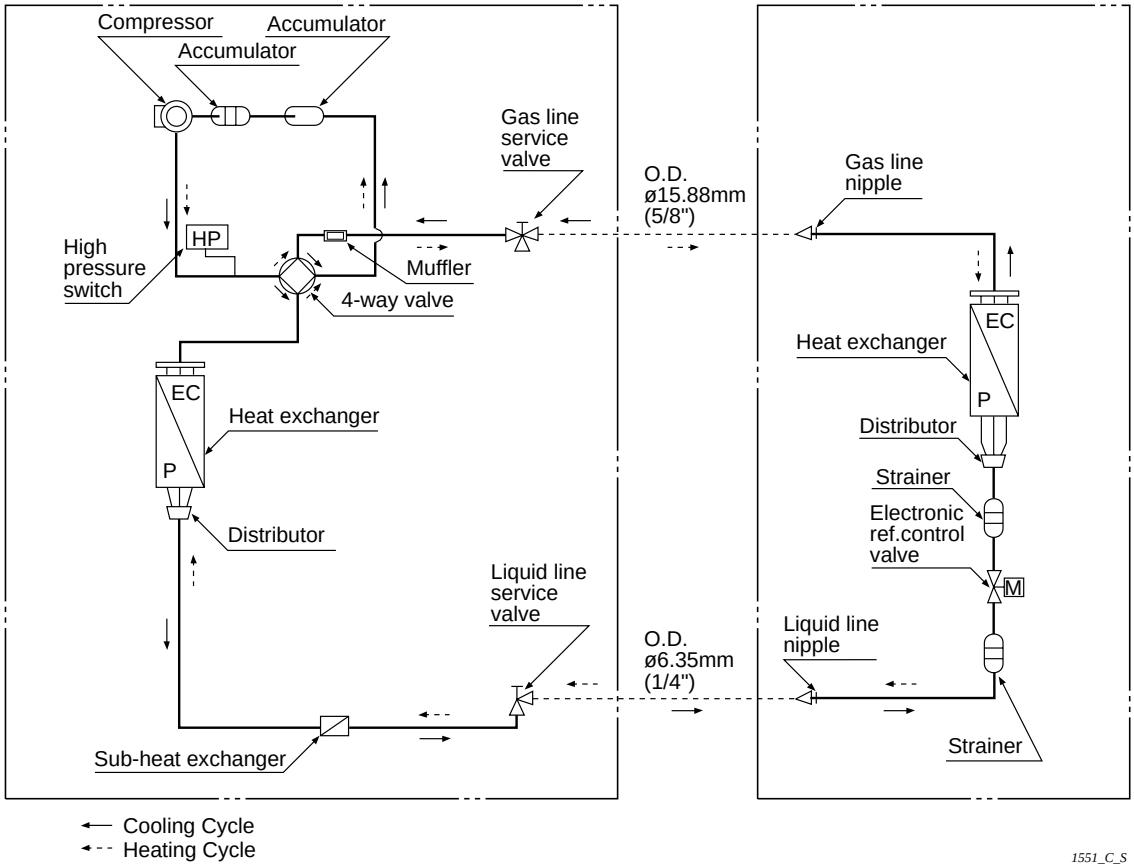
1-5 Refrigerant Flow Diagram

Outdoor Units : AER 436 SCL3E **Indoor Units : 36, 48 Type**
AER 448 SCL3E



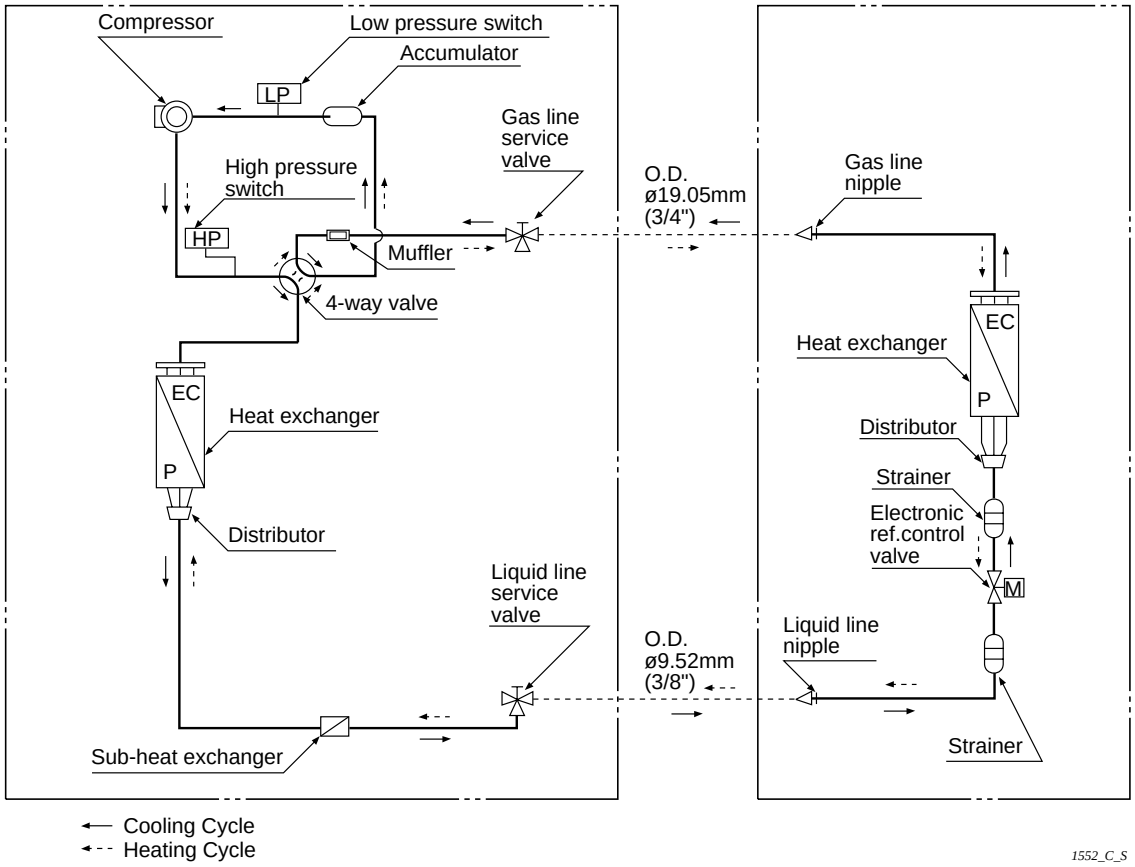
1-5 Refrigerant Flow Diagram

Outdoor Units : AER 425 SHLE **Indoor Unit : 25 Type**
AER 425 SHL3E



1-5 Refrigerant Flow Diagram

Outdoor Units : AER 436 SHL3E **Indoor Units : 36, 48 Type**
AER 448 SHL3E



1-6 Operating Range

	Temperature	Indoor air intake temp.	Outdoor air intake temp.
Cooling	Maximum	35°C DB / 23°C WB	43 °C DB
	Minimum	18°C DB / 14°C WB	-15 °C DB
Heating	Maximum	27°C DB / — WB	21 °C DB / 15.5°C WB
	Minimum	15°C DB / — WB	-15 °C DB / — WB

1-7 Cooling Capacity

Indoor Unit : ASR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

RATING CAPACITY :		7.3 kW			AIR FLOW RATE :	1140 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.22	2.37	2.55	2.49	2.45
	21	SHC	4.66	4.47	4.28	4.06	3.83
15	23	SHC	5.21	5.03	4.83	4.61	4.39
	25	SHC	5.77	5.58	5.39	5.17	4.94
	27	SHC	6.33	6.14	5.95	5.73	5.5
	29	SHC	6.88	6.7	6.51	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.28	2.44	2.62	2.57	2.52
	21	SHC	3.93	3.78	3.6	3.42	3.23
17	23	SHC	4.49	4.34	4.16	3.98	3.78
	25	SHC	5.05	4.89	4.72	4.54	4.34
	27	SHC	5.6	5.45	5.28	5.09	4.9
	29	SHC	6.16	6.01	5.83	5.65	5.46
	31	SHC	6.72	6.56	6.39	6.21	6.01
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.35	2.52	2.7	2.66	2.62
	21	SHC	3.21	3.08	2.94	2.77	2.6
19	23	SHC	3.76	3.63	3.49	3.33	3.16
	25	SHC	4.32	4.19	4.05	3.89	3.71
	27	SHC	4.88	4.75	4.61	4.45	4.27
	29	SHC	5.44	5.31	5.17	5	4.83
	31	SHC	5.99	5.86	5.72	5.56	5.39
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.41	2.59	2.78	2.74	2.7
	23	SHC	3.03	2.91	2.78	2.64	2.5
21	25	SHC	3.59	3.47	3.34	3.2	3.05
	27	SHC	4.15	4.03	3.9	3.75	3.61
	29	SHC	4.7	4.58	4.46	4.31	4.17
	31	SHC	5.26	5.14	5.01	4.87	4.73
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.48	2.65	2.85	2.82	2.78
23	25	SHC	2.86	2.76	2.65	2.54	2.41
	27	SHC	3.42	3.32	3.21	3.1	2.97
	29	SHC	3.97	3.88	3.77	3.65	3.52
	31	SHC	4.53	4.44	4.32	4.21	4.08
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.56	2.74	2.91	2.9	2.88
25	27	SHC	2.71	2.6	2.51	2.41	2.3
	29	SHC	3.27	3.15	3.06	2.97	2.86
	31	SHC	3.82	3.71	3.62	3.52	3.42

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ASR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

RATING CAPACITY :		7.3 kW			AIR FLOW RATE :	1140 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.07	2.22	2.38	2.49	2.62
	21	SHC	4.66	4.47	4.28	4.06	3.83
15	23	SHC	5.21	5.03	4.83	4.61	4.39
	25	SHC	5.77	5.58	5.39	5.17	4.94
	27	SHC	6.33	6.14	5.95	5.73	5.5
	29	SHC	6.88	6.7	6.51	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.13	2.28	2.44	2.57	2.69
	21	SHC	3.93	3.78	3.6	3.42	3.23
17	23	SHC	4.49	4.34	4.16	3.98	3.78
	25	SHC	5.05	4.89	4.72	4.54	4.34
	27	SHC	5.6	5.45	5.28	5.09	4.9
	29	SHC	6.16	6.01	5.83	5.65	5.46
	31	SHC	6.72	6.56	6.39	6.21	6.01
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.19	2.35	2.52	2.65	2.77
	21	SHC	3.21	3.08	2.94	2.77	2.6
19	23	SHC	3.76	3.63	3.49	3.33	3.16
	25	SHC	4.32	4.19	4.05	3.89	3.71
	27	SHC	4.88	4.75	4.61	4.45	4.27
	29	SHC	5.44	5.31	5.17	5	4.83
	31	SHC	5.99	5.86	5.72	5.56	5.39
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.25	2.41	2.59	2.72	2.85
	23	SHC	3.03	2.91	2.78	2.64	2.5
21	25	SHC	3.59	3.47	3.34	3.2	3.05
	27	SHC	4.15	4.03	3.9	3.75	3.61
	29	SHC	4.7	4.58	4.46	4.31	4.17
	31	SHC	5.26	5.14	5.01	4.87	4.73
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.31	2.48	2.66	2.79	2.93
23	25	SHC	2.86	2.76	2.65	2.54	2.41
	27	SHC	3.42	3.32	3.21	3.1	2.97
	29	SHC	3.97	3.88	3.77	3.65	3.52
	31	SHC	4.53	4.44	4.32	4.21	4.08
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.39	2.56	2.71	2.87	3.02
25	27	SHC	2.71	2.6	2.51	2.41	2.3
	29	SHC	3.27	3.15	3.06	2.97	2.86
	31	SHC	3.82	3.71	3.62	3.52	3.42

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ASR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

RATING CAPACITY :		10.6 kW			AIR FLOW RATE :	1920 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	10.7	10.21	9.69	9.08	8.44
		CI	2.89	3.09	3.31	3.38	3.46
	21	SHC	6.95	6.69	6.43	6.13	5.81
15	23	SHC	7.88	7.62	7.36	7.06	6.74
	25	SHC	8.81	8.56	8.3	7.99	7.68
	27	SHC	9.74	9.49	9.23	8.93	8.44
	29	SHC	10.67	10.21	9.69	9.08	8.44
	31	SHC	10.7	10.21	9.69	9.08	8.44
		TC	11.06	10.61	10.11	9.57	8.98
		CI	2.96	3.17	3.4	3.48	3.56
	21	SHC	5.78	5.57	5.33	5.09	4.81
17	23	SHC	6.71	6.5	6.27	6.02	5.74
	25	SHC	7.65	7.43	7.2	6.95	6.67
	27	SHC	8.58	8.37	8.13	7.88	7.61
	29	SHC	9.51	9.3	9.06	8.81	8.54
	31	SHC	10.44	10.23	9.99	9.57	8.98
		TC	11.45	11.03	# 10.6	10.07	9.5
		CI	3.05	3.27	3.51	3.59	3.68
	21	SHC	4.61	4.43	4.24	4.01	3.77
19	23	SHC	5.55	5.36	5.17	4.94	4.7
	25	SHC	6.48	6.29	6.11	5.88	5.64
	27	SHC	7.41	7.23	7.04	6.81	6.57
	29	SHC	8.34	8.16	7.97	7.74	7.5
	31	SHC	9.28	9.09	8.9	8.67	8.43
		TC	11.82	11.41	10.97	10.47	9.96
		CI	3.14	3.36	3.61	3.7	3.79
	23	SHC	4.37	4.2	4.02	3.83	3.63
21	25	SHC	5.3	5.13	4.96	4.76	4.56
	27	SHC	6.23	6.06	5.89	5.69	5.49
	29	SHC	7.16	6.99	6.82	6.62	6.42
	31	SHC	8.09	7.93	7.75	7.56	7.36
		TC	12.22	11.86	11.45	11.02	10.52
		CI	3.22	3.45	3.7	3.8	3.89
23	25	SHC	4.12	3.99	3.84	3.68	3.5
	27	SHC	5.06	4.92	4.77	4.61	4.43
	29	SHC	5.99	5.85	5.7	5.55	5.37
	31	SHC	6.92	6.79	6.63	6.48	6.3
		TC	12.72	12.27	11.9	11.49	11.05
		CI	3.33	3.56	3.78	3.9	4.02
25	27	SHC	3.9	3.75	3.63	3.5	3.35
	29	SHC	4.84	4.69	4.56	4.43	4.28
	31	SHC	5.77	5.62	5.49	5.36	5.21

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ASR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

RATING CAPACITY :		12.6 kW			AIR FLOW RATE :	1920 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	12.71	12.13	11.52	10.8	10.03
		CI	3.42	3.66	3.93	4.14	4.38
	21	SHC	8.04	7.72	7.38	7	6.6
15	23	SHC	8.97	8.65	8.31	7.93	7.54
	25	SHC	9.9	9.58	9.25	8.86	8.47
	27	SHC	10.84	10.51	10.18	9.8	9.4
	29	SHC	11.77	11.45	11.11	10.73	10.03
	31	SHC	12.7	12.13	11.52	10.8	10.03
		TC	13.14	12.61	12.02	11.38	10.67
		CI	3.51	3.76	4.04	4.26	4.49
	21	SHC	6.83	6.55	6.25	5.94	5.6
17	23	SHC	7.76	7.49	7.19	6.87	6.53
	25	SHC	8.69	8.42	8.12	7.8	7.46
	27	SHC	9.62	9.35	9.05	8.74	8.39
	29	SHC	10.56	10.28	9.98	9.67	9.33
	31	SHC	11.49	11.21	10.92	10.6	10.26
		TC	13.61	13.12	# 12.6	11.97	11.29
		CI	3.62	3.88	4.16	4.4	4.63
	21	SHC	5.61	5.37	5.14	4.85	4.54
19	23	SHC	6.54	6.31	6.07	5.78	5.47
	25	SHC	7.48	7.24	7	6.71	6.41
	27	SHC	8.41	8.17	7.93	7.65	7.34
	29	SHC	9.34	9.1	8.87	8.58	8.27
	31	SHC	10.27	10.04	9.8	9.51	9.2
		TC	14.05	13.56	13.04	12.45	11.84
		CI	3.72	3.99	4.28	4.52	4.76
	23	SHC	5.31	5.09	4.87	4.62	4.37
21	25	SHC	6.24	6.02	5.81	5.56	5.31
	27	SHC	7.17	6.96	6.74	6.49	6.24
	29	SHC	8.1	7.89	7.67	7.42	7.17
	31	SHC	9.04	8.82	8.6	8.35	8.1
		TC	14.53	14.1	13.61	13.1	12.5
		CI	3.82	4.09	4.39	4.64	4.89
23	25	SHC	5.01	4.84	4.65	4.45	4.22
	27	SHC	5.94	5.77	5.58	5.39	5.16
	29	SHC	6.88	6.71	6.51	6.32	6.09
	31	SHC	7.81	7.64	7.45	7.25	7.02
		TC	15.12	14.59	14.15	13.66	13.13
		CI	3.94	4.22	4.48	4.76	5.04
25	27	SHC	4.75	4.56	4.4	4.23	4.05
	29	SHC	5.68	5.49	5.33	5.16	4.98
	31	SHC	6.61	6.42	6.26	6.09	5.91

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ACR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

RATING CAPACITY :		7.3 kW			AIR FLOW RATE :	1080 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.22	2.37	2.55	2.49	2.45
	21	SHC	4.74	4.56	4.37	4.15	3.93
15	23	SHC	5.31	5.12	4.93	4.72	4.49
	25	SHC	5.87	5.69	5.5	5.28	5.06
	27	SHC	6.44	6.25	6.06	5.85	5.62
	29	SHC	7	6.82	6.63	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.28	2.44	2.62	2.57	2.52
	21	SHC	4.02	3.87	3.7	3.52	3.32
17	23	SHC	4.58	4.43	4.26	4.08	3.89
	25	SHC	5.15	5	4.83	4.65	4.45
	27	SHC	5.71	5.56	5.39	5.21	5.02
	29	SHC	6.28	6.13	5.95	5.78	5.58
	31	SHC	6.84	6.69	6.52	6.34	6.15
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.35	2.52	2.7	2.66	2.62
	21	SHC	3.29	3.16	3.03	2.87	2.69
19	23	SHC	3.86	3.73	3.59	3.43	3.26
	25	SHC	4.42	4.29	4.16	4	3.82
	27	SHC	4.99	4.86	4.72	4.56	4.39
	29	SHC	5.55	5.42	5.29	5.13	4.95
	31	SHC	6.12	5.99	5.85	5.69	5.52
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.41	2.59	2.78	2.74	2.7
	23	SHC	3.12	3.01	2.88	2.74	2.6
21	25	SHC	3.69	3.57	3.44	3.3	3.16
	27	SHC	4.25	4.14	4.01	3.87	3.73
	29	SHC	4.82	4.7	4.57	4.43	4.29
	31	SHC	5.38	5.27	5.14	5	4.86
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.48	2.65	2.85	2.82	2.78
23	25	SHC	2.96	2.87	2.75	2.64	2.52
	27	SHC	3.52	3.43	3.32	3.21	3.08
	29	SHC	4.09	3.99	3.88	3.77	3.65
	31	SHC	4.65	4.56	4.45	4.34	4.21
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.56	2.74	2.91	2.9	2.88
25	27	SHC	2.81	2.7	2.62	2.52	2.41
	29	SHC	3.38	3.27	3.18	3.08	2.98
	31	SHC	3.94	3.83	3.74	3.65	3.54

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ACR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

RATING CAPACITY :		7.3 kW			AIR FLOW RATE :	1080 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.22	2.37	2.55	2.49	2.45
	21	SHC	4.74	4.56	4.37	4.15	3.93
15	23	SHC	5.31	5.12	4.93	4.72	4.49
	25	SHC	5.87	5.69	5.5	5.28	5.06
	27	SHC	6.44	6.25	6.06	5.85	5.62
	29	SHC	7	6.82	6.63	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.28	2.44	2.62	2.57	2.52
	21	SHC	4.02	3.87	3.7	3.52	3.32
17	23	SHC	4.58	4.43	4.26	4.08	3.89
	25	SHC	5.15	5	4.83	4.65	4.45
	27	SHC	5.71	5.56	5.39	5.21	5.02
	29	SHC	6.28	6.13	5.95	5.78	5.58
	31	SHC	6.84	6.69	6.52	6.34	6.15
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.35	2.52	2.7	2.66	2.62
	21	SHC	3.29	3.16	3.03	2.87	2.69
19	23	SHC	3.86	3.73	3.59	3.43	3.26
	25	SHC	4.42	4.29	4.16	4	3.82
	27	SHC	4.99	4.86	4.72	4.56	4.39
	29	SHC	5.55	5.42	5.29	5.13	4.95
	31	SHC	6.12	5.99	5.85	5.69	5.52
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.41	2.59	2.78	2.74	2.7
	23	SHC	3.12	3.01	2.88	2.74	2.6
21	25	SHC	3.69	3.57	3.44	3.3	3.16
	27	SHC	4.25	4.14	4.01	3.87	3.73
	29	SHC	4.82	4.7	4.57	4.43	4.29
	31	SHC	5.38	5.27	5.14	5	4.86
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.48	2.65	2.85	2.82	2.78
23	25	SHC	2.96	2.87	2.75	2.64	2.52
	27	SHC	3.52	3.43	3.32	3.21	3.08
	29	SHC	4.09	3.99	3.88	3.77	3.65
	31	SHC	4.65	4.56	4.45	4.34	4.21
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.56	2.74	2.91	2.9	2.88
25	27	SHC	2.81	2.7	2.62	2.52	2.41
	29	SHC	3.38	3.27	3.18	3.08	2.98
	31	SHC	3.94	3.83	3.74	3.65	3.54

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ACR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

RATING CAPACITY :		10.6 kW			AIR FLOW RATE :	1800 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	10.7	10.21	9.69	9.08	8.44
		CI	2.89	3.09	3.31	3.38	3.46
	21	SHC	7	6.75	6.49	6.2	5.88
15	23	SHC	7.97	7.72	7.46	7.16	6.85
	25	SHC	8.94	8.69	8.43	8.13	7.82
	27	SHC	9.91	9.66	9.4	9.08	8.44
	29	SHC	10.7	10.21	9.69	9.08	8.44
	31	SHC	10.7	10.21	9.69	9.08	8.44
		TC	11.06	10.61	10.11	9.57	8.98
		CI	2.96	3.17	3.4	3.48	3.56
	21	SHC	5.8	5.59	5.36	5.12	4.84
17	23	SHC	6.77	6.56	6.33	6.08	5.81
	25	SHC	7.74	7.53	7.3	7.05	6.78
	27	SHC	8.71	8.5	8.26	8.02	7.75
	29	SHC	9.67	9.47	9.23	8.99	8.72
	31	SHC	10.64	10.43	10.11	9.57	8.98
		TC	11.45	11.03	# 10.6	10.07	9.5
		CI	3.05	3.27	3.51	3.59	3.68
	21	SHC	4.6	4.42	4.23	4.01	3.77
19	23	SHC	5.57	5.39	5.2	4.97	4.74
	25	SHC	6.54	6.35	6.17	5.94	5.7
	27	SHC	7.5	7.32	7.14	6.91	6.67
	29	SHC	8.47	8.29	8.11	7.88	7.64
	31	SHC	9.44	9.26	9.07	8.85	8.61
		TC	11.82	11.41	10.97	10.47	9.96
		CI	3.14	3.36	3.61	3.7	3.79
	23	SHC	4.35	4.18	4.01	3.82	3.62
21	25	SHC	5.32	5.15	4.98	4.79	4.59
	27	SHC	6.29	6.12	5.95	5.76	5.56
	29	SHC	7.26	7.09	6.92	6.72	6.53
	31	SHC	8.22	8.06	7.89	7.69	7.5
		TC	12.22	11.86	11.45	11.02	10.52
		CI	3.22	3.45	3.7	3.8	3.89
23	25	SHC	4.11	3.98	3.83	3.67	3.5
	27	SHC	5.08	4.95	4.8	4.64	4.47
	29	SHC	6.05	5.92	5.76	5.61	5.43
	31	SHC	7.02	6.88	6.73	6.58	6.4
		TC	12.72	12.27	11.9	11.49	11.05
		CI	3.33	3.56	3.78	3.9	4.02
25	27	SHC	3.89	3.74	3.62	3.49	3.34
	29	SHC	4.86	4.71	4.59	4.46	4.31
	31	SHC	5.83	5.68	5.56	5.42	5.28

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ACR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

RATING CAPACITY :		12.6 kW			AIR FLOW RATE :	1920 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	12.71	12.13	11.52	10.8	10.03
		CI	3.42	3.66	3.93	4.14	4.38
	21	SHC	8.17	7.86	7.53	7.16	6.78
15	23	SHC	9.19	8.88	8.55	8.19	7.8
	25	SHC	10.21	9.9	9.58	9.21	8.82
	27	SHC	11.23	10.92	10.6	10.23	9.84
	29	SHC	12.25	11.94	11.52	10.8	10.03
	31	SHC	12.71	12.13	11.52	10.8	10.03
		TC	13.14	12.61	12.02	11.38	10.67
		CI	3.51	3.76	4.04	4.26	4.49
	21	SHC	6.87	6.61	6.32	6.01	5.68
17	23	SHC	7.89	7.63	7.34	7.03	6.7
	25	SHC	8.91	8.65	8.36	8.06	7.73
	27	SHC	9.93	9.67	9.38	9.08	8.75
	29	SHC	10.95	10.69	10.4	10.1	9.77
	31	SHC	11.97	11.71	11.42	11.12	10.67
		TC	13.61	13.12	# 12.6	11.97	11.29
		CI	3.62	3.88	4.16	4.4	4.63
	21	SHC	5.57	5.34	5.11	4.84	4.54
19	23	SHC	6.59	6.36	6.13	5.86	5.56
	25	SHC	7.61	7.38	7.15	6.88	6.58
	27	SHC	8.63	8.4	8.18	7.9	7.6
	29	SHC	9.65	9.43	9.2	8.92	8.62
	31	SHC	10.67	10.45	10.22	9.94	9.64
		TC	14.05	13.56	13.04	12.45	11.84
		CI	3.72	3.99	4.28	4.52	4.76
	23	SHC	5.27	5.06	4.85	4.61	4.37
21	25	SHC	6.29	6.08	5.87	5.63	5.39
	27	SHC	7.31	7.11	6.9	6.66	6.41
	29	SHC	8.34	8.13	7.92	7.68	7.44
	31	SHC	9.36	9.15	8.94	8.7	8.46
		TC	14.53	14.1	13.61	13.1	12.5
		CI	3.82	4.09	4.39	4.64	4.89
23	25	SHC	4.98	4.82	4.63	4.44	4.22
	27	SHC	6	5.84	5.65	5.46	5.24
	29	SHC	7.02	6.86	6.68	6.49	6.26
	31	SHC	8.04	7.88	7.7	7.51	7.29
		TC	15.12	14.59	14.15	13.66	13.13
		CI	3.94	4.22	4.48	4.76	5.04
25	27	SHC	4.72	4.54	4.39	4.22	4.05
	29	SHC	5.74	5.56	5.41	5.24	5.07
	31	SHC	6.77	6.58	6.43	6.26	6.09

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ADR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

RATING CAPACITY :		7.3 kW			AIR FLOW RATE :	1080 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.35	2.51	2.69	2.63	2.58
	21	SHC	4.86	4.68	4.5	4.28	4.06
15	23	SHC	5.44	5.26	5.07	4.86	4.64
	25	SHC	6.02	5.84	5.65	5.44	5.22
	27	SHC	6.59	6.41	6.23	6.02	5.8
	29	SHC	7.17	6.99	6.67	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.41	2.58	2.76	2.71	2.65
	21	SHC	4.13	3.99	3.82	3.64	3.46
17	23	SHC	4.71	4.56	4.4	4.22	4.03
	25	SHC	5.29	5.14	4.97	4.8	4.61
	27	SHC	5.87	5.72	5.55	5.38	5.19
	29	SHC	6.44	6.3	6.13	5.95	5.76
	31	SHC	7.02	6.87	6.71	6.53	6.18
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.48	2.66	2.85	2.8	2.75
	21	SHC	3.41	3.28	3.15	2.99	2.82
19	23	SHC	3.98	3.86	3.72	3.57	3.4
	25	SHC	4.56	4.44	4.3	4.14	3.97
	27	SHC	5.14	5.01	4.88	4.72	4.55
	29	SHC	5.72	5.59	5.46	5.3	5.13
	31	SHC	6.29	6.17	6.03	5.88	5.71
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.55	2.73	2.93	2.89	2.84
	23	SHC	3.25	3.13	3.01	2.87	2.73
21	25	SHC	3.82	3.71	3.59	3.45	3.31
	27	SHC	4.4	4.29	4.16	4.02	3.88
	29	SHC	4.98	4.86	4.74	4.6	4.46
	31	SHC	5.56	5.44	5.32	5.18	5.04
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.62	2.8	3.01	2.97	2.93
23	25	SHC	3.09	3	2.89	2.78	2.66
	27	SHC	3.67	3.58	3.47	3.36	3.23
	29	SHC	4.25	4.15	4.04	3.94	3.81
	31	SHC	4.82	4.73	4.62	4.51	4.39
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.7	2.89	3.07	3.05	3.03
25	27	SHC	2.95	2.85	2.76	2.67	2.56
	29	SHC	3.53	3.42	3.34	3.24	3.14
	31	SHC	4.11	4	3.91	3.82	3.72

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ADR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

RATING CAPACITY :		7.3 kW				AIR FLOW RATE :	1080 CMH
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	7.37	7.03	6.67	6.26	5.81
		CI	2.2	2.35	2.52	2.55	2.6
	21	SHC	4.86	4.68	4.5	4.28	4.06
15	23	SHC	5.44	5.26	5.07	4.86	4.64
	25	SHC	6.02	5.84	5.65	5.44	5.22
	27	SHC	6.59	6.41	6.23	6.02	5.8
	29	SHC	7.17	6.99	6.67	6.26	5.81
	31	SHC	7.37	7.03	6.67	6.26	5.81
		TC	7.61	7.31	6.96	6.59	6.18
		CI	2.25	2.41	2.59	2.63	2.67
	21	SHC	4.13	3.99	3.82	3.64	3.46
17	23	SHC	4.71	4.56	4.4	4.22	4.03
	25	SHC	5.29	5.14	4.97	4.8	4.61
	27	SHC	5.87	5.72	5.55	5.38	5.19
	29	SHC	6.44	6.3	6.13	5.95	5.76
	31	SHC	7.02	6.87	6.71	6.53	6.18
		TC	7.88	7.6	# 7.3	6.94	6.54
		CI	2.32	2.49	2.67	2.71	2.76
	21	SHC	3.41	3.28	3.15	2.99	2.82
19	23	SHC	3.98	3.86	3.72	3.57	3.4
	25	SHC	4.56	4.44	4.3	4.14	3.97
	27	SHC	5.14	5.01	4.88	4.72	4.55
	29	SHC	5.72	5.59	5.46	5.3	5.13
	31	SHC	6.29	6.17	6.03	5.88	5.71
		TC	8.14	7.85	7.56	7.21	6.86
		CI	2.39	2.56	2.74	2.79	2.84
	23	SHC	3.25	3.13	3.01	2.87	2.73
21	25	SHC	3.82	3.71	3.59	3.45	3.31
	27	SHC	4.4	4.29	4.16	4.02	3.88
	29	SHC	4.98	4.86	4.74	4.6	4.46
	31	SHC	5.56	5.44	5.32	5.18	5.04
		TC	8.42	8.17	7.88	7.59	7.24
		CI	2.45	2.62	2.82	2.87	2.92
23	25	SHC	3.09	3	2.89	2.78	2.66
	27	SHC	3.67	3.58	3.47	3.36	3.23
	29	SHC	4.25	4.15	4.04	3.94	3.81
	31	SHC	4.82	4.73	4.62	4.51	4.39
		TC	8.76	8.45	8.2	7.91	7.61
		CI	2.53	2.71	2.87	2.95	3.02
25	27	SHC	2.95	2.85	2.76	2.67	2.56
	29	SHC	3.53	3.42	3.34	3.24	3.14
	31	SHC	4.11	4	3.91	3.82	3.72

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

Indoor Unit : ADR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

RATING CAPACITY :		10.6 kW			AIR FLOW RATE :	1800 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	10.7	10.21	9.69	9.08	8.44
		CI	2.89	3.09	3.31	3.38	3.46
	21	SHC	7.48	7.24	6.99	6.71	6.41
15	23	SHC	8.53	8.29	8.04	7.76	7.46
	25	SHC	9.58	9.34	9.1	8.81	8.44
	27	SHC	10.63	10.21	9.69	9.08	8.44
	29	SHC	10.7	10.21	9.69	9.08	8.44
	31	SHC	10.7	10.21	9.69	9.08	8.44
		TC	11.06	10.61	10.11	9.57	8.98
		CI	2.96	3.17	3.4	3.48	3.56
	21	SHC	6.22	6.02	5.8	5.56	5.3
17	23	SHC	7.27	7.07	6.85	6.61	6.35
	25	SHC	8.32	8.12	7.9	7.67	7.4
	27	SHC	9.37	9.17	8.95	8.72	8.46
	29	SHC	10.42	10.23	10	9.57	8.98
	31	SHC	11.06	10.61	10.11	9.57	8.98
		TC	11.45	11.03	# 10.6	10.07	9.5
		CI	3.05	3.27	3.51	3.59	3.68
	21	SHC	4.96	4.79	4.61	4.39	4.16
19	23	SHC	6.01	5.84	5.66	5.44	5.21
	25	SHC	7.06	6.89	6.71	6.49	6.27
	27	SHC	8.11	7.94	7.76	7.55	7.32
	29	SHC	9.17	8.99	8.81	8.6	8.37
	31	SHC	10.22	10.04	9.86	9.65	9.42
		TC	11.82	11.41	10.97	10.47	9.96
		CI	3.14	3.36	3.61	3.7	3.79
	23	SHC	4.74	4.58	4.41	4.23	4.04
21	25	SHC	5.79	5.63	5.47	5.28	5.09
	27	SHC	6.84	6.68	6.52	6.33	6.14
	29	SHC	7.89	7.73	7.57	7.38	7.19
	31	SHC	8.94	8.78	8.62	8.43	8.24
		TC	12.22	11.86	11.45	11.02	10.52
		CI	3.22	3.45	3.7	3.8	3.89
23	25	SHC	4.52	4.39	4.25	4.1	3.93
	27	SHC	5.57	5.45	5.3	5.15	4.98
	29	SHC	6.62	6.5	6.35	6.2	6.03
	31	SHC	7.67	7.55	7.4	7.26	7.09
		TC	12.72	12.27	11.9	11.49	11.05
		CI	3.33	3.56	3.78	3.9	4.02
25	27	SHC	4.32	4.18	4.06	3.94	3.8
	29	SHC	5.37	5.23	5.12	4.99	4.85
	31	SHC	6.43	6.28	6.17	6.04	5.9

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

1-7 Cooling Capacity

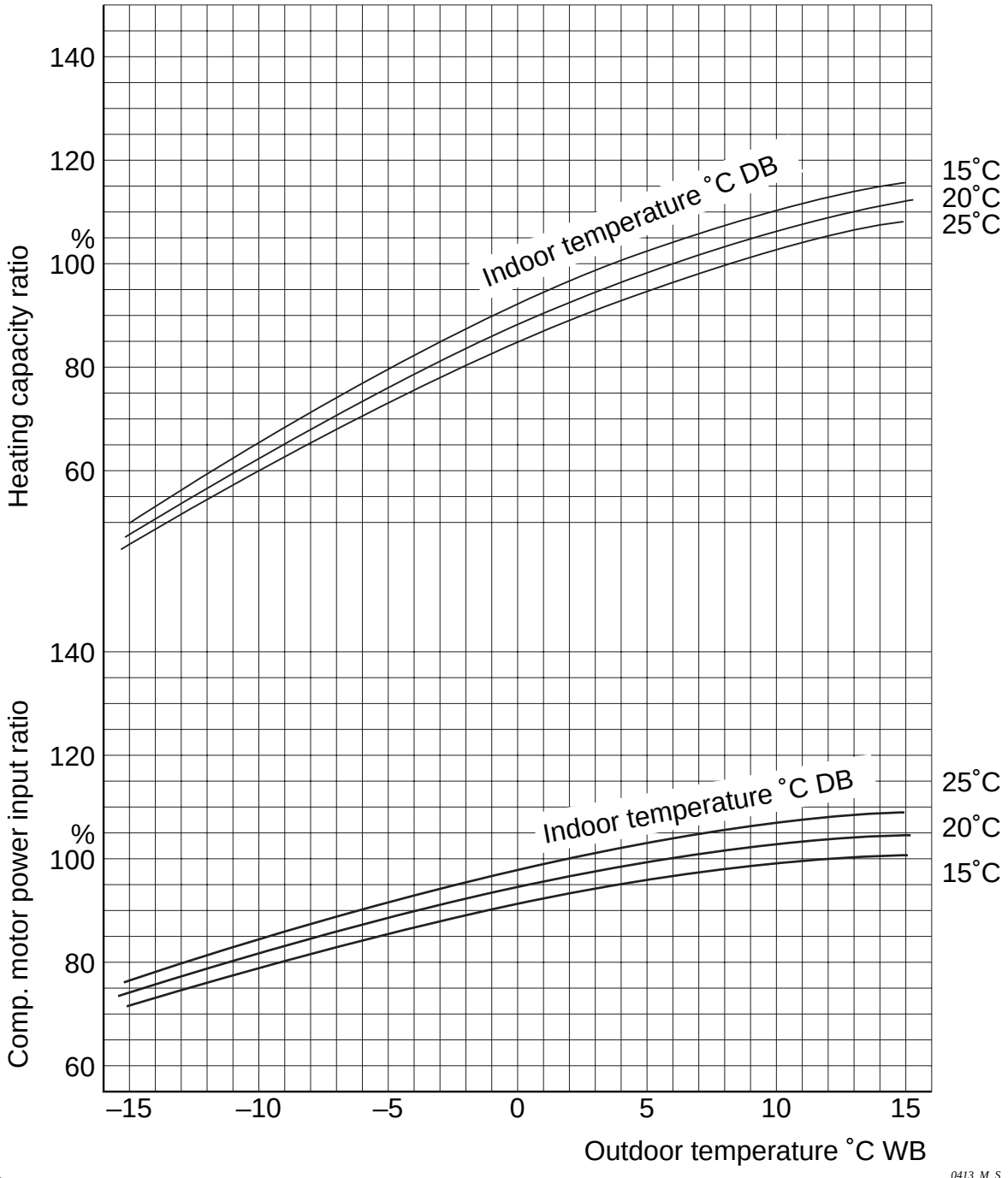
Indoor Unit : ADR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

RATING CAPACITY :		12.6 kW			AIR FLOW RATE :	1980 CMH	
EVAPORATOR		CONDENSER					
ENT. TEMP. °C		AMBIENT TEMP °C					
WB	DB		25	30	35	40	45
		TC	12.71	12.13	11.52	10.8	10.03
		CI	3.42	3.66	3.93	4.14	4.38
	21	SHC	8.68	8.39	8.09	7.74	7.38
15	23	SHC	9.83	9.53	9.23	8.88	8.52
	25	SHC	10.97	10.68	10.37	10.02	9.66
	27	SHC	12.11	11.82	11.51	10.8	10.03
	29	SHC	12.71	12.13	11.52	10.8	10.03
	31	SHC	12.71	12.13	11.52	10.8	10.03
		TC	13.14	12.61	12.02	11.38	10.67
		CI	3.51	3.76	4.04	4.26	4.49
	21	SHC	7.3	7.05	6.78	6.49	6.18
17	23	SHC	8.44	8.19	7.92	7.63	7.32
	25	SHC	9.58	9.33	9.06	8.77	8.46
	27	SHC	10.72	10.47	10.2	9.92	9.6
	29	SHC	11.86	11.62	11.34	11.06	10.67
	31	SHC	13.01	12.61	12.02	11.38	10.67
		TC	13.61	13.12	# 12.6	11.97	11.29
		CI	3.62	3.88	4.16	4.4	4.63
	21	SHC	5.9	5.69	5.47	5.21	4.93
19	23	SHC	7.05	6.83	6.62	6.35	6.07
	25	SHC	8.19	7.97	7.76	7.5	7.21
	27	SHC	9.33	9.12	8.9	8.64	8.36
	29	SHC	10.47	10.26	10.04	9.78	9.5
	31	SHC	11.61	11.4	11.18	10.92	10.64
		TC	14.05	13.56	13.04	12.45	11.84
		CI	3.72	3.99	4.28	4.52	4.76
	23	SHC	5.64	5.44	5.24	5.01	4.79
21	25	SHC	6.78	6.58	6.38	6.16	5.93
	27	SHC	7.92	7.72	7.53	7.3	7.07
	29	SHC	9.06	8.87	8.67	8.44	8.21
	31	SHC	10.2	10.01	9.81	9.58	9.35
		TC	14.53	14.1	13.61	13.1	12.5
		CI	3.82	4.09	4.39	4.64	4.89
23	25	SHC	5.37	5.22	5.05	4.87	4.66
	27	SHC	6.52	6.36	6.19	6.01	5.8
	29	SHC	7.66	7.5	7.33	7.15	6.94
	31	SHC	8.8	8.65	8.47	8.29	8.08
		TC	15.12	14.59	14.15	13.66	13.13
		CI	3.94	4.22	4.48	4.76	5.04
25	27	SHC	5.14	4.97	4.82	4.67	4.5
	29	SHC	6.28	6.11	5.96	5.81	5.64
	31	SHC	7.43	7.25	7.11	6.95	6.78

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CI : Compressor Input (kW)

Rating conditions are
: Outdoor Ambient Temp. 35 °C DB
: Indoor Unit Entering Air Temp. 27 °C DB / 19 °C WB

● Heating Capacity



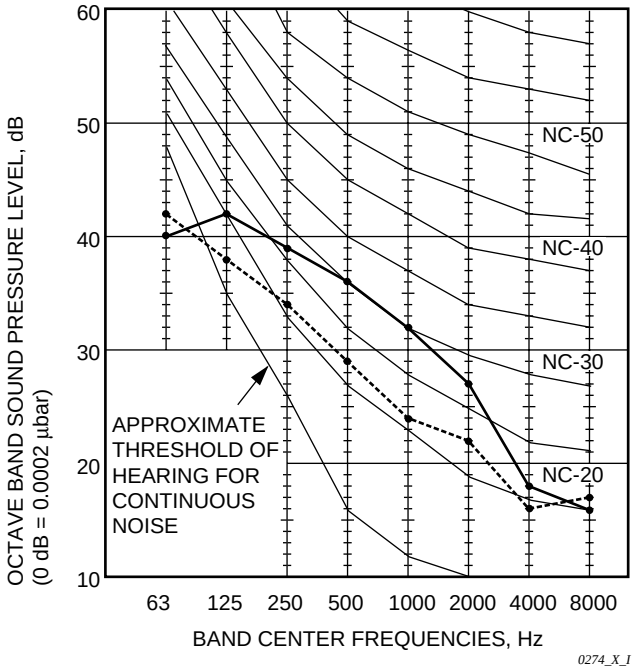
NOTE

1. Above characteristics are based on:
   1) Tubing length is 7 meters.
   2) Air flow speed is high speed.
2. Minimum outdoor ambient temperature: –15°C WB
3. Above characteristics indicate instantaneous capacity. Integrated capacity is instantaneous capacity less the effect of frost on the outdoor coil and the drop of performance during defrost cycle.

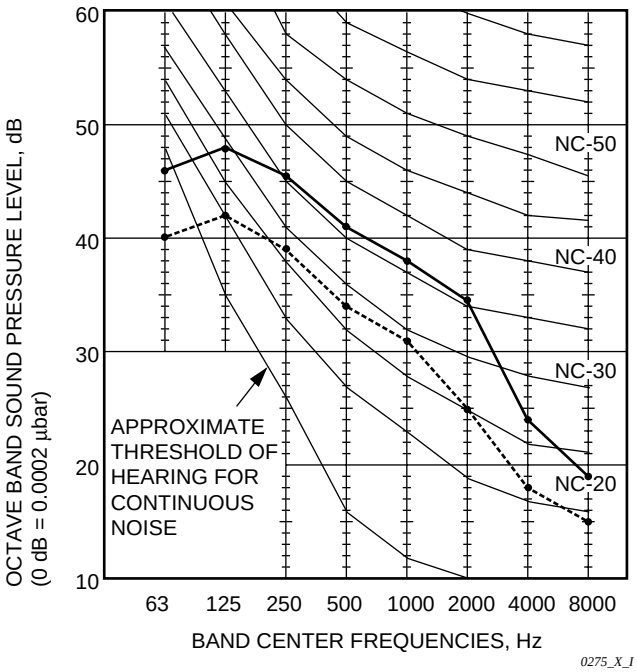
1-8 Noise Criterion Curves

4-Way Air Discharge Semi-concealed Type

MODEL	: ASR 425 H
SOUND LEVEL	: HIGH 37 dB(A), NC 30
	LOW 31 dB(A), NC 22
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: ASR 436 H - ASR 448 H
SOUND LEVEL	: HIGH 43 dB(A), NC 36
	LOW 36 dB(A), NC 24
CONDITION	: Center, Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



REMARKS: 1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
2. The test results were obtained from an anechoic room.

