

14. CEILING RECESSED TYPE CASSETTERIA MODELS

**(Split system, Air to air)
heat pump type**

FDR208HEN-SA

258HEN-SA

308HEN-SA

308HES-SA

408HES-SA

508HES-SA

FDR308HEN-A

308HES-A

408HES-A

508HES-A

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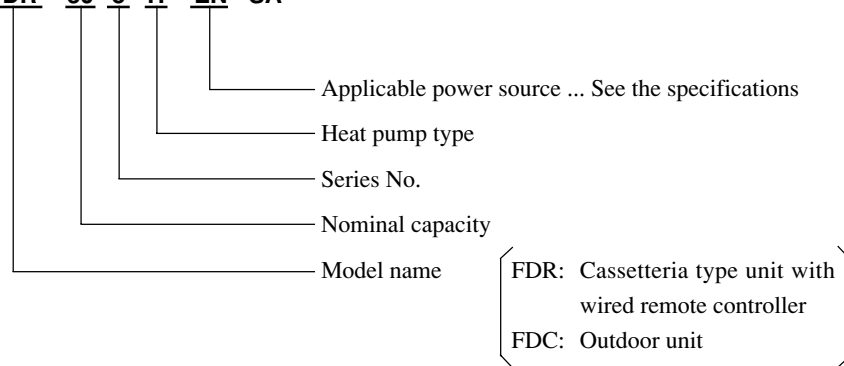
14.1 GENERAL INFORMATION

14.1.1 Specific features

- (1) Less refrigerant charge amount due to use of double phase refrigerant flow system. The total refrigerant charge amount has been reduced by more than 50%.
- (2) The indoor outdoor interconnection signal wiring has been done away with. The microcomputer chip is installed in the indoor unit. There is no need for the unit to communicate between the outdoor and indoor units so the unit is more resistant to electromagnetic noise thus the incidence of microcomputer malfunction has been reduced. The compressor in the outdoor unit has its own self protection function, that reacts according to abnormal high pressure and excessive high temperature.
- (3) There are only five power lines with earth line between the outdoor and indoor unit. As no signal wire is used there is no need to separate the power line from the signal line. One cable with 6 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.
- (4) Quiet sound design**
 - (a) Noise reducing effect has been improved significantly with the employment of large silent steam fans which are free from the wind swishing sound, and the special designing of noise shielding and acoustic suction panel.
 - (b) Ideal adaptation to the need for quiet sound at conference rooms, offices, etc.
- (5) 2 types of optional decorative panel**
 - (a) Optional decorative panel consists of silent panel and a canvas duct panel. [has smaller sizes and is prepared with canvas duct panel which provides higher drain head.]
 - (b) Flexibility of installation is increased with 2 type panels.
- (6) External static pressure**
 - (a) High external static pressure type (Refer to the specification in clause 2 for the external static pressure.)
 - (b) Maximum duct length is two times of conventional types. Adaptable to an extra long duct of one spot 20 meters extension.

14.1.2 How to read the model name

Example: **FDR 30 8 H EN - SA**



14.2 SELECTION DATA

14.2.1 Specifications

Model FDR208HEN-SA

Item		Model	FDR208HEN-SA		
			FDR208-A		FDC208HEN3A
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-26W-E	R-PNLC-26W-E	—
Nominal cooling capacity ⁽¹⁾		W	5000		
Nominal heating capacity ⁽¹⁾		W	5400		
Power source			1 Phase, 220/240V, 50Hz		
Operation data⁽³⁾	Cooling input	kW	1.78/1.87		
	Running current (Cooling)	A	8.3/8.1		
	Power factor (Cooling)	%	97/96		
	Heating input	kW	1.74/1.84		
	Running current (Heating)	A	8.1/7.9		
	Power factor (Heating)	%	98/97		
	Inrush current	A	44		
Noise level		dB(A)	Hi: 43 Lo: 37	Hi: 44 Lo: 38	52
Exterior dimensions					
Height × Width × Depth		mm	Unit: 355 × 750 × 635 Panel: 10 × 1040 × 750	Unit: (299+α) × 750 × 635 Panel: 10 × 864 × 585	690 × 880 × 290
Net weight		kg	Unit: 30 Panel: 7	Unit: 30 Panel: 5	49
Refrigerant equipment					
Compressor type & Q'ty			—		RM5523GNE4 × 1
Motor		kW	—		1.7
Starting method			—		Line starting
Heat exchanger			Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control			Capillary tube		
Refrigerant			R22		
Quantity		kg	Holding charged		0.98 [Pre-charged up to the piping length of 0m]
Refrigerant oil		ℓ	—		0.7 (BARREL FREEZE 32SAM)
Defrost control			MC controlled de-icer		
High pressure control			High pressure switch		
Air handling equipment			Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty					
Motor		W	55 × 1		55 × 1
Starting method			Line starting		
Air flow (Standard)		CMM	Hi: 14 Lo: 11		56
Available static pressure		Pa (mmAq)	Standard: 50 (5) High: 85 (8.5)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 2 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		20 (Crank case heater)
Operation control			Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch					
Room temperature control			Thermostat by electronics		—
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data		mm (in)	Liquid line: φ6.35 (1/4") Gas line: φ15.88 (5/8")		
Refrigerant piping size					
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