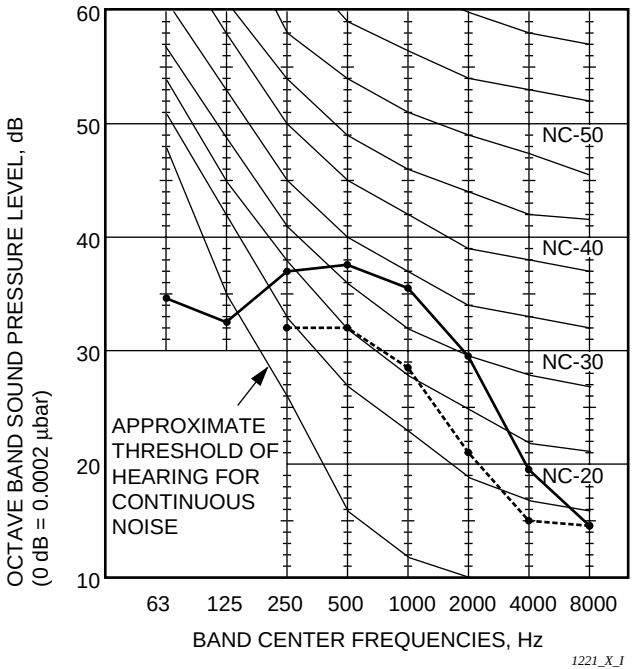
NOTE

To evaluate “Noise level” the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

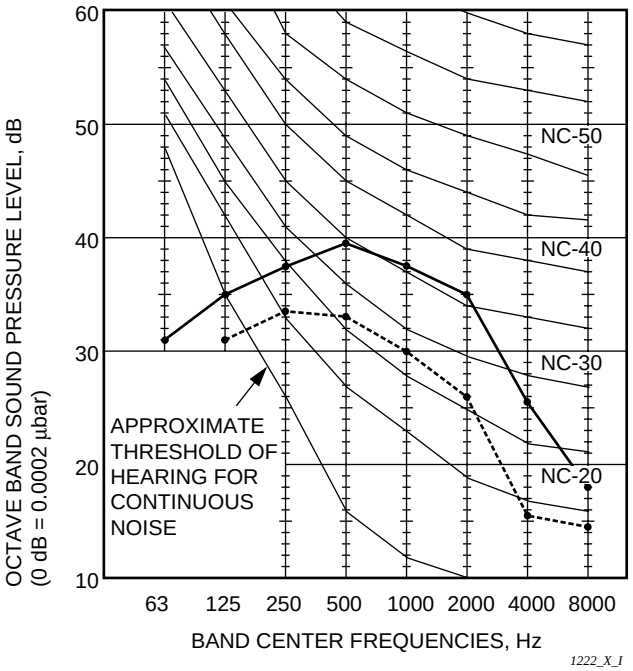
1-8 Noise Criterion Curves

Ceiling Mounted Type

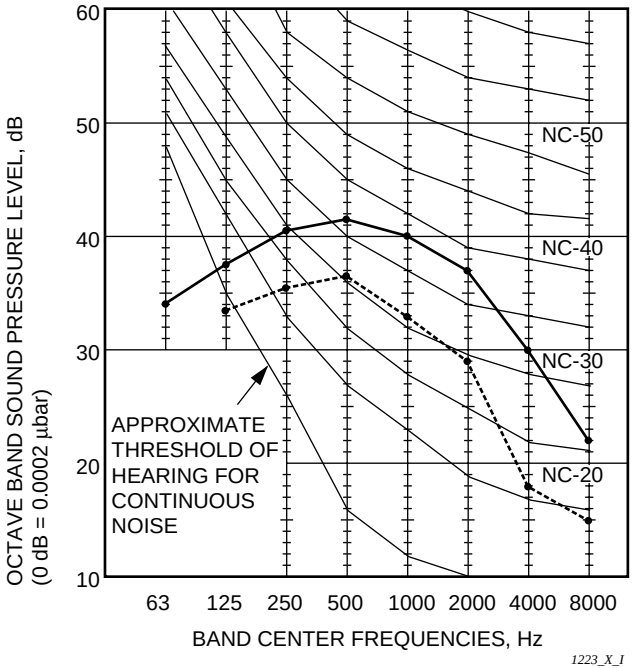
MODEL	: ACR 425 H
SOUND LEVEL	: HIGH 39 dB(A), NC 34
	LOW 34 dB(A), NC 26
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: ACR 436 H
SOUND LEVEL	: HIGH 42 dB(A), NC 36
	LOW 35 dB(A), NC 28
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



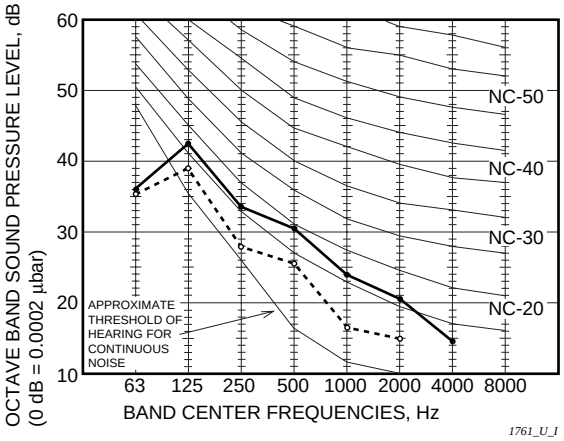
MODEL	: ACR 448 H
SOUND LEVEL	: HIGH 44 dB(A), NC 38
	LOW 37 dB(A), NC 31
CONDITION	: Distance 1 m, Under the unit 1 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



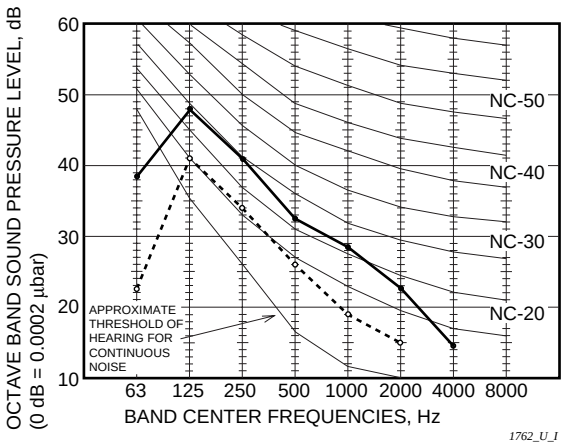
1-8 Noise Criterion Curves

Concealed Duct Type

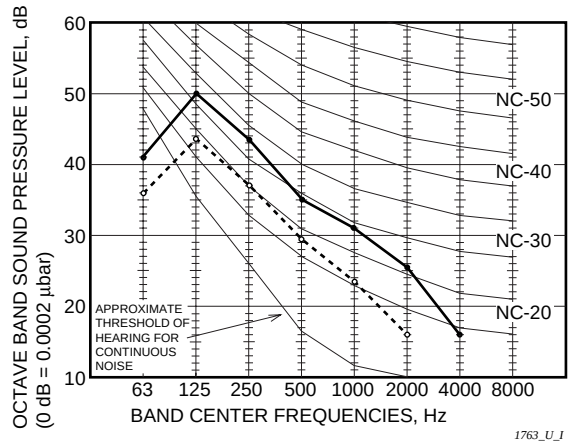
MODEL	: ADR 425 H
SOUND LEVEL	: HIGH 34 dB(A), NC 22 / LOW 27 dB(A), NC 18
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: ADR 436 H
SOUND LEVEL	: HIGH 38 dB(A), NC 30 / LOW 31 dB(A), NC 21
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



MODEL	: ADR 448 H
SOUND LEVEL	: HIGH 40 dB(A), NC 33 / LOW 33 dB(A), NC 25
CONDITION	: Under the unit 1.5 m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz



REMARKS: 1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
2. The test results were obtained from an anechoic room.

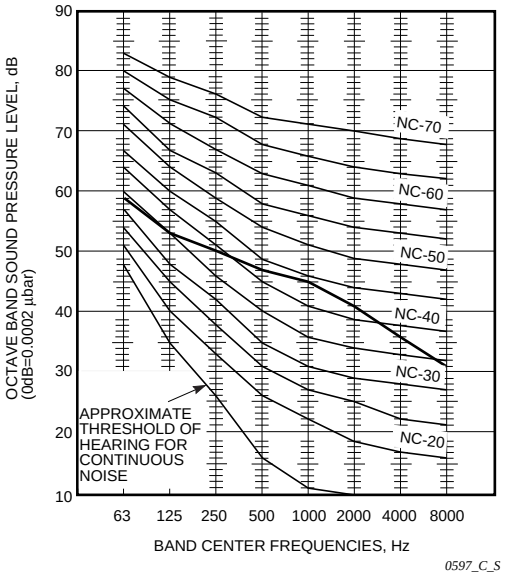
NOTE

To evaluate “Noise level” the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

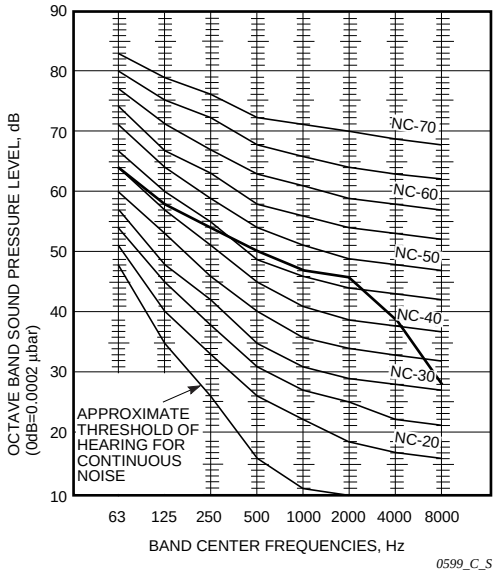
1-8 Noise Criterion Curves

Outdoor Units

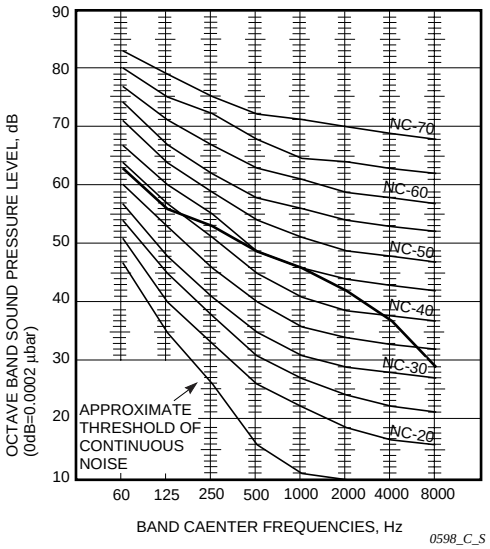
MODEL	: AER 425 SCLE - AER 425 SCL3E AER 425 SHLE - AER 425 SHL3E
SOUND LEVEL	: 52 dB(A), NC 44
CONDITION	: Distance 1m, Height 1m
SOURCE	: 220 - 230 - 240 V, 1 Phase, 50 Hz 380 - 400 - 415V, 3 Phase, 50 Hz



MODEL	: AER 448 SCL3E AER 448 SHL3E
SOUND LEVEL	: 55 dB(A), NC 47
CONDITION	: Distance 1m, Height 1m
SOURCE	: 380 - 400 - 415V, 3 Phase, 50 Hz



MODEL	: AER 436 SCL3E AER 436 SHL3E
SOUND LEVEL	: 53 dB(A), NC 45
CONDITION	: Distance 1m, Height 1m
SOURCE	: 380 - 400 - 415 V, 3 Phase, 50 Hz



REMARKS: 1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.
2. The test results were obtained from an anechoic room.

NOTE

To evaluate “Noise level” the maximum number of the measured OCTAVE BAND SOUND PRESSURE LEVEL is used. Read the number on each BAND CENTER FREQUENCIES (horizontal axis) ranging from 63 Hz to 8000 Hz and select the maximum value (vertical axis) among them.

1-9 Indoor Fan Performance

Concealed Duct Type

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

(1) Remove 2 screws on the electrical component box and remove the cover plate.

(2) Disconnect the fan motor sockets in the box.

(3) Take out the booster cable (sockets at both ends) clamped in the box.

(4) Securely connect the booster cable sockets between the disconnected fan motor sockets in step 2 as shown in the Fig. 1-1.

(5) Place the cable neatly in the box and reinstall the cover plate.

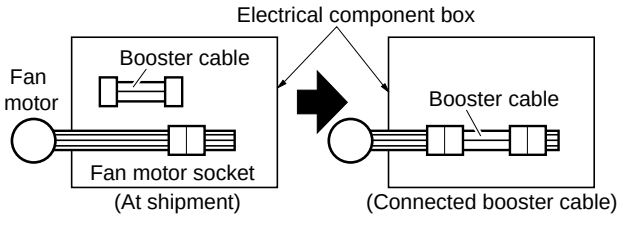
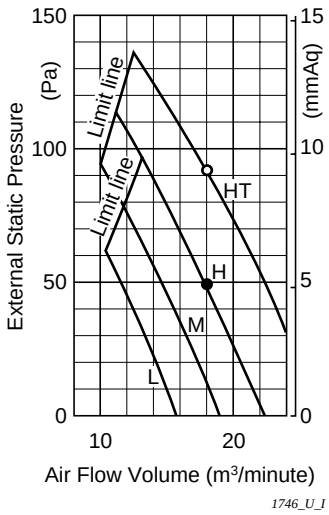


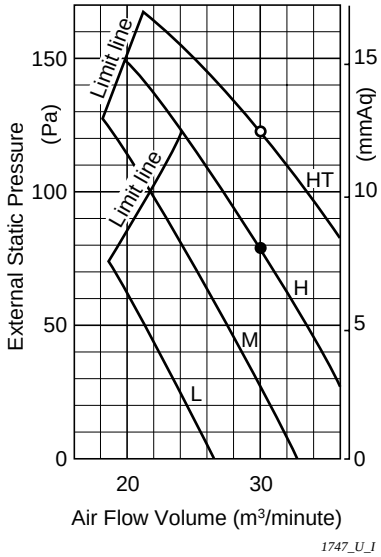
Fig. 1-1

Indoor Fan Performance

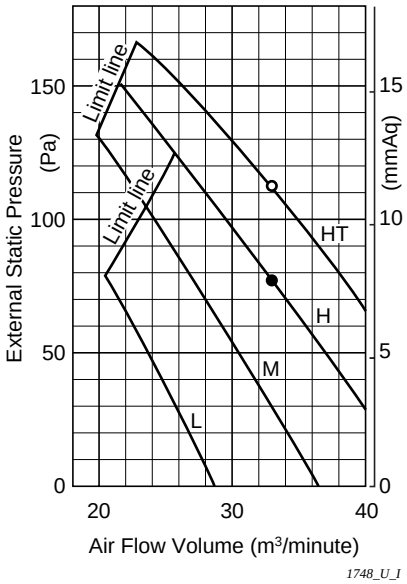
ADR 425 H



ADR 436 H



ADR 448 H



NOTE

HT : Using the booster cable

H : At shipment

Fig. 1-2

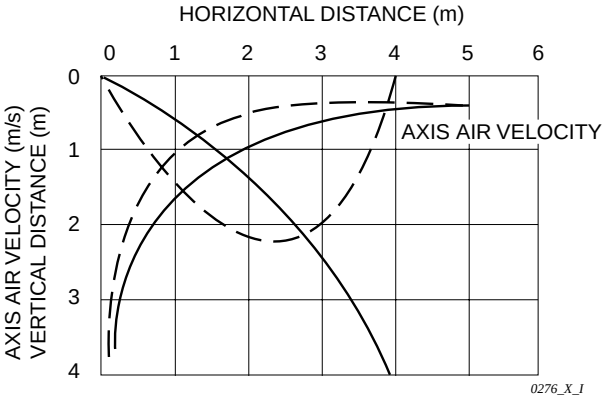
■ How to read the diagram

The vertical axis is the external static pressure (Pa) while the horizontal axis represents the AIR FLOW (m³/minute). The characteristic curves for “HT”, “H”, “M” and “L” fan speed control are shown.
The nameplate values are shown based on the “H” air flow. For the 25 type, the air flow is 18 m³/minute, while the external static pressure is 49 Pa at “H” position. If external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet.
This problem may be solved by increasing the fan speed as explained above.

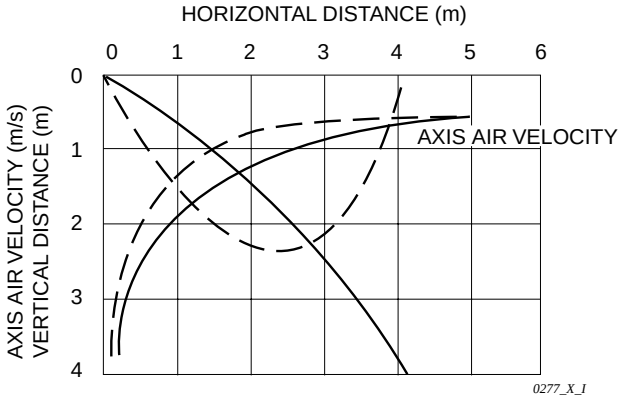
1-10 Air throw Distance Chart

4-Way Air Discharge Semi-concealed Type

Model: 25 Type



Model: 36, 48 Type



1

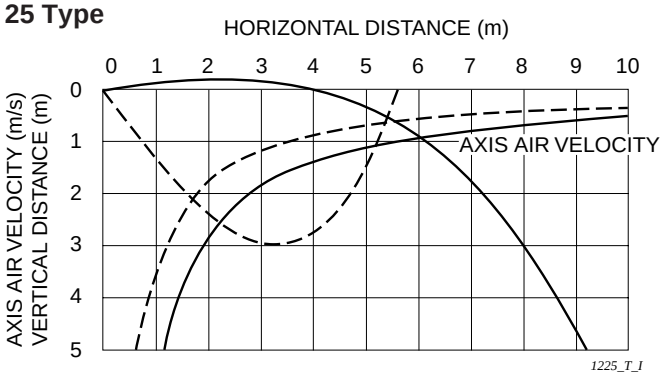
——————: LOUVER ANGLE 20˚ in Cooling mode
— — — — —: LOUVER ANGLE 60˚ in Heating mode

Condition Fan Speed : Hi
Room air temp. : 27 ˚C DB in cooling mode
20 ˚C DB in heating mode

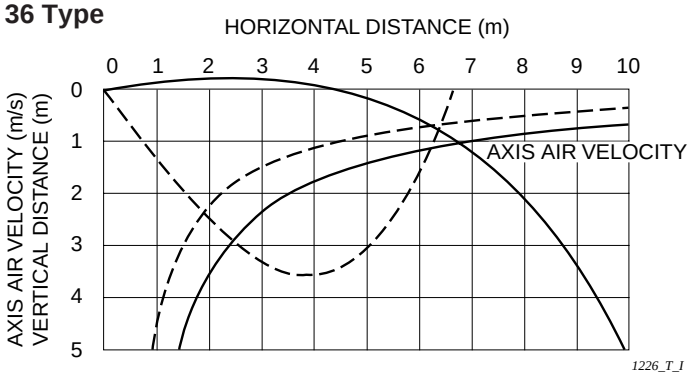
1-10 Air throw Distance Chart

Ceiling Mounted Type

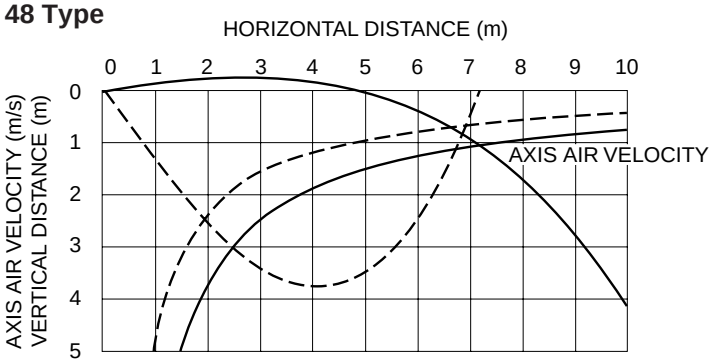
Model: 25 Type



Model: 36 Type



Model: 48 Type



	COOLING	HEATING
FAN SPEED	HIGH	HIGH
ROOM AIR TEMP.	27˚	20˚
LOUVER ANGLE	– 7˚	54˚

: COOLING

: HEATING

1227_T_I

1-11 Installation Instructions

Tubing Length

(A) Single type

- Refrigerant tubing between the indoor and outdoor units should be kept as short as possible.
- The length of the refrigerant tubes between the indoor and outdoor units are limited by the elevation difference between the two units. During tubing work, try to make both the tubing length (L) and the difference in elevation (H) as short as possible. Refer to Table 1-1 for the details.

Installation Example 1

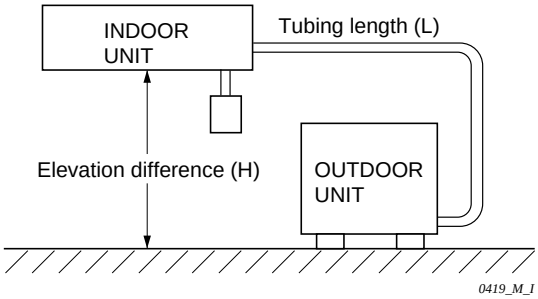


Table 1-1 (R407C Models)

Tubing Data \ Models		AER 425 S(C/H)LE AER 425 S(C/H)L3E	AER 436 S(C/H)L3E	AER 448 S(C/H)L3E
Tubing size outer diameter	Narrow tube mm (in.)	6.35 (1/4)	9.52 (3/8)	9.52 (3/8)
	Wide tube mm (in.)	15.88 (5/8)	19.05 (3/4)	19.05 (3/4)
Limit of tubing length (m)		50	50	50
Limit of elevation difference between the two units	Outdoor unit is placed upper (m)	50	50	50
	Outdoor unit is placed lower (m)	30	30	30
Max. allowable tubing length at shipment (m)		30	30	30
Required additional refrigerant *1 (g/m)		a) 45	b) 50	b) 50
Refrigerant charged at shipment (kg)		3.2	4.0	4.5

No additional charge of compressor oil is necessary.

*1 If total tubing length becomes 30 to 50 m, charge additional refrigerant (R407C) by a) 45 or b) 50 g/m.

1-11 Installation Instructions

Selecting the Installation Site

Indoor Unit

AVOID:

- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist.
- direct sunlight
- locations where nearby heat sources may affect performance of the unit.
- locations where nearby external air may enter the room directly. This may cause “sweating” on the air discharge ports, causing them to spray or drip.
- locations where the remote controller will be splashed with water or affected by dampness or humidity.
- installing the remote controller behind curtains or furniture.

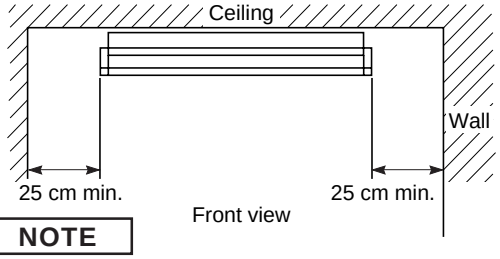
DO:

- select an appropriate position from which every corner of the room can be uniformly cooled.
- select a location where the ceiling is strong enough to support the weight of the unit.
- select a location where tubing and drain pipe have the shortest run to the outside.
- allow room for operation and maintenance as well as unrestricted air flow around the unit.
- install the unit within the maximum elevation difference (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in Table 1-1.
- allow room for mounting the remote controller about 1 m off the floor, in an area that is not in direct sunlight nor in the flow of cool air from the indoor unit.

NOTE

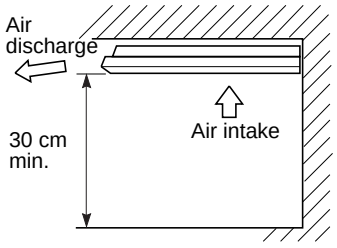
Air delivery will be degraded if the distance from the floor to the ceiling is greater than 3 m.

Ceiling-Mounted Type



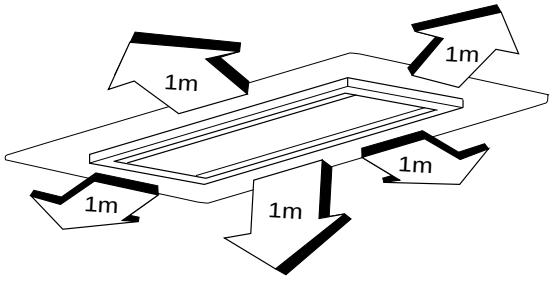
NOTE

The rear of the indoor unit can be installed flush against the wall.



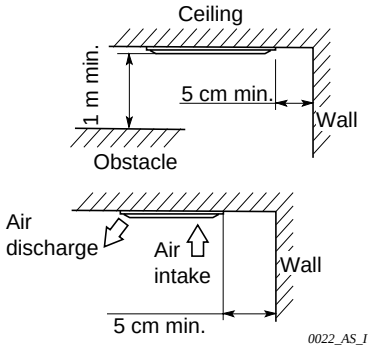
0020_T_I

2-Way, 4-Way Semi-Concealed Type



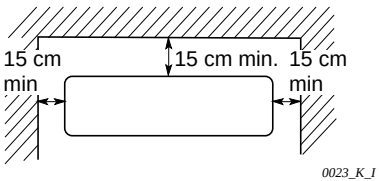
0021_X_I

1-Way Semi-Concealed Type



0022_AS_I

Wall-Mounted Type



0023_K_I

Front View

1-11 Installation Instructions

Selecting the Installation Site

Outdoor Unit

AVOID:

- heat sources, exhaust fans, etc. (Fig. 1-3)
- damp, humid or uneven locations.

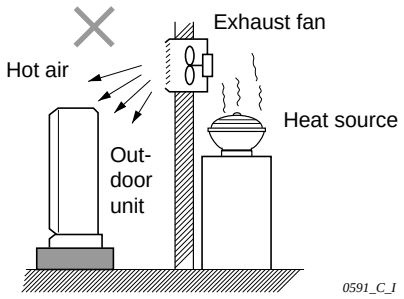


Fig. 1-3

DO:

- choose a place as cool as possible.
- choose a place that is well ventilated and outside air temperature does not exceed maximum 45 ˚C constantly.
- allow enough room around the unit for air intake / exhaust and possible maintenance. (Fig. 1-4)
- provide a solid base; about 15 cm above ground level to reduce humidity and possible water damage in unit and decrease service life. (Fig. 1-5)
- use lag bolts or equal to bolt down unit, reducing vibration and noise.

Table 1-2 Ⓐ Dimensions

Model	Min. (cm)
25 type	10
36, 48 type	20

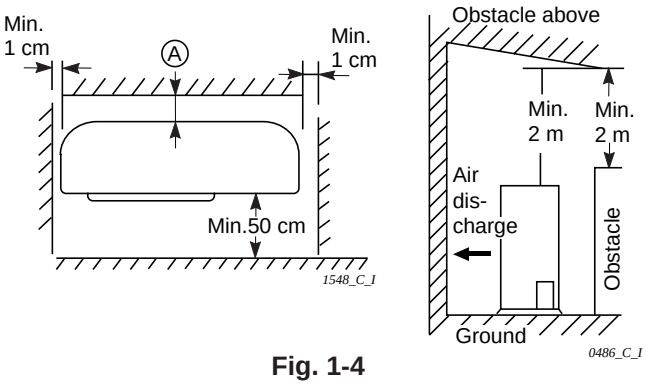
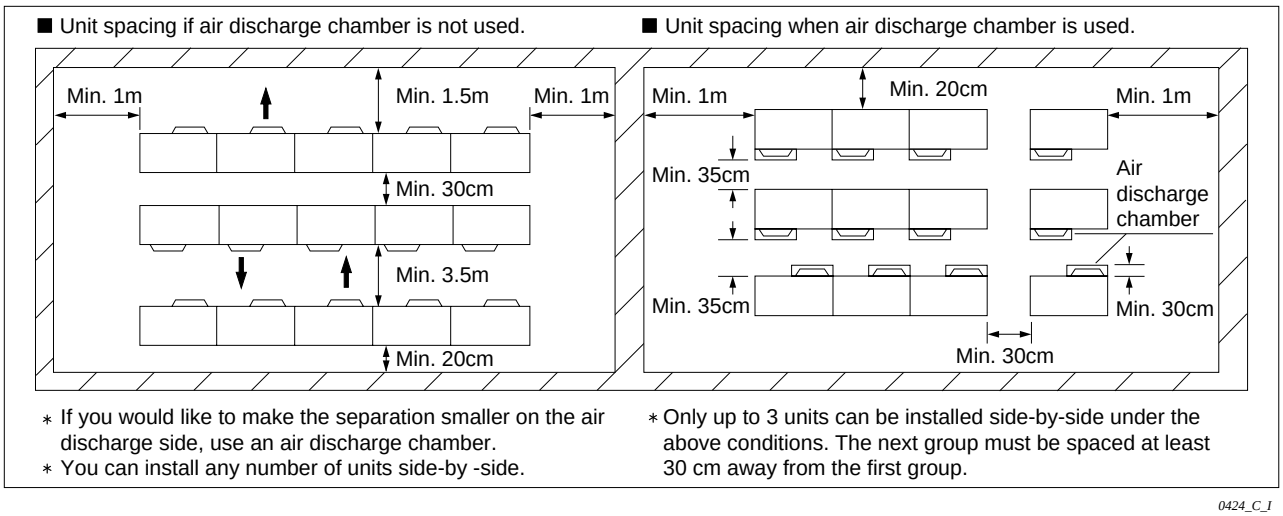


Fig. 1-4

In case of multiple installations



∗ If you would like to make the separation smaller on the air discharge side, use an air discharge chamber.
∗ You can install any number of units side-by -side.

∗ Only up to 3 units can be installed side-by-side under the above conditions. The next group must be spaced at least 30 cm away from the first group.

0424_C_I

- provide a solid base (concrete block, 10 × 40 cm beams or equal), a minimum of 15 cm above ground level to reduce humidity and protect the unit against possible water damage and decreased service life. (Fig. 1-5)
- use lag bolts or equal to bolt down unit, reducing vibration and noise.

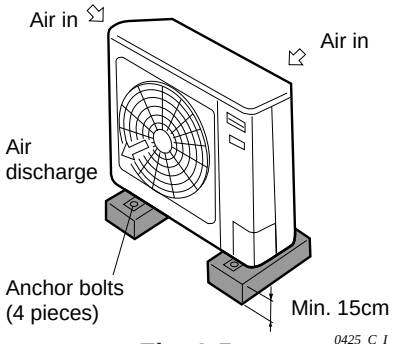


Fig. 1-5

1-11 Installation Instructions

Selecting the Installation Site

■ **Air Discharge Chamber for Top Discharge**

Be sure to install the air discharge chamber in the filed when:

- it is difficult to keep a space of min. 50 cm between the air discharge outlet and the obstacle.
- the air discharge outlet is facing to the sidewalk and discharged hot air annoys the passers. Refer to Fig. 1-6.

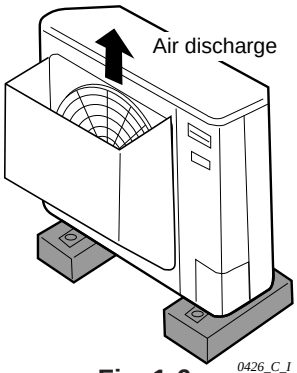


Fig. 1-6

■ **Installing the Unit in Heavy Snow Areas**

In positions with strong wind, snow-proof ducting should likewise be fitted and direct exposure to the wind should be avoided as much as possible.

Countermeasures against snow and wind in regions with snow and strong wind, the following problems may occur when the outdoor unit is not provided with a platform and snow-proof ducting.

a) The outdoor fan may not run and damage of the unit may be caused.
b) There may be no air flow.
c) The tubing may freeze and burst.
d) The condenser pressure may drop because of strong wind, and the indoor unit may freeze.

■ **Precautions for Installation in Heavy Snow Areas**

(1) The platform should be higher than the max. snow depth. (Fig. 1-7)
(2) The two fixing feet of the outdoor unit should be used for the platform, and the platform should be installed beneath the air intake side of outdoor unit.
(3) The platform foundation must be firmer and the unit must be secured with anchor bolts.
(4) In case of installation on a roof subject to strong wind, countermeasures must be taken to prevent the unit from being blown over.

In regions with snow fall, the outdoor unit should be provided with a platform and snow-proof duct.

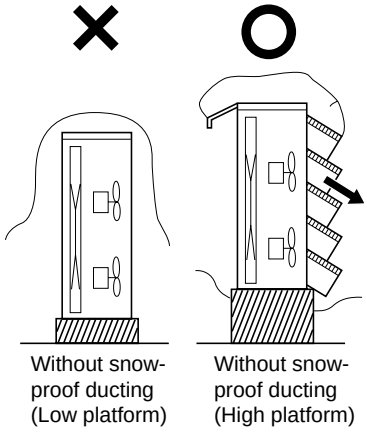


Fig. 1-7 **Fig. 1-8**

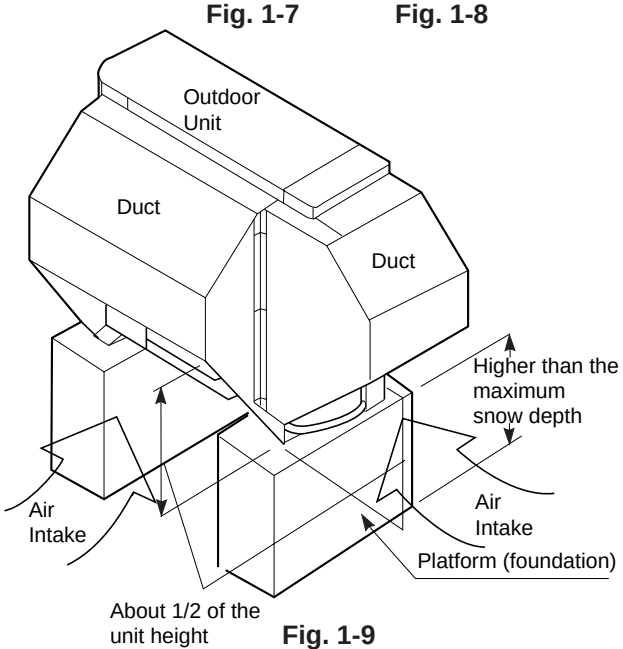
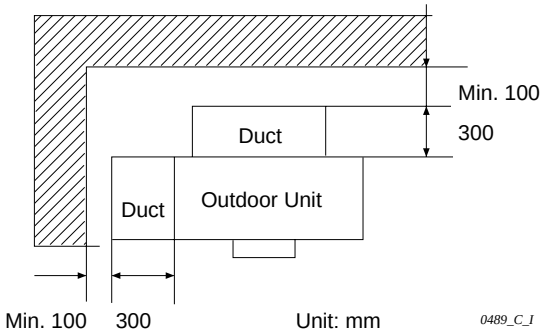
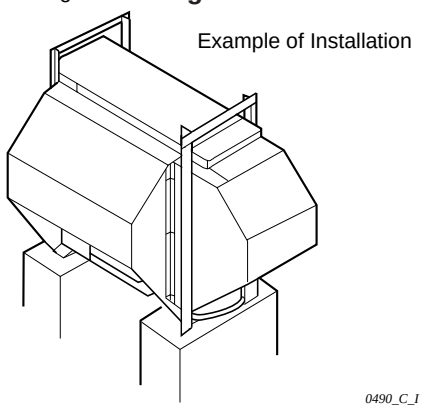


Fig. 1-9

■ **Dimensions of Snow / Wind-proof Ducting and Refrigerant Tubing Space for Installation**



Example of Installation



1-11 Installation Instructions

Selecting the Installation Site

■ Wind Shield

Important

It is recommended to install wind shields for cooling operation in low outdoor temperature condition. (Fig. 1-10)

General

When the outdoor unit is installed in a position exposed to strong wind (like seasonal winds with low air temperature in winter), wind shield must be installed on the outdoor unit.

This unit is designed so that the fan of the outdoor unit runs at low speed when the air conditioner is operated at low outdoor air temperatures. When the outdoor unit is exposed to strong wind, the system pressure drops because of the freeze protector.

For outer dimensions of wind shield, please see Fig. 1-11.

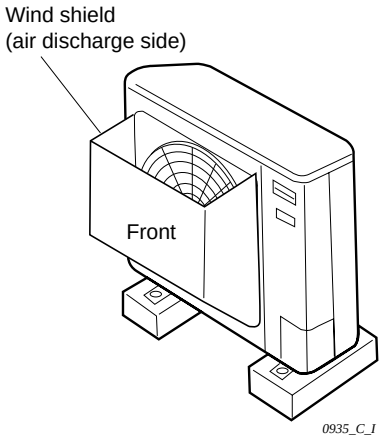
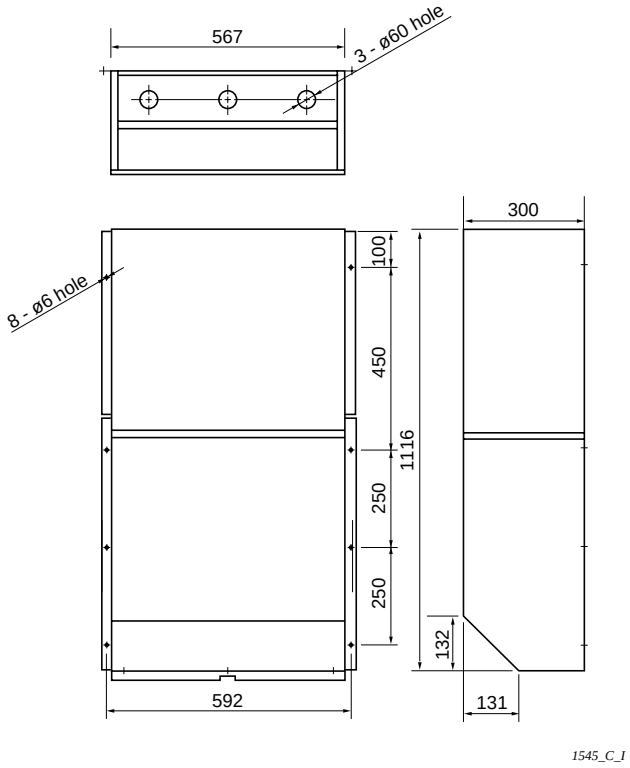
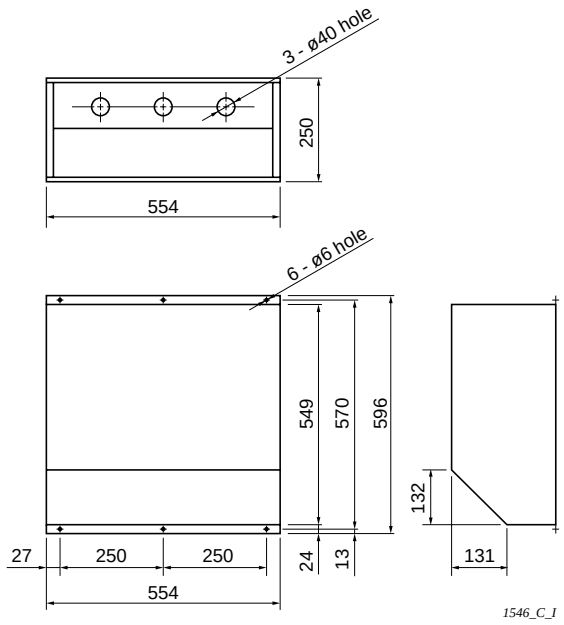


Fig. 1-10

Recommended outer dimensions of wind shield (field supply)



For 36, 48 type



For 25 type

Fig. 1-11

1-11 Installation Instructions

Electrical Wiring

■ **General Precautions on Wiring**

(1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.

(2) **Provide a power outlet to be used exclusively for each unit, and a power supply disconnect and circuit breaker for overcurrent protection should be provided in the exclusive line.**

(3) To prevent possible hazards due to insulation failure, the unit must be grounded.

(4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.

(5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.

(6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.

(7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning.

You must insure that installation complies with all relevant rules and regulations.

(8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:

- The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.
- Use shielded wires for inter-unit control wiring between units and ground the shielded on both sides.

(9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop appointed by the manufacture, because special purpose tools are required.

■ **Recommended Wire Length and Wire Diameter for Power Supply System**

* AWG = American Wire Gauge

(1) Single Type (One indoor unit / one outdoor unit)

Type		(A) Power Supply	(B) Inter-unit wiring	Time Delay Fuse or Circuit Capacity	Power Supply Terminal Base	
		4 mm^2	2.5 mm^2		Capacity	Max. Wire Diameter
R407C models	AER 425 S(C/H)L3E	97 m	50 m	15 A	25 A	5.5 mm^2 (AWG#10)
	AER 436 S(C/H)L3E	60 m	50 m	20 A	25 A	5.5 mm^2 (AWG#10)
	AER 448 S(C/H)L3E	54 m	50 m	25 A	25 A	5.5 mm^2 (AWG#10)
	AER 425 S(C/H)LE	17 m	50 m	40 A	50 A	14 mm^2 (AWG#10)

1-11 Installation Instructions

■ Electrical Wiring

• Indoor Unit

Type	(F) Power Supply	Time Delay Fuse or Circuit Capacity	Power Supply Terminal Base	
	2.5 mm²		Capacity	Max. Wire Diameter
X, S, AS, T, U, SL	245 m	15 A	50 A	14 mm² (AWG#6)
K	588 m	15 A	25 A	5.5 mm² (AWG#10)
D	89 m	15 A	50 A	14 mm² (AWG#6)

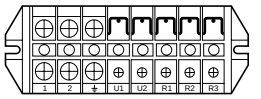
Control Wiring

(C) Inter-Unit Control Wiring	(D) Remote Control Wiring	(E) Control Wiring For Group Control
0.75 mm² (AWG#18) **Use Shielded Wiring**	0.75 mm² (AWG#18)	0.75 mm² (AWG#18)
Max. 1000 m	Max. 500 m	Max. 500 m

NOTE

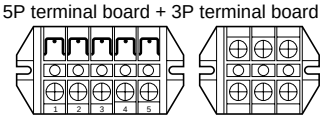
1) Refer to the Wiring System Diagrams (Ref. next page) for the meaning of “A”, “B”, “C”, “D”, “E”, and “F” in the above tables.
2) Inter-Unit Control Wiring (c) has no polarity. But for other wiring, respect polarity. Be sure to connect as shown in the Wiring System Diagram.
3) The basic connection diagram of the indoor unit shows the 8P terminal board, so the terminal boards in your equipment may differ from the diagram.
4) In accordance with conformity of EC Directive No. 89/336/EEC, when connecting power supply, it should be considered guidance showing below.
   * Do not share a common installation group with other equipment.
   * Be sure that supply network impedance is sufficiently low ($|Z_{SYS}| \leqq R\Omega$). It may be necessary to consult the power supply authority before connection of the air conditioner to a low-voltage public network.

8P terminal board



0511_M_I

5P terminal board + 3P terminal board



0512_M_I

Only for K type

R407C Models

Models	RΩ	Remarks
25 type (3 phase)	—	Not necessary to consider supply network impedance
36 type (3 phase)	0.192	Conforms to the local code
48 type (3 phase)	0.167	Ditto
25 type (1 phase)	0.126	Ditto

1-11 Installation Instructions

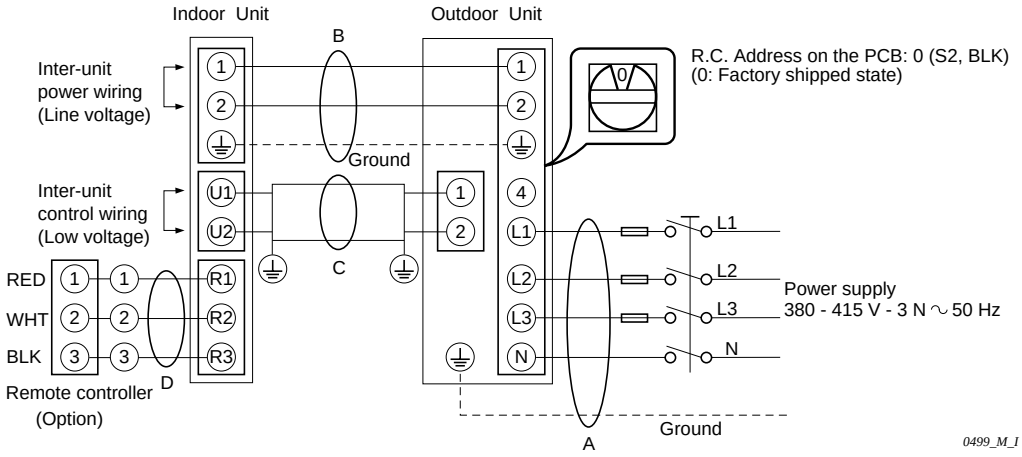
Electrical Wiring

● **Wiring System Diagrams**

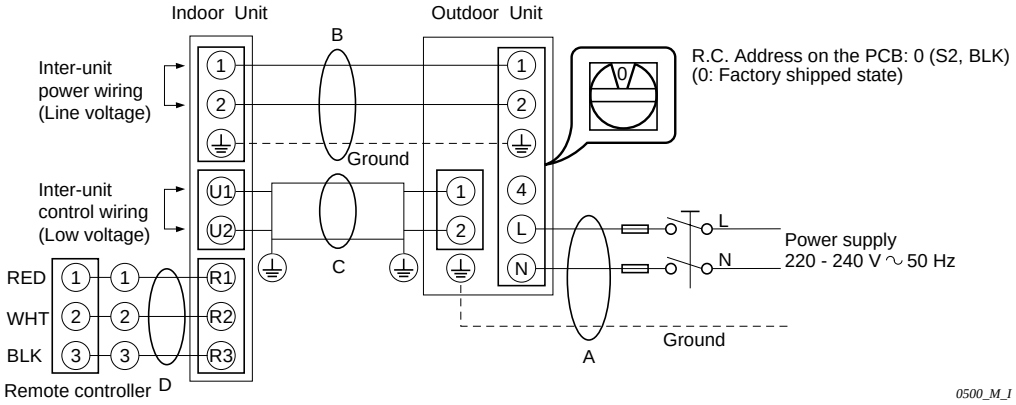
(1) Basic wiring diagram for standard control

① Single type (one indoor unit)

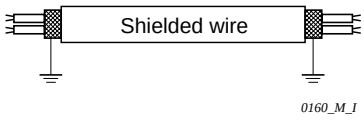
①-1. 3-phase outdoor unit



①-2. Single-phase outdoor unit



② **Use shielded wires for inter-unit control wiring (c) and ground the shielded on both sides.**



1-11 Installation Instructions

■ Electrical Characteristics

Indoor Unit : ASR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.6 / 0.63	0.62 / 0.65	12.1 / 12.3	13.32 / 13.58
	kW	130 / 150	0.13 / 0.15	2.55 / 2.7	2.81 / 3.0
Full load conditions	A	0.6 / 0.63	0.62 / 0.65	13.44 / 13.48	14.66 / 14.76
	kW	130 / 150	0.13 / 0.15	2.8 / 2.88	3.06 / 3.18
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.37 / 0.42	0.62 / 0.65	13.7 / 13.5	14.69 / 14.57
	kW	80 / 100	0.13 / 0.15	2.86 / 2.96	3.07 / 3.21
Full load conditions	A	0.37 / 0.42	0.62 / 0.65	15.6 / 15.2	16.59 / 16.27
	kW	80 / 100	0.13 / 0.15	3.25 / 3.29	3.46 / 3.54
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ASR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.6 / 0.63	0.62 / 0.65	4.45 / 4.35	4.82 / 4.73
	kW	130 / 150	0.13 / 0.15	2.5 / 2.52	2.76 / 2.82
Full load conditions	A	0.6 / 0.63	0.62 / 0.65	5.3 / 5.32	5.67 / 5.69
	kW	130 / 150	0.13 / 0.15	2.98 / 3.02	3.24 / 3.32
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.37 / 0.42	0.62 / 0.65	5 / 4.8	5.31 / 5.12
	kW	80 / 100	0.13 / 0.15	2.79 / 2.81	3 / 3.06
Full load conditions	A	0.37 / 0.42	0.62 / 0.65	5.1 / 4.9	5.41 / 5.22
	kW	80 / 100	0.13 / 0.15	2.87 / 2.89	3.08 / 3.14
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ASR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.92 / 0.93	1.24 / 1.31	6.35 / 6.39	7.01 / 7.05
	kW	200 / 220	0.26 / 0.29	3.46 / 3.51	3.92 / 4.02
Full load conditions	A	0.92 / 0.93	1.24 / 1.31	7.2 / 7.24	7.86 / 7.9
	kW	200 / 220	0.26 / 0.29	3.98 / 4.02	4.44 / 4.53
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.65 / 0.68	1.24 / 1.31	7 / 7.04	7.58 / 7.64
	kW	140 / 160	0.26 / 0.29	3.86 / 3.88	4.26 / 4.33
Full load conditions	A	0.65 / 0.68	1.24 / 1.31	7.4 / 7.44	7.98 / 8.04
	kW	140 / 160	0.26 / 0.29	4.08 / 7.12	4.48 / 4.57
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ASR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.92 / 0.93	1.24 / 1.31	7.7 / 7.72	8.35 / 8.37
	kW	200 / 220	0.26 / 0.29	4.14 / 4.16	4.6 / 4.67
Full load conditions	A	0.92 / 0.93	1.24 / 1.31	8.8 / 8.82	9.47 / 9.49
	kW	200 / 220	0.26 / 0.29	5 / 5.04	5.46 / 5.55
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.65 / 0.68	1.24 / 1.31	8.89 / 8.91	9.48 / 9.52
	kW	140 / 160	0.26 / 0.29	5.06 / 5.08	5.46 / 5.53
Full load conditions	A	0.65 / 0.68	1.24 / 1.31	9.4 / 9.41	9.99 / 10.02
	kW	140 / 160	0.26 / 0.29	5.38 / 5.42	5.78 / 5.87
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

Cooling:

Rating Conditions	:	Indoor Air Temperature	27°C DB / 19°C WB
		Outdoor Air Temperature	35°C DB
Full Load Conditions	:	Indoor Air Temperature	35°C DB / 23°C WB
		Outdoor Air Temperature	43°C DB

Heating:

Rating Conditions	:	Indoor Air Temperature	20°C DB
		Outdoor Air Temperature	7°C DB / 6°C WB
Full Load Conditions	:	Indoor Air Temperature	24°C DB
		Outdoor Air Temperature	21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit: ACR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.43 / 0.43	0.62 / 0.65	12.1 / 12.3	13.15 / 13.38
	kW	90 / 100	0.13 / 0.15	2.55 / 2.7	2.77 / 2.95
Full load conditions	A	0.43 / 0.43	0.62 / 0.65	13.44 / 13.48	14.49 / 14.56
	kW	90 / 100	0.13 / 0.15	2.8 / 2.88	3.02 / 3.13
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.33 / 0.34	0.62 / 0.65	13.7 / 13.5	14.65 / 14.49
	kW	70 / 80	0.13 / 0.15	2.86 / 2.96	3.06 / 3.19
Full load conditions	A	0.33 / 0.34	0.62 / 0.65	15.6 / 15.2	16.55 / 16.19
	kW	70 / 80	0.13 / 0.15	3.25 / 3.29	3.45 / 3.52
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ACR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.43 / 0.43	0.62 / 0.65	4.45 / 4.35	4.77 / 4.67
	kW	90 / 100	0.13 / 0.15	2.5 / 2.52	2.72 / 2.77
Full load conditions	A	0.43 / 0.43	0.62 / 0.65	5.3 / 5.32	5.62 / 5.64
	kW	90 / 100	0.13 / 0.15	2.98 / 3.02	3.2 / 3.27
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.33 / 0.34	0.62 / 0.65	5 / 4.8	5.29 / 5.1
	kW	70 / 80	0.13 / 0.15	2.79 / 2.81	2.99 / 3.04
Full load conditions	A	0.33 / 0.34	0.62 / 0.65	5.1 / 4.9	5.39 / 5.2
	kW	70 / 80	0.13 / 0.15	2.87 / 2.89	3.07 / 3.12
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ACR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.95 / 0.98	1.24 / 1.31	6.35 / 6.39	7.01 / 7.06
	kW	200 / 220	0.26 / 0.29	3.46 / 3.51	3.92 / 4.02
Full load conditions	A	0.95 / 0.98	1.24 / 1.31	7.2 / 7.24	7.86 / 7.91
	kW	200 / 220	0.26 / 0.29	3.98 / 4.02	4.44 / 4.53
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.86 / 0.9	1.24 / 1.31	7 / 7.04	7.64 / 7.68
	kW	180 / 200	0.26 / 0.29	3.86 / 3.88	4.3 / 4.37
Full load conditions	A	0.86 / 0.9	1.24 / 1.31	7.4 / 7.44	8.04 / 8.09
	kW	180 / 200	0.26 / 0.29	4.08 / 7.12	4.52 / 4.61
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ACR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.95 / 0.98	1.24 / 1.31	7.7 / 7.72	8.35 / 8.38
	kW	200 / 220	0.26 / 0.29	4.14 / 4.16	4.6 / 4.67
Full load conditions	A	0.95 / 0.98	1.24 / 1.31	8.8 / 8.82	9.47 / 9.5
	kW	200 / 220	0.26 / 0.29	5 / 5.04	5.46 / 5.55
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.86 / 0.9	1.24 / 1.31	8.89 / 8.91	9.54 / 9.56
	kW	180 / 200	0.26 / 0.29	5.06 / 5.08	5.5 / 5.57
Full load conditions	A	0.86 / 0.9	1.24 / 1.31	9.4 / 9.41	10.05 / 10.07
	kW	180 / 200	0.26 / 0.29	5.38 / 5.42	5.82 / 5.91
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ADR 425 H **Outdoor Unit : AER 425 SCLE**
AER 425 SHLE

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.84 / 0.9	0.62 / 0.65	12.1 / 12.3	13.56 / 13.85
	kW	180 / 210	0.13 / 0.15	2.55 / 2.7	2.86 / 3.06
Full load conditions	A	0.84 / 0.9	0.62 / 0.65	13.44 / 13.48	14.9 / 15.03
	kW	180 / 210	0.13 / 0.15	2.8 / 2.88	3.11 / 3.24
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 1 phase / 50 Hz	
Rating conditions	A	0.84 / 0.9	0.62 / 0.65	13.7 / 13.5	15.16 / 15.05
	kW	180 / 210	0.13 / 0.15	2.86 / 2.96	3.17 / 3.32
Full load conditions	A	0.84 / 0.9	0.62 / 0.65	15.6 / 15.2	17.06 / 16.75
	kW	180 / 210	0.13 / 0.15	3.25 / 3.29	3.56 / 3.65
Starting amperes	A	1 / 1	1 / 1	67 / 73	69 / 75

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ADR 425 H **Outdoor Unit : AER 425 SCL3E**
AER 425 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.84 / 0.9	0.62 / 0.65	4.45 / 4.35	4.89 / 4.8
	kW	180 / 210	0.13 / 0.15	2.5 / 2.52	2.81 / 2.88
Full load conditions	A	0.84 / 0.9	0.62 / 0.65	5.3 / 5.32	5.74 / 5.76
	kW	180 / 210	0.13 / 0.15	2.98 / 3.02	3.29 / 3.38
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	0.84 / 0.9	0.62 / 0.65	5 / 4.8	5.44 / 5.25
	kW	180 / 210	0.13 / 0.15	2.79 / 2.81	3.1 / 3.17
Full load conditions	A	0.84 / 0.9	0.62 / 0.65	5.1 / 4.9	5.54 / 5.35
	kW	180 / 210	0.13 / 0.15	2.87 / 2.89	3.18 / 3.25
Starting amperes	A	1 / 1	1 / 1	25 / 28	27 / 30

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ADR 436 H **Outdoor Unit : AER 436 SCL3E**
AER 436 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	1.43 / 1.54	1.24 / 1.31	6.35 / 6.39	7.13 / 7.19
	kW	290 / 340	0.26 / 0.29	3.46 / 3.51	4.01 / 4.14
Full load conditions	A	1.43 / 1.54	1.24 / 1.31	7.2 / 7.24	7.99 / 8.05
	kW	290 / 340	0.26 / 0.29	3.98 / 4.02	4.53 / 4.65
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	1.43 / 1.54	1.24 / 1.31	7 / 7.04	7.79 / 7.84
	kW	290 / 340	0.26 / 0.29	3.86 / 3.88	4.41 / 4.51
Full load conditions	A	1.43 / 1.54	1.24 / 1.31	7.4 / 7.44	8.19 / 8.25
	kW	290 / 340	0.26 / 0.29	4.08 / 7.12	4.63 / 4.75
Starting amperes	A	2 / 2	3 / 3	42 / 45	47 / 50

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

1-11 Installation Instructions

Electrical Characteristics

Indoor Unit : ADR 448 H **Outdoor Unit : AER 448 SCL3E**
AER 448 SHL3E

● Cooling

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	1.48 / 1.58	1.24 / 1.31	7.7 / 7.72	8.5 / 8.53
	kW	310 / 360	0.26 / 0.29	4.14 / 4.16	4.71 / 4.81
Full load conditions	A	1.48 / 1.58	1.24 / 1.31	8.8 / 8.82	9.62 / 9.66
	kW	310 / 360	0.26 / 0.29	5 / 5.04	5.57 / 5.69
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

● Heating (Heat pump only)

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		220 - 240 V / 1 phase / 50 Hz		380 - 415 V / 3 phase / 50 Hz	
Rating conditions	A	1.48 / 1.58	1.24 / 1.31	8.89 / 8.91	9.71 / 9.75
	kW	310 / 360	0.26 / 0.29	5.06 / 5.08	5.63 / 5.73
Full load conditions	A	1.48 / 1.58	1.24 / 1.31	9.4 / 9.41	10.23 / 10.25
	kW	310 / 360	0.26 / 0.29	5.38 / 5.42	5.95 / 6.07
Starting amperes	A	2 / 2	3 / 3	48 / 53	53 / 58

Cooling:
Rating Conditions : Indoor Air Temperature 27°C DB / 19°C WB
Outdoor Air Temperature 35°C DB
Full Load Conditions : Indoor Air Temperature 35°C DB / 23°C WB
Outdoor Air Temperature 43°C DB

Heating:
Rating Conditions : Indoor Air Temperature 20°C DB
Outdoor Air Temperature 7°C DB / 6°C WB
Full Load Conditions : Indoor Air Temperature 24°C DB
Outdoor Air Temperature 21°C DB / 15.5°C WB

2. PROCESSES AND FUNCTIONS

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2-1 Room Temperature Control

The unit adjusts room temperature by turning the outdoor unit's compressor ON and OFF. This process is controlled by the **thermostat** located in the indoor unit.
The figures on this and the next page show how each part of the system performs as the room temperature changes and the thermostat activates the compressor to start (**thermo ON**) or stop (**thermo OFF**). Fig. 1 shows about the cooling cycle, and Fig. 2 shows about the heating cycle.

(A) Cooling

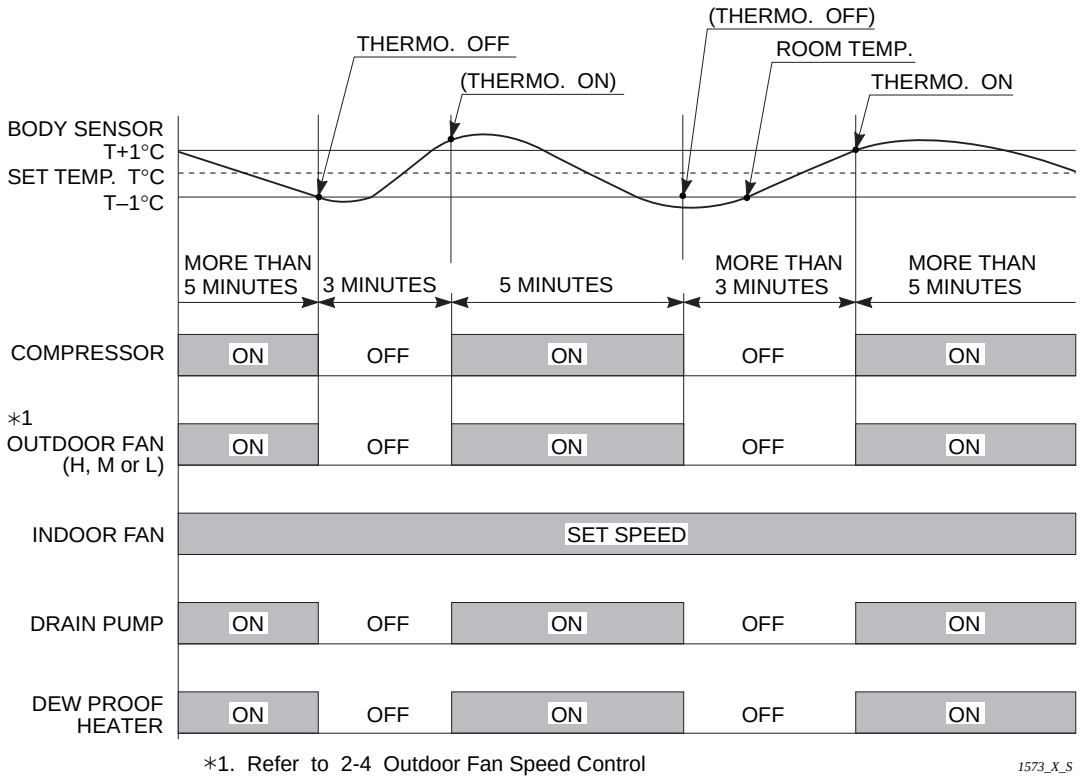


Fig. 1

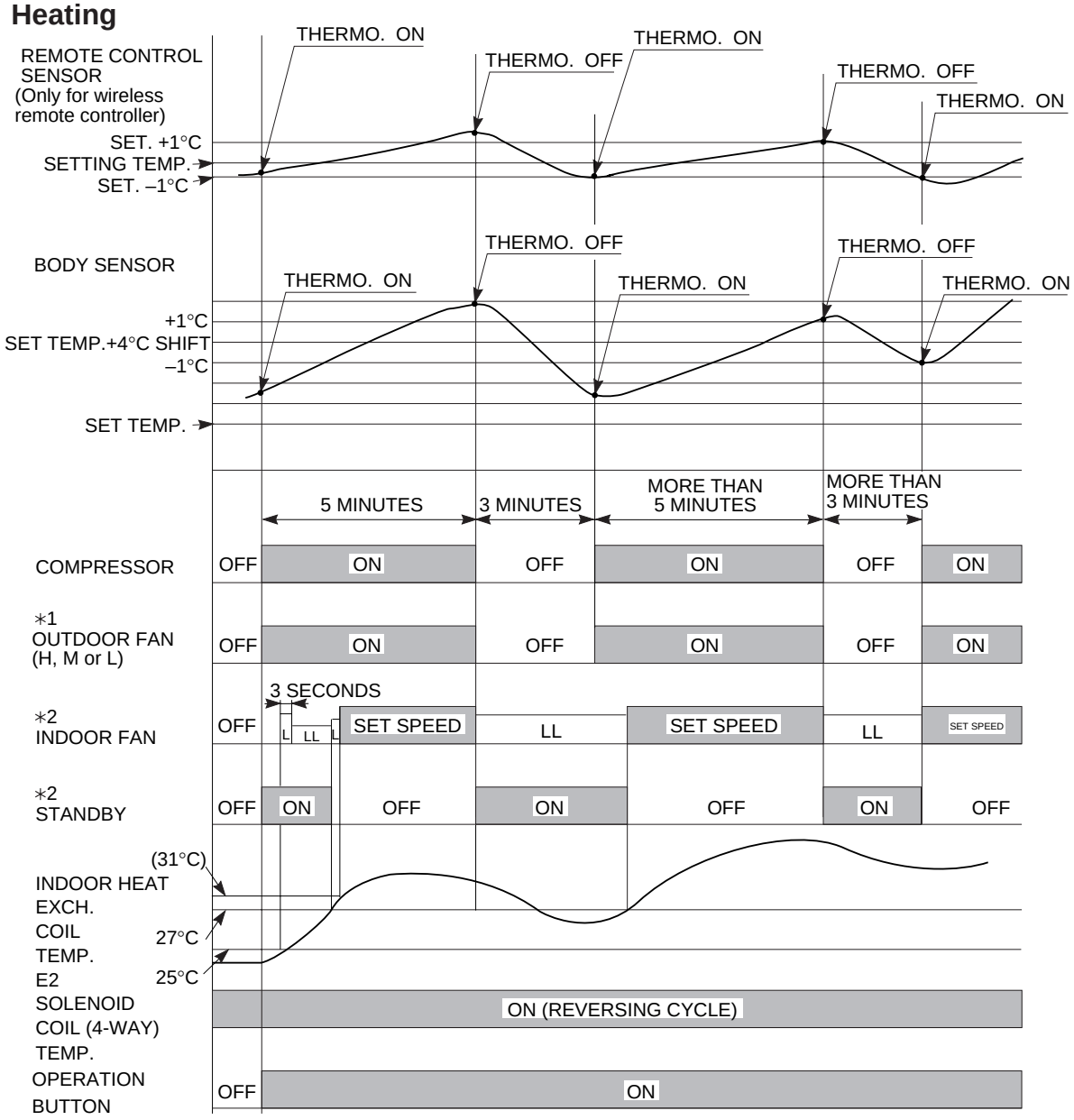
Chart Summary and Explanations

- ❑ Once the compressor **starts**, it keeps running for 5 minutes.
- ❑ Once the compressor **stops**, it will not start running again for 3 minutes.
- ❑ If you **change** the operation mode (**HEAT, DRY, COOL,** or **FAN**) during the cooling cycle, the control circuit **stops** the compressor for 3 minutes.
- ❑ For 5 minutes after the compressor is first turned on, and for 3 minutes after it is turned off, the compressor is not controlled by the room sensor.
- ❑ **Thermo ON:** When room temperature rises 1°C (2°C when set on body sensor) above the set temperature T°, (T°+1°C or T°+2°C when set on body sensor):

  Compressor → **ON**
- ❑ **Thermo OFF**: When the room temperature is –1°C below the set temperature T°:

  Compressor → **OFF**

(B) Heating



∗1. Refer to 2-4 Outdoor Fan Speed Control
∗2. Refer to 2-2 Cold Draft Prevention (Heating)

1574_X_S

Fig. 2

Chart Summary and Explanations

- ❑ Once the compressor starts, it keeps running for 5 minutes.
- ❑ Once the compressor stops, it will not start running again for 3 minutes.
- ❑ If you change the operation mode (**HEAT, DRY, COOL** or **FAN**) during the heating cycle, the control circuit **stops** the compressor for **3 minutes.**
- ❑ For 5 minutes after the compressor is first turned on, and for 3 minutes after it is turned off, the compressor is not controlled by the room sensor.

When set on remote control sensor

Thermo ON: When room temperature is –1°C below the set temperature T˚.

Compressor → ON

Thermo OFF: When the room temperature is 1°C above the set temperature T˚, (T˚+1°C)

Compressor → OFF

When set on body sensor

NOTE: In case of Body sensor, operating temperature is shifted to setting temperature +4°C .

2-2 Cold Draft Prevention (Heating Cycle)

The cold draft prevention function controls indoor fan speed so a strong draft of cold air will not blow out before the indoor heat exchange coils have warmed up.

- ❑ STANDBY shows on the remote controller when the indoor fan speed is LL (very low) or OFF. This condition occurs in the following 3 cases:
  - During Thermo OFF (refer to 2-1 B). Room Temperature Control, Heating)
  - During the defrosting operation (refer to 2-10 Defrosting Control, Heating)
  - Until either the coil temperature E2 reaches 27°C or when a maximum of 6 minutes has past.
- ❑ The indoor fan motor operates in **L** instead of **LL** for 3 seconds as it starts to give the fan an initial boost.

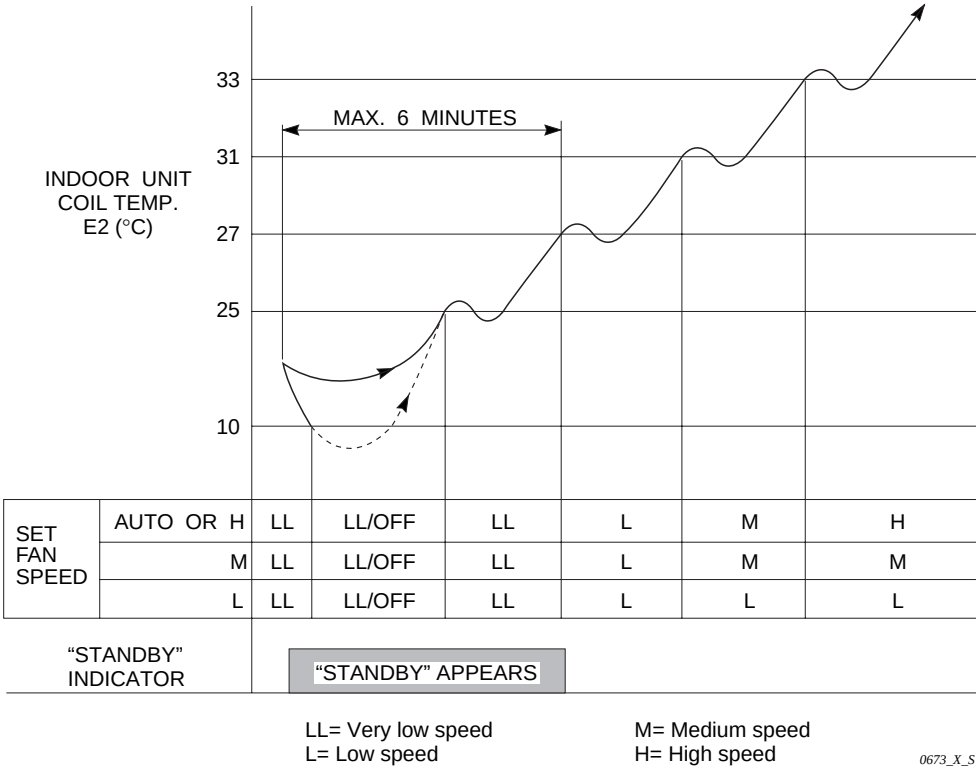


Fig. 3

Chart Summary and Explanations

- ❑ The main idea of this chart is to show that the indoor fan speed increases and gets closer to the set fan speed as the coil temperature **E2** rises.
- ❑ The indoor unit's coil temperature is taken from sensor **E2** located in the middle of the indoor heat exchange coil.
- ❑ The dotted line shows that the indoor fan motor is **OFF**. When the temperature at sensor **E2** falls below 10°C, the indoor fan motor stops running.

2-3 Automatic Fan Speed (Indoor Unit)

By pressing the FAN SPEED button on the remote controller, the fan speed can be set at one of four steps: AUTO., HI., MED., or LO. When set at AUTO. the indoor unit fan speed will be automatically adjusted to the room temperature as the two charts shown below.

(A) Cooling

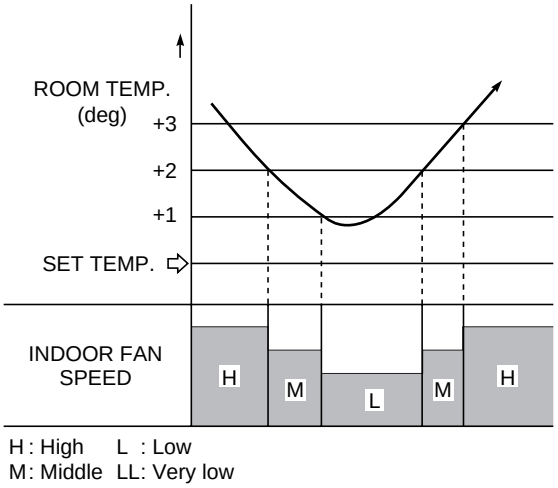


Fig. 4

Chart Explanations and notes

❑ When the fan speed changes, it keeps the speed step for at least 3 minutes, even if the temperature changes to another speed step during the time.

(B) Heating

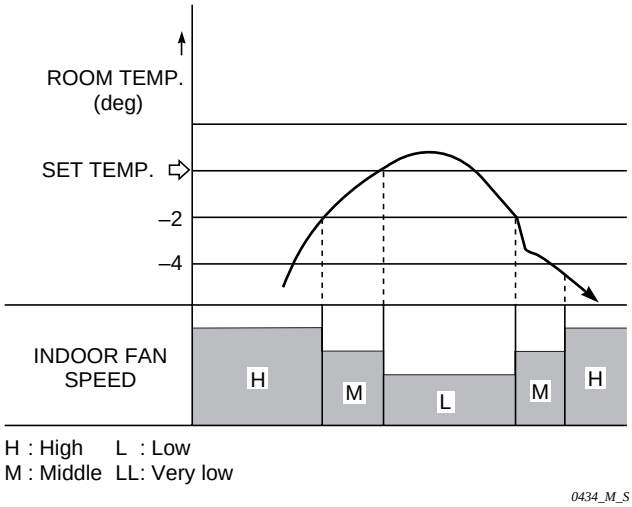


Fig. 5

Chart Explanations and notes

❑ When the fan speed changes, it keeps the speed step for at least 1 minute, even if the temperature changes to another speed step during the time.

2-4 Outdoor Fan Speed Control

To optimize performance in air conditioner, the outdoor fan speed is selected automatically according to the outdoor temperature.

- ❑ Note that in both **Cooling** and **Heating** modes, the fan comes on at first at high speed (H mode) for 5 seconds. Since outdoor conditions sometimes make it difficult for the fan to start, this sudden surge of power may be necessary.
- ❑ The outdoor fan operates in H mode for 3 minutes after the compressor stops (excluding defrosting operation period).
- ❑ Charts below show how the outdoor fan speed changes with the change in outdoor temperature.

(A) Cooling

*Outdoor Air temperature	Outdoor fan motor (FMo)
25°C or more	H
less than 25°C	M
less than 19°C	L

* This is supposed to be coil temp [C2] when operating outdoor fan without running comp.

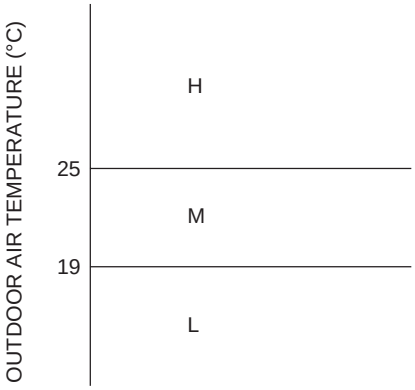


Fig. 6

(B) Heating

Outdoor coil temperature [C2]	Outdoor fan motor (FMo)
14°C or more	M
less than 14°C	H

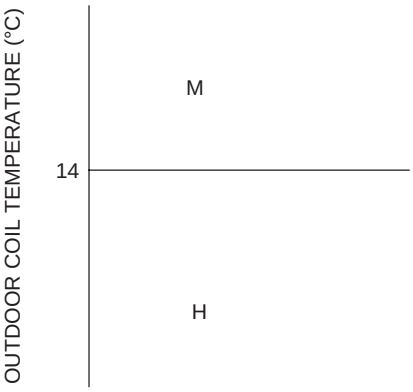
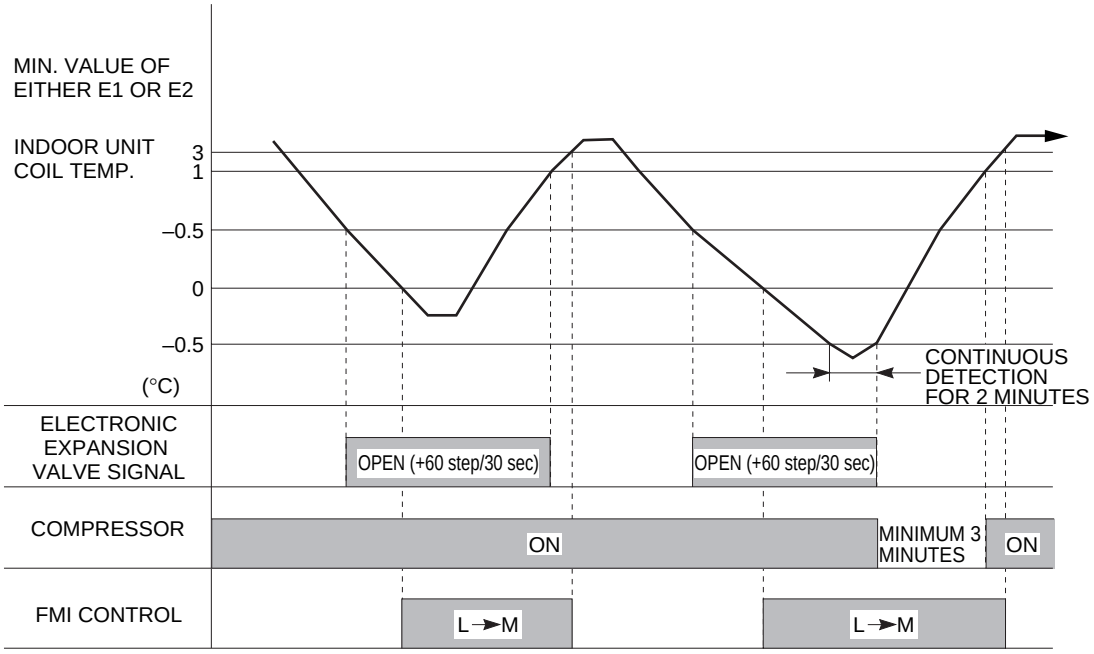


Fig. 7

2-5 Freeze Prevention (Cooling)

Freeze Prevention keeps the indoor heat exchange coil from freezing. Freezing reduces the efficiency of the unit, and frost build up on the coil blocks cool air circulation from the indoor unit's fan.



1563_M_S

Fig. 8

Note: Freeze prevention is controlled by the temperature at the indoor heat exchanger coil as sensed by either sensor **E1** (located at the entrance of the coil) or sensor **E2** (located on the middle of the coil). Freeze prevention cycle is controlled by the lower temperature sensed at either of the two sensors.

Chart Explanations and notes

- ❑ This chart shows when the **electronic expansion valve** opens to regulate the temperature of the indoor unit coil to prevent freezing.
- ❑ If the refrigerant control is not effective and the temperature continues to drop and stays below 0°C for 2 minutes continuously, the control circuit stops the compressor. The compressor does not start again until the temperature rises above 1°C.
  The compressor stops for 3 minutes minimum.

Note: • When low fan speed is selected and the air conditioner is in cooling operation at a low outdoor temperature of less than 10°C, the air conditioner may automatically switch to medium fan speed.
• Cut the jumper wire (JP11) on the outdoor P.C.B. when the above FMI control (L➞M) is not needed.

2-6 Condensing Temperature Control (Cooling)

Condensing temperature is controlled by the outdoor heat exchanger coil temperature as sensed by sensor **C2**.

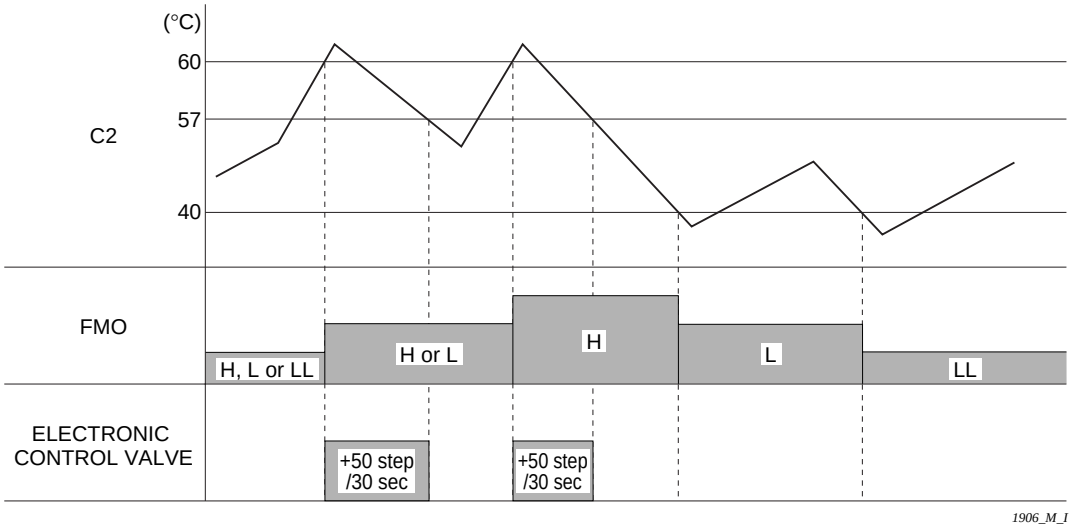


Fig. 9

Chart Explanations and notes

- ❑ This chart shows how the outdoor fan speed and the electronic refrigerant control valve react to coil temperature to control condensing temperature.
- ❑ Sensor **C2** is located in the middle of the outdoor unit heat exchange coil.
- ❑ When **C2** rises above 60°C the electronic control valve opens 50steps / 30 seconds, and the outdoor for speed increases by one step. The outdoor fan speed doese not change for 5 minits.
- ❑ When **C2** falls below 40°C, the outdoor fan speed decreases by one step.

2-7 Overload Protection (Heating)

This function prevents the air conditioner from overloading.

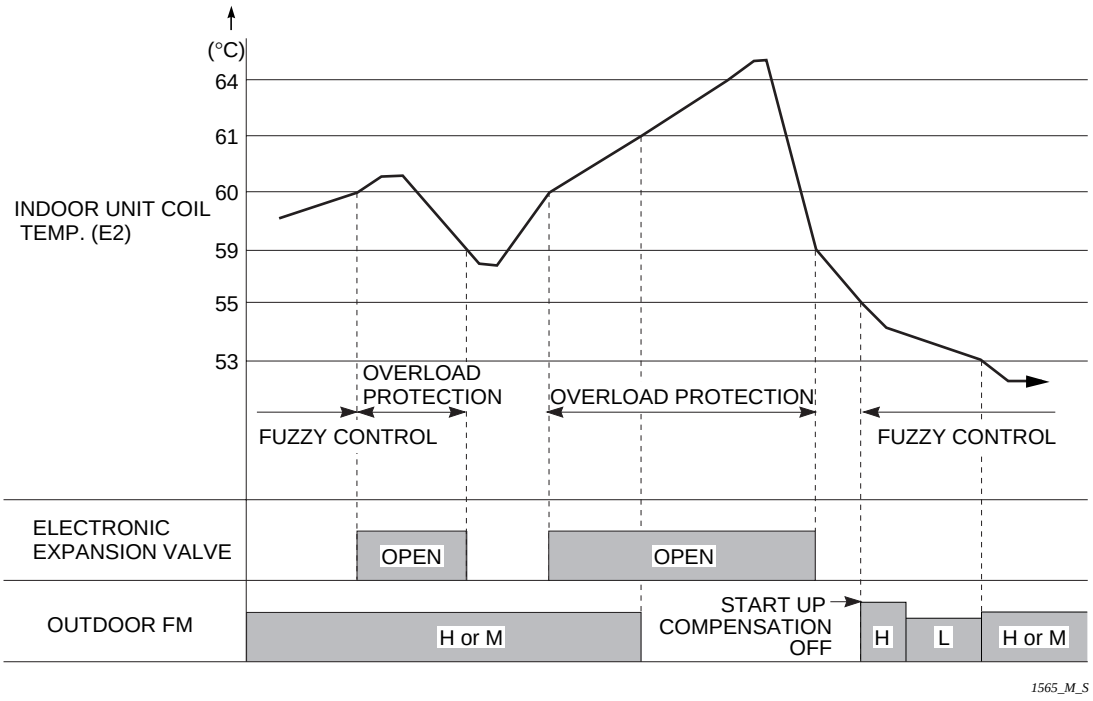


Fig. 10

Chart Explanations and notes

- ❑ This chart shows how the outdoor fan speed and the electronic refrigerant control valve react to coil temperature to keep the indoor heat exchanger coil from overloading.
- ❑ When sensor **E2** rises above 60°C the electronic refrigerant control valve opens at 50 steps/ 30 seconds until **E2** falls below 59°C.
- ❑ Sensor **E2** is located in the middle of the indoor unit heat exchange unit.
- ❑ When sensor **E2** rises above 62°C, the control circuit stops the outdoor fan motor till the temp. drops to 55°C
- ❑ Fuzzy control controls the electronic refrigerant control valve.

2-8 Discharge Temperature Control (Cooling and Heating)

This function prevents the compressor motor from burn out by overheating.

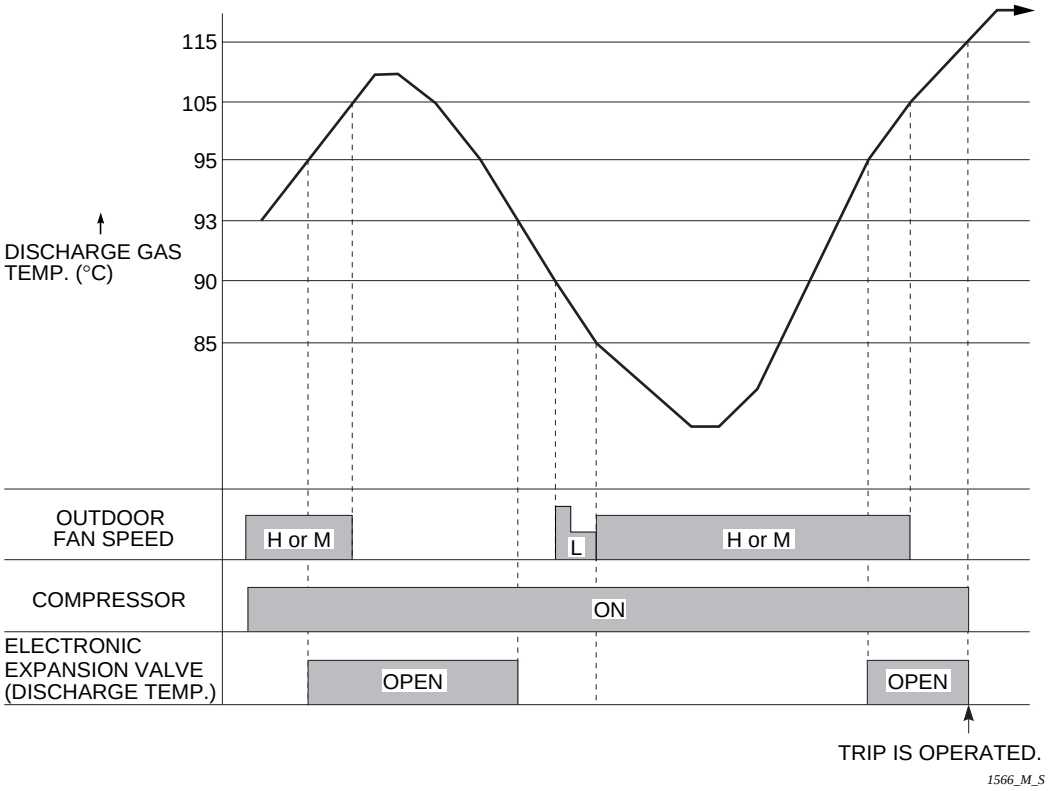


Fig. 11

Chart Summary and Explanations

- ❑ Discharge temperature is sensed by **TH8** (discharge gas sensor).
- ❑ When the temperature rises **above 95°C** the electronic refrigerant control valve opens at 50 steps/30 seconds until the temperature falls **below 93°C**.
- ❑ During **HEATING** operation, when the temperature rises **above 105°C**, the control circuit stops the outdoor fan motor until the temperature falls below 90°C. Please note that this control does not function during **COOLING** operation.
- ❑ For both **COOLING** and **HEATING** modes, if the temperature reaches **115°C** (135°C for 48 type) the operation shuts down and alarm **P3** appears on the remote controller.
- ❑ The outdoor fan speed is controlled on discharge temp. at heating mode.

2-9 Auto. Mode for Automatic Heating/Cooling Switching

❑ When the AUTO mode is selected, the microprocessor calculates the difference between the set temperature and the room temperature, and automatically switches to the COOLING or HEATING mode to maintain the desired temperature.

Room temp. ≧ Set temp. ➔ COOLING
Room temp. < Set temp. ➔ HEATING

This means that if the room temperature is **higher or equal to** the set temperature, **COOLING** operation starts. If the room temperature is **lower** than the set temperature, **HEATING** operation starts.

2-9 Auto. Mode for Automatic Heating/Cooling Switching

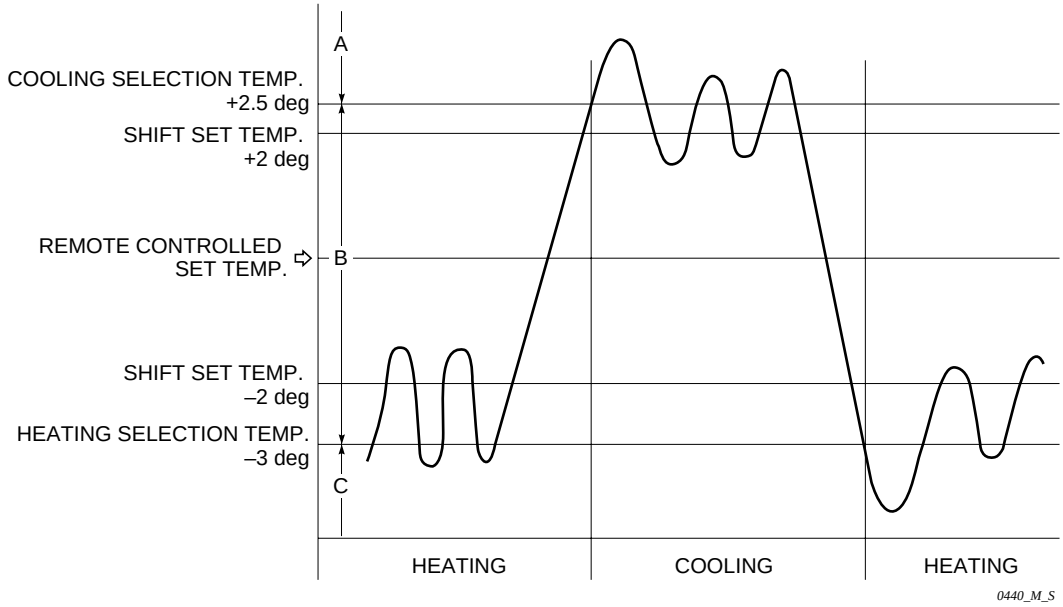


Fig. 12

Chart summary and Explanations

- ❑ This chart shows how the Operation Mode (**COOLING** or **HEATING**) is determined by the microprocessor taking the room temperature into consideration. It also shows the temperature points at which the cooling or heating mode is switched, when the AUTO mode is selected.
- ❑ After operation starts, the set temperature shifts automatically by +2 deg. at cooling and by -2 deg. at heating. For example, if cooling is selected, the set temperature changes from 20° C to 22° C.
  (The display of the remote controller remains 20° C.)
- ❑ The change of the operation mode (heating to cooling, cooling to heating) by the change of the room temperature during the operation is as follows.

  Heating to Cooling; Room temp. ≥ Shifted temp + 0.5 deg.

  Cooling to Heating; Room temp. ≤ Shifted temp -1.0deg.

  For example, if the room temperature rises above 22.5 °C (=22+0.5) during the cooling operation at the room temperature 20° C set by the remote controller, the operation changes to cooling. When the room temperature lowers below 17° C (=18-1.0) thereafter, the operation changes to heating again.
- ❑ In heating operation, using the body sensor, room temperature control is designed so that room air temp. is sensed as 4 deg. lower than suctioned air at indoor unit taking into account of the temperature gap between upper part and lower part of the room.
- ❑ Within 10 minutes after the compressor turns OFF, the operation does not change to cooling (heating), even when the room temperature changes from C to A (A to C).
- ❑ When switching from cooling (heating) to heating (cooling), the actuation of the 4 way valve will delay about 30-50 seconds after the compressor turns ON.

2-10 Defrosting Control, Outdoor Heat Exchanger Coil (Heating)

When the outdoor temperature is low, frost may form on the outdoor heat exchanger coil. When this occurred, the defrosting system operates. The microprocessor in the outdoor unit monitors the relationship between the temperature of the outdoor heat exchanger coil and the outdoor temperature so it can defrost when necessary.