- (2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"
- (3) The operation data indicate when the air-conditioner is operated at 220/240V 50Hz.
- (4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503
- (5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR258HEN-SA

Item	Model	FDR258HEN-SA		
		FDR258-A		FDC258HEN3A
Decorative panel		Silent panel	Canvas panel	—
Panel model (Option)		R-PNLS-36W-E	R-PNLC-36W-E	—
Nominal cooling capacity ⁽¹⁾	W	5700		
Nominal heating capacity ⁽¹⁾	W	6100		
Power source		1 Phase, 220/240V, 50Hz		
Operation data ⁽²⁾	Cooling input	kW	2.06/2.17	
	Running current (Cooling)	A	9.4/9.4	
	Power factor (Cooling)	%	99/96	
	Heating input	kW	1.96/2.11	
	Running current (Heating)	A	9.1/9.2	
	Power factor (Heating)	%	98/96	
	Inrush current	A	51	
	Noise level	dB(A)	Hi: 43 Lo: 37	Hi: 44 Lo: 38
Exterior dimensions				
Height × Width × Depth	mm	Unit: 355 × 950 × 635 Panel: 10 × 1240 × 750	Unit: (299+α) × 950 × 635 Panel: 10 × 1064 × 585	845 × 880 × 340
Net weight	kg	Unit: 35 Panel: 8	Unit: 35 Panel: 6	55
Refrigerant equipment		—		RM5526GNE4 × 1
Compressor type & Q'ty				
Motor	kW	—		1.9
Starting method		—		Line starting
Heat exchanger		Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control		Capillary tube		
Refrigerant		R22		
Quantity	kg	Holding charged		1.1 [Pre-charged up to the piping length of 5m]
Refrigerant oil	ℓ	—		0.7 (BARREL FREEZE 32SAM)
Defrost control		MC controlled de-icer		
High pressure control		High pressure switch		
Air handling equipment		Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty				
Motor	W	90 × 1		55 × 1
Starting method		Line starting		
Air flow (Standard)	CMM	Hi: 18 Lo: 14		56
Available static pressure	Pa (mmAq)	Standard: 45 (4.5) High: 80 (8.0)		—
Fresh air intake		Available		—
Air filter, Q'ty		Polypropylene net × 2 (washable)		—
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater	W	—		20 (Crank case heater)
Operation control		Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch				
Room temperature control		Thermostat by electronics		—
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data	mm	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Refrigerant piping size	(in)			
Connecting method		Flare piping		
Drain hose		(Connectable with VP25)		—
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit, Drain hose		
Optional parts		Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

- (2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"
- (3) The operation data indicate when the air-conditioner is operated at 220/240V 50Hz.
- (4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503
- (5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR308HEN-SA

Item		Model	FDR308HEN-SA		
			FDR308-A		FDC308HEN3
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-36W-E	R-PNLC-36W-E	—
Nominal cooling capacity ⁽¹⁾		W	7100		
Nominal heating capacity ⁽¹⁾		W	8000		
Power source			1 Phase, 220/240V, 50Hz		
Operation data⁽²⁾	Cooling input	kW	3.02/3.22		
	Running current (Cooling)	A	14.0/14.5		
	Power factor (Cooling)	%	98/93		
	Heating input	kW	2.88/3.04		
	Running current (Heating)	A	13.4/13.8		
	Power factor (Heating)	%	98/92		
	Inrush current	A	95		
	Noise level	dB(A)	Hi: 44 Lo: 38	Hi: 45 Lo: 39	52
Exterior dimensions					
Height × Width × Depth		mm	Unit: 355 × 950 × 635 Panel: 10 × 1240 × 750	Unit: (299+α) × 950 × 635 Panel: 10 × 1064 × 585	845 × 880 × 340
Net weight		kg	Unit: 35 Panel: 8	Unit: 35 Panel: 6	74
Refrigerant equipment			—		GT-A5534EN41 × 1
Compressor type & Q'ty			—		2.5
Motor		kW	—		2.5
Starting method			—		Line starting
Heat exchanger			Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control			Capillary tube		
Refrigerant			R22		
Quantity		kg	Holding charged		1.4 [Pre-charged up to the piping length of 5m]
Refrigerant oil		ℓ	—		1.45 (BARREL FREEZE 32SAM)
Defrost control			MC controlled de-icer		
High pressure control			High pressure switch		
Air handling equipment			Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty			—		—
Motor		W	100 × 1		55 × 1
Starting method			Line starting		
Air flow (Standard)		CMM	Hi: 20 Lo: 15		58
Available static pressure		$\frac{\text{Pa}}{(\text{mmAq})}$	Standard: 45 (4.5) High: 80 (8.0)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 2 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		33 (Crank case heater)
Operation control			Wired remote control switch		— (Indoor unit side)
Operation switch			(Optional : RCD-H-E)		—
Room temperature