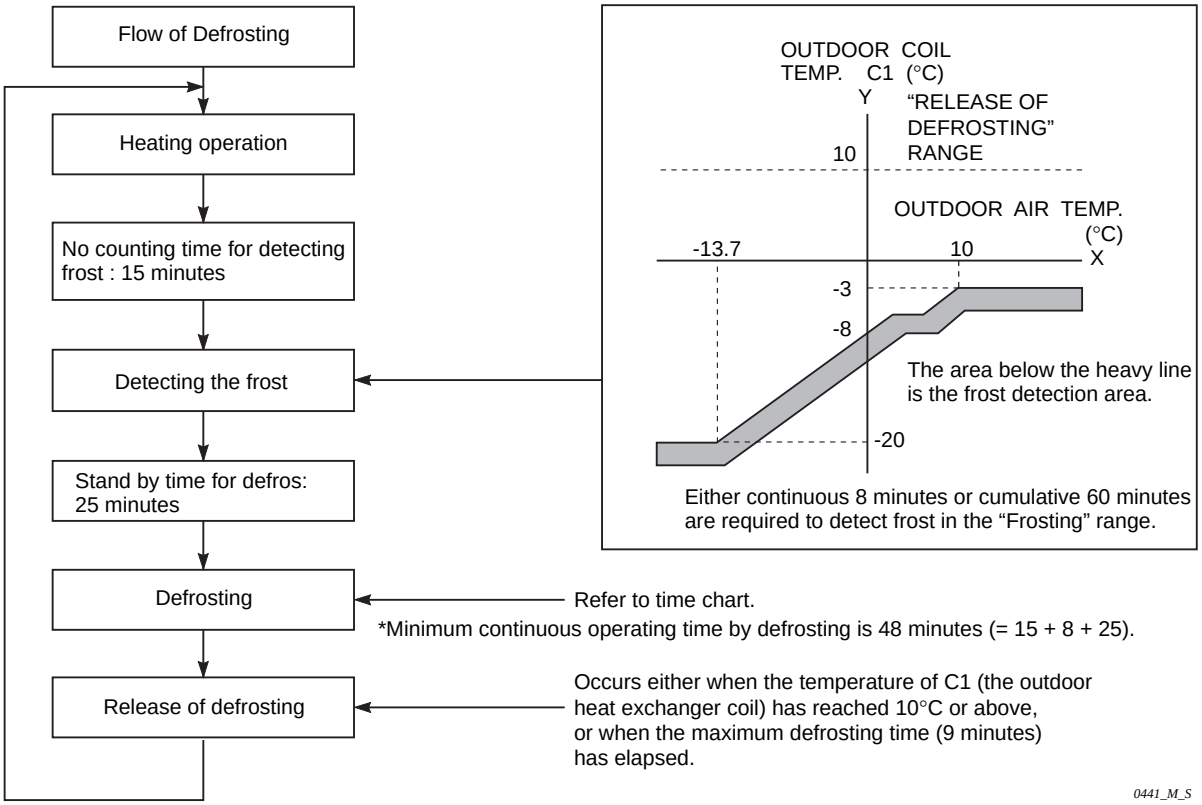


Fig. 13

Time Chart for Defrosting

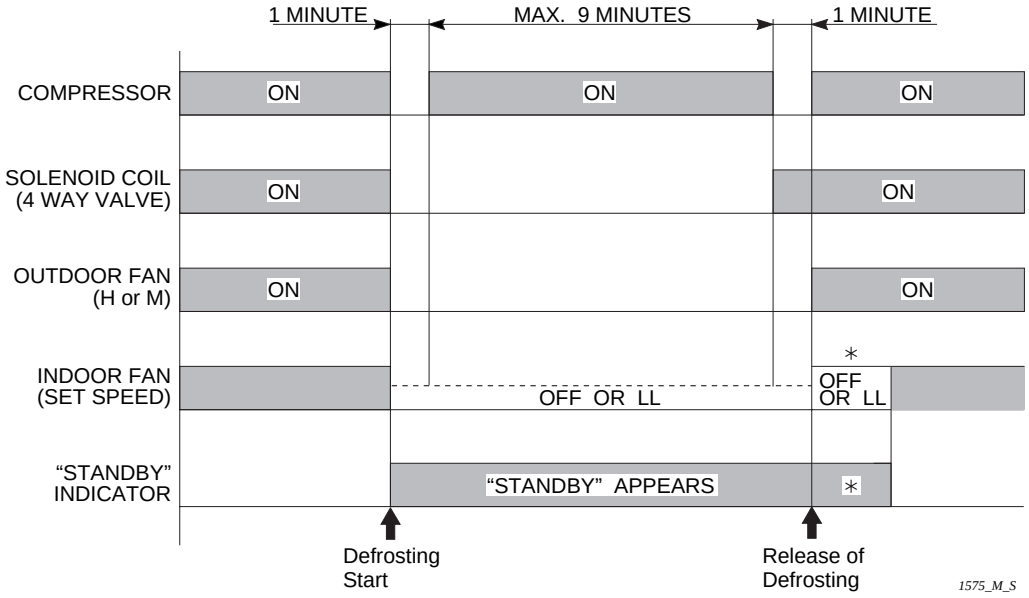


Fig. 14

- ❑ During the defrost cycle, **STANDBY** appears on the remote controller.
- ❑ *.....**Cold Draft Prevention** may operate occasionally

2-11 4-Way Valve, Solenoid Control

The basic function of the 4-way valve is to direct the refrigerant in the correct direction according to the Operation Mode (**COOLING** or **HEATING**) selected.
The following two charts show conditions of the controls and functions listed in the left hand column when the solenoid is **ON** or **OFF**. Chart (A) on this page shows the relationships when the temperature control is in **NORMAL** mode, and Chart (B) on the next page shows the relationships when the remote controller is set to **AUTO** mode.

(A) Normal Control Mode

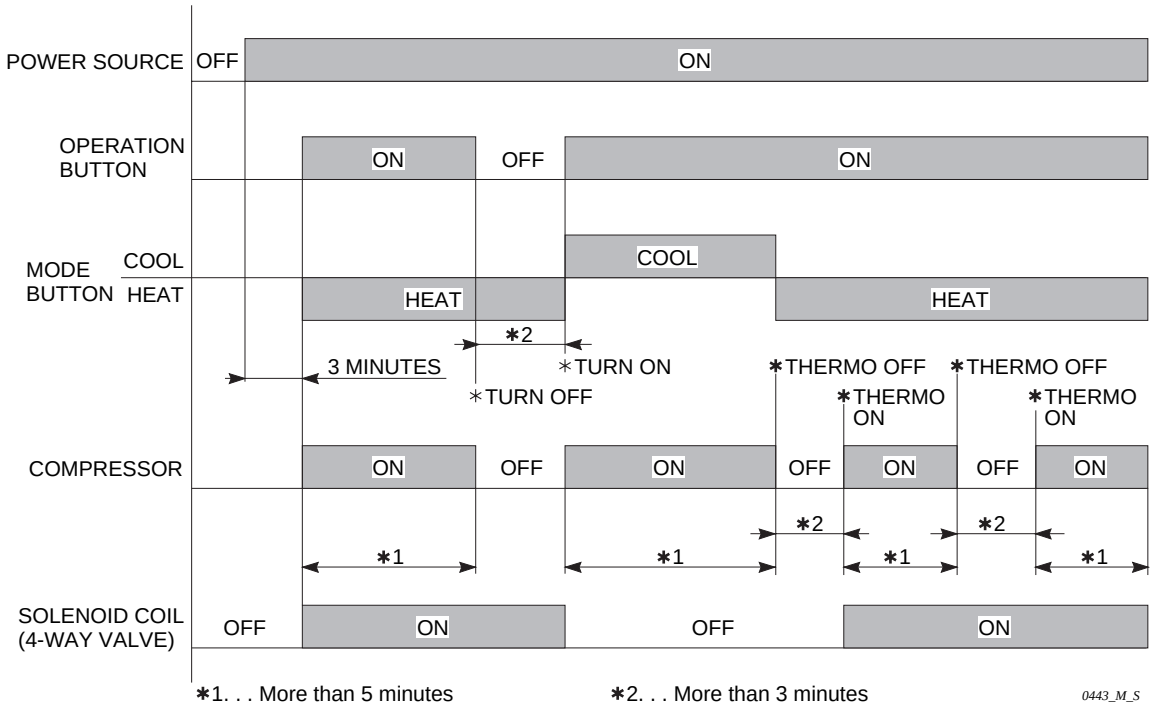


Fig. 15

Chart Summary and Explanations

- ❑ For the first 3 minutes after power is applied, the 4–way valve remains OFF and the compressor will not operate, even if the ON button is pushed.
- ❑ If the 4–way valve is turned OFF with the compressor operating, the air conditioner operates in COOLING mode. See Table below.
- ❑ If the 4–way valve is turned ON with the compressor operating, the air conditioner operates in HEATING mode. See Table below.

Operation Mode	4-way valve solenoid	Compressor
COOLING	OFF	ON
HEATING	ON	

(B) AUTO Control Mode

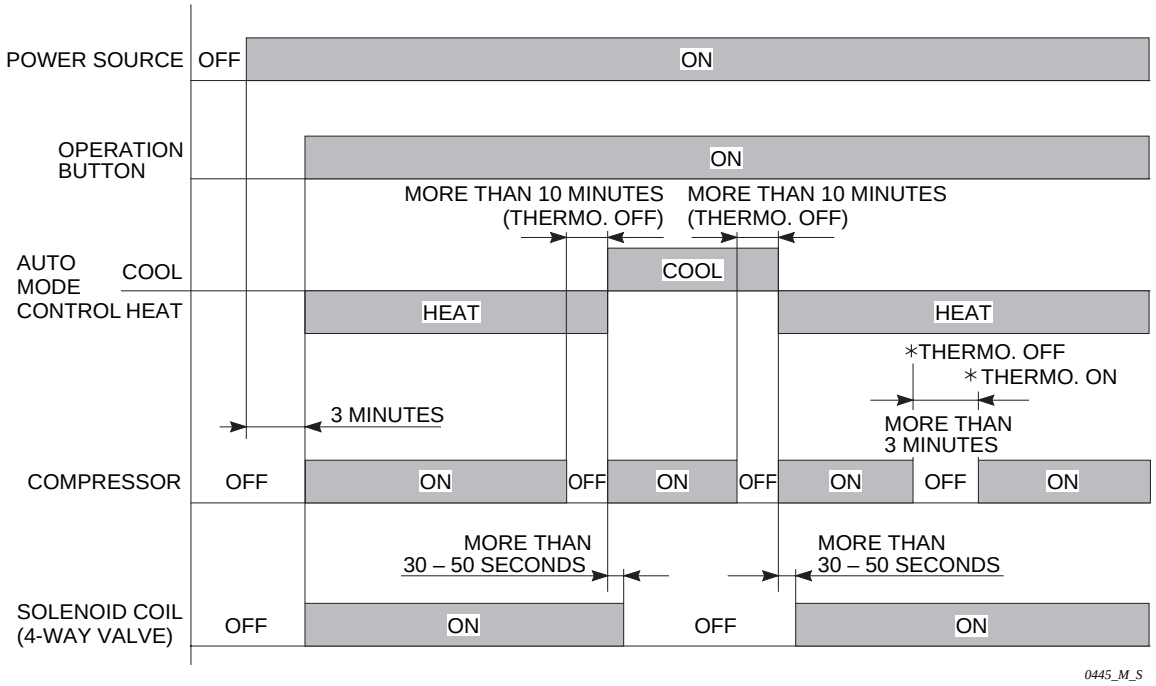


Fig. 16

When the Compressor has stopped while in **AUTO** mode, the 4-way valve switches on (heating) or off (cooling) within 1 minute according to the following conditions:

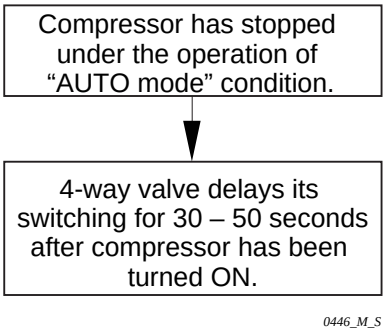


Fig. 17

2-12 Automatic Restart after Power Interruption

This air conditionner has a power failure recovery function.

2-13 Electronic Expansion Valve

❑ This valve allows very precise and smooth control of the amount of refrigerant flow in the system. Since the valve is operated by a step motor, the control circuits can open or close it in very exact amounts, so the degree of heating or cooling can be changed by just a little, or changed very quickly or slowly.

(Completely close …… 0 step)

(Full open..... 480 step)

Model	Min. open		Max. open	Standard condition
	HEAT	COOL		
25 type	100 step	120 step	480 step	100 – 200
36 type	85 step	85 step		100 – 200
48 type	85 step	85 step		100 – 200

❑ **Fuzzy Control**

Fuzzy Control is a controlling system to control electronic refrigerant control valve using fuzzy logic. It regulates the functions of heating and cooling, as well as some of the processes inside the unit, by taking account of many different conditions of temperature, fan speed, etc. These control circuits work automatically to send just the right amount of refrigerant through the **Electronic Expansion Valve**.

2-14 Compressor Discharge Gas Temperature

(A) Cooling

Indoor temp. (˚C)	20 – 25		26 – 28	29 – 32
Outdoor temp. (°C)	13 or below	14 – 16	27 – 35	36 – 43
Compressor discharge gas temp. (°C)	40 – 80	40 – 90	60 – 100	70 – 105

(B) Heating (Except During Defrosting)

Indoor temp. (°C)	18 – 21		22 – 25			26 – 30		
Outdoor temp. (°C)	0 or below	1 – 10	0 or below	1 – 10	11 – 21	0 or below	1 – 10	11 – 21
Compressor discharge gas temp. (°C)	40 – 80	50 – 90	40 – 90	50 – 100	60 – 105	50 – 90	60 – 100	70 – 105

❑ Operate the unit at least 30 minutes to stabilize the discharge temperature.

❑ The above discharge temperature was measured with a 15m tubing length. The temperature may vary with tubing length.

2-15 Compressor Current Detection Circuit

- ❑ The Compressor Current Detection Circuit detects the compressor current and, depending on the current range, can stop the compressor motor so it will not be damaged by overcurrent.
- ❑ Overcurrent can be caused by several factors, particularly mechanical seizing of the compressor or liquid backflow. Either of these conditions can hold the compressor to run, and thus drawing so much current that the motor can burn out.

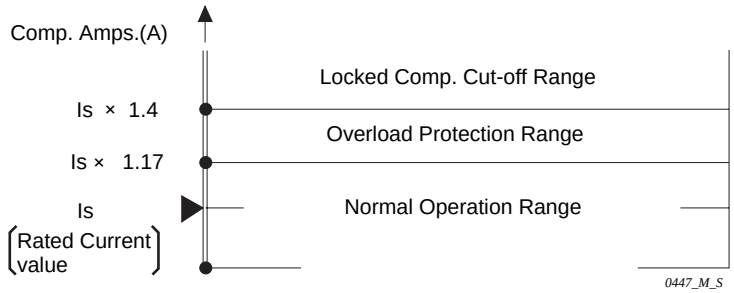


Fig. 18

Outdoor Model	Rated Current Value Is (A)	Overload Protection Is x 1.17 (A)	Locked Compressor Cut-off Is x 1.4 (A)
SPW-CR253G(H)L5	23.1	27.0	32.3
SPW-CR253G(H)L8	7.1	8.31	9.94
SPW-CR363G(H)L8	10.3	12.05	14.42
SPW-CR483G(H)L8	13.6	15.9	19.0

2

Chart Summary and Explanations

❑ **Overload Protection**

- When the detected current is 1.17 – 1.4 times greater than the rated current value (Is) and continues for 30 seconds, both compressor and outdoor fan stop (Thermostat **OFF**).
- After 3-minute pause, if the air conditioner is ready for Thermostat **ON**, it starts again. However, if the condition mentioned above repeats **twice within 30 minutes**, the remote controller displays the alarm message **H01**, **compressor overload**.

❑ **Locked Compressor Cut-off**

- When the detected current is **1.4 times greater** than the rated current value (Is) and **continues for 2 seconds**, both compressor and outdoor fan stop (Thermostat **OFF**).
- After 3-minute pause, if the air conditioner is ready for Thermostat **ON**, it starts again. However, if the condition mentioned above repeats **twice**, the remote controller displays the alarm message **H02**, **compressor locked**.

❑ **Failure of Compressor Current Detection**

- When the Compressor Current Detection Circuit fails to detect the compressor current **within 2 seconds after compressor starts**, both compressor and outdoor fan stop (Thermostat **OFF**).
- After 3-minute pause, if the air conditioner is ready for Thermostat **ON**, it starts again. However, when the circuit fails to detect the current twice in a row, the remote controller displays alarm message **H03, Failure of compressor Current Detection.**

2-16 Dehumidifying Operation

Dehumidifying operation uses the cooling cycle to remove moisture from the air, but by running an indoor fan at a low speed, to dehumidify without greatly lowering room temperature. In this mode, the microprocessor automatically controls the ON-OFF operation between +2 deg. and -2 deg. of the set temperature.

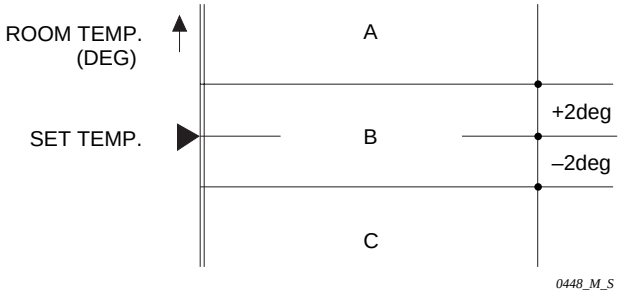


Fig. 19

A range: When the room temperature is in this range, cooling operation starts. However, when the temperature is below 18°C, the cooling operation does not start.

B range: When the room temperature is in this range, the air conditioner automatically repeats the dehumidifying cycle of 5 minutes **ON**, 3 minutes **OFF** – see **Fig. 20** for details.

C range: When the room temperature is in this range, the microprocessor shuts off the air conditioner.

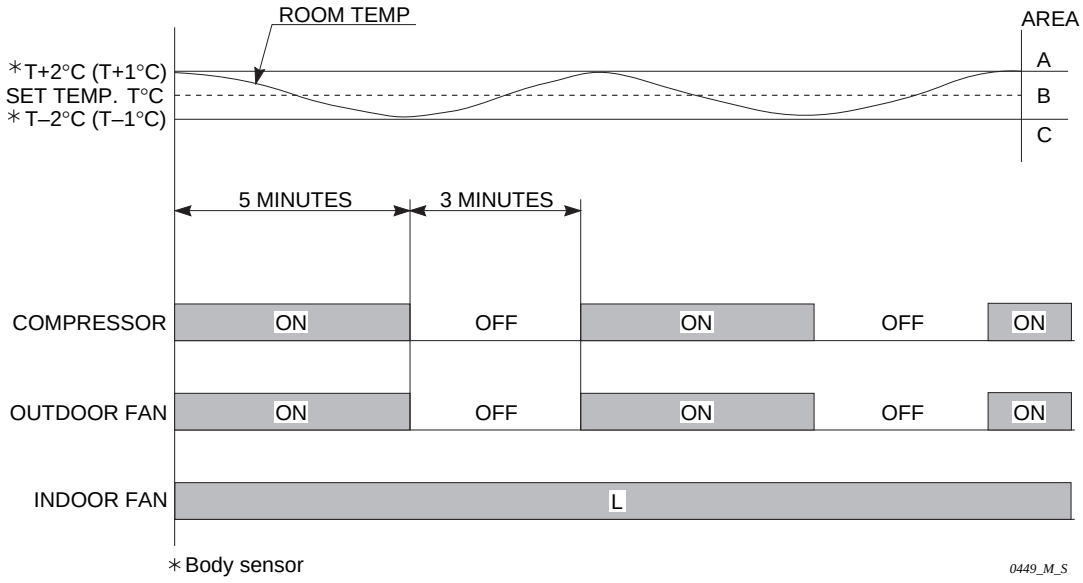


Fig. 20

- ❑ The indoor fan speed is automatically set to **L** and cannot be adjusted to M or H.
- ❑ When the set temperature is either 18 or 19°C, the set temperature is considered the same as 20°C.
- ❑ Room temperature is monitored every 8 minutes when it is in the **B** range to select the best operation mode.

2-17 Auto-flap Control (Indoor Unit : 4-Way Air Discharge Semi-Concealed Type Ceiling-Mounted Type)

Auto flap can control the air flow in 5 steps.

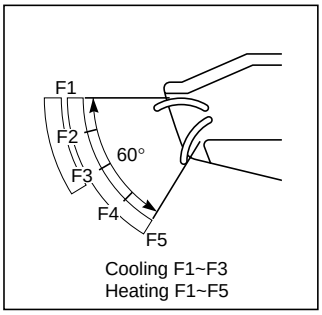


Fig. 21

Operation mode	Flap position	
	Automatic setting	Optional setting
Cooling/dehumidifying	F2	F1 • F2 • F3 • Swing
Fan	F2	F1 • F2 • F3 • F4 • F5 • Swing
Heating	F4	F1 • F2 • F3 • F4 • F5 • Swing
Standby for heating	F2 (The flap returns to the original position after release of the standby mode.)	

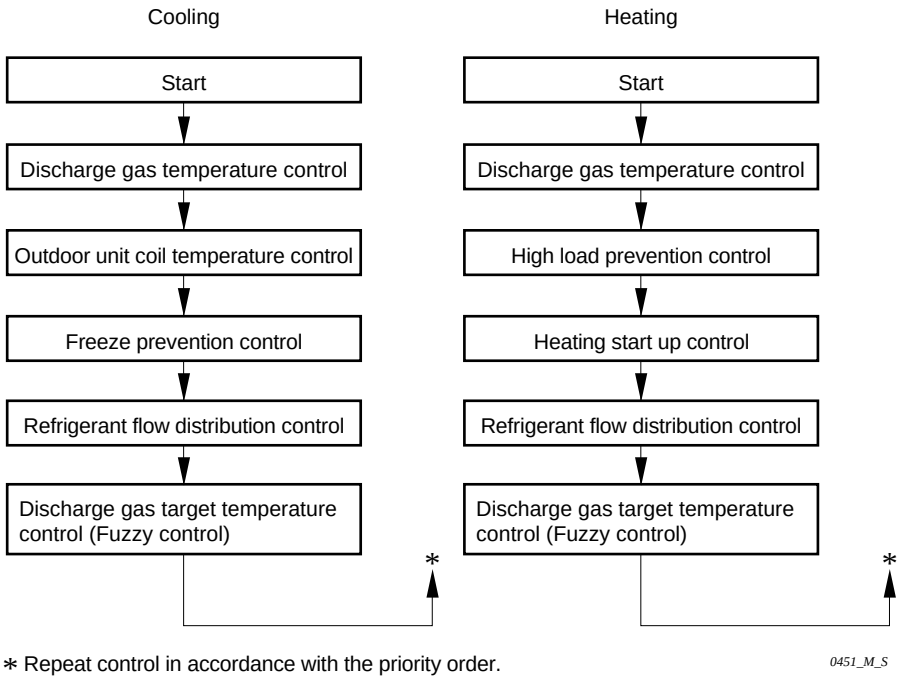
2

(1) When the unit is stopped, the Auto-flap returns to F5 position.
(2) When the airflow direction is set (an optional setting), the auto and Swing settings will be released. To return the mode to auto-flap control, change the operation mode.
(3) Once Auto-flap is set, the flap position will be input in the memory.
(4) When the operation mode is changed, the unit starts to search flap position. (if a search action for sensing flap position is not succeeded in one minute, only the swing is operated.)

2-18 Controlled by Electronic Expansion Valve

The circulation volume of the refrigerant is controlled by a pulse type electronic control valve.
When the power is switched ON, the opening degree of the electronic control valve is controlled between 90 and 480 steps after setting the initial step at the time when the thermostat is ON.

Contents and Order of control



Even though the operation is performed every 30 seconds, the control of discharge gas temperature, high load prevention, outdoor unit coil temperature and freeze prevention activates when it occurs.

(1) Refrigerant flow distribution control

At the control of flexible combination (a plural number of indoor units are set), the opening degree of the electronic control valve is controlled by the indoor unit coil temperature.

Cooling: indoor unit coil E2 temperature (located at the middle of coil)
Heating: indoor unit coil E1 temperature (located at the outlet of coil)

(2) Fuzzy control (optimal refrigerant flow rate control)

By outputting the fuzzy estimation result corresponding to the fuzzy input variables (the indoor unit coil temp., the deviation between the actual discharge gas temp. and the target discharge gas temperature calculated from the outdoor unit coil temperature and the change thereof), the electronic refrigerant valve is controlled so that the unit can perform its maximum ability in accordance with the indoor and outdoor temperature conditions at the operation.

2-19 Voltage Detection Control

When the power voltage falls below 160 V (voltage between N phase and each phase) or rises above 260 V, the “P2” alarm is issued to protect the compressor and electrical components.

3. ELECTRICAL DATA

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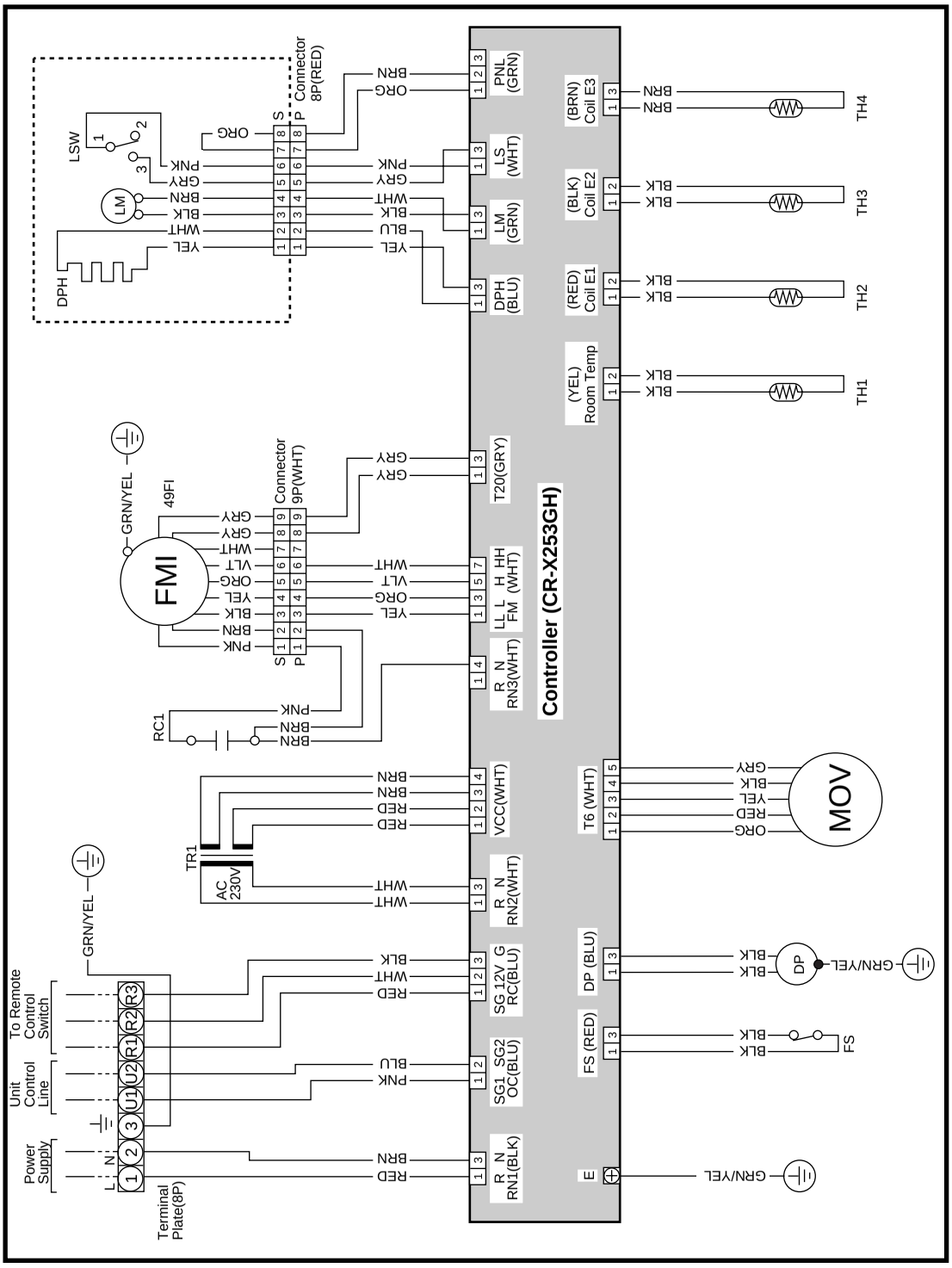
Ceiling Mounted Type ..... III - 4
Concealed Duct Type ..... III - 6
Concealed Duct High Static Pressure Type ..... III - 12
3-2 Outdoor Units (Electric Wiring Diagram, Schematic Diagram) ..... III - 16

3

3-1 Indoor Units

① 4-Way Air Discharge Semi-concealed Type : ASR 425 H - ASR 436 H
ASR 448 H

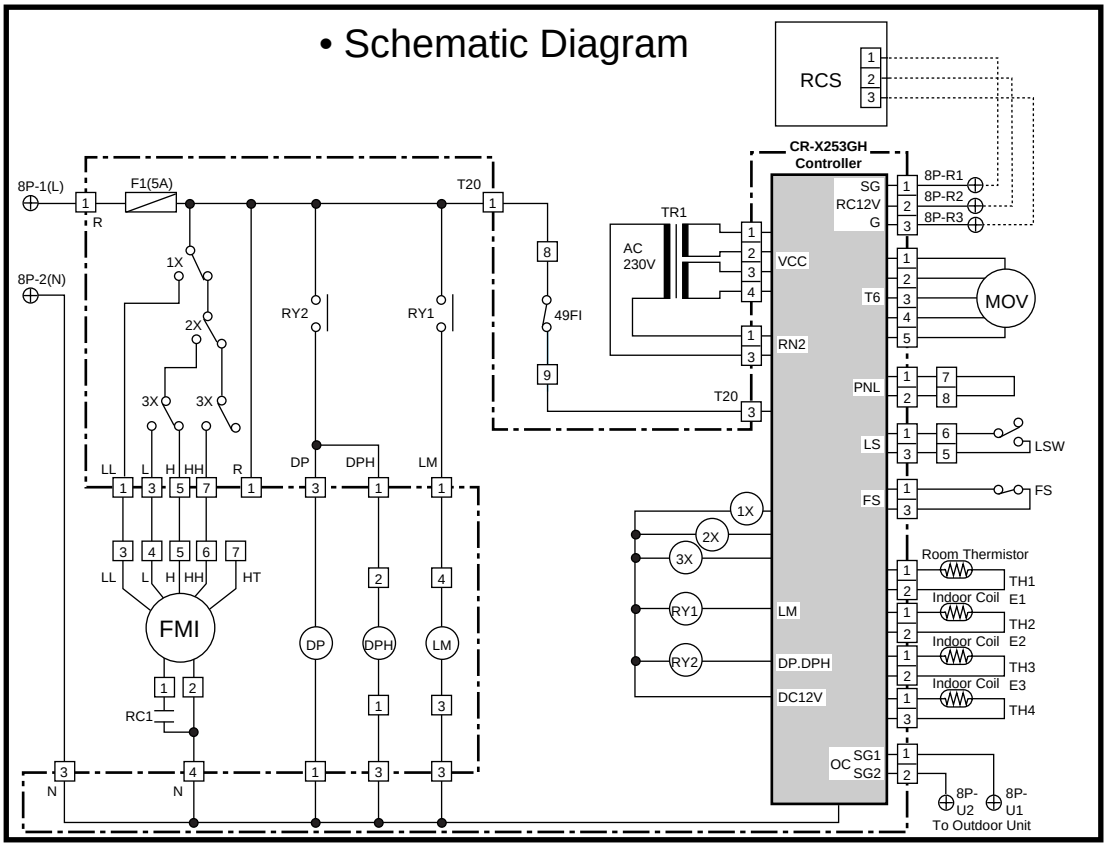
• Electric Wiring Diagram



Ⓦ 854-2-5268-470-00-3 (X)

3-1 Indoor Units

① 4-Way Air Discharge Semi-concealed Type : ASR 425 H - ASR 436 H
ASR 448 H



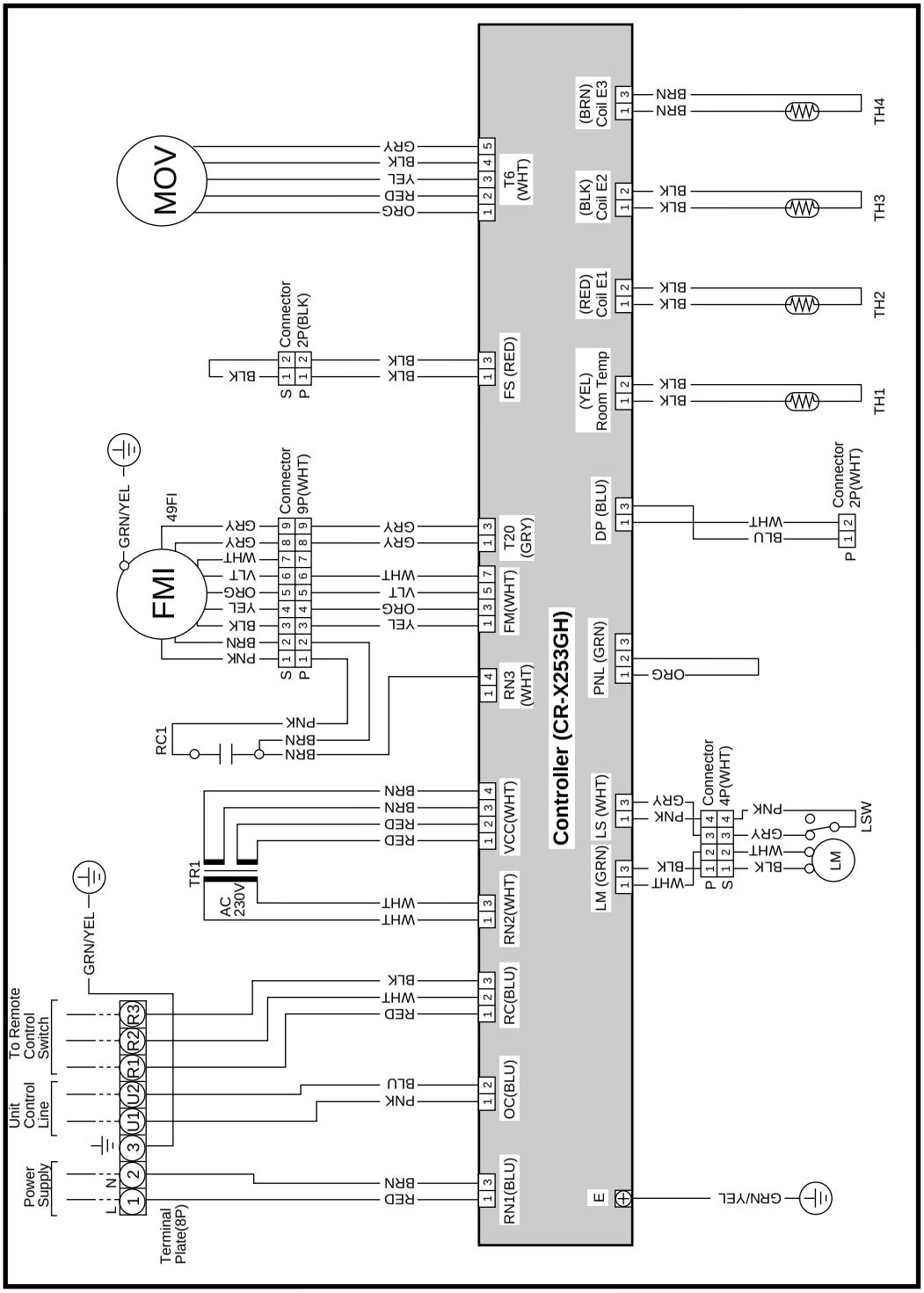
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	CR-X253GH	Indoor Controller
F1	Fuse	⊕	Terminal Plate
LM	Auto Louver Motor	□	Connector
TR1	Power Transformer	⊡	Terminal
1X-3X	Auxiliary Relay	DP	Drain Pump
RY1-RY2	Auxiliary Relay	DPH	Dew Proof Heater
MOV	Motor Operated Valve	LSW	Limit Switch
RCS	Remote Control Switch	FS	Float Switch
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

Ⓢ 854-2-5268-470-00-3 (X)

3-1 Indoor Units

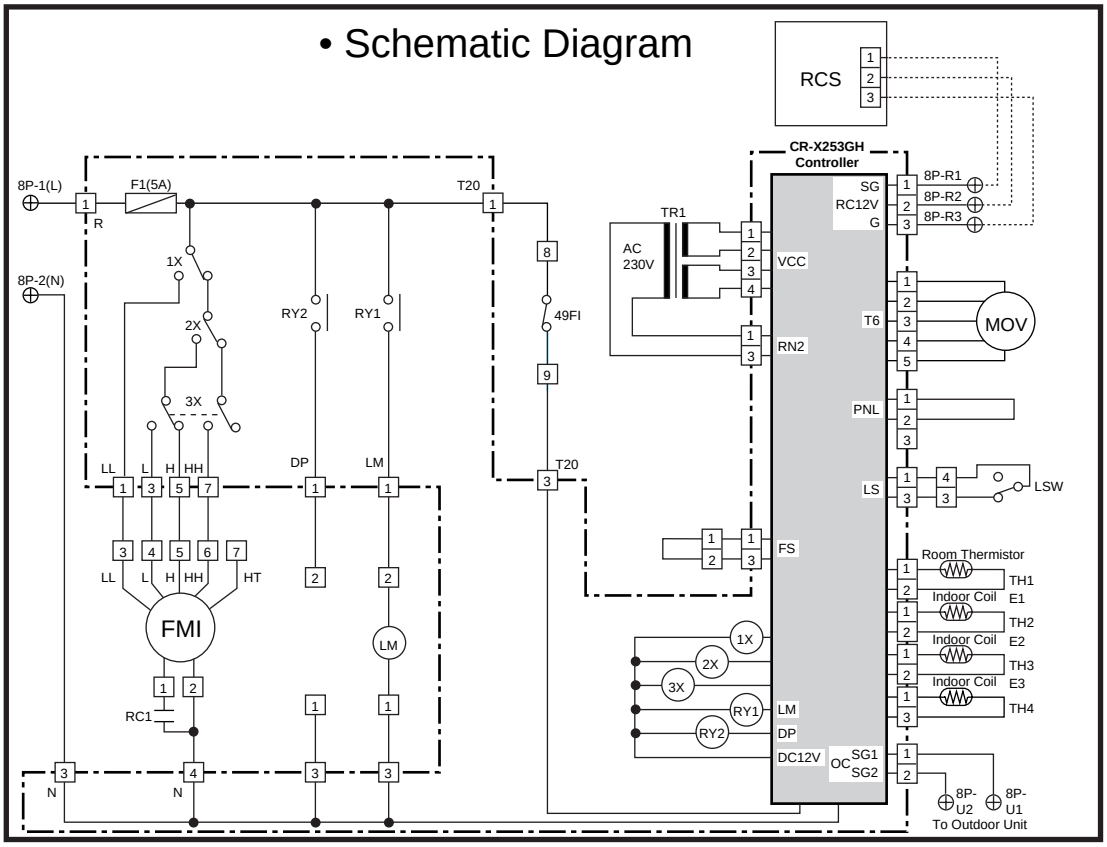
② Ceiling Mounted Type : ACR 425 H - ACR 436 H - ACR 448 H

• Electric Wiring Diagram



3-1 Indoor Units

② Ceiling Mounted Type : ACR 425 H - ACR 436 H - ACR 448 H



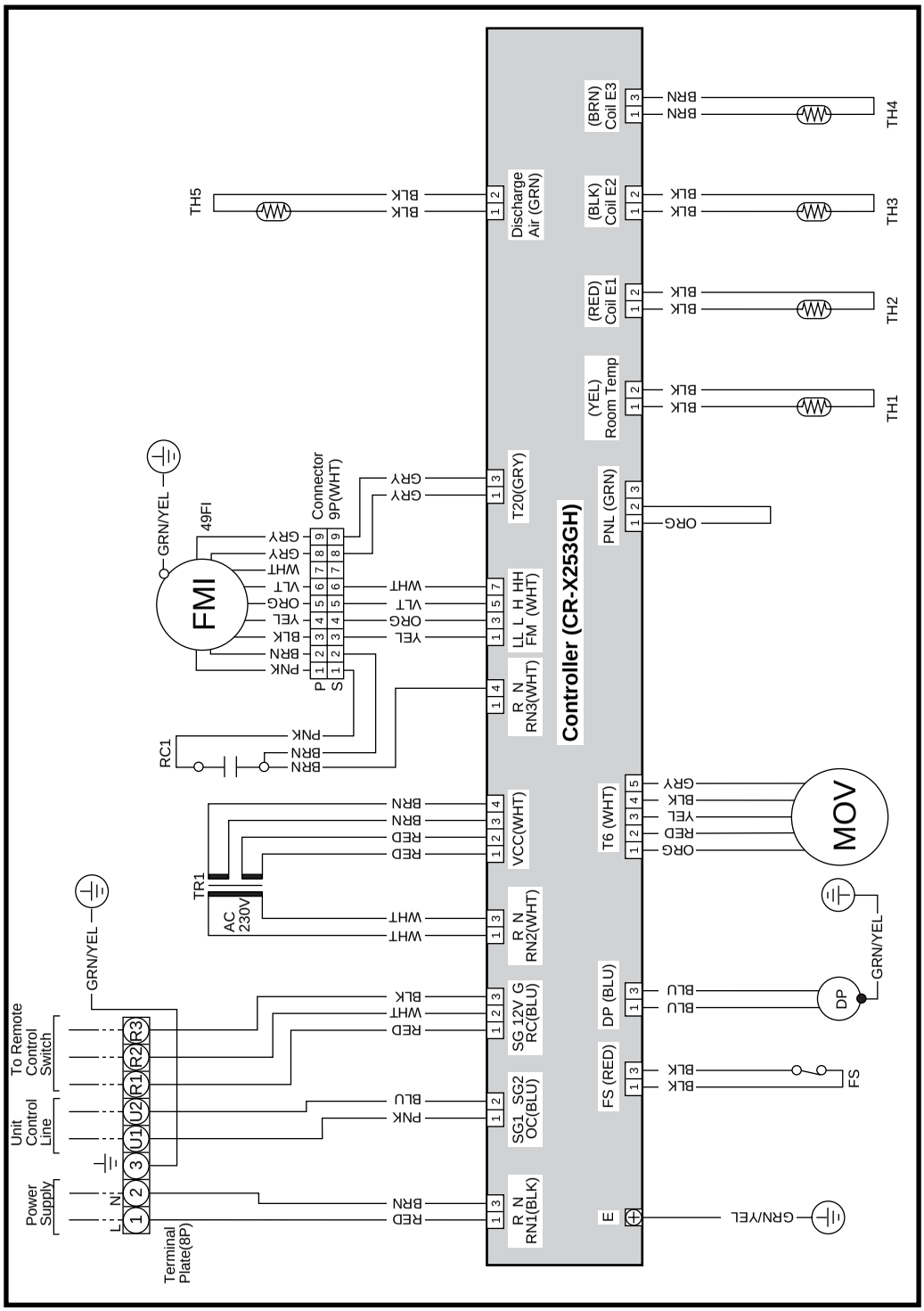
Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH4	Thermistor (Indoor Coil E3)
MOV	Motor Operated Valve	F1	Fuse
49FI	Indoor Motor Thermal Protector	1X-3X	Auxiliary Relay
RC1	Running Capacitor	RY1-RY2	Auxiliary Relay
TR1	Power Transformer	CR	Indoor Controller
LM	Auto Louver Motor	RCS	Remote Control Switch
LSW	Limit Switch	⊕	Terminal Plate
TH1	Room Thermistor	□	Connector
TH2	Thermistor (Indoor Coil E1)	⊡	Terminal
TH3	Thermistor (Indoor Coil E2)		

Ⓢ 854-2-5268-665-00-0 (TR)

3-1 Indoor Units

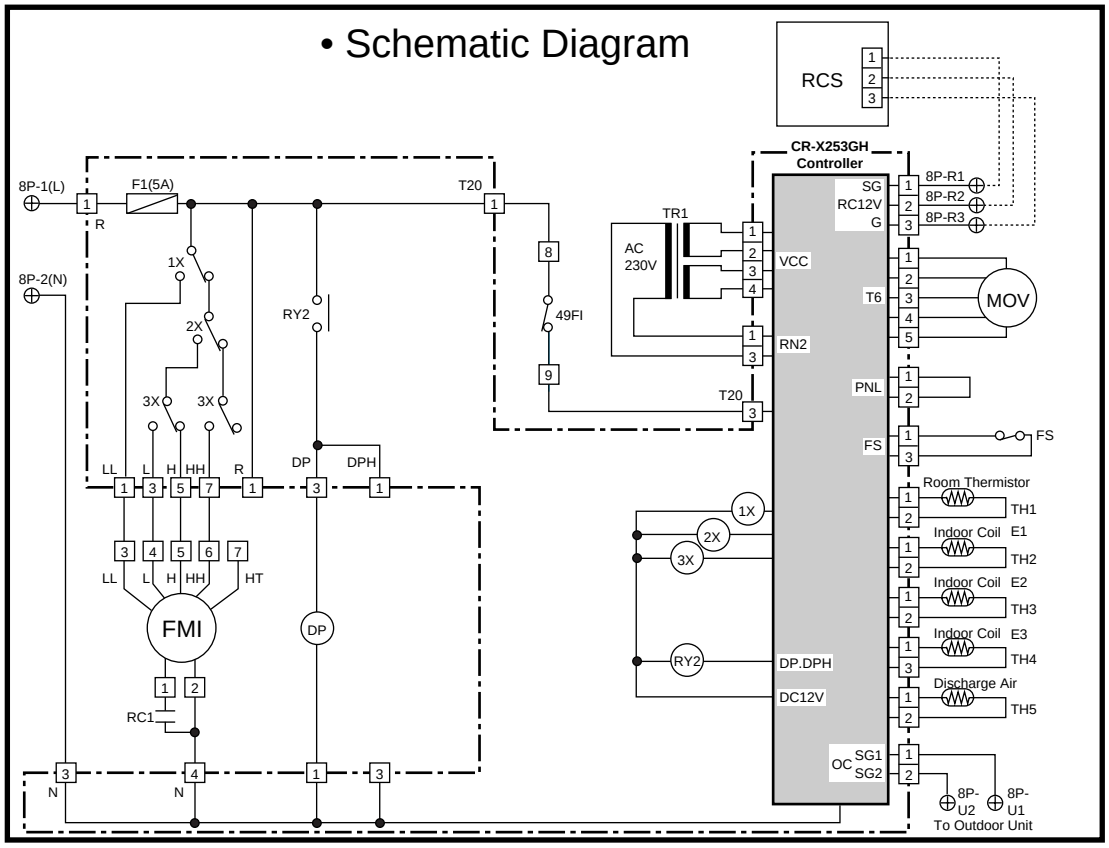
⑥ Concealed Duct Type : ADR 425 H - ADR 436 H - ADR 448 H

• Electric Wiring Diagram



3-1 Indoor Units

⑥ Concealed Duct Type : ADR 425 H - ADR 436 H - ADR 448 H

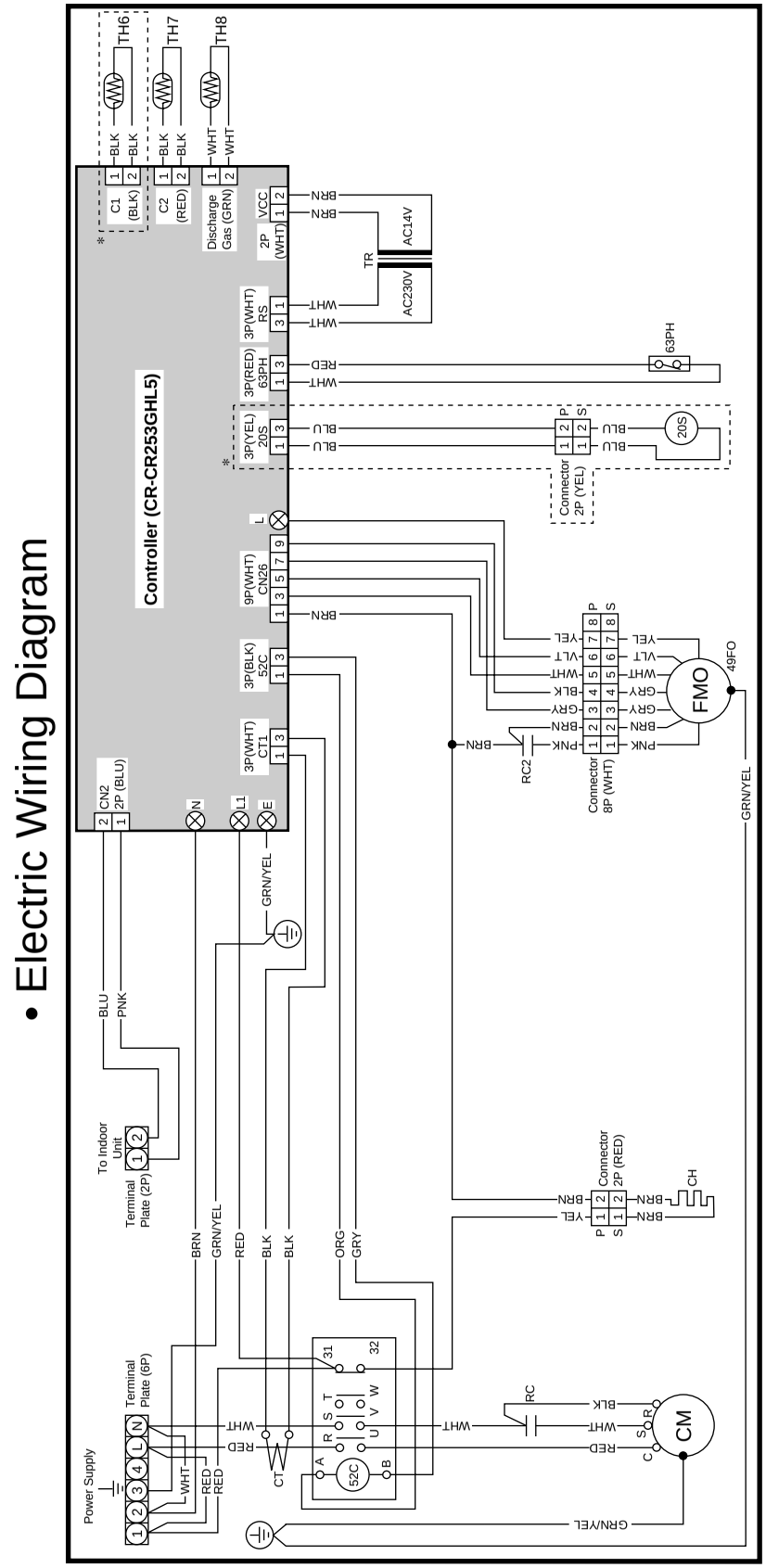


Symbols	Description	Symbols	Description
FMI	Indoor Fan Motor	TH3	Thermistor (Indoor Coil E2)
49FI	Indoor Motor Thermal Protector	TH4	Thermistor (Indoor Coil E3)
RC1	Running Capacitor	TH5	Thermistor (Discharge Air)
F1	Fuse	CR-X253GH	Indoor Controller
FS	Float Switch	⊕	Terminal Plate
TR1	Power Transformer	□	Connector
1X-3X	Auxiliary Relay	⊡	Terminal
RY2	Auxiliary Relay	DP	Drain Pump
MOV	Motor Operated Valve		
RCS	Remote Control Switch		
TH1	Room Thermistor		
TH2	Thermistor (Indoor Coil E1)		

Ⓢ 854-2-5268-843-00-0 (UR93GHN56)

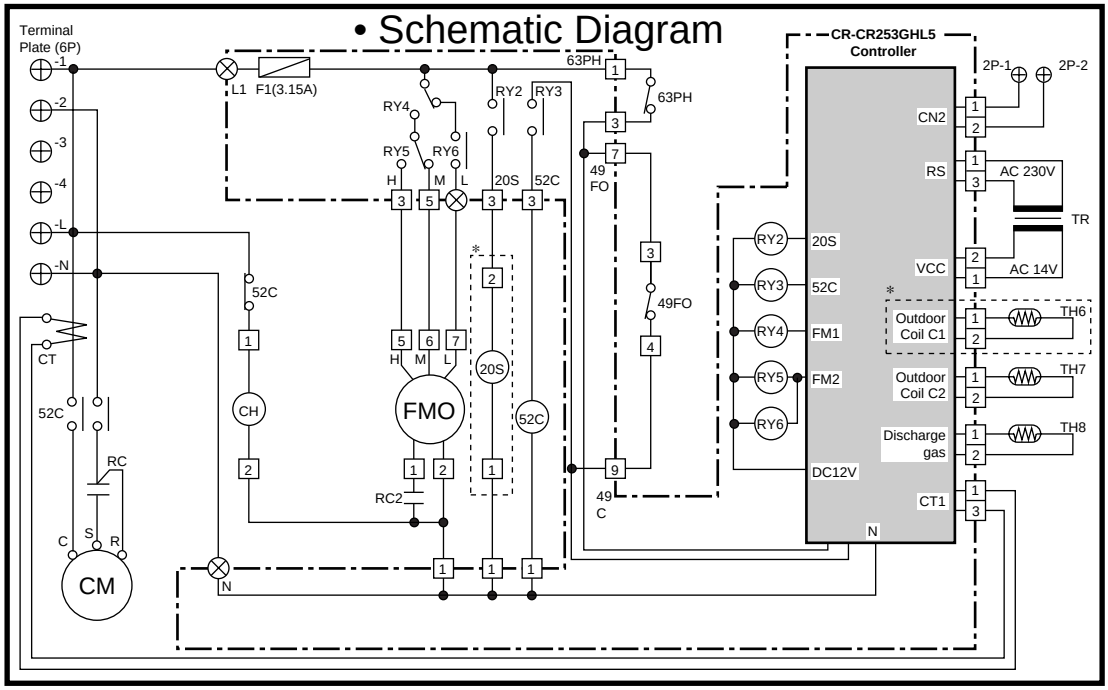
3-2 Outdoor Units

① AER 425 SCLE - AER 425 SHLE



3-2 Outdoor Units

① AER 425 SCLE - AER 425 SHLE



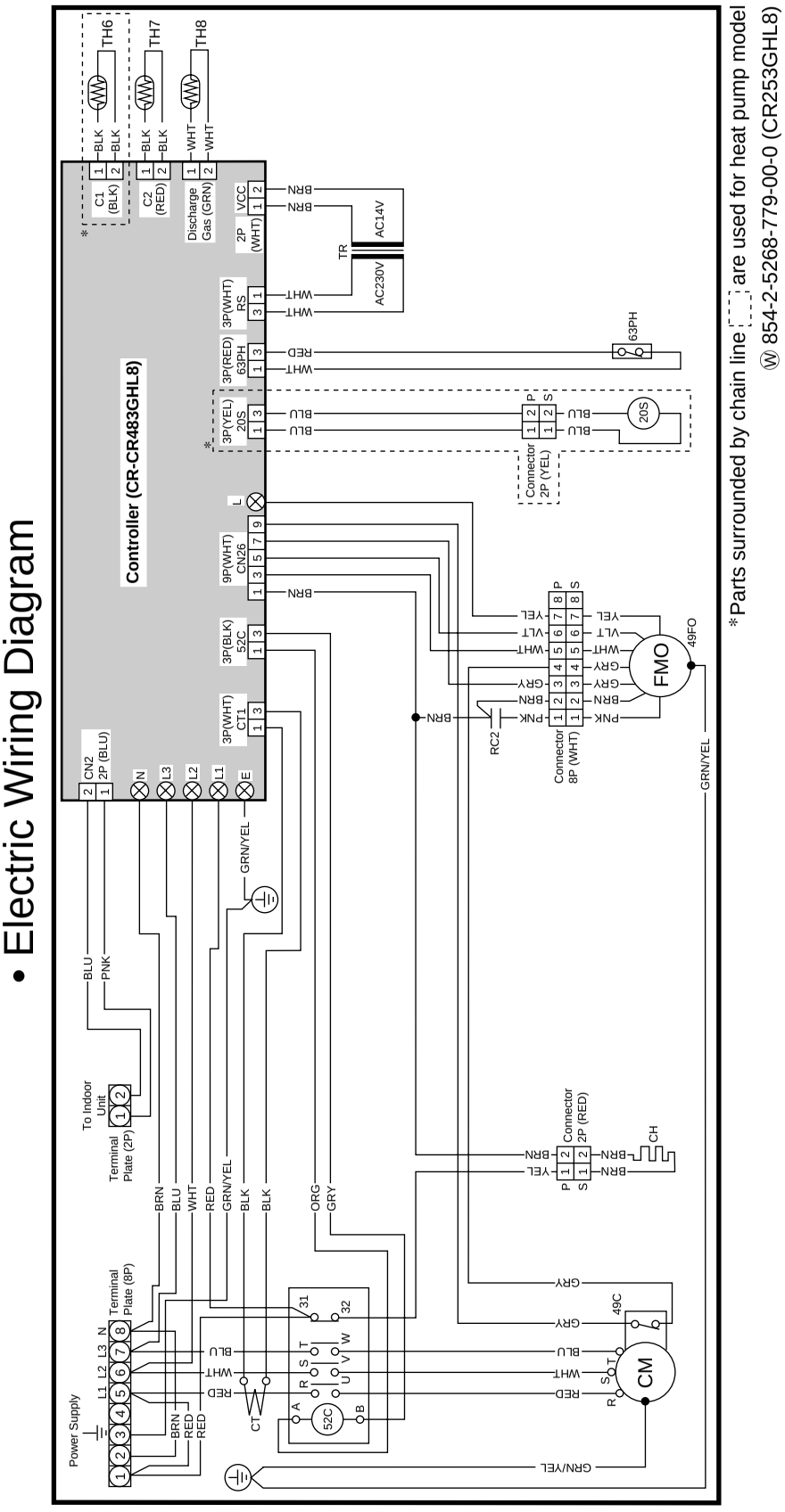
Symbols	Description	Symbols	Description
CM	Compressor Motor	CR-CR253GHL5	Outdoor Controller
FMO	Outdoor Fan Motor	RY2~6	Auxiliary Relay
52C	Compressor Motor Magnetic Contactor	⊕	Terminal Plate
49FO	Outdoor Fan Motor Thermal Protector	⊗	Terminal
63PH	High Pressure Switch	□	Connector
CT	Current Transmitter		
RC,RC2	Running Capacitor		
TR	Power Transformer		
CH	Crank Case Heater		
20S	Four Way Valve		
F1	Fuse		
TH6	Thermistor (Outdoor Coil C1)		
TH7	Thermistor (Outdoor Coil C2)		
TH8	Thermistor (Discharge Gas)		

*Parts surrounded by chain line [ ] are used for heat pump model.

Ⓢ 854-2-5268-778-00-0 (CR253GHL5)

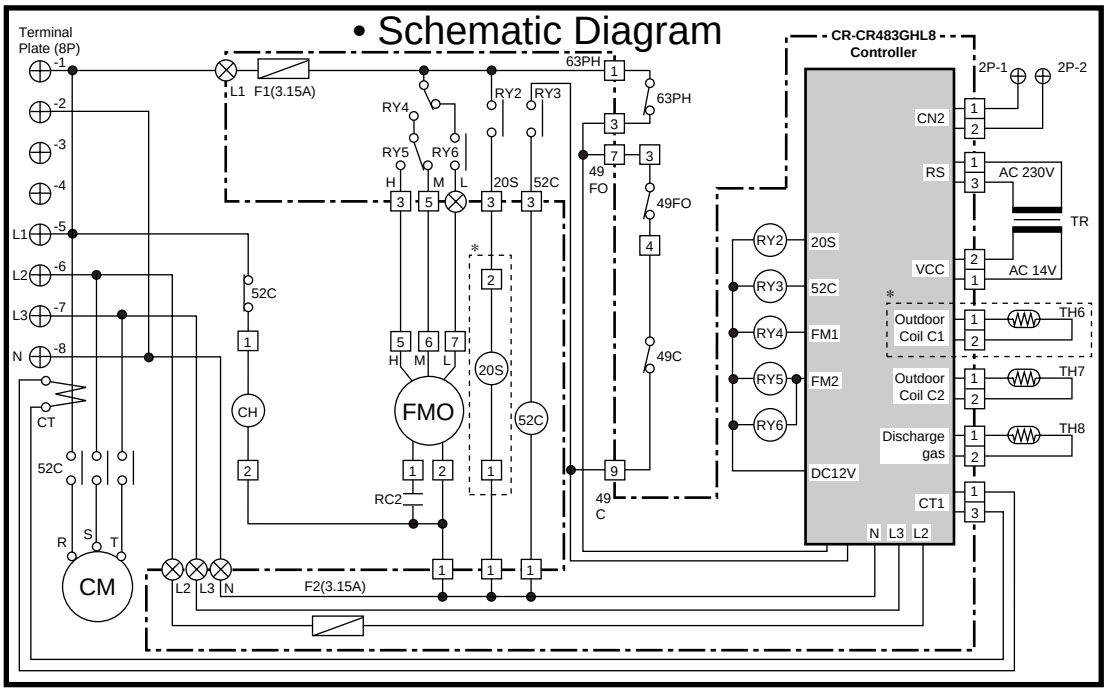
3-2 Outdoor Units

② AER 425 SCL3E - AER 425 SHL3E



3-2 Outdoor Units

② AER 425 SCL3E - AER 425 SHL3E



Symbols	Description	Symbols	Description
CM	Compressor Motor	CR-CR483GHL8	Outdoor Controller
FMO	Outdoor Fan Motor	RY2~6	Auxiliary Relay
52C	Compressor Motor Magnetic Contactor	⊕	Terminal Plate
49C	Compressor Motor Termal Protector	⊗	Terminal
49FO	Outdoor Fan Motor Thermal Protector	□	Connector
63PH	High Pressure Switch		
CT	Current Transmitter		
RC2	Running Capacitor		
TR	Power Transformer		
CH	Crank Case Heater		
20S	Four Way Valve		
F1,2	Fuse		
TH6	Thermistor (Outdoor Coil C1)		
TH7	Thermistor (Outdoor Coil C2)		
TH8	Thermistor (Discharge Gas)		

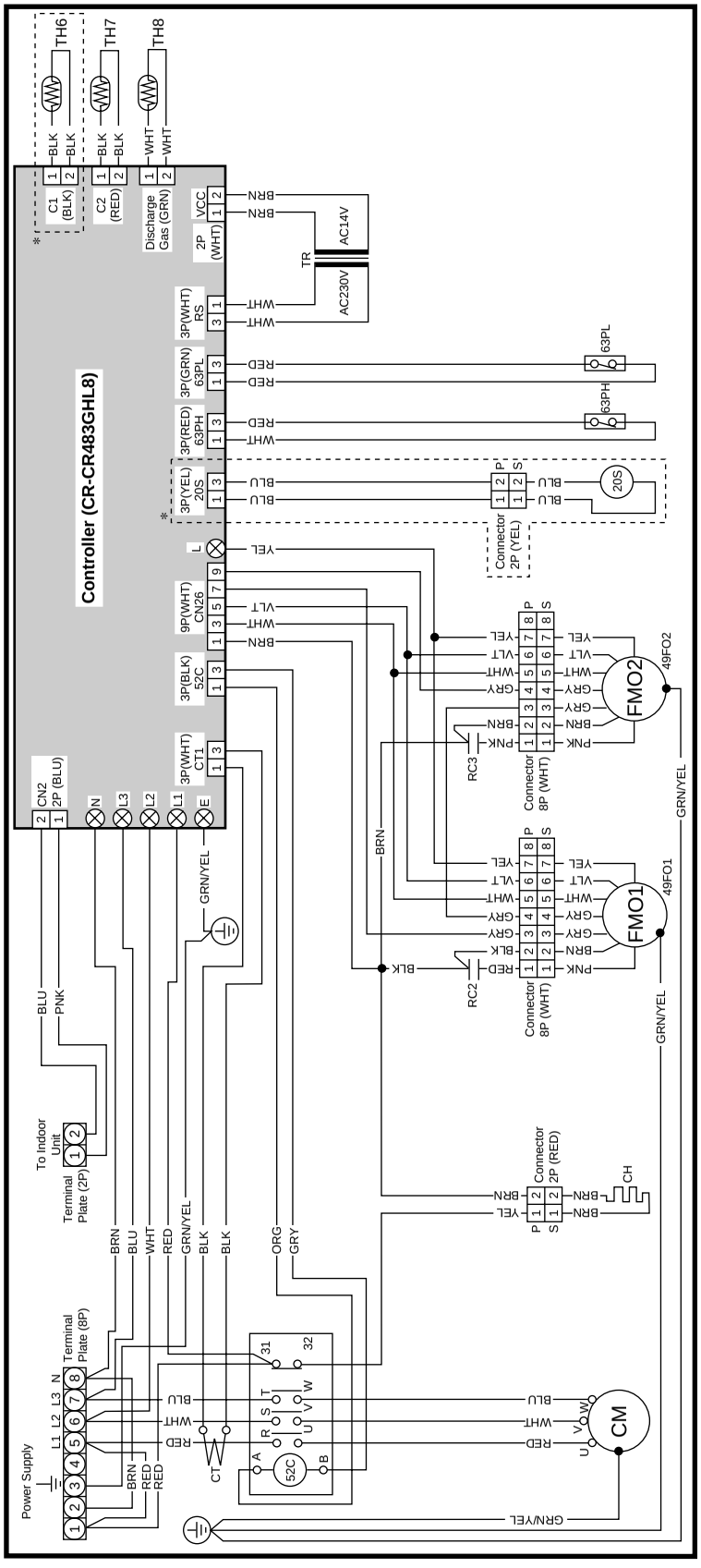
* Parts surrounded by chain line [ ] are used for heat pump model

Ⓢ 854-2-5268-779-00-0 (CR253GHL8)

3-2 Outdoor Units

③ AER 436 SCL3E - AER 436 SHL3E - AER 448 SCL3E - AER 448 SHL3E

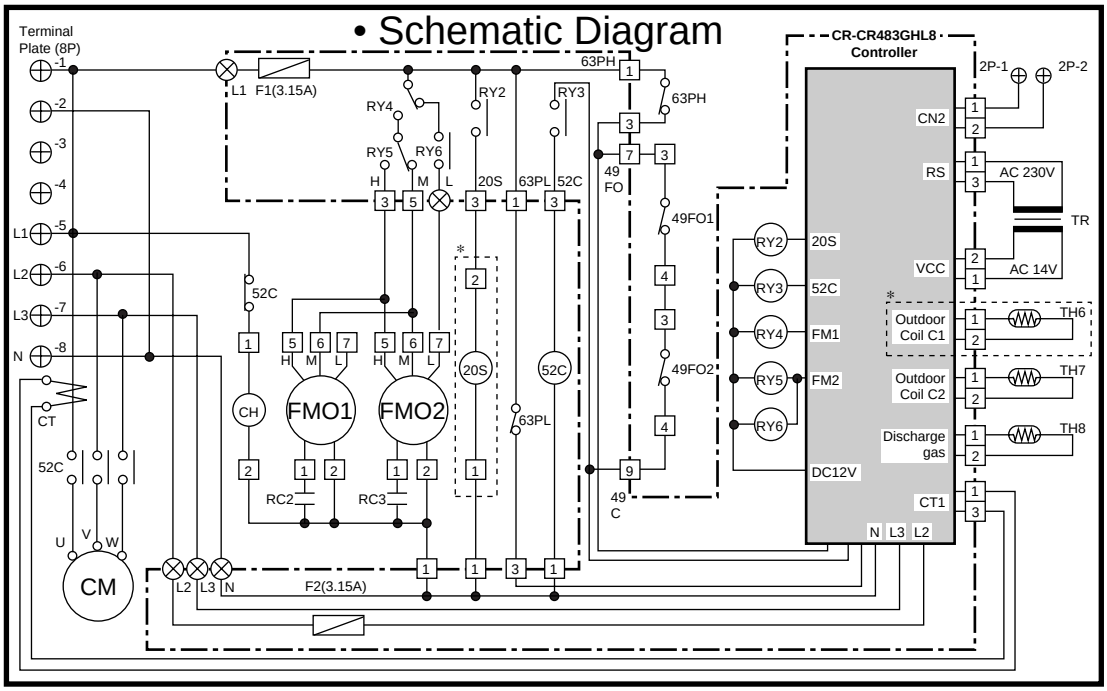
• Electric Wiring Diagram



*Parts surrounded by chain line ⋯ are used for heat pump model Ⓦ 854-2-5268-787-00-1 (CR363GHL8)

3-2 Outdoor Units

③ AER 436 SCL3E - AER 436 SHL3E - AER 448 SCL3E - AER 448 SHL3E



Symbols	Description	Symbols	Description
CM	Compressor Motor	CR-CR483GHL8	Outdoor Controller
FMO1,2	Outdoor Fan Motor	RY2~6	Auxiliary Relay
52C	Compressor Motor Magnetic Contactor	⊕	Terminal Plate
49FO1,2	Outdoor Fan Motor Thermal Protector	⊗	Terminal
63PH	High Pressure Switch	□	Connector
63PL	Low Pressure Switch		
CT	Current Transmitter		
RC2,3	Running Capacitor		
TR	Power Transformer		
CH	Crank Case Heater		
20S	Four Way Valve		
F1,2	Fuse		
TH6	Thermistor (Outdoor Coil C1)		
TH7	Thermistor (Outdoor Coil C2)		
TH8	Thermistor (Discharge Gas)		

*Parts surrounded by chain line [ ] are used for heat pump model

Ⓢ 854-2-5268-787-00-1 (CR363GHL8)

4. SERVICE PROCEDURES

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(12) Test Run Procedure ..... IV - 52

4-1 Troubleshooting

This section explains:

- ❑ What the LED codes mean
- ❑ What the remote control unit display screen messages mean
- ❑ How to use the flow charts to find and solve problems
- ❑ How to use the self-diagnostic tests to find parts that aren't working right

This unit is made to be trouble free, and not need much service. However, with time, moving parts wear out, electronic components break down, and sometimes misuse damages the unit.
The purpose of this section is to help you when the unit is not working properly. Sometimes your experience will tell you right away where to look for a problem, and when you find it you will know how to fix it at once.
Often, however, all you have is a *symptom* like "poor cooling" or "outside fan doesn't come on." Now you must find out the cause of the problem, and then how to fix it. This section provides several ways to help you go from the symptom to the cause and then the solution.
The first chart, **General Troubleshooting Flow Chart** is divided into two sections: Poor heating and Poor Cooling. Under each heading you will find the main things that can go wrong and cause either of these problems. Sometimes you can start with this chart and find the problem right away, but often you will come here for more suggestions after you have looked at the error code on the remote control unit display. This chart gives you the "big picture" of problems and solutions.
The other main tool we explain here is the use of the **Alarm Messages**. When a certain part fails or a safety device has shut the unit down, any alpha-numeric codes appears on the display to guide you to the problem.
By understanding the code you can often go right to the problem area and then, with this manual and your knowledge of air conditioning, find the solution.

(1)-1 Check before and after Troubleshooting (AER 425 SHLE)

Many problems may happen because of wiring or power supply problems, so you should check these areas first. Problems here can cause false results in some of the other tests, and so should be corrected first.

①. Check power supply wiring

- ❑ Check the power supply wires are correctly connected between terminal No. 1 & 2 on the 3P terminal plates in the indoor unit and the outdoor unit.

②. Check inter-unit wiring

- ❑ Check that inter-unit control wiring (DC low voltage) is correctly connected between the indoor unit and outdoor unit.

  Power Supply: 50 Hz, single-phase, 220-230-240 V

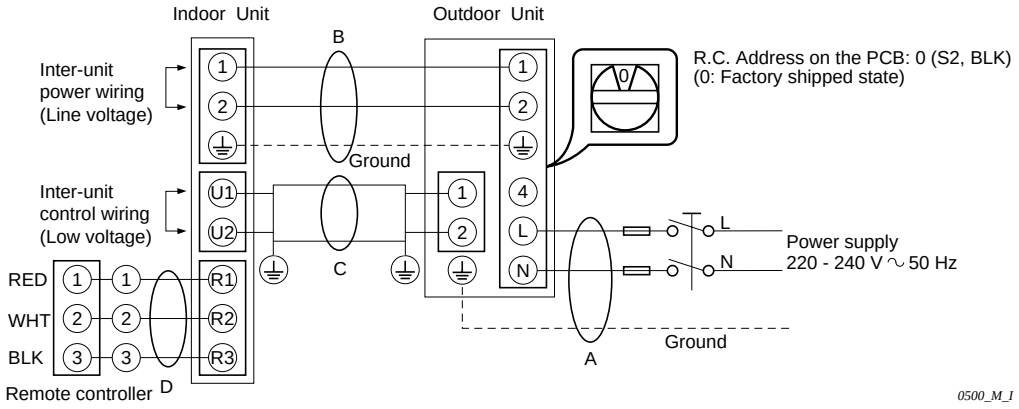


Fig. 22

③. Check power supply

- ❑ Check that voltage is within the specified range (±10% of the rating).
- ❑ Check that power is being supplied.

WARNING

If the following troubleshooting must be done with power being supplied, be careful not to touch any uninsulated live part that can cause ELECTRIC SHOCK.

④. Check the lead wires and connectors in indoor and outdoor units.

- ❑ Check that the sheath of lead wires is not damaged.
- ❑ Check that the lead wires are firmly connected at the terminal plate.
- ❑ Check that the wiring is correct.

(1)-2 Check before and after Troubleshooting (AER 425 SHL3E - AER 436 SHL3E - AER 448 SHL3E)

Many problems may happen because of wiring or power supply problems, so you should check these areas first. Problems here can cause false results in some of the other tests, and so should be corrected first.

①. Check power supply wiring

- ❑ Check that power supply wires are correctly connected to terminal No.5 through No.8 on the 8P terminal plate in the outdoor unit.
- ❑ Check the power supply wires are correctly connected between terminal No.1 and 2 on the 3P terminal plate in the indoor unit and terminal No.1 and 2 on the 8P terminal plate in the outdoor unit.

②. Check inter-unit wiring

- ❑ Check that inter-unit control wiring (DC low voltage) is correctly connected between the indoor unit and outdoor unit.

Power Supply: 50 Hz, 3-phase, 380-400-415 V

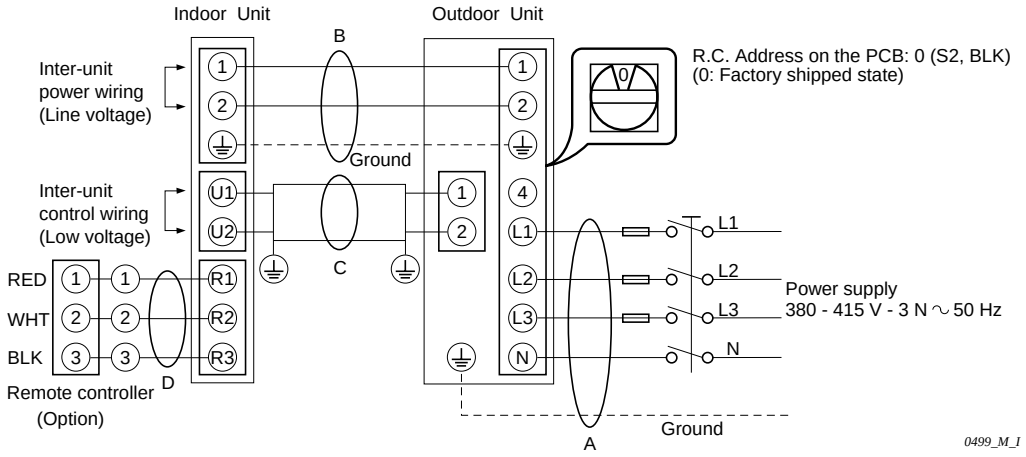


Fig. 23

③. Check power supply

- ❑ Check that voltage is within the specified range (±10% of the rating).
- ❑ Check that power is being supplied.

WARNING

If the following troubleshooting must be done with power being supplied, be careful not to touch any uninsulated live part that can cause ELECTRIC SHOCK.

④. Check the lead wires and connectors in indoor and outdoor units.

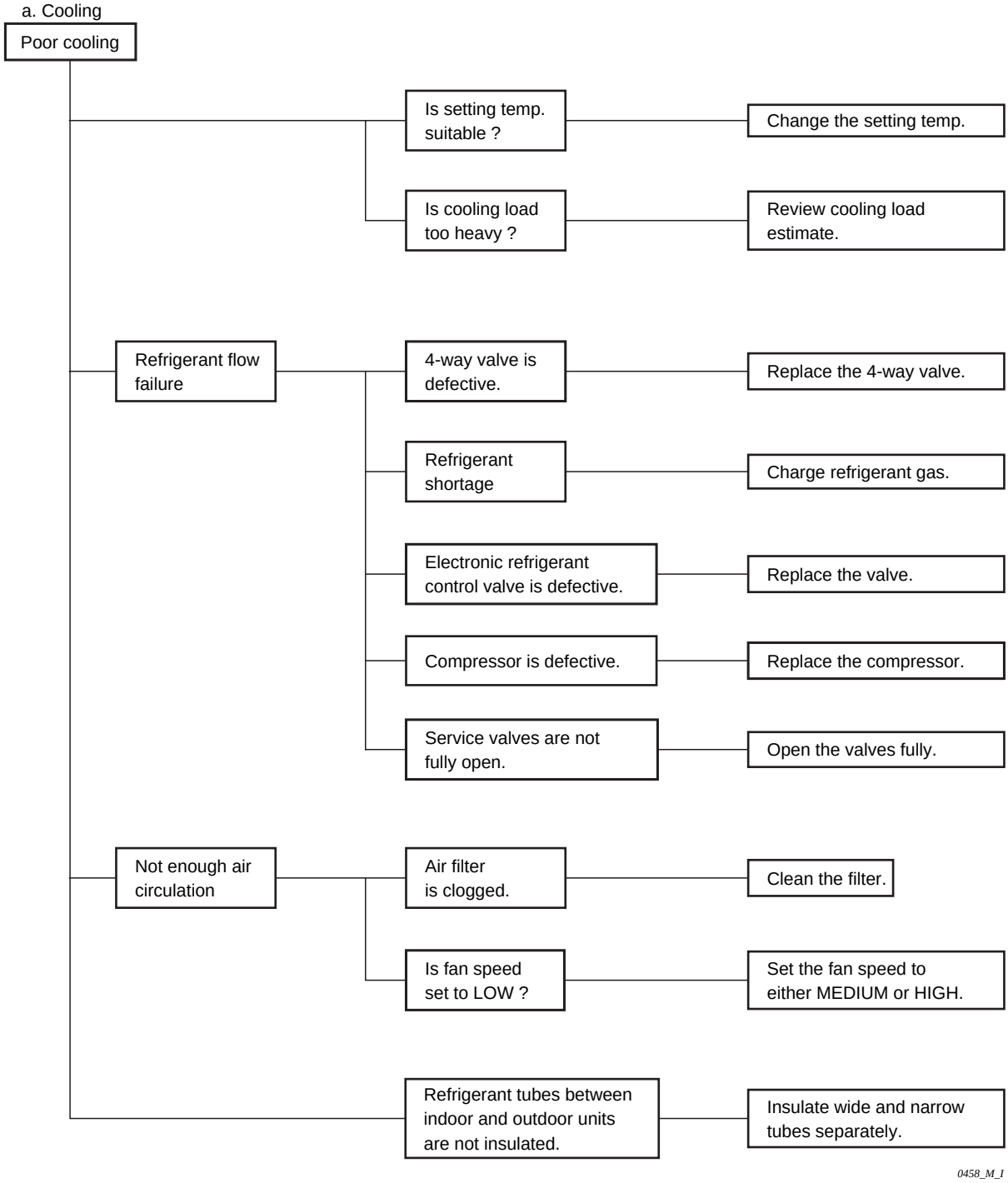
- ❑ Check that the sheath of lead wires is not damaged.
- ❑ Check that the lead wires are firmly connected at the terminal plate.
- ❑ Check that the wiring is correct.

(2) General Troubleshooting Flow Chart: Diagnosis and Remedy

When you have found a major problem, such as refrigerant not flowing in the system or reduced air circulation, come to this section and find the box listing the problem. Connected to the box are the main causes of the problem and their remedies. To find out which malfunction is happening in your case, check the remote controller for an Alarm Message, and follow the steps in section 3).

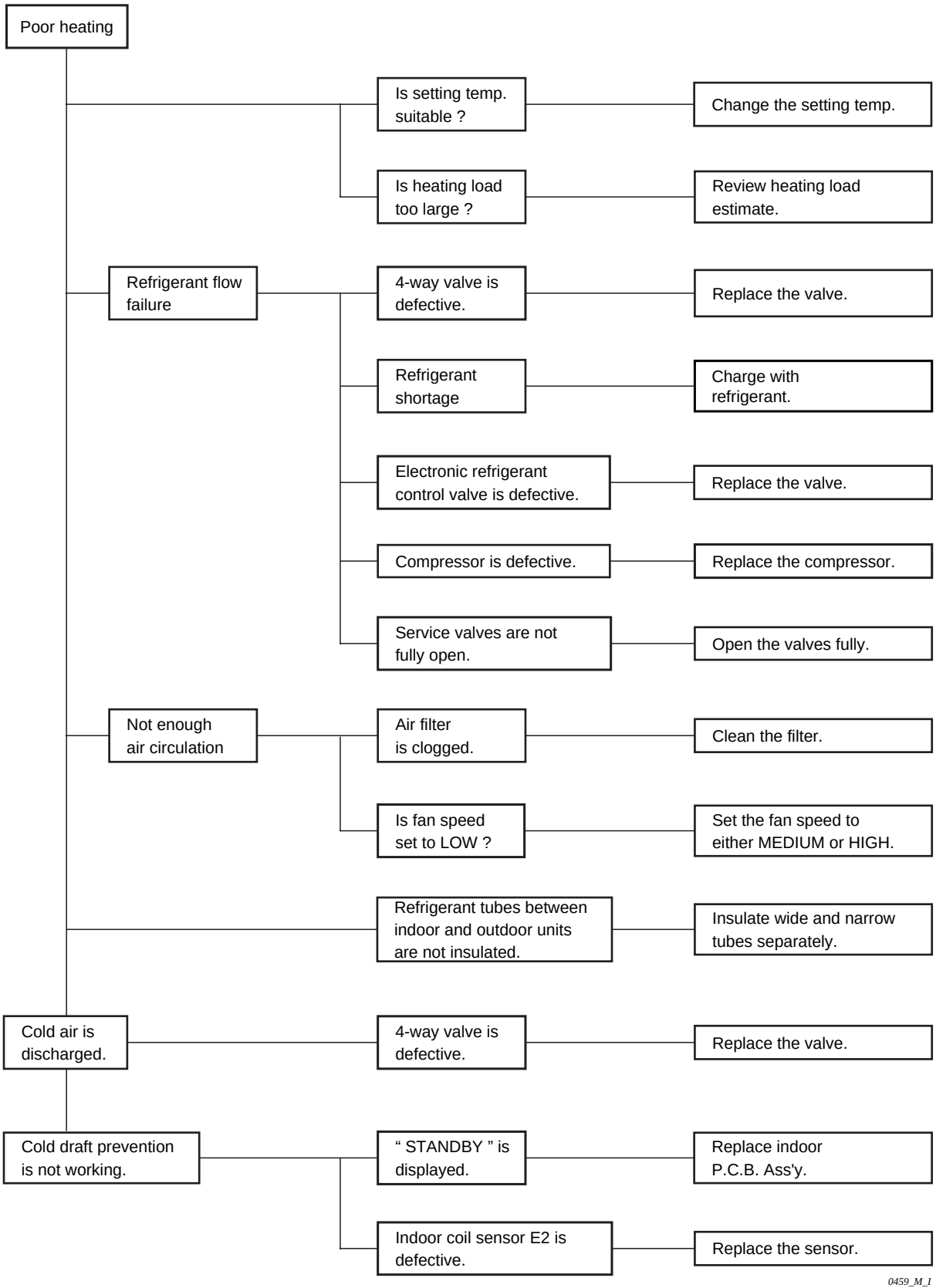
(A) Cooling

a. Cooling



(B) Heating

b. Heating



4

(3) Meanings of alarm messages

If an error occurred in the air conditioner, the error condition is presented by indicating the error code in the wired remote controller display or by the combination of lamp statuses for operation, timer and heat stand-by (OFF status and flashing status).

Possible causes of troubles			Wired remote controller display	Wireless remote controller display
• Serial communication errors • Mis-setting	Remote controller is detecting unusual signal from indoor unit.	Error receiving of serial communications signal.	E01	Operation lamp flashes ☼: Operation lamp ●: Timer lamp ●: Heat stand-by lamp
		Error transmitting of serial communications signal.	E02	
	• Indoor unit is detecting unusual signal from the remote controller or group control. (No serial communications signal)		E03	
	Improper setting of indoor unit or remote controller.	Indoor unit address setting is duplicated.	E08	
		Remote controller address (RCU.ADR) is duplicated.	E09	
	Indoor unit is detecting unusual signal from signal option.	Error receiving of serial communications signal.	E11	
	Improper setting of indoor unit or remote controller.	When using flexible combination control, main indoor unit address setting is duplicated. (judged by outdoor unit.)	E14	
	Indoor unit is detecting unusual signal from outdoor unit.	Error receiving of serial communications signal.	E04	Heat stand-by lamp flashes ●: Operation lamp ●: Timer lamp ☼: Heat stand-by lamp
		Error transmitting of serial communications signal	E05	
	Outdoor unit is detecting unusual signal from indoor unit.	Error receiving of serial communications signal. (Confirmation error of unit numbers included)	E06	
		Error transmitting of serial communications signal.	E07	
	Auto. address setting is not correct.	No. of judged indoor units or total capacity of indoor units is small.	E15	
		No. of judged indoor units or total capacity of indoor units is large.	E16	
	Indoor unit is detecting unusual signal from another indoor unit.	Error receiving of serial communications signal.	E18	
• Mis-setting	Improper setting of indoor unit or remote controller.	Model setting of indoor unit is not matching the outdoor unit.	L02	Operation lamp and heat stand-by lamp flash at the same time. ☼: Operation lamp ●: Timer lamp ☼: Heat stand-by lamp
		When using group control, main indoor unit address setting is duplicated. (judged by indoor unit.)	L03	
		Improper wiring between indoor units. (There is a group connection wiring in case of individual control.)	L07	
		Capacity code of indoor unit is not set.	L09	
		Improper wiring of group control wiring.	L11	
Improper wiring connections of ceiling panel.			P09	●: Operation lamp ☼: Timer lamp ☼: Heat stand-by lamp
• Activation of protective device	Protective device in indoor unit is activated.	Thermal protector in indoor fan motor is activated.	P01	
		Float switch is activated.	P10	
	Protective device in outdoor unit is activated.	• Thermal protector in outdoor fan motor is activated. • PC or AC Compressor thermal protector is activated. • Power supply voltage is unusual. (The voltage is more than 260 V or less than 160 V between L and N phase.)	P02	Operation lamp and heat stand-by lamp flash alternately. ☼: Operation lamp ●: Timer lamp ☼: Heat stand-by lamp
		Discharge gas temperature of PC comp. is unusual.	P03	
		High pressure switch is activated.	P04	
		Negative phase or voltage drops.	P05	
		Other indooor unit is warning.	P31	

Possible causes of troubles			Wired remote controller display	Wireless remote controller display
• Thermistor failure	Indoor thermistor is either open or short.	Indoor coil temp. (E1 = TH2) cannot be detected.	F01	Operation lamp and heat stand-by lamp flash alternately. ☼: Operation lamp ☼: Timer lamp ●: Heat stand-by lamp
		Indoor coil temp. (E2 = TH3) cannot be detected.	F02	
		Indoor room temperature cannot be detected.	F10	
	Outdoor thermistor is either open or short.	Discharge gas temp.A (PC compressor=TH0A) cannot be detected.	F04	
		Outdoor coil liquid temp. (C1 = TH0E) cannot be detected.	F06	
		Outdoor coil gas temp. (C2 = TH0C) cannot be detected.	F07	
• Fault with compressor and its circuit	Protective device for compressor is activated.	PC compressor motor is overloaded.	H01	●: Operation lamp ☼: Timer lamp ●: Heat stand-by lamp
		PC compressor motor is locked.	H02	
		Compressor current detection circuit is defective.	H03	
		Low-pressure protector is activated. (Low pressure switch or low pressure prevention.)	H06	
		Standard comp. contactor (Mg SW)is chattering.	H18	

☼: flashes

●: OFF

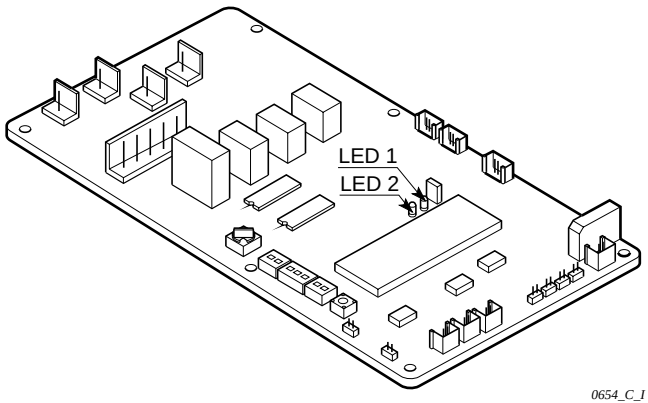
4

(4) LED Indication on the Outdoor Unit's P.C.B. Ass'y

If something goes wrong with the outdoor unit, **LED** lamps on the **outdoor P.C.B. Ass'y** light up to show the cause of the trouble, in addition to the Alarm message on the remote controller.

LED 2 on P.C. board	LED 1 on P.C. board	Remote controller	Possible cause of trouble
●	●	No message	Normal
●	○	E06, E07, L04	Outdoor unit serial communication signal is abnormal. Outdoor unit address is duplicated.
●	*	No message	Other outdoor units are performing auto address and detecting refrigerant shortage.
○	●	P02	FMo • CM thermal protection is in operation. Power supply voltage is abnormal.
○	○	P04, P05	High voltage SW activates Negative phase protector activates.
○	*	F04~F09	Sensor is abnormal. (Open or short)
*	●	H01, H02	Abnormal compressor current value is detected.
*	○	H04, H05	Scroll thermal protection failure is detected.
* Flash at the same time	*	E15, E16	Auto address failure
* Flash alternately	*	"SETTING" flashes.	Auto address is in operation.

NOTE ●: LED lamps OFF ○: LED lamps ON (lights up) *: LED lamps ON (flashes)



0654_C_I

Fig. 24

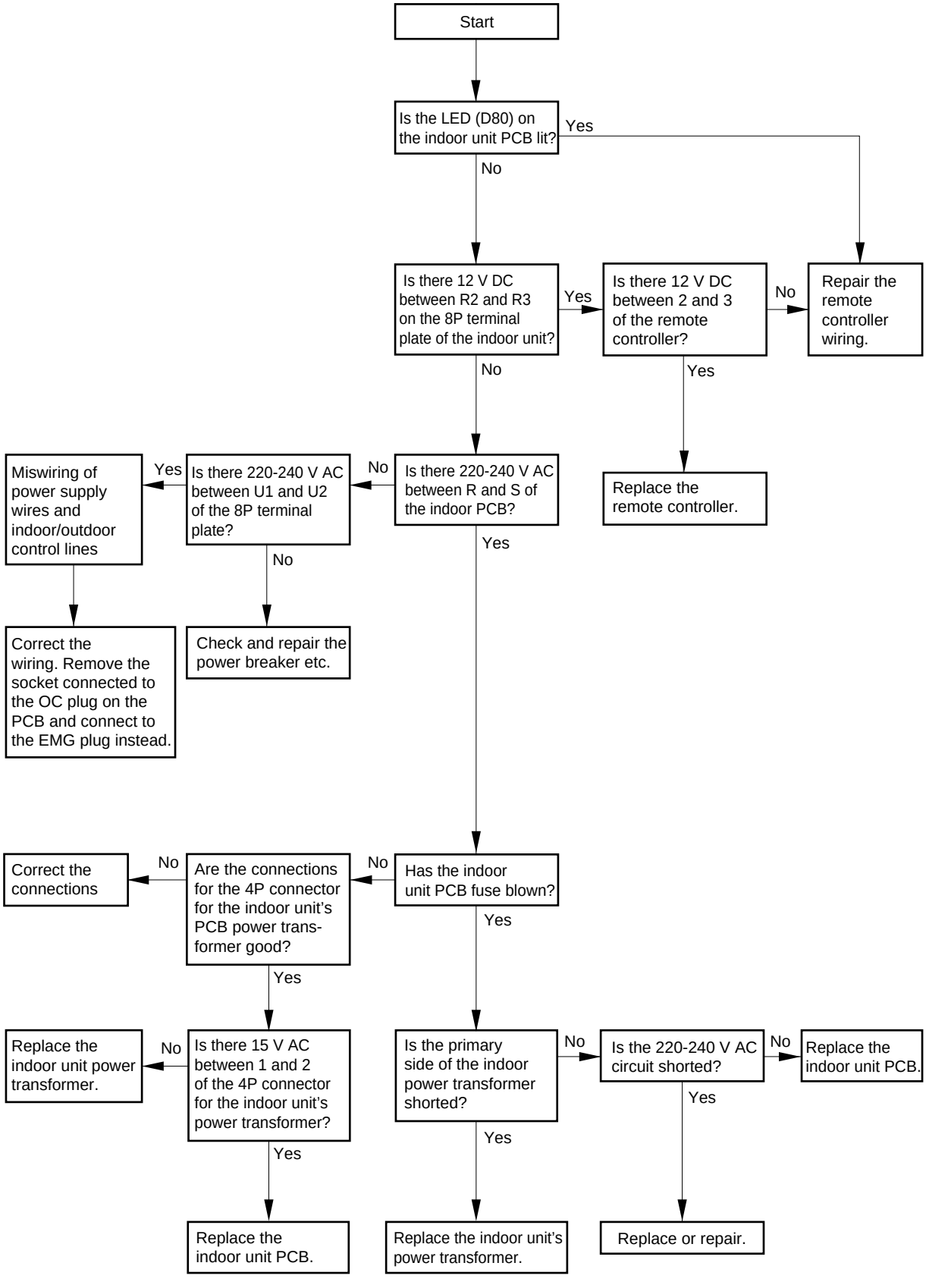
CAUTION

*** REFRIGERANT SHORTAGE**

Note particularly that a **shortage of refrigerant** is only shown by the **outdoor P.C.B. Ass'y LEDs** and the Alarm Message does not appear on the Indoor Remote Controller . The compressor keeps running even when the refrigerant is less, so when you find the LED indication on the **outdoor P.C.B. Ass'y**, stop the air conditioner immediately to avoid the compressor damage.

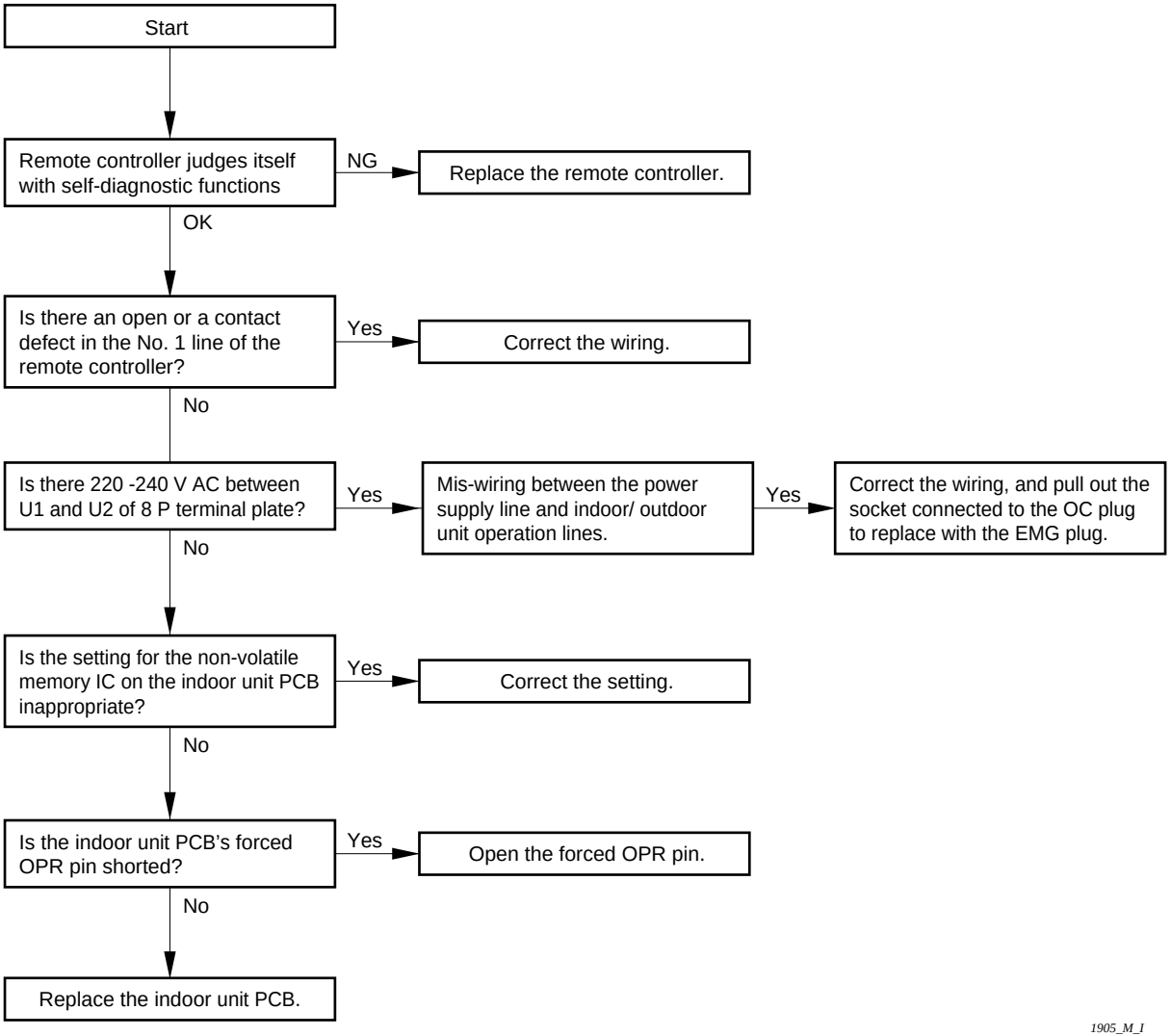
(5) Symptoms and parts to inspect

1) Symptom: LCD on the remote controller does not display and remote controller does not operate.



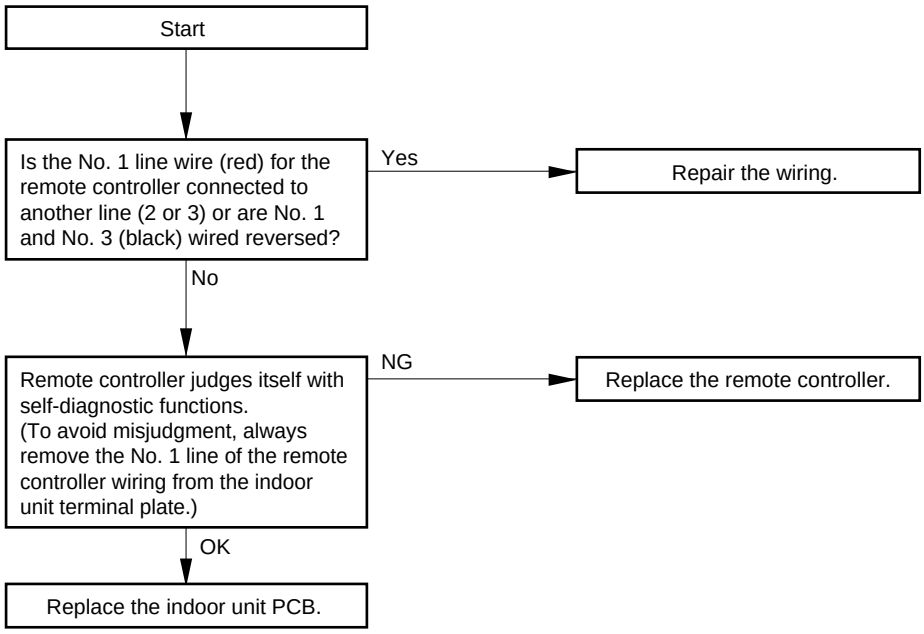
0332_M_I

2) Symptom: LCD on the remote controller displays “CHECK E01”.
(Unusual communication between remote controller and indoor unit.)



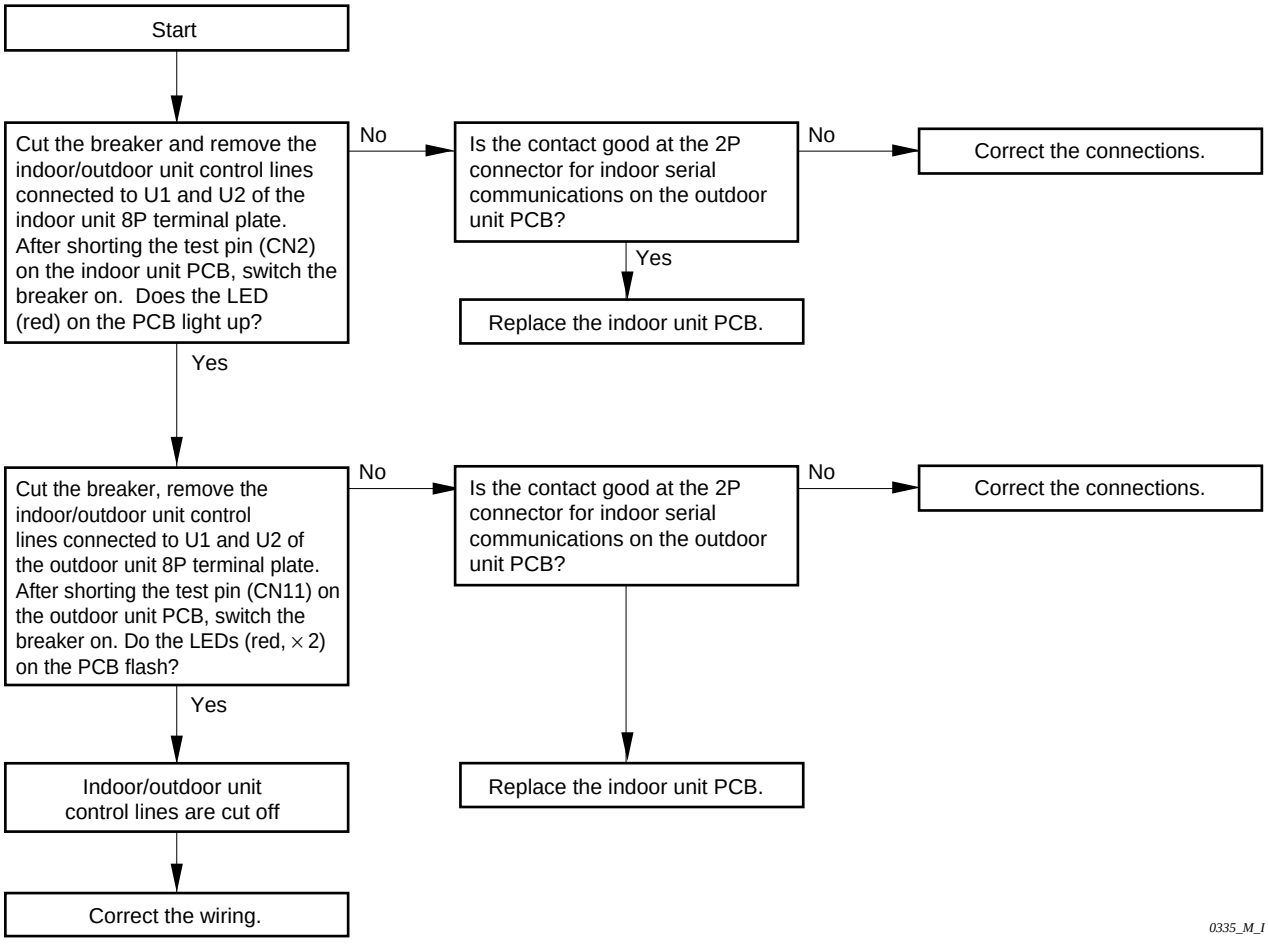
1905_M_I

3) Symptom: LCD on the remote controller displays “CHECK E02”. (Unusual communication between remote controller and indoor unit)

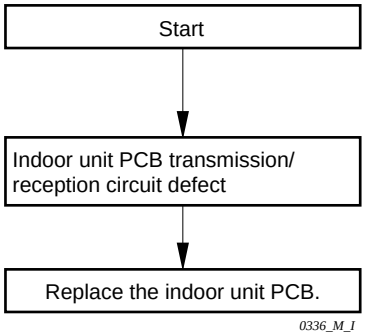


0334_M_I

4) Symptom: LCD on the remote controller is displaying “CHECK E04”. (Unusual communication between the indoor and outdoor units.)

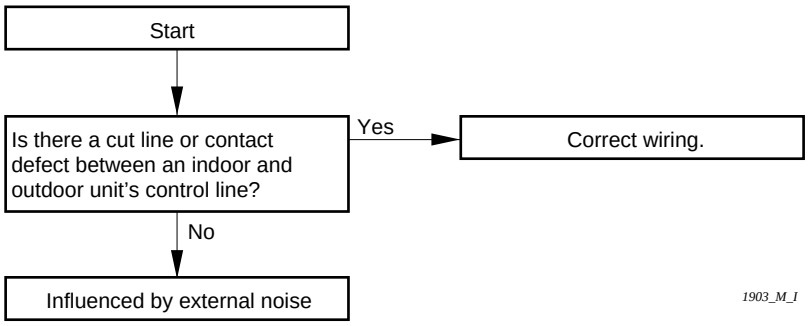


5) Symptom: LCD on the remote controller is displaying “CHECK E05”. (Unusual communication between the indoor and outdoor units)



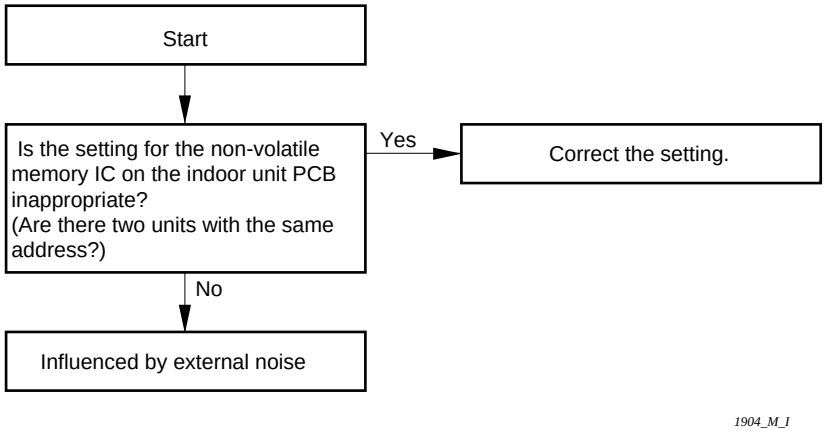
4

6) Symptom: LCD on the remote controller is displaying “CHECK E06”. (Unusual communication between the indoor and outdoor units)



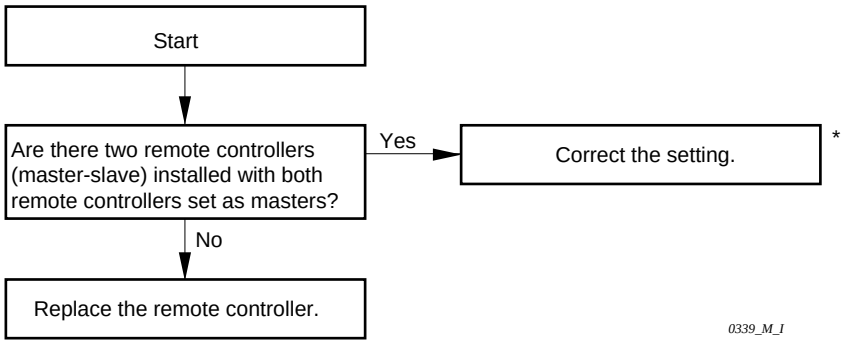
* See the section of INSTALLATION INSTRUCTION concerning with flexible combination system.

7) Symptom: LCD on the remote controller is displaying “CHECK E08”. (Duplicate indoor unit address setting)



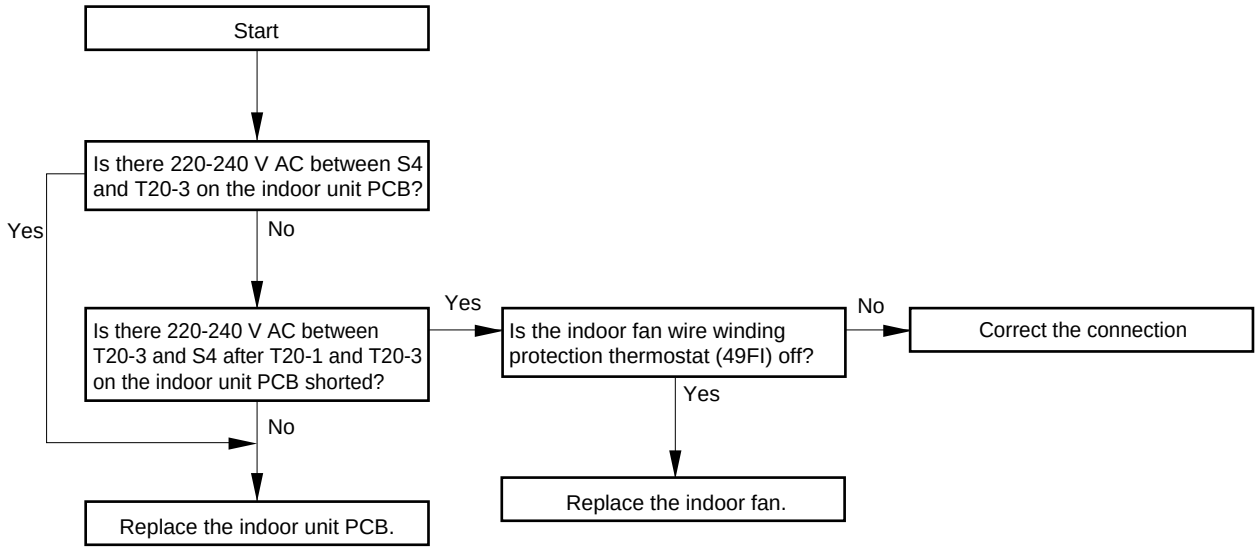
* See the section of INSTALLATION INSTRUCTION concerning with flexible combination system.

8) Symptom: LCD on the remote controller is displaying “CHECK E09”. (Duplicate setting of RCU address switch of remote controllers)

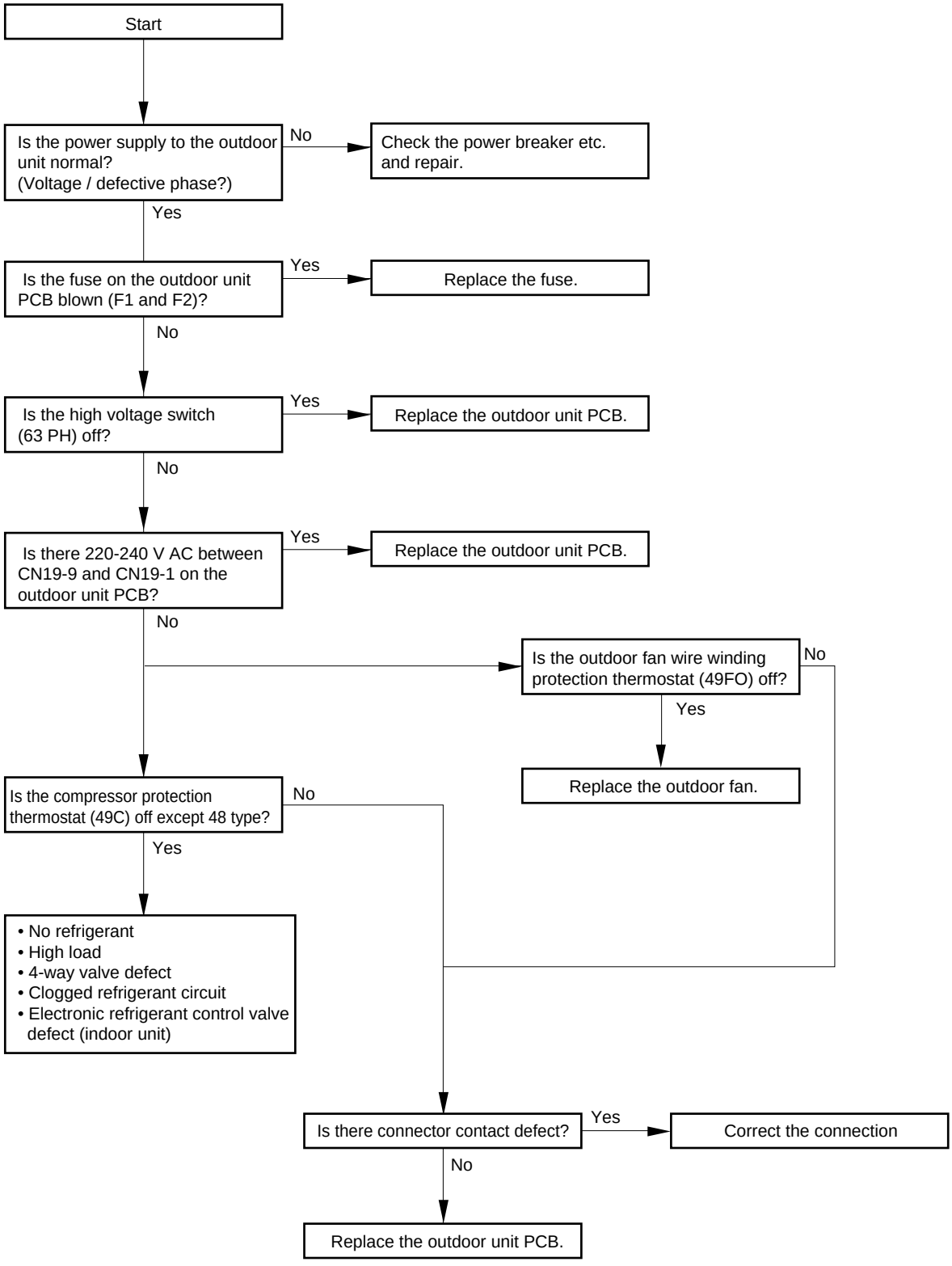


* See the section of INSTALLATION INSTRUCTION concerning with controlling remote controller switches when there are two remote controllers.

9) Symptom: LCD on the remote controller displays “CHECK P01”. (Indoor fan protection thermostat operation warning)

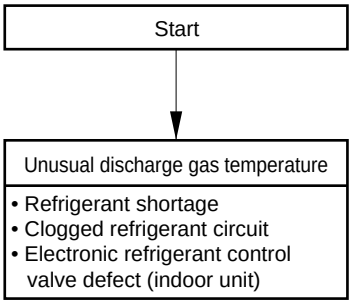


10) Symptom: LCD on the remote controller displays “CHECK P02”. (Compressor / outdoor fan protection thermostat operation warning / power supply voltage abnormality)



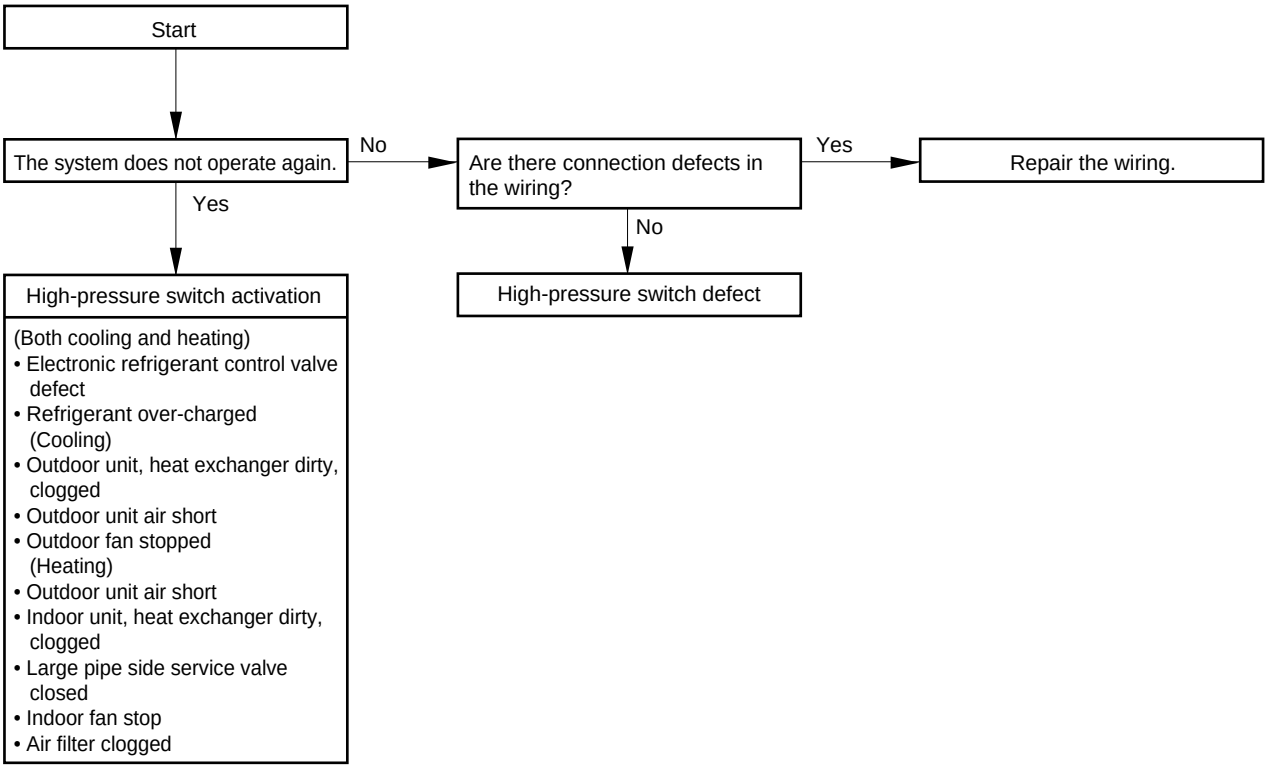
0342_M_I

11) Symptoms: LCD on the remote controller displays “CHECK P03”. (Alarm for unusual discharge temp. of compressor)



0343_M_I

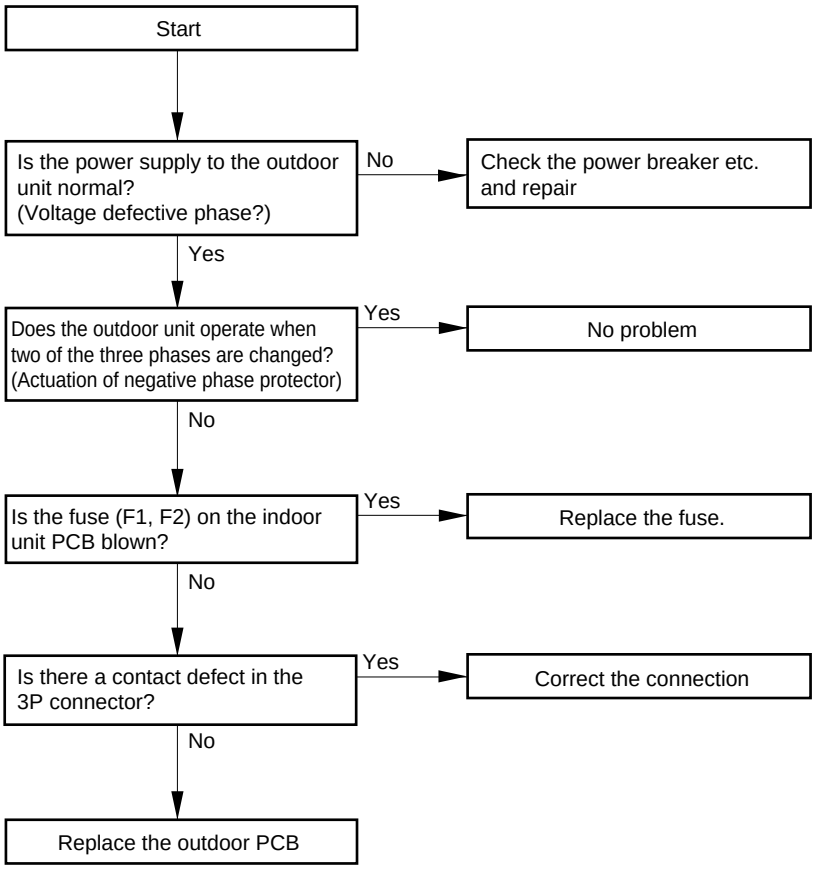
12) Symptom: LCD on the remote controller displays “CHECK P04”. (High-pressure switch activation warning)



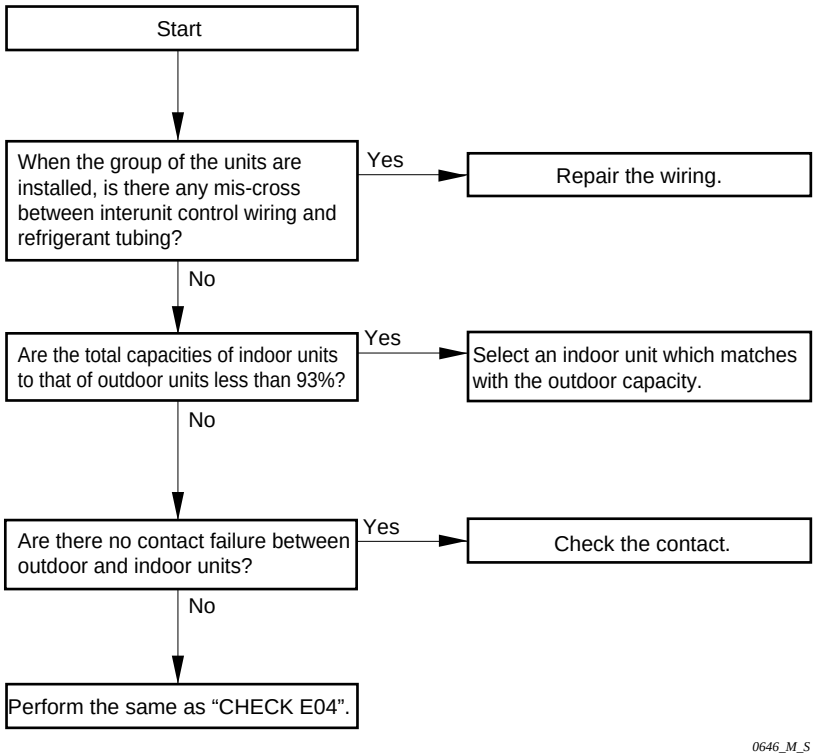
0344_M_I

4

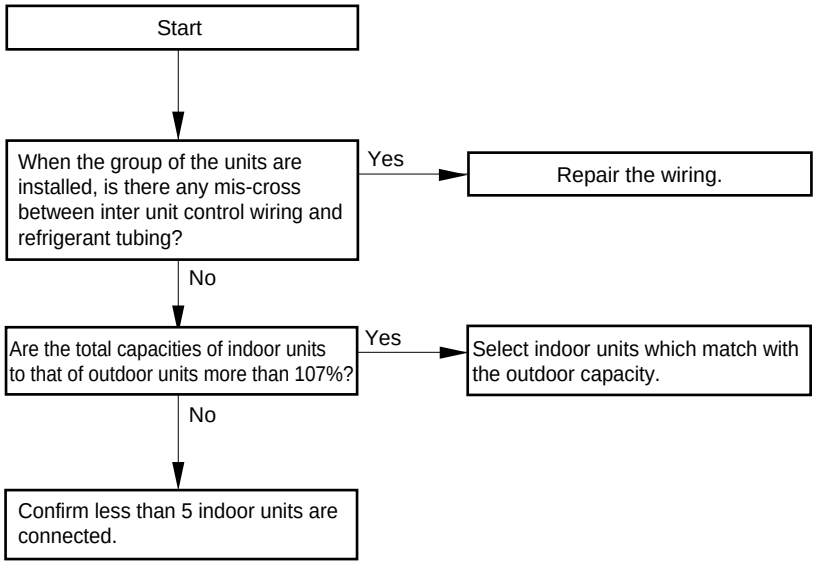
13) Symptom: LCD on the remote controller displays “CHECK P05”. (Negative phase detection operation warning)



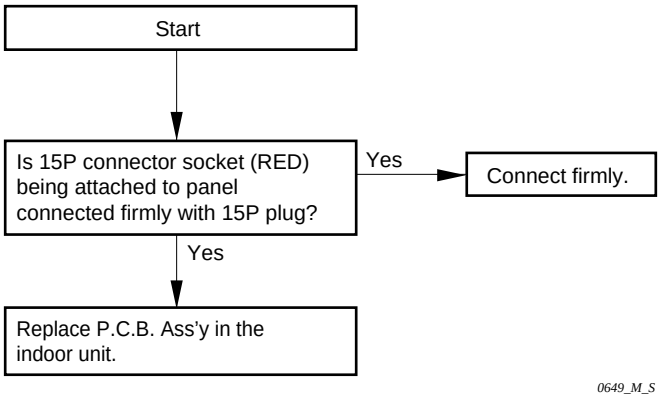
14) Symptom: LCD on the remote controller displays “CHECK E15”.



15) Symptom: LCD on the remote controller displays “CHECK E16”.

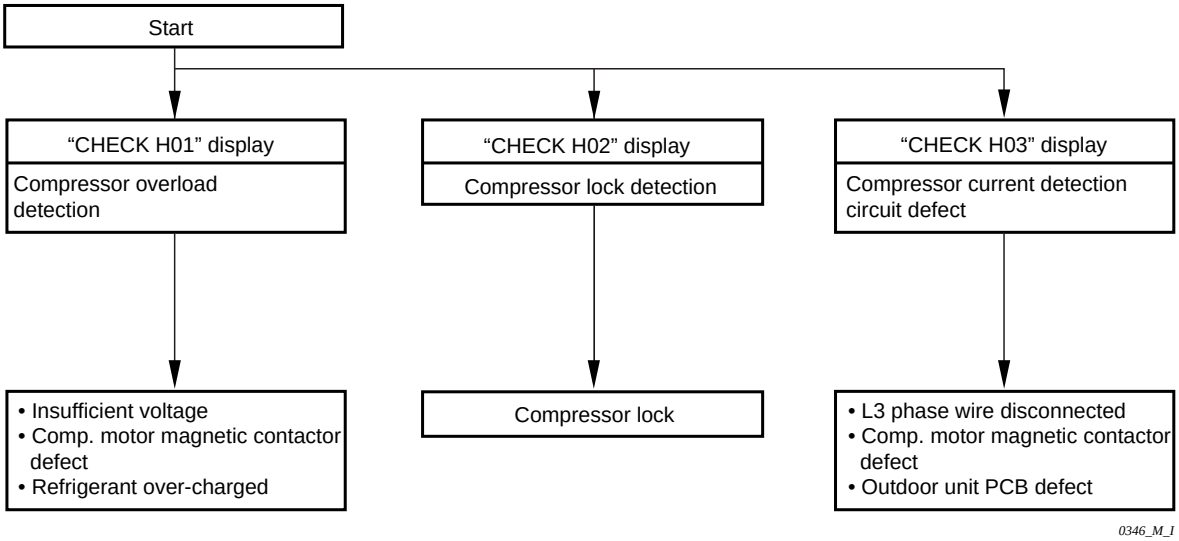


16) “Check P9” is displayed on the remote control unit.



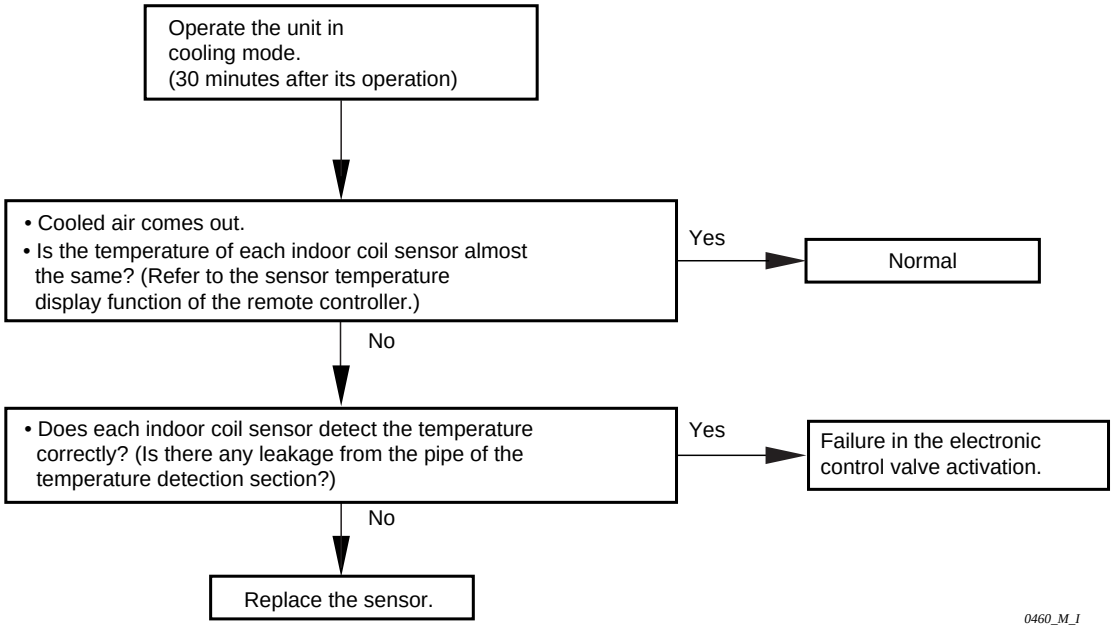
17) Symptom: LCD on the remote controller displays “CHECK H01, H02, H03”. (PC compressor current detection)

* Please check the related part described in the following chart after confirming the code setting (S4) of the outdoor unit’s capacity on the PCB in the outdoor unit.



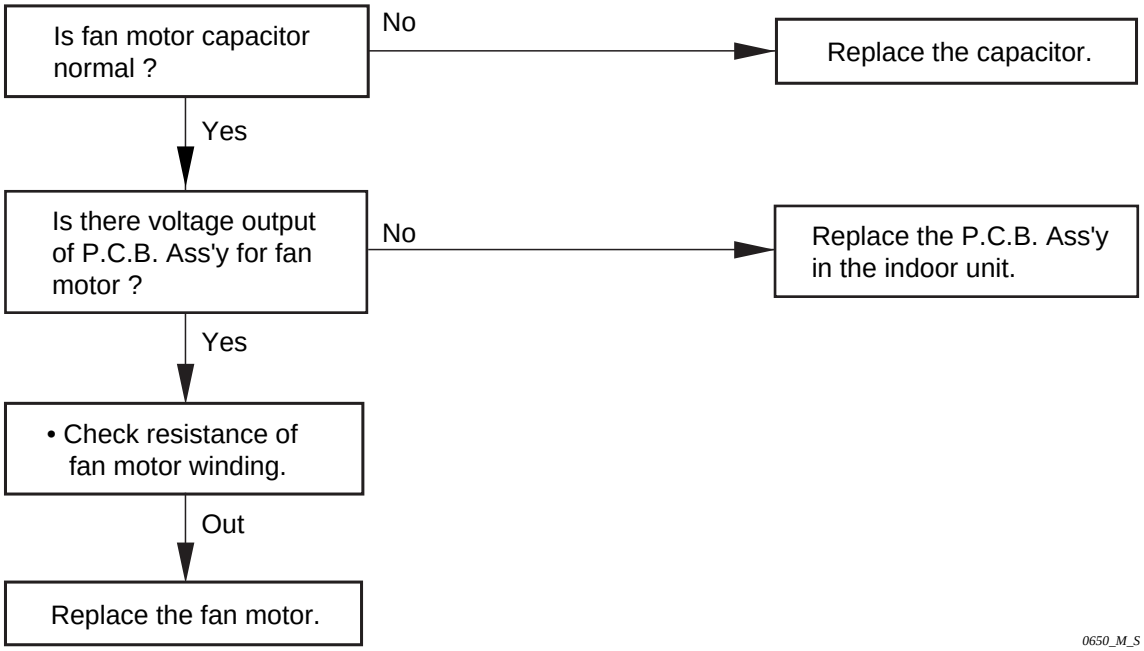
18) Check the indoor unit (When the alarm of communication failure is not activated)

- If the electronic control valve failure occurred in Flexible Combination system (simultaneous operation system), one indoor unit would not be operated normally, then the other units won’t be operated either. Due to this, try to detect the troubled unit and correct it.



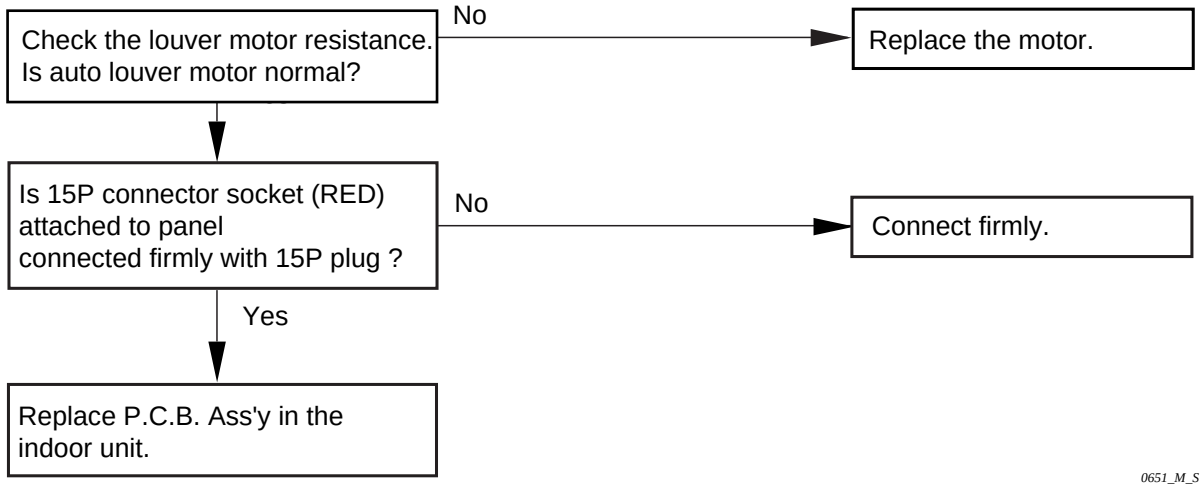
(6) Procedures When a Specific Component Does Not Work

1) Indoor fan does not operate.



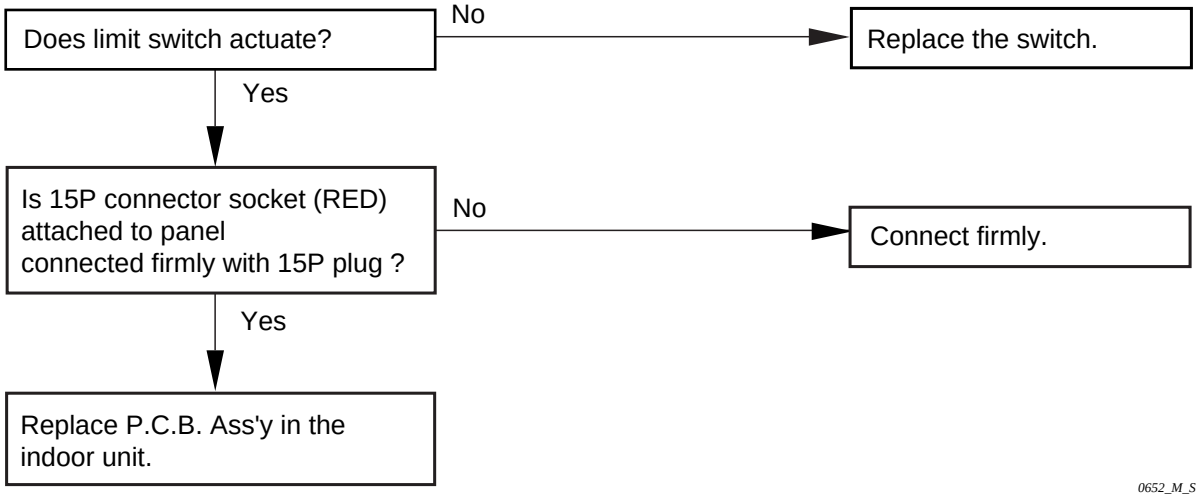
0650_M_S

2) Flaps in indoor unit's air outlet does not operate, when you press SWEEP button.



0651_M_S

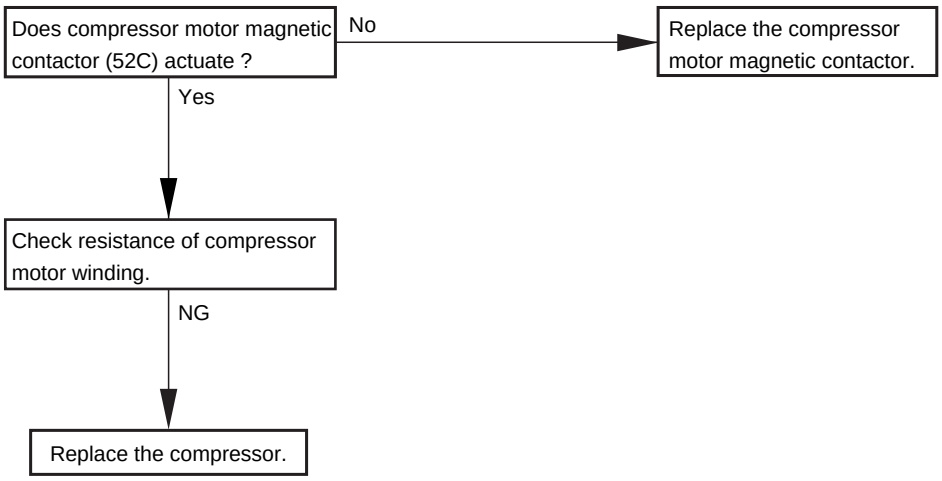
3) Flap does not operate, when you press FAN AIM button. (When you press SWEEP button, flap operates.)



0652_M_S

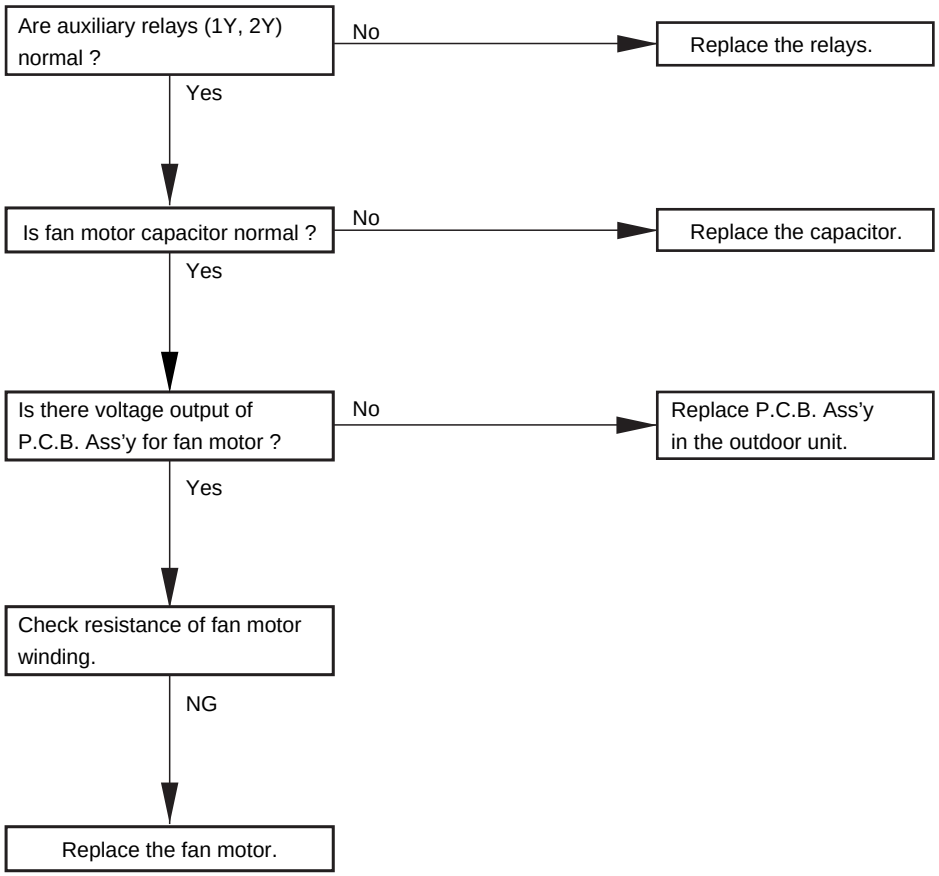
4

4) Compressor motor does not operate.



0461_M_I

5) Outdoor fan does not operate.



0462_M_I

(7) Service Functions of Remote Controller

From the remote controller you can control both the operation and settings of the unit as well as perform several useful service checks. This section explains how to use the remote controller on the following items from (A) to (J).

(A) Set service check switches.

(B) Use the test run procedure.

(C) Check the sensor temperature readings.

(D) Find out about past service problems.

(E) Check the remote controller itself for correct operation.

(F) Excute the auto. address operation.

(G) Confirm and change the indoor unit address.

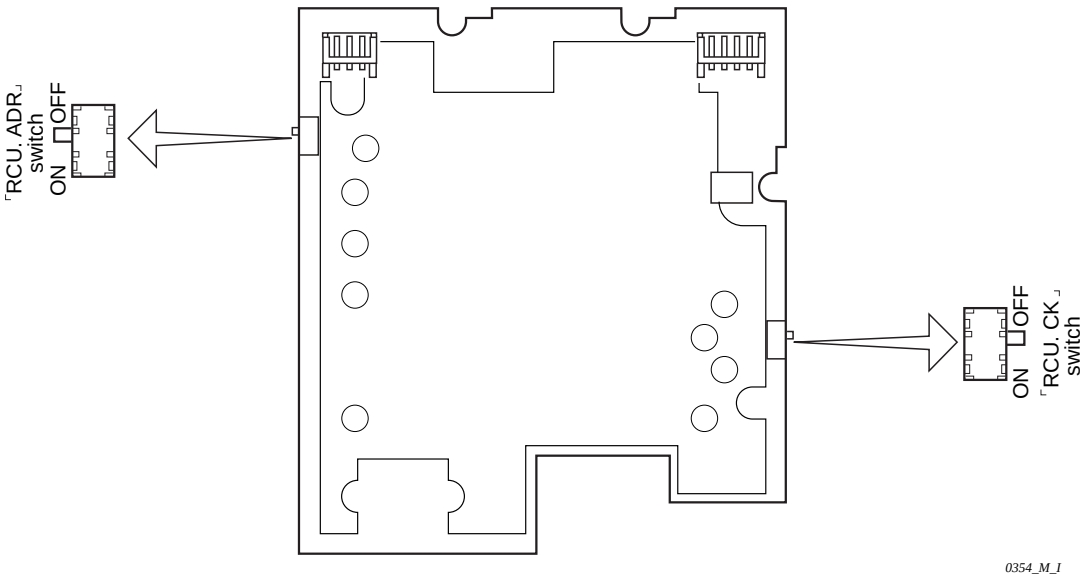
(H) Change the shift temperature in heating mode

(I) Set the indoor unit address.

(J) Change the period of the filter timer

(A) Set service check switches

The service check switch (RCU.CK) is located on the back of the remote controller's P.C.B. Ass'y as follows :



The followings are the correct switch settings for ordinary use of the unit. Only change the settings temporarily for making service checks. When you finish the settings, **be sure to return them to the standard settings** shown here.

- ❏ **RCU.CK** switch - Refer to section **(E)** " **Checking the remote controller for correct operation**"
  (Remote Control Unit, Check)
- ❏ **RCU.ADR** switch - Keep the switch **OFF** all the time except in case of sub remote controller
  (Remote Control Unit, Address)

(B) Use the test run procedure

- ❏ The purpose of the test run function is to let you control the operation of the unit directly without turning the unit on or off by thermostat. As indicated in the following procedure, be sure to stop test run operation when you finish the procedure, or the air conditioner may be damaged.
- ❏ To protect the air conditioner from overloading, the outdoor unit will not start running for 3 minutes after power is applied or the unit is turned OFF.

ⓐ Press the **TEST / CHK** button at the bottom right on the remote controller.

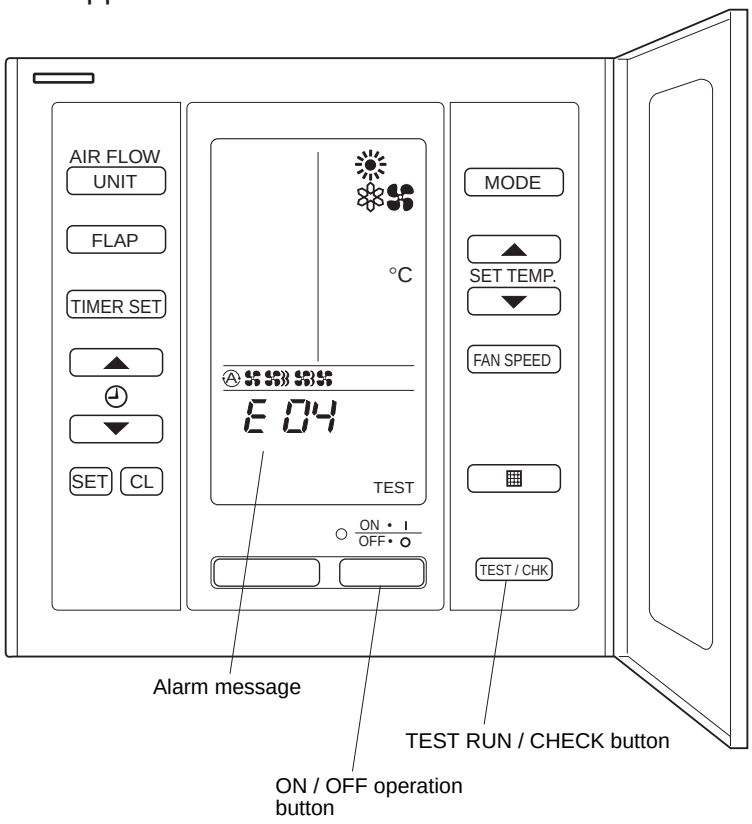
ⓑ Press the ON / OFF operation button to start the test run.

ⓒ Press the **MODE** button to select either COOLING or HEATING mode.

ⓓ When the test run starts, “TEST” shows on the remote controller’s display.

ⓔ During the test run, the air conditioner runs continuously and the thermostat does not control the system.

ⓕ After the test run, be sure to press the **TEST / CHK** button once again to finish this mode and make sure “TEST” is not shown on the display.



CAUTION

The TEST RUN button is used **only for servicing** the air conditioner. **Do not** press this button in normal operation, or the system may be damaged.

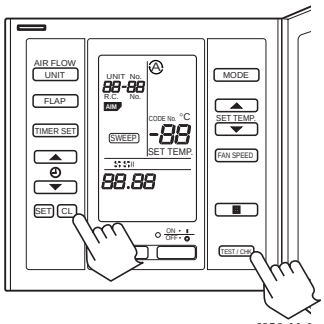
(C) Check the sensor temperature readings

The air conditioner has thermo sensors which are used to control the unit.

- ❏ Each sensor has an address which is made up of the indoor unit address, and the sensor address. The indoor unit address is used only when several units are hooked up to one remote controller (group control). If there is only one unit, made up of one indoor and one outdoor unit, then only the sensor address should be put in, as shown in the procedure below.

Follow this procedure to display the temperature of each sensor:

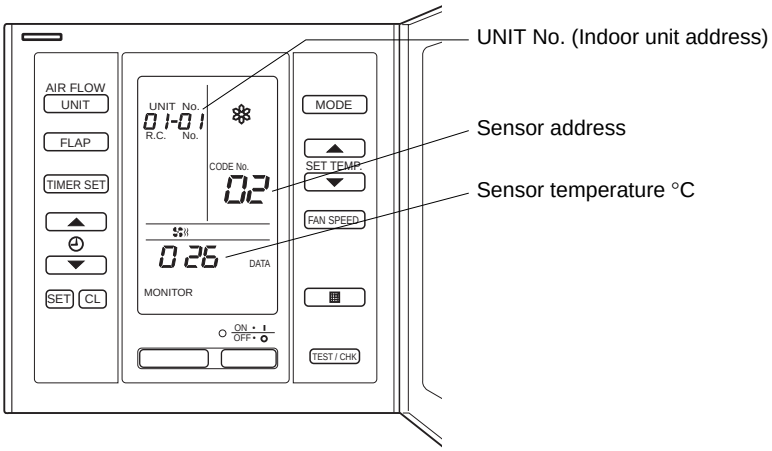
ⓐ On the remote controller, press both **TEST / CHK** and **CL** buttons at the same time for more than 4 seconds.



0356_M_I

ⓑ The UNIT No., the address and temperature of the sensors instead of its usual information will flash on the display.

- ❏ Following example shows the UNIT No. (Indoor unit address) is fixed at **01– 01**.
- ❏ In case of group control, select the UNIT NO. (Indoor unit address) which you want to check with **UNIT** button.
- ❏ Each time you press the ▲, ▼ (SET TEMP.) button you can select a different sensor, and the display shows the sensor address and temperature as shown below.



0357_M_I

NOTE

Do not press **TIMER SET** button during the procedure.

4

Refer to the table below for the relationship between the sensor address and the location of the sensor.

Relationship between the sensor address and the location of sensor

Sensor Address (CODE No.)		Location of Sensor (Themistor): ˚C	
Indoor Unit	01	—	
	02	TH1	Indoor air suction Temp.
	03	TH2	Indoor coil Temp. (E1)
	04	TH3	Indoor coil Temp. (E2)
	05	TH4	Indoor coil Temp. (E3)
	06	TH5	Indoor discharge air Temp.*
	07	—	
	08	—	
	09	—	
Outdoor Unit	0A	TH8	Discharge gas Temp. A
	0B	—	
	0C	—	
	0D	TH7	Outdoor coil liquid Temp. (C2)
	0E	TH6	Outdoor coil liquid Temp. (C1)
	0F	—	
	10	—	
	11	—	
	12	—	
	13	—	
	14	—	

* Only for unit which has a discharge air temp. sensor (U or D type)

NOTE

In case there are no sensor equipped with the unit, "- - -" is shown on the display.

ⓒ Resetting the remote controller display to previous mode.

❑ To reset the display, press **TEST / CHK** button, then the remote controller will return to previous mode.

(D) Find out about past service problems

The remote controller can memorize the **max. 4 most recent alarm messages**, so you can see problems the unit has had, if any. Knowing what has already occurred and been fixed helps you to know what to check at present.

❑ This function is usable even if the unit is not working.

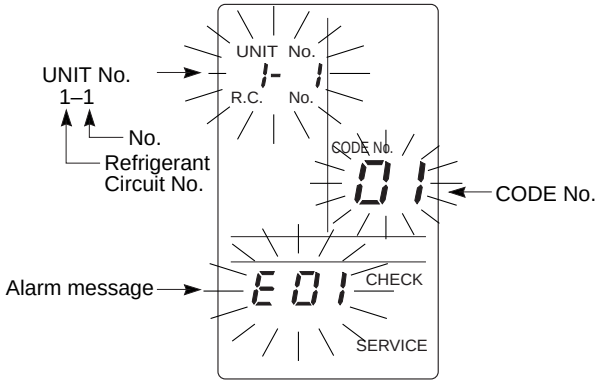
❑ To display the past error codes, follow the procedure below.

Procedure:

ⓐ On the remote controller, press both **TEST / CHK** and **SET** buttons at the same time for more than 4 seconds.
ⓑ Once in this mode, display changes from the normal display to service check display as shown in the table below:

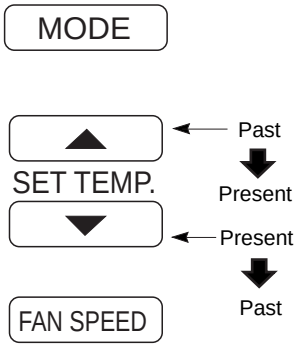
NORMAL DISPLAY	Display Change (➔)	SERVICE CHECK DISPLAY
Set temp.	➔	Code No.
UNIT No.	➔	UNIT No. (Indoor unit address)
Hours, Minutes	➔	Alarm Message

This picture shows the service check display.



0358_M_I

ⓒ. A maximum of 4 alarm messages can be accessed by pressing either **SET TEMP** button ▲ or ▼ as follows.



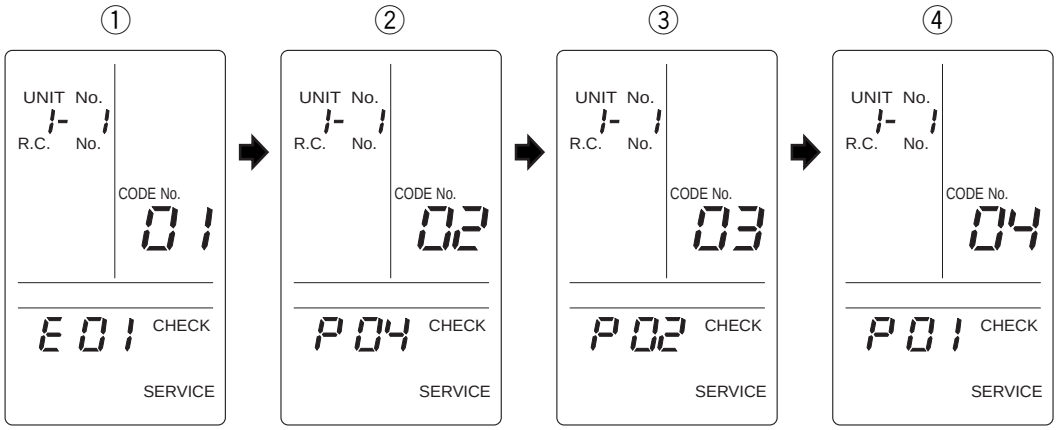
0359_M_I

NOTE Pressing **CL** (Clear) button will clear all the service history.

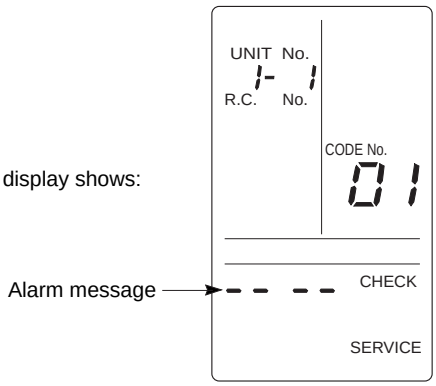
▲ ... accessed in order of "Past ➔ Present".

▼ ... accessed in order of "Present ➔ Past".

For example, if the last four alarm messages were, in order of occurrence from oldest to most recent, **P01**, **P02**, **P04**, and most recently **E01**, then the display will be shown as below when you press ▼ button four times. The 5th time you press ▼ button you can repeat the display, then the first message will be shown again.



If there are no alarm messages, the display shows:



0360_M_I

Important

Never press **CL** (clear) button unless you want to erase the accessed data in memory. Follow the procedure below only when erasing is necessary.

- ❏ To erase accessed data, press the **CL** button.
- ❏ When erasing is finisned,"----" mark appears on the controller's display.

After checking the alarm messages, be sure to press the **TEST / CHK** button.

(E) Check the remote controller itself for correct operation

The remote controller has a **self-diagnostic** function to check if it works properly. Use this procedure to find out if the remote controller itself is in trouble.

ⓐ Turn ON the **RCU.CK** switch on the back of the **P.C.B.** Ass'y in the remote controller. See section **(A)** for exact location.

ⓑ The appearance of the display will tell you whether or not the remote controller is working correctly or not.

- ❏ **Normal condition** – All displays appear for 10 seconds, then disappear.
- ❏ **Unusual condition** – All displays flash ON and OFF for 10 seconds, then disappear.

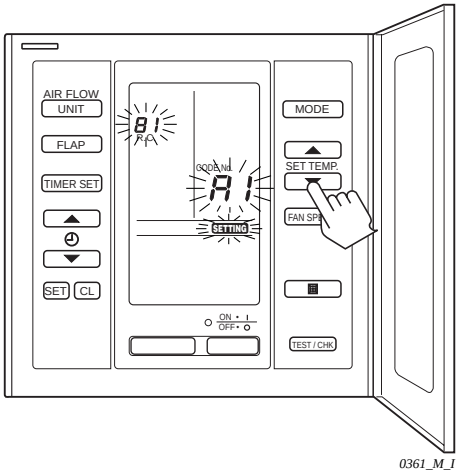
After checking the panel, be sure to set the RCU.CK switch to this original OFF position.

(F) Execute the auto. address operation

❏ Auto. address operation is executed by pressing the A. ADD (S1) button of outdoor unit's PCB usually.
For your convenience it can be executed by remote controller also.

ⓐ Press the **TEST / CHK** and ▲ **(◴)** buttons at the same time for more than 4 seconds.

ⓑ Set CODE No. A1 with ▲ , ▼ **(SET TEMP)** button.



In this mode, the auto. address operation is executed at each R.C. (Refrigerant Circuit) line one by one.

ⓒ Select R.C. No. which you want to execute the auto. address operation with **UNIT** button.

ⓓ Press the **SET** button. The auto. address operation will start. CODE No. changes from flashing to ON state.

ⓔ If an error occurs during operation, the alarm message will be displayed. Check and remove the cause. If you want to stop the operation, press the **CL** button then the unit stands in waiting mode (Press the **SET** button again.)

ⓕ If the automatic address operation finishes, the display will disappear.

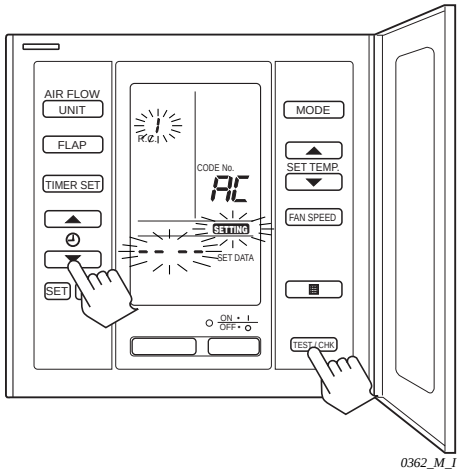
ⓖ Execute the operation of the other R.C. line in the same way by following the above steps ⓒ to ⓓ .

ⓗ Complete the automatic address operation by pressing the **TEST / CHK** button.

(G) Confirm and change the indoor unit address

❑ The purpose of the above function is to let you confirm the indoor unit address after the auto. address operation, and change the indoor unit address if it is needed.

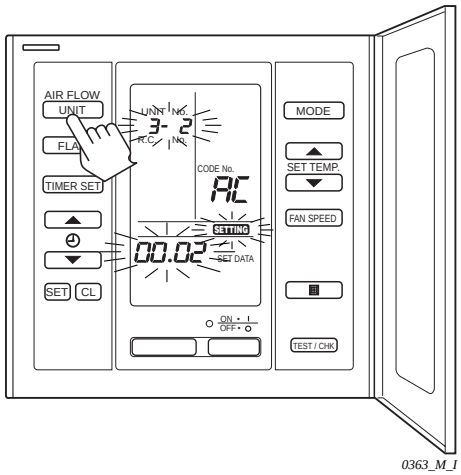
ⓐ Press the **TEST / CHK** and ▼ **(** ◴ **)** buttons at the same time for more than 4 seconds.



0362_M_I

ⓑ Select the R.C. No. which you want to change with the **UNIT** (up) or **FLAP** (down) buttons.

ⓒ Press the SET button (to confirm the R.C. No.).
The smallest registered indoor No. and the selected R.C. No. will be displayed.

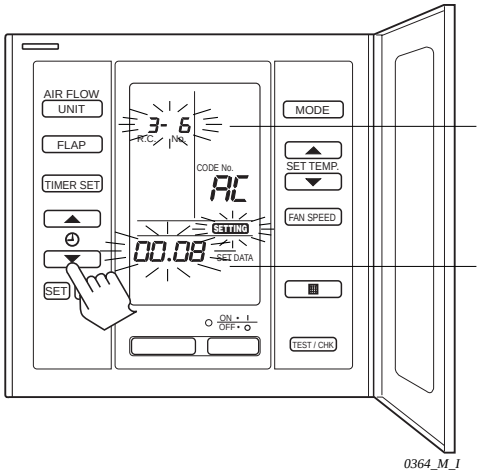


0363_M_I

Ex:
R.C. No. 3 is selected.
Indoor No. 2 is the smallest indoor No. of the R.C. No. 3.

ⓓ Select the indoor No. which you want to change with **UNIT** button. Once in this mode, **the fan motor of selected indoor unit will turn on and let you confirm the indoor unit address.**

ⓔ Set the required new indoor unit's No. by pressing the ▲ , ▼ **(** ◴ **)** button.



* In this case, UNIT No. 3 – 6 (current)
≠
3 – 8 (NEW : after pressing the **TEST / CHK** button)

ⓕ Press the SET button.
UNIT No, SET DATA (0008) and SETTING changes from flashing to ON state.

ⓖ If you made a mistake, press the **CL** button.

ⓗ Finally, press the **TEST / CHK** button.

ⓘ If you want to change the indoor unit address of the other R.C. No., follow the step ⓐ to ⓗ in the same way.

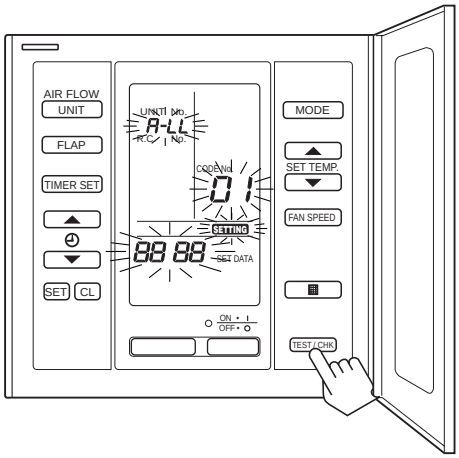
4

(H) Change the shift temperature in heating mode

❑ If the indoor unit is installed at high location (ex. ceiling level), the thermostat tends to turn off at heating mode because of the hot air temperature around ceiling level. In order to solve the problem, the shift temp. (valid while heating only) is set when shipped from factory.

❑ If the shift temp. is not enough (ex. the indoor unit is installed at position higher than 3 m), the shift temp. can be set with remote controller from +1 to +10 deg. manually as follows:

ⓐ Press the **TEST / CHK** button for more than 4 seconds.

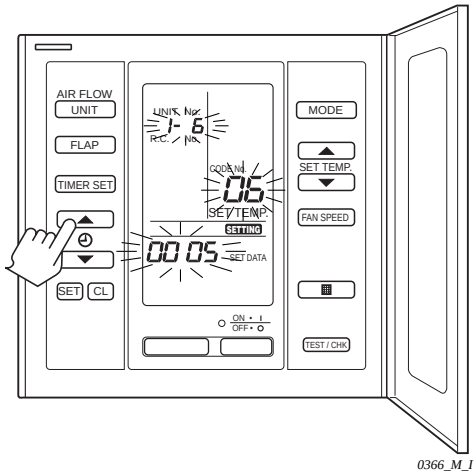


0365_M_I

ⓑ In case of group control, if you want to change all units in group control collectively, proceed next step remaining ALL displayed.
If you want to change a unit individually, select the indoor unit address (UNIT No.) with **UNIT** button.

ⓒ Select the CODE No. 06 with ▲ , ▼ **(SET TEMP)** button.

ⓓ Choose the shift temp with ▲ , ▼ **(** ◴ **)** button.



0366_M_I

EX:
UNIT No. 1–6
CODE No. 06
Shift temp. +5 deg

ⓔ Press the SET button.
CODE No. 06, SET DATA and SETTING change from flashing to ON state.

ⓕ If you made a mistake, press the **CL** button.

ⓖ Finally, press the **TEST / CHK** button.

(I) Set the indoor unit address

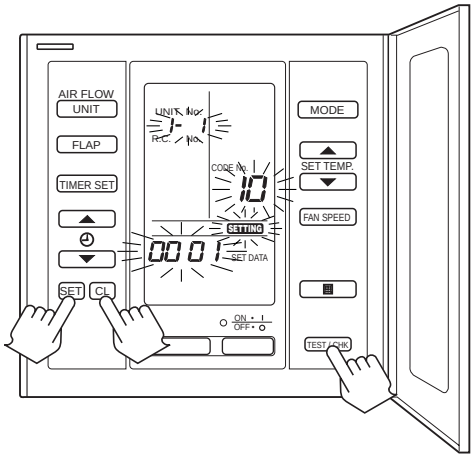
❑ This function is usable if the auto. address operation is not available.
Indoor unit address can be set one by one by remote controller.

NOTE

1) In case of group control, branch wiring for group control should be removed temporarily.
2) In case of remote controllerless system, remote controller should be connected with the indoor unit temporarily.

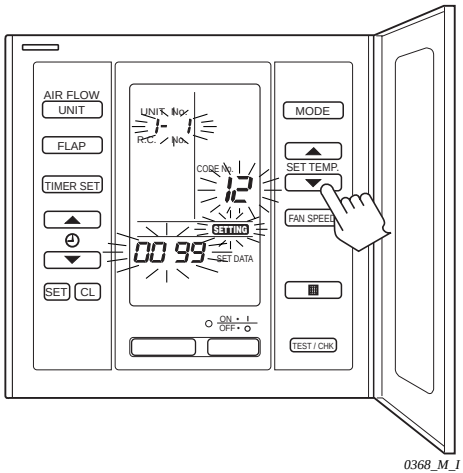
ⓐ Short the two terminals of DISP PIN on indoor unit PCB.
(DISP PIN : Refer to P. VI–2)

ⓑ Press the **TEST / CHK** , **SET** and **CL** buttons at the same time for more than 4 seconds.



0367_M_I

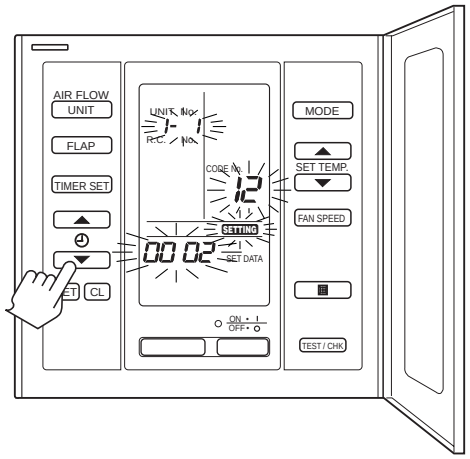
ⓒ Set the CODE No. 12 to set the No. of R. C. with the ▲ , ▼ **(SET TEMP)** button.



0368_M_I

4

ⓓ Set the No. of R. C. which you want to set with ▲ , ▼ **(** ◴ **)** button.



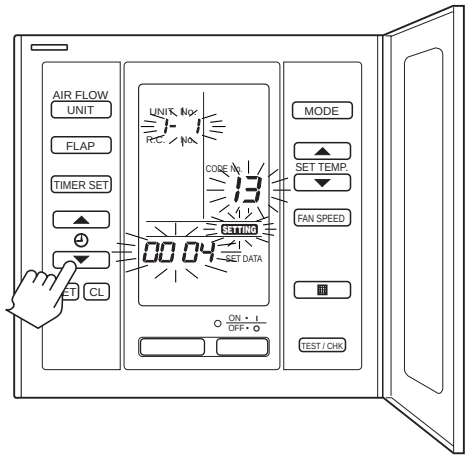
0369_M_I

Ex. No. of R. C. will be set 2.

ⓔ Press the **SET** button.
UNIT No., CODE No. 12, SETTING and SET DATA (0002) change from flashing to ON state.

ⓕ Select the CODE No. 13 to set the indoor unit No. with the ▲ , ▼ **(SET TEMP)** button.

ⓖ Set the indoor unit No. which you want to set with the ▲ , ▼ **(** ◴ **)** button.



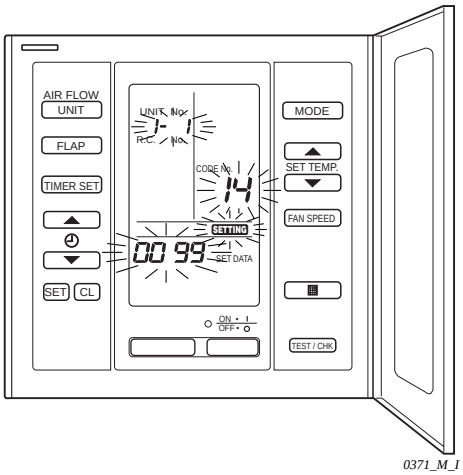
0370_M_I

Ex. Indoor unit No. 4 will be set.
In this example, indoor unit address (UNIT No.) will be set 2–4.

ⓗ Press the **SET** button.
UNIT No., CODE No. 13, SETTING and SET DATA (0004) change from flashing to ON state.

ⓘ Select the code No. 14 to set group setting with the ▲ , ▼ **(SET TEMP)** button.

ⓙ Set the No. of group setting as shown below with the ▲ , ▼ **(** ◴ **)** button.



0371_M_I

Nos. of group setting.
0 : Standard system (except group control)
1 : Main indoor unit in case of group control
2 : Sub indoor unit in case of group control
99: No setting (at factory shipment)

ⓚ Press the **SET** button.
UNIT No., CODE No. 14, SETTING and SET DATA change from flashing to ON state.

Ⓛ If you made a mistake, press the **CL** button so that setting returns to the initial state.

ⓜ Press the **TEST / CHK** button to finish this mode.
The display is disappeared.

ⓝ Confirm the indoor unit address (UNIT No.) with the **UNIT** button after pressing the **ON / OFF** button.

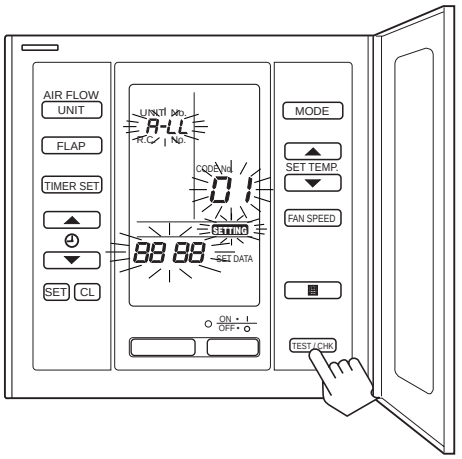
ⓞ Finally, remove the short circuit of DISP PIN.
And in case of group control, be sure to restore the branch wiring to its original wiring.
In case of remote controller–less system, remove the remote controller.

4

(J) Change the period of the filter timer

❑ If the period of filter timer is not suitable (for example in case of dirty environment), the period can be shortened to half as follows:

ⓐ Press the **TEST / CHK** button for more than 4 seconds.

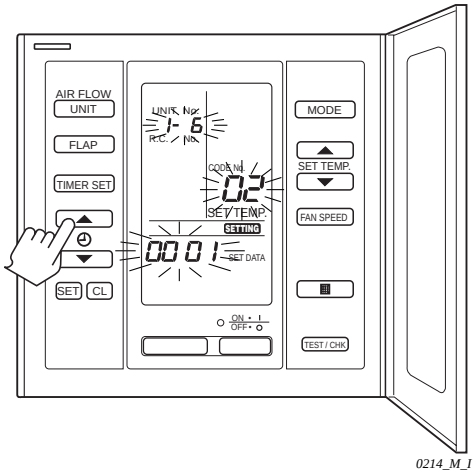


0213_M_I

ⓑ In case of group control, if you want to change all units in group control collectively, proceed next step remaining “ALL” displayed.
If you want to change a unit individually, select the indoor unit address (UNIT No.) with **UNIT** button.

ⓒ Select the CODE No. 02 with ▲ , ▼ **(SET TEMP)** button.

ⓓ Change the No. from 0 to 1 with ▲ , ▼ **(** ◴ **)** button.



0214_M_I

EX:
UNIT No. 1–6
CODE No. 02
T type 150 hr → 75 hr

ⓔ Press the SET button.
CODE No. 06, SET DATA and SETTING change from flashing to ON state.

ⓕ If you made a mistake, press the **CL** button.

ⓖ Finally, press the **TEST / CHK** button.

4

4-2 Checking the Electrical Components

(1) Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 1 MΩ.

① Power Supply Wires

Clamp the earthed wire of the Power Supply wires with a lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (**Fig. 25**)

Then measure the resistance between the earthed wire and the other power wire. (**Fig. 25)**

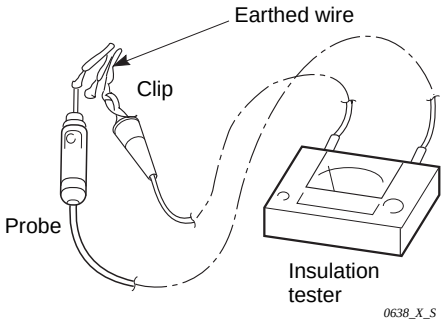


Fig. 25

② Indoor Unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on high voltage terminal on the terminal plate (**Fig. 26**)

See **Fig. 22**.

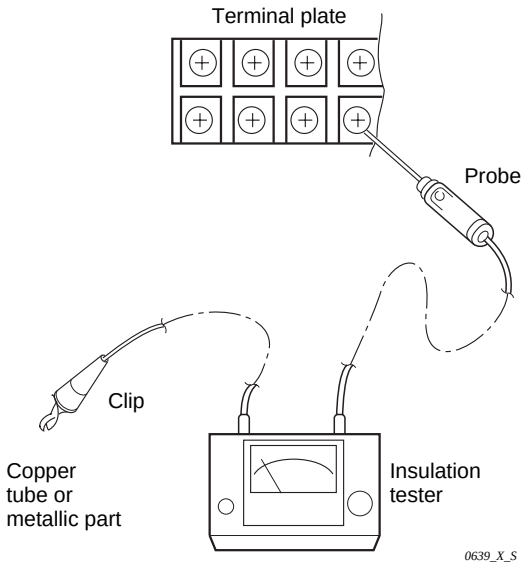


Fig. 26

③ Outdoor Unit (SPW-CR253GHL5)

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on ① and then ② on the 8 or 6P terminal plate. (**Fig. 26**)

See **Fig. 22**.

③ Outdoor Unit (SPW-CR253GHL8, SPW-CR363GHL8, SPW-CR483GHL8)

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on ⑤ and then ⑥, and then ⑦ on the 8P terminal plate. (**Fig. 26**)

See **Fig. 23**.

4

(2) Measurement of Insulation Resistance for Electrical parts

- Disconnect the connector of the desired electric part from terminal plate, P.C.B. Ass'y, etc. (**Fig. 27**)
- Similary, disconnect the lead wires from compressor, capacitor, etc. (**Fig. 28**)
- Measure the resistance in the same manner as illustrated on the right.

  Refer to Electrical Wiring Diagram.

NOTE

If the probe does not enter the hole because the hole is too narrow, use a probe with a thinner pin.

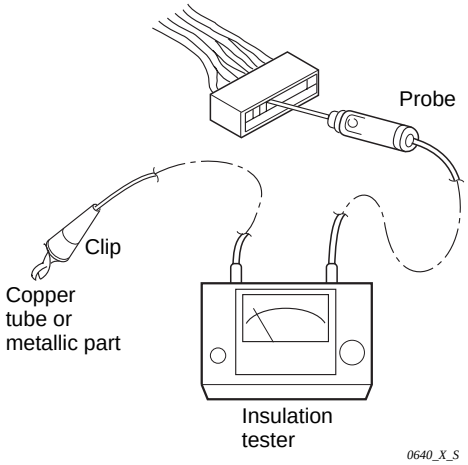


Fig. 27

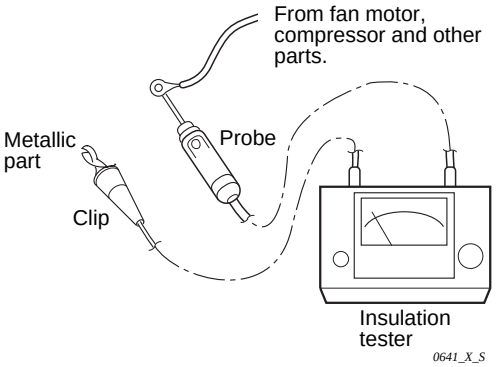


Fig. 28

(3) Checking the Protective Devices

- Disconnect the connector, which consists of P (plug) and S (socket) when you want to check the protective device.
- Then check continuity among plug's (and/or socket's) terminal as in **Fig. 29**.
- Normality of the protective device can be judged by the following table. The Protective Device is proved normal if there is a continuity between terminals.

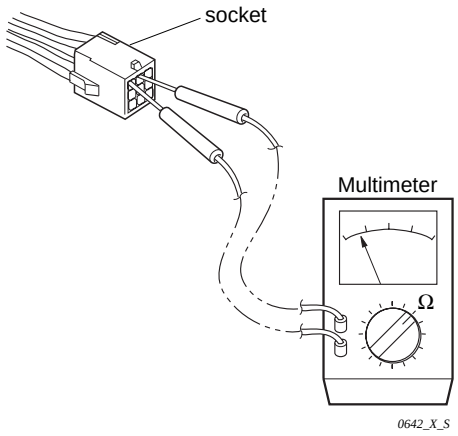


Fig. 29

① **Indoor fan motor thermal protector (49FI) . . . . . Indoor unit**

- Disconnect 9P connector (WHT) which leads to the indoor fan motor (FMI).
- Check the socket's terminals between No. 8 (GRY lead wire) and No. 9 (GRY lead wire).

② **Compressor motor thermal protector (49C) . . . . . Outdoor unit**

- Only for the SPW-C253GH8 and SPW-C363GH8. Disconnect the 8P connector (white), and the 9P connector (white) on the P.C. board, and check 8P (white) plug's No. 4 (GRY lead wire) and socket's No. 9 (GRY lead wire) on the P.C.board.

③ **Outdoor fan motor thermal protector (49FO) . . . . . Outdoor unit**

- Disconnect 8P connector(s) (WHT) which lead(s) to the outdoor fan motor (FMO).
- Check socket's terminal between No. 3 (GRY lead wire) and No.4 (GRY lead wire).

④ **High pressure switch (63PH) . . . . . Outdoor unit**

- Disconnect the socket (63PH) of 3P (red) connecting to the P.C. board, and check both sides (1 (white), 3 (red)).

(4) Checking the Electrical Parts

① **Power transformer (TR1) ..... Indoor unit** *Measure the coil resistance.

- Primary ; Measure the resistance between No.1 and No.3 (WHT lead wires) terminals of 3P (WHT) socket connected to power transformer.
- Secondary 14V ; Measure the resistance between No.1 and No.2 (RED lead wires).

  10V ; Measure the resistance between No.3 and No.4 (BRN lead wires).

Refer to “1-3 Other component specifications”.

② **Power transformer (TR) ..... Outdoor unit** *Measure the coil resistance.

- Primary ; Measure the resistance between No.1 and No.3 (WHT lead wires) terminals of 3P(WHT) socket jointed to power transformer.
- Secondary 14 V ; Measure the resistance between No.1 and No.2 (BRN lead wires).

Refer to “1-3 Other component specifications”.

③ **Indoor fan motor (FMI) ..... Indoor unit** *Measure the coil resistance.

- Measure the resistance between each terminal of 9P (WHT) socket connected to the indoor fan motor.

Refer to “1–2–(A) Major component specifications”.

④ **Outdoor fan motor (FMO) ..... Outdoor unit** *Measure the coil resistance.

- Measure the resistance in the same manner as explained above ③.

Refer to “1–2–(B)Major component specifications”.

⑤ **Fan motor capacitor ..... Both in indoor and outdoor unit**

- Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in **Fig. 30**. Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.
- The capacitor is “good” if the pointer bounces to a great extent and then gradually returns to its original position.

NOTE
The range of deflection and the deflection time differ according to the capacity of the capacitor.

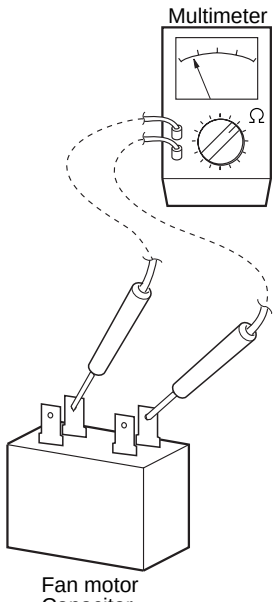


Fig. 30

4

⑥ **Solenoid coil of the electronic refrigerant** *Measure the coil resistance.

control valve (ERCV) ……. Indoor unit

- Measure the resistance between No. 5 (GRY lead wire) and other terminals (another color of lead wires) of 5P (WHT) plug connected to the solenoid coil.

  Refer to “1-2-(A) Major component specifications”.

⑦ **Compressor motor (CM) ……. Outdoor unit** *Measure the coil resistance.

- **In case of triple -phase compressor**

  Measure the resistance between “R” (RED lead wire) and “S” (WHT lead wire) terminals, “R” and “T” (BLU lead wire) terminals and “S” and “T” terminals on the compressor motor magnetic contactor.

- **In case of single -phase compressor**

  Remove the cover of compressor terminal and measure the resistance between terminals.

  Refer to “1-2 Major component specifications”.

⑧ **Compressor motor magnetic contactor (52C) ……. Outdoor unit**

- Measure the resistance between A (ORG lead wire) and B (GRY lead wire) terminals on the compressor motor magnetic contactor.

  Refer to “1-3 Other component specifications”.

- Check the continuity between contactors.

MODEL	FMCA–1S / FC–1SZ607			
Push button on the magnetic contactor	Pair of terminals			
	R – U	S – V	T – W	31 – 32
no press	——	——	——	YES
press	YES	YES	YES	——

⑨ **Solenoid coil of 4-way valve (20S) … Outdoor unit**

*Measure the coil resistance.

- Measure the resistance between No.1 (BLU lead wire) and No.2 (BLU lead wire) terminals of 2P (YEL) socket connected to the solenoid coil.

  Refer “1-3 Other component specifications”.

4

⑩ **Fuse on indoor and outdoor P.C.B. Ass'y …. Both in indoor and outdoor unit**

*Check the continuity.

- Remove the P.C.B. Ass'y from the electrical component box. Then pull out the fuse from the P.C.B. Ass'y. (**Fig. 31**)

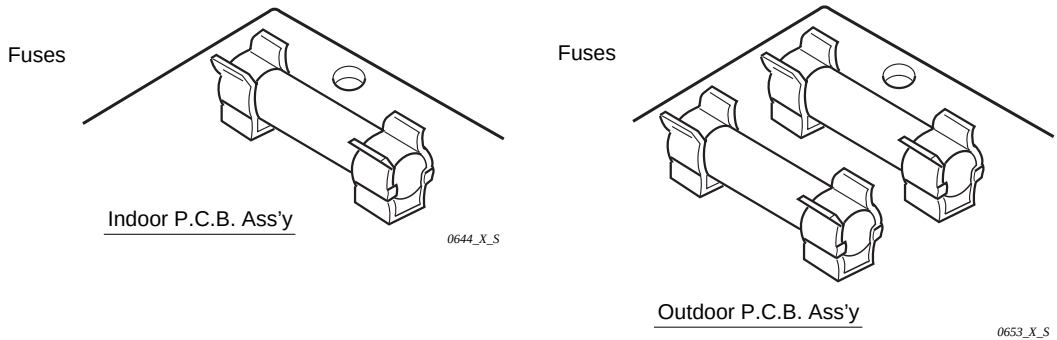


Fig. 31

- Then check the continuity of the fuse by using the multimeter. (**Fig. 32**)

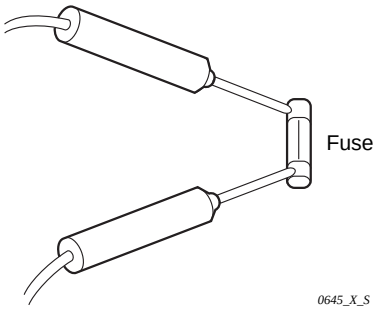
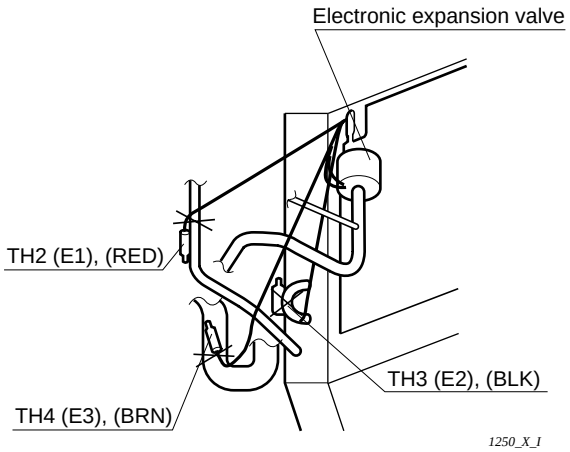


Fig. 32

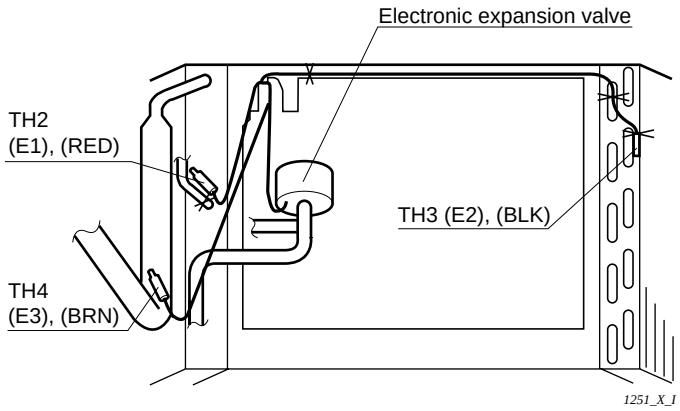
(5) Sensor and Solenoid Layout Diagram

Indoor Unit

• ASR 425 H

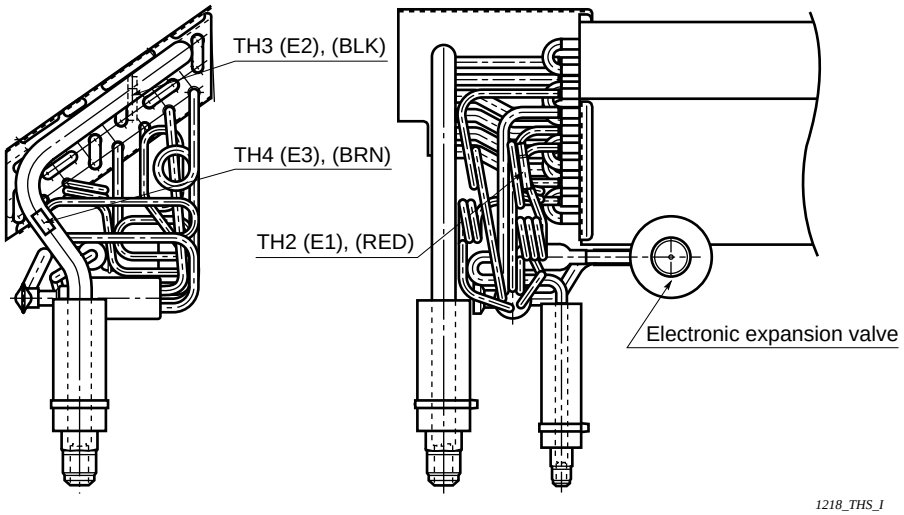


• ASR 436 H
• ASR 448 H

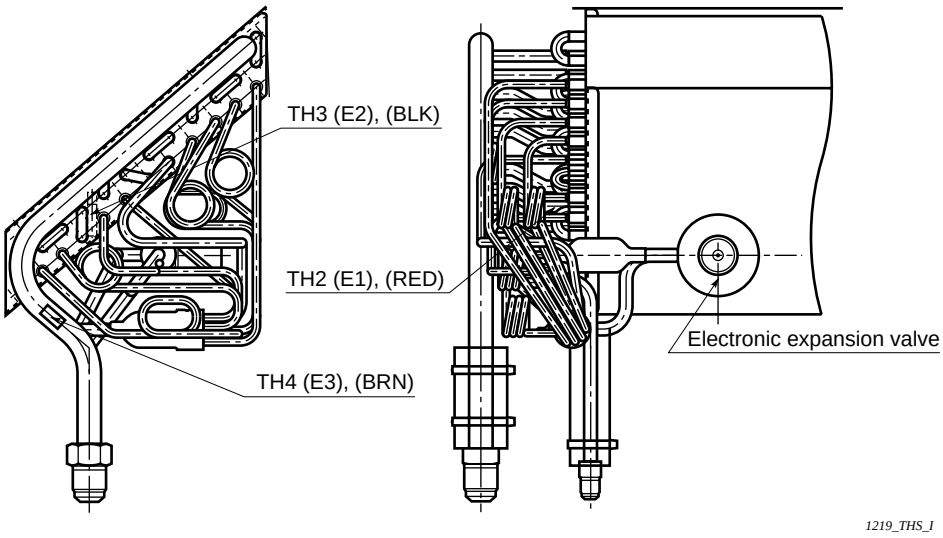


Indoor Unit

• ACR 425 H



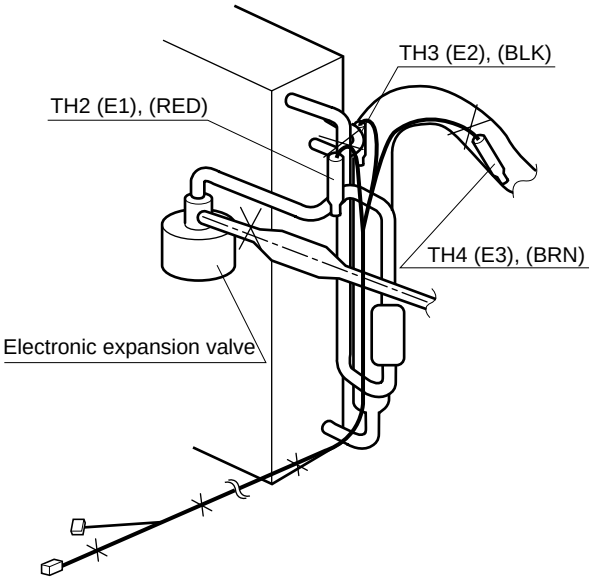
• ACR 436 H - ACR 448 H



4

Indoor Unit

• ADR 425 H



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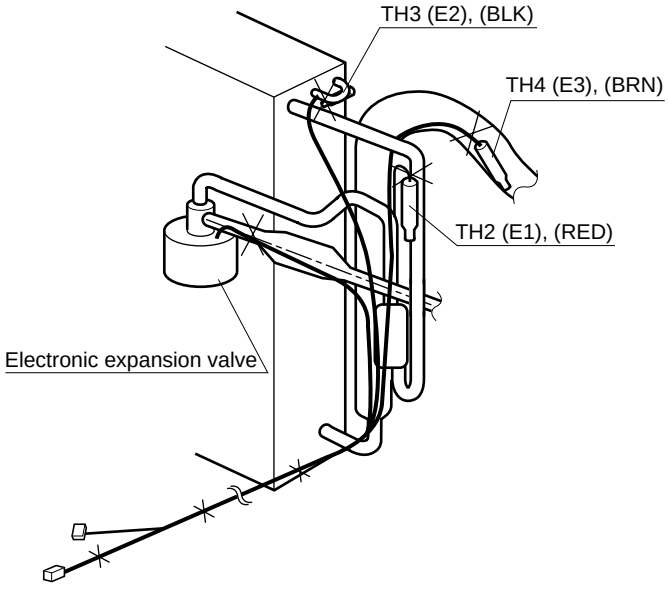
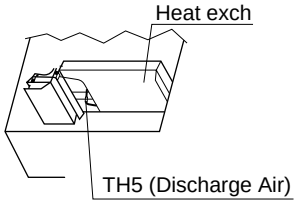
• ADR 436 H
• ADR 448 H



1258_U_I



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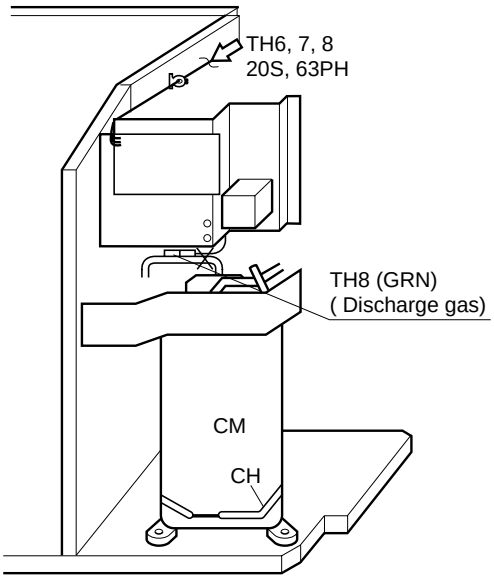
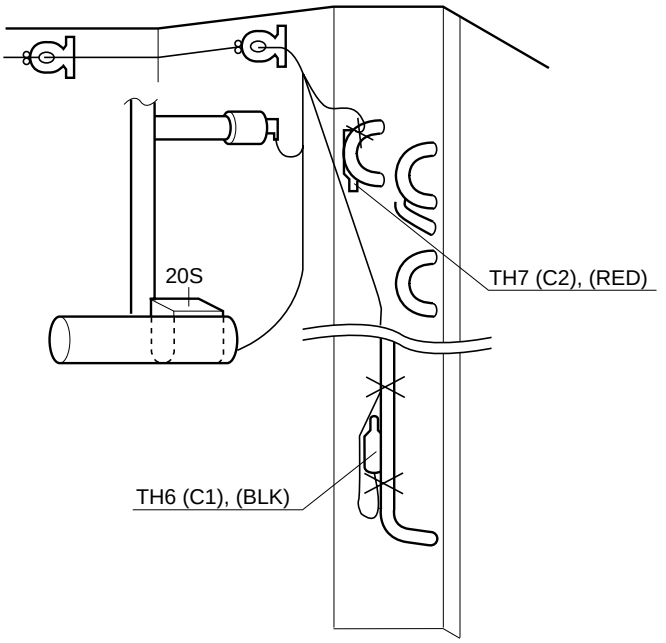
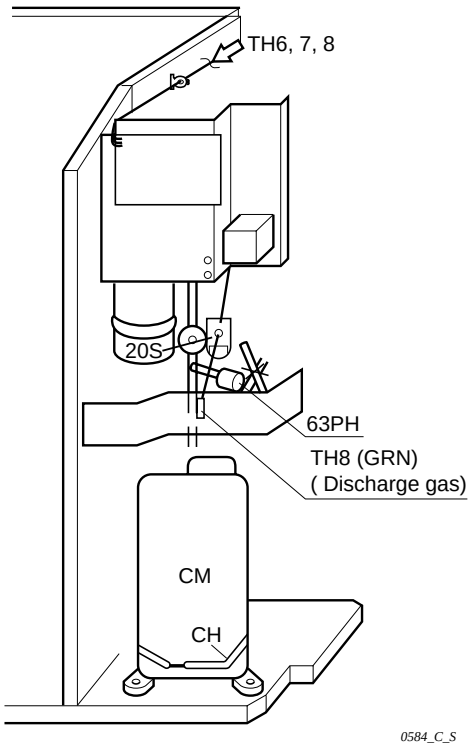
Outdoor Units

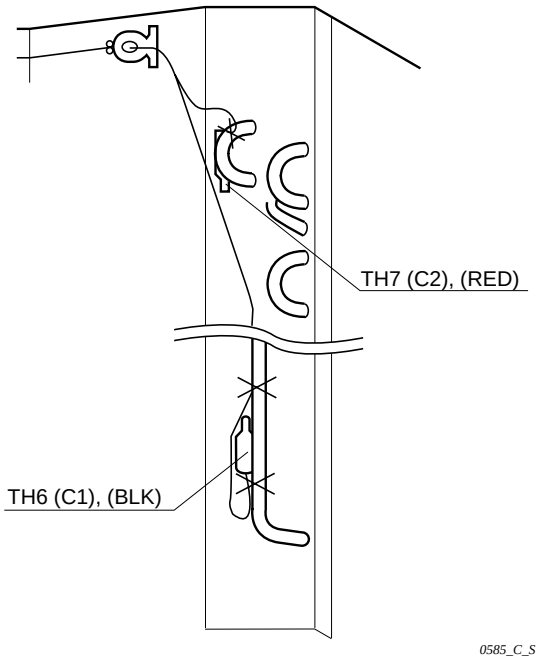
• AER 425 SHLE - AER 425 SHL3E





• AER 436 SHL3E





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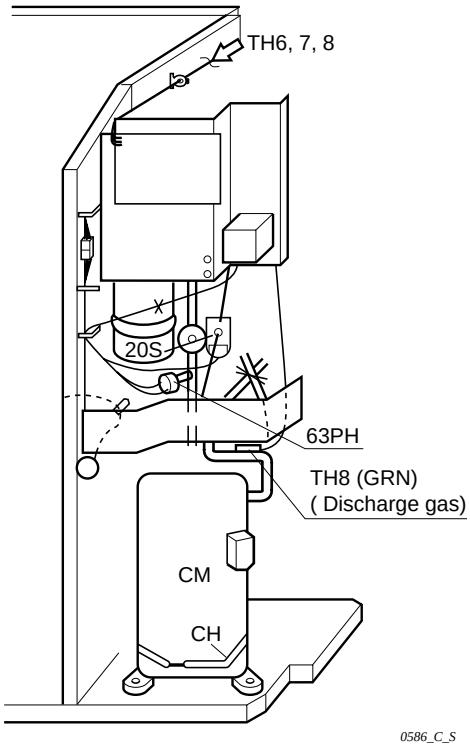
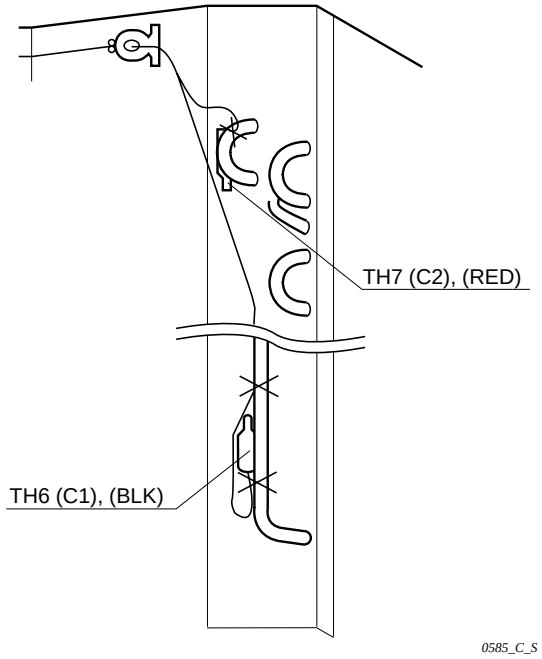
Outdoor Units

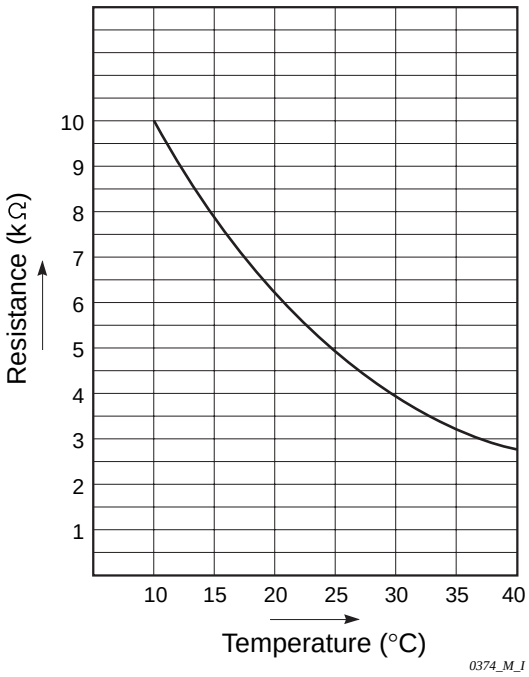
• AER 448 SHL3E





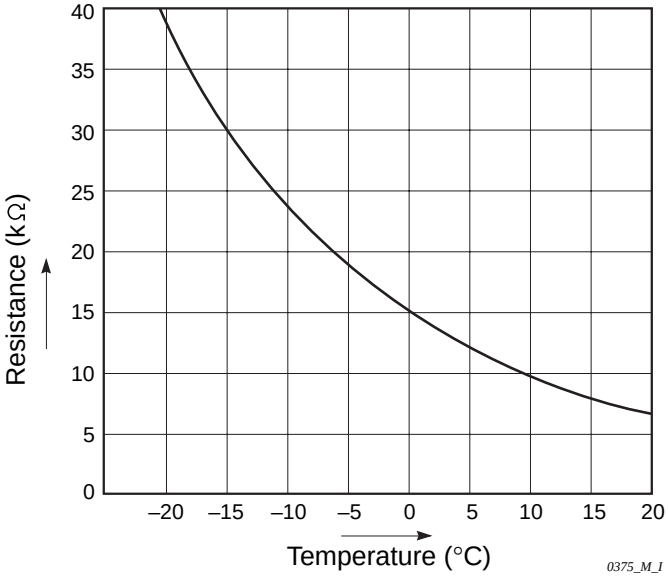
(6) Thermistor Characteristic Curve

(1) Room temp. sensor : TH1 (KTEC-35)
TH5 (KTEC-35)

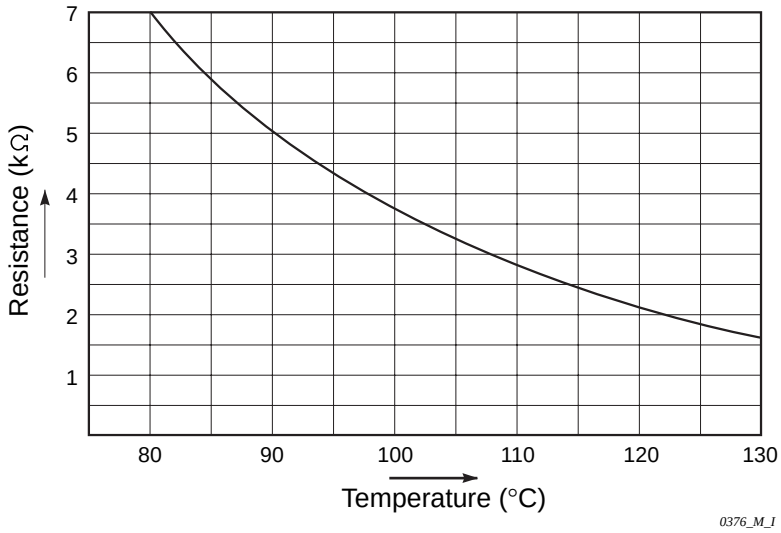


(2) Indoor heat exch.
coil sensor : TH2(E1), TH3(E2), TH4(E3)
Outdoor heat
exch. coil sensor : TH6(C1), TH7(C2)

(PBC-41E) (PB3M-41E)



(3) Compressor discharge gas temp. sensor : TH8 (PTC-51H)



4

(7) P.C.B. Setting

● Setting of outdoor control PCB

(A) Standard control (single outdoor unit)

In case of single outdoor unit installation, even if in case of twin, triple or quartet type (2, 3 or 4 indoor units), no setting necessary.
Keep factory shipment state (R.C. address is set in “0”).

In this case, auto. address operation takes place automatically for the first time when the power is switched on. This takes about a few minutes.

(B) Group control (Multiple outdoor units)

In case of group control (up to 8 indoor units can be connected with one remote controller), before turning the power supply on set the R.C. address with S2, S3 on the outdoor control PCB.

R.C. address: Refrigerant circuit address 1 ~ 30.

Regarding the example of R.C. address for group control, please refer to page 53 and sec. 12-3 (page 87).

(C) Central control (when using the system controller)

In case of central control (when using the system controller,that is, when linking outdoor units in a network),

(a) Before turning the power supply on, set the R.C. address with S2, S3 on the outdoor control PCB.
(b) Remove the short plug (CN4, 2P Black) from all outdoor units except any one of outdoor unit.

Regarding the example of R.C. address for central control and the position of CN4, please refer to page 54 and sec. 12-3
(page 87).

● **Setting of indoor control PCB**

No setting necessary.
Each indoor unit address (UNIT No.: R.C. – No.) is decided after auto. address operation.

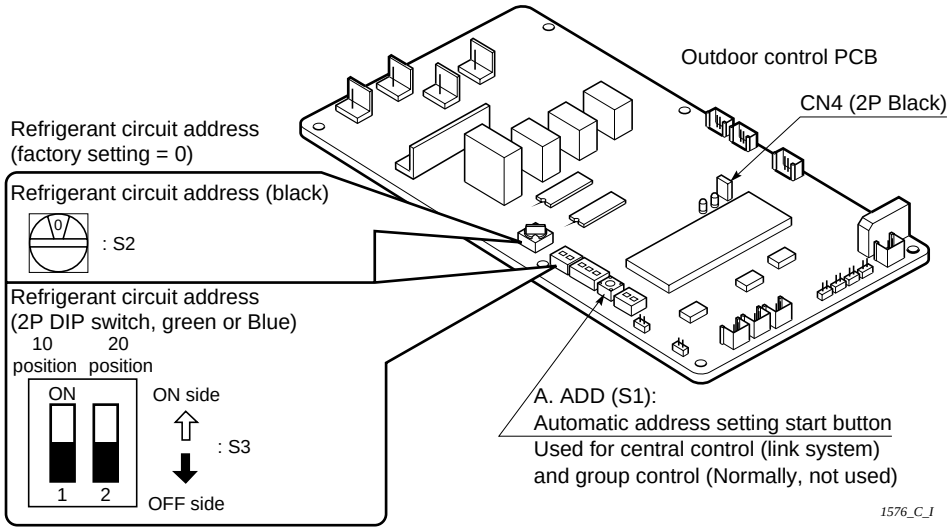
Indoor unit No.
Refrigerant Circuit No. (R.C. address)

Manual setting for indoor unit address can be performed also by remote controller.

(8) R.C. Address Setting Method

Outdoor unit R.C. address setting method

In case of group control or central control, set the R.C. address to 1, 2, 3, ... according to the No. of outdoor units.



R.C. address	R.C. address (S3 2P dip switch, green)	R.C. address (S2 Rotary switch, Black)
00 auto address ("0" when shipped from factory)	Both OFF	Set to 0
02 (In case of No. 2 outdoor unit)	Both OFF	Set to 2
03 (In case of No. 3 outdoor unit)	Both OFF	Set to 3
11 (In case of No. 11 outdoor unit)	10's digit ON	Set to 1
21 (In case of No. 21 outdoor unit)	20's digit ON	Set to 1
30 (In case of No. 30 outdoor unit)	10's digit and 20's digit ON	Set to 0

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(9) Automatic Address Setting Method

— For group control and central control with multiple outdoor units —

Carry out automatic address setting with the remote controller.

(1) All auto. address operation

① Press the **TEST / CHK** and ▲ **(** ◴ **)** buttons at the same time for more than 4 seconds.

② Press the **SET** button after confirming the CODE No. AA (CODE No. AA: All Auto. address operation).

After addresses are automatically set in order for the outdoor units from No. 1 to No. 30, the system returns to the normal stopped state.

(2) Individual auto. address operation for each refrigerant circuit

① To select each refrigerant circuit individually and set addresses automatically, press the **TEST / CHK** and ▲ **(** ◴ **)** buttons at the same time for more than 4 seconds, then press the ▲ , ▼ (SET TEMP) button once to set CODE No. A1.
(CODE No. A1: Auto. address operation)

② Select R.C. No. which you want to execute the auto. address operation with **UNIT** button.

③ Press the **SET** button. The auto. address operation will start. CODE No. changes from flashing to ON state.

④ If the error is happened during the operation, the alarm message will display. Check and remove the cause. If you want to interrupt the operation, press the **CL** button then the unit stands in waiting mode (Press the **SET** button).

⑤ If the auto. address operation finishes, the display will disappear.

⑥ Execute the operation of the other R.C. line in the same way by following the above steps ② to ③.

⑦ Complete the auto. address operation by pressing the **TEST / CHK** button.

NOTE

Required time for auto. address operation:
In case of group control : a few minutes for each R.C.
In case of central control : max. about 20 min. for each R.C.

(10) Displaying Indoor / Outdoor Unit Combination Numbers

Display the indoor / outdoor unit address after automatic address setting.

(1) When installing multiple units, match the indoor unit address numbers and the outdoor R.C. address numbers and display them at an easy-to-check location (near the nameplate) with an oil-based magic marker or other indelible marker so that the individual indoor and outdoor unit combinations can be checked.

Example:
Outdoor Unit 1 – Indoor Units 1-1, 1-2, 1-3, ...
Outdoor Unit 2 – Indoor Units 2-1, 2-2, 2-3, ...

(2) This is necessary for maintenance. Always label these.
*Check indoor unit address with the remote controller. Press the **TEST / CHK** button for at least 4 seconds and check the indoor unit address with the **UNIT** button. (Each time you press the **UNIT** button, the address changes 1-1, 1-2, ... 2-1, 2-2, ...) The fan for only the selected indoor unit turns on at high speed, so check which indoor unit runs and label the indoor unit address.
(If there is 1 outdoor unit, the addresses are 1-1, 1-2, ...)

When you press the **TEST / CHK** button again, the system returns to normal remote control mode.

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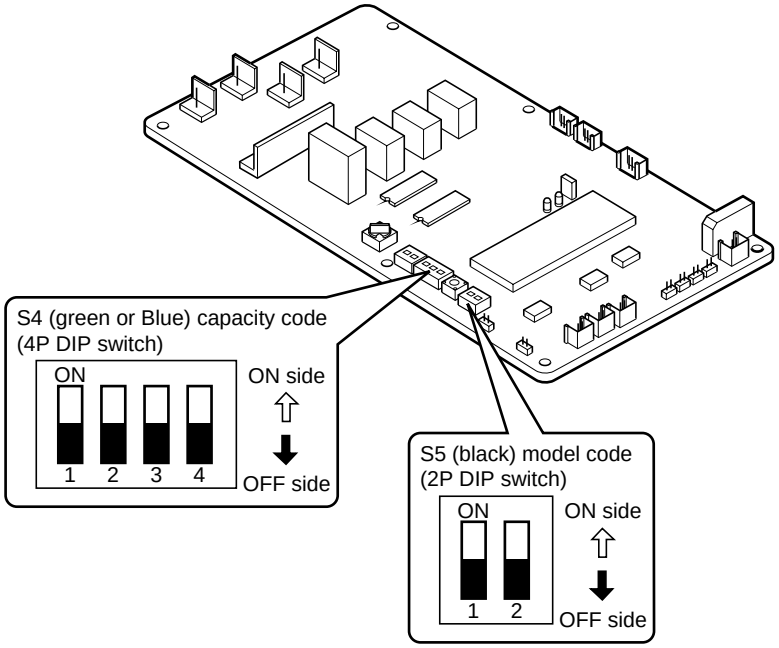
(11) Items to Check Prior to Test Run

(1) Turn on the power supply switch more than 5 hours before in order to charge the crank case heater.

(2) Fully open the outdoor service valve after making the leak inspection of field connected tubing, vacuuming, and gas charging if necessary.

(3) Check the capacity code and model code setting.
* The factory setting is as shown in the table. Double check it.
* The capacity code is set by S4 (green, 4P DIP switch) on outdoor control PCB.
The model code is set by S5 (black, 2P DIP switch) on outdoor control PCB.



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• R407 Models: AER type

S4. Capacity code

No. / Model No.	Outdoor PCB			
	1	2	3	4
25 type (1 phase)	ON	ON	ON	OFF
25 type (3 phase)	ON	ON	ON	OFF
36 type (3 phase)	OFF	ON	OFF	ON
48 type (3 phase)	OFF	OFF	ON	ON

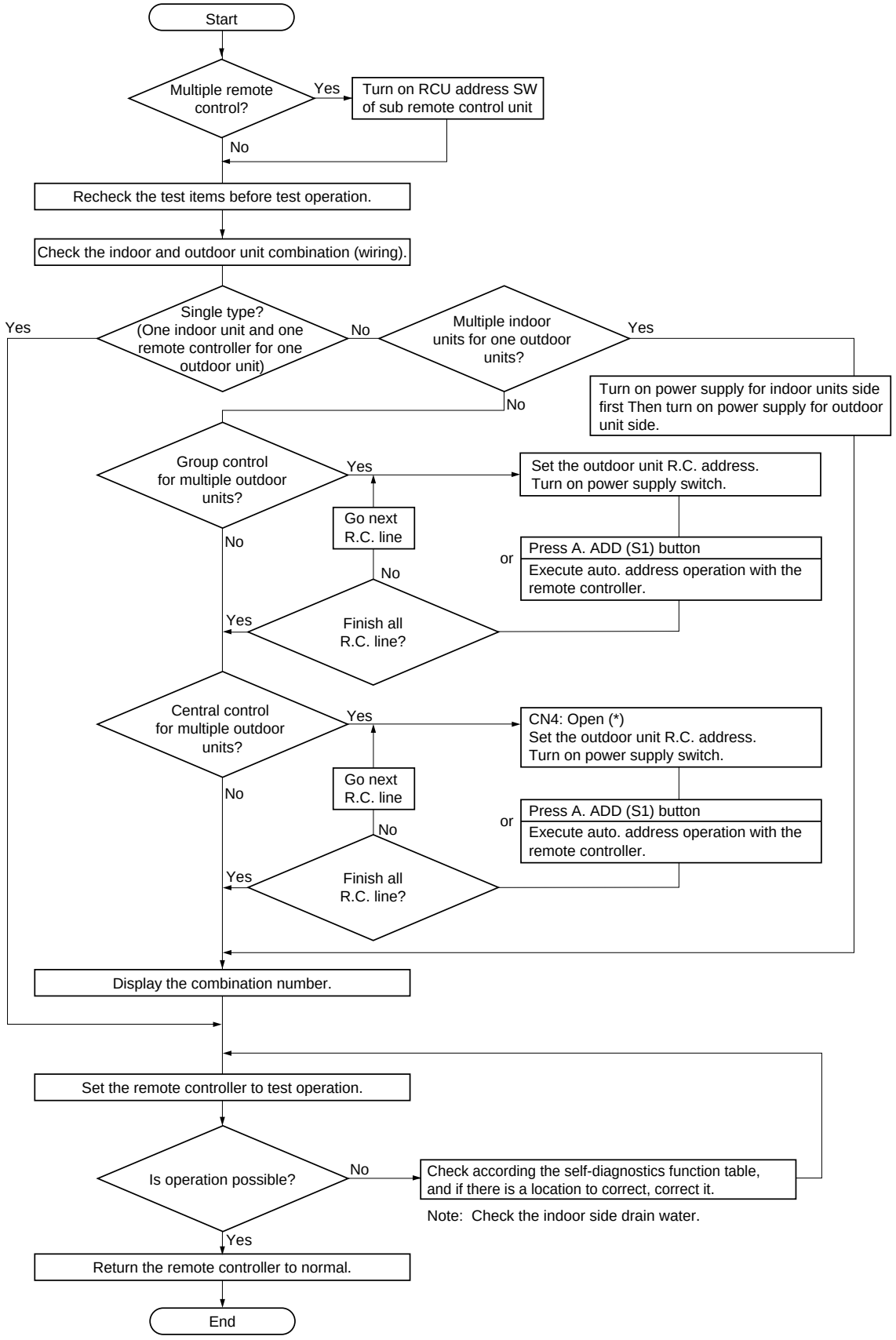
S5. Model code

No. / Model No.	Outdoor PCB	
	1	2
AER 425 SHLE	OFF	ON
AER 425 SHL3E	OFF	OFF
AER 436 SHL3E	OFF	OFF
AER 448 SHL3E	OFF	OFF

S5. Model code

No. / Model No.	Outdoor PCB	
	1	2
AER 425 SCLE	ON	ON
AER 425 SCL3E	ON	OFF
AER 436 SCL3E	ON	OFF
AER 448 SCL3E	ON	OFF

(12) Test Run Procedure



NOTE

1) One of CN4 of all linked outdoor units shold be short.
2) In case of using system controller, zone registration is required after finishing Test run. Regarding the zone registration, please refer to Installation Instructions attached with system controller.

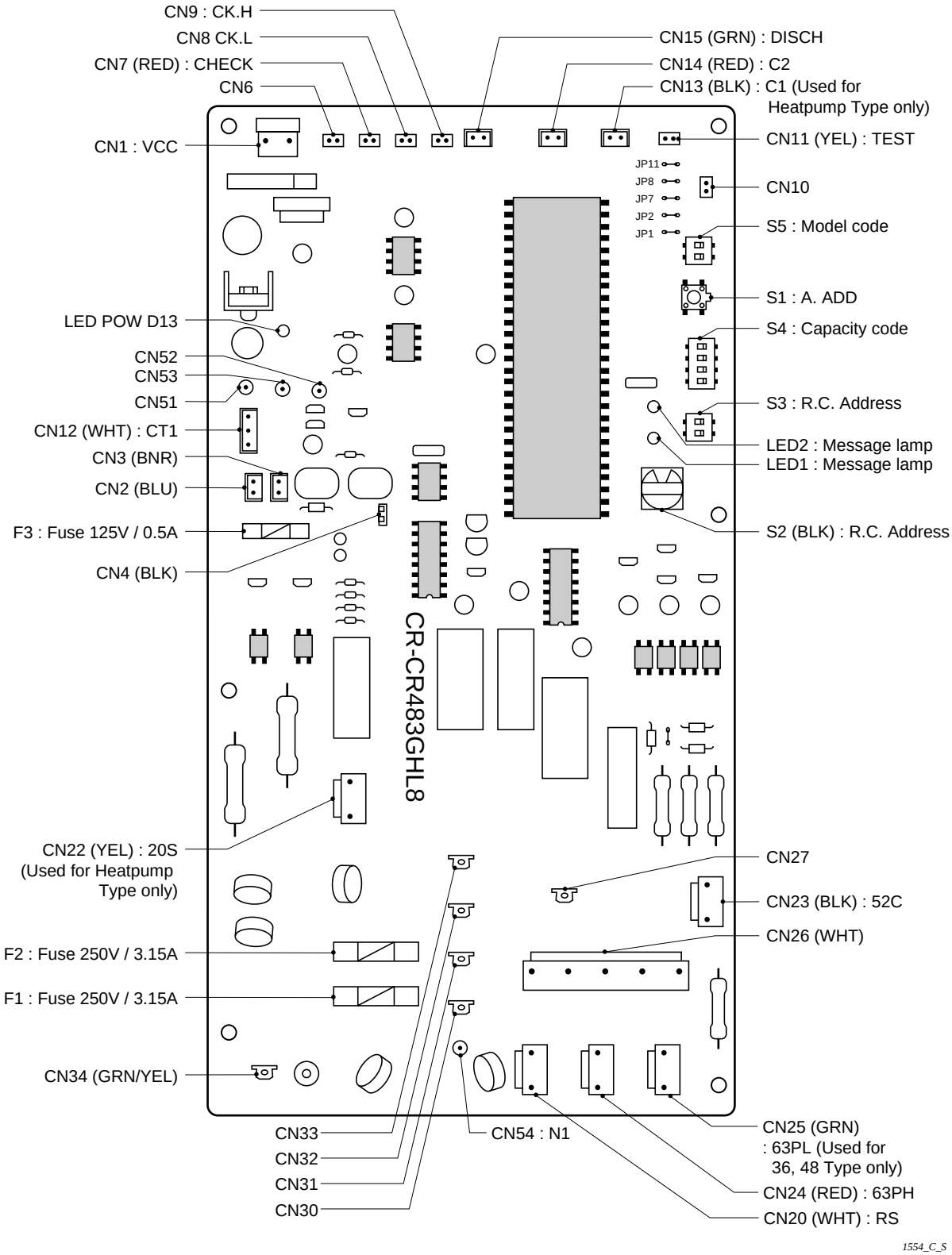
5. APPENDIX

5-1 P.C.B. ..... V - 2

5

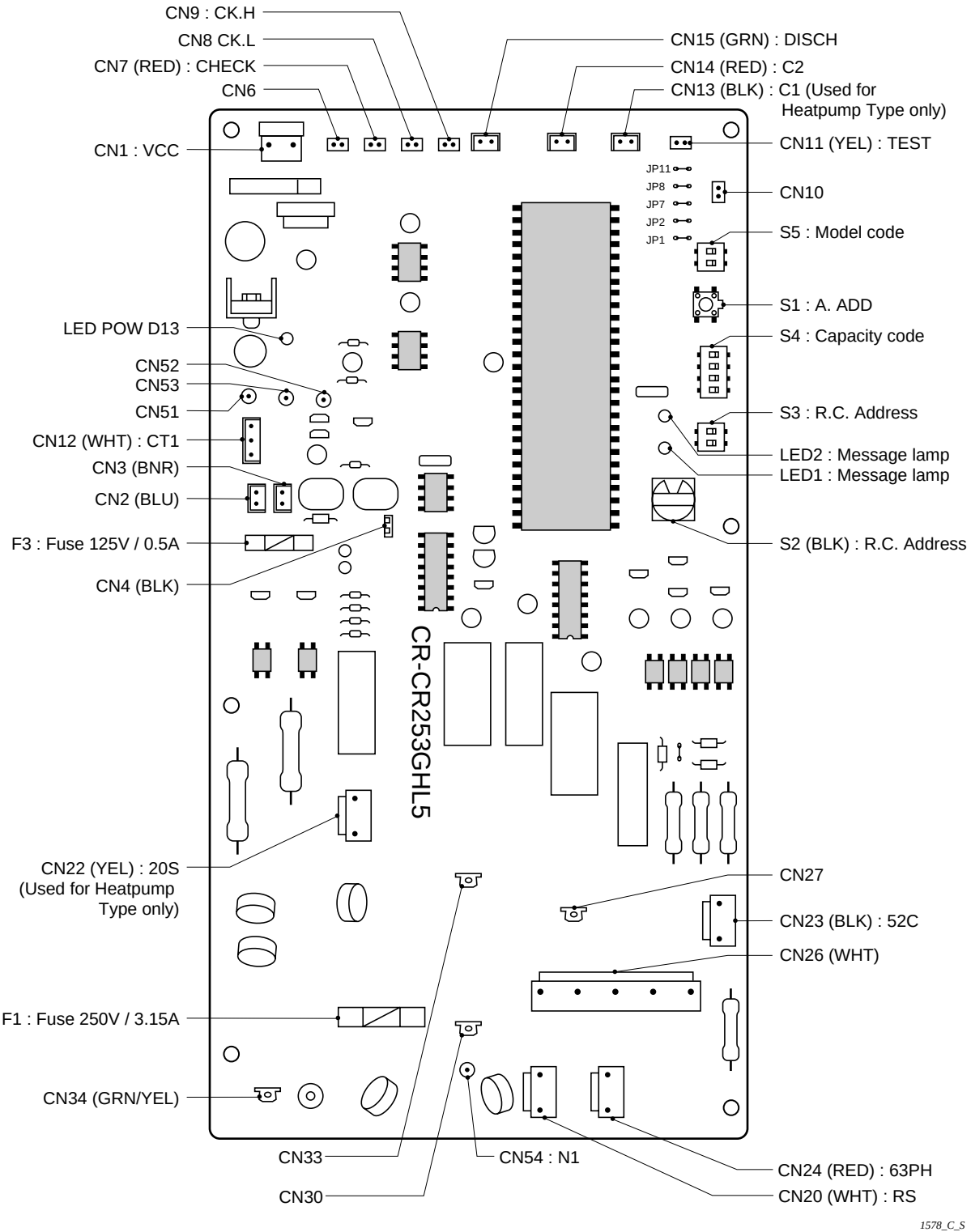
5-1 P.C.B.

Outdoor Unit Control P.C.B. : AER 425 SCL3E - AER 436 SCL3E - AER 448 SCL3E
AER 425 SHL3E - AER 436 SHL3E - AER 448 SHL3E



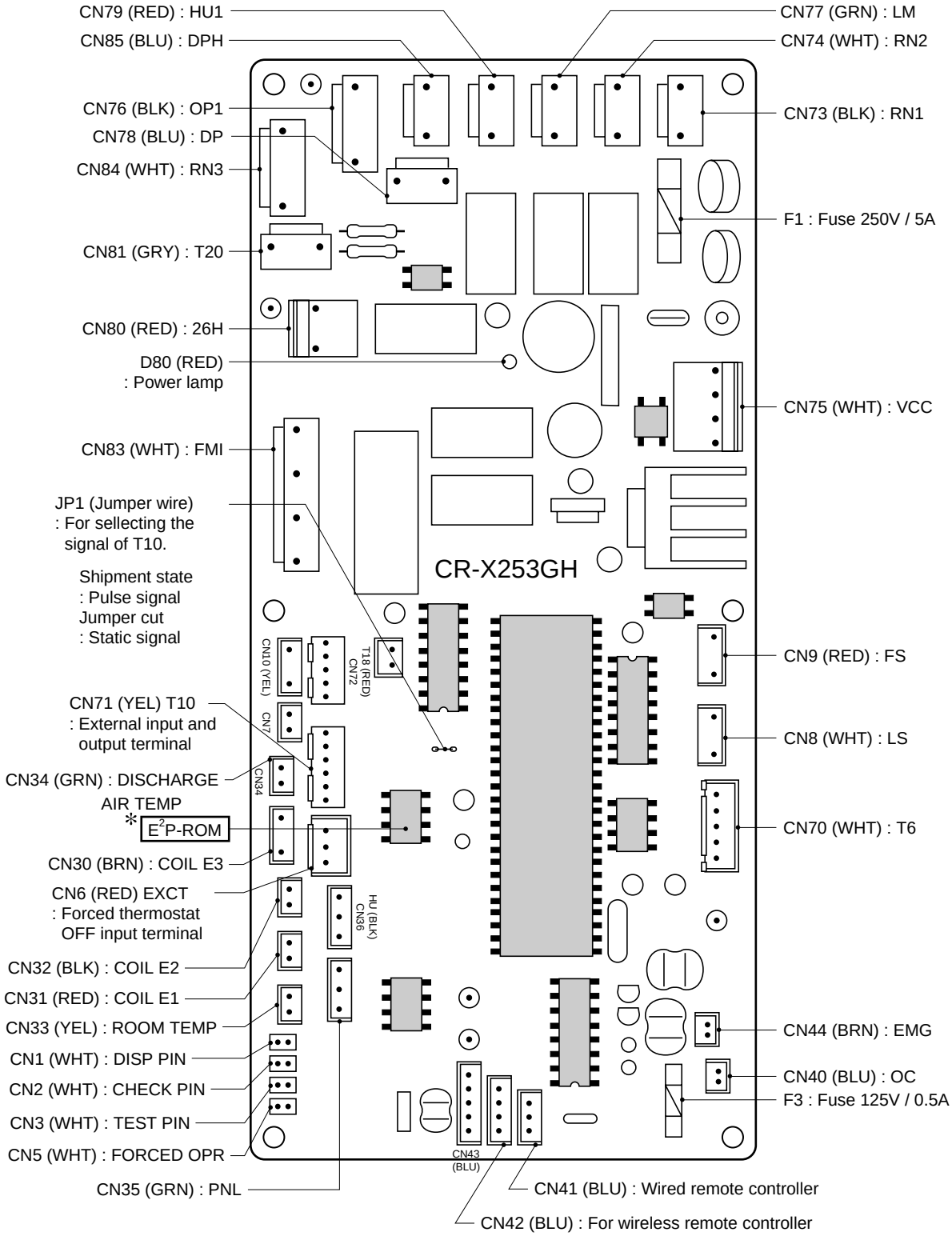
5-1 P.C.B.

Outdoor Unit Control P.C.B. : AER 425 SCLE - AER 425 SHLE



5-1 P.C.B.

Indoor Unit Control P.C.B. (CR-X253GH)



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Note when replacing the indoor unit P.C.B.

When replacing the indoor unit P.C.B. for service, remove the *E²P-ROM of the original P.C.B. then attach it to the new P.C.B. since the original E²P-ROM has it's own data (ex. indoor unit address) to identify the unit.

5

• The specifications, designs, and information in this brochure are subject to change without notice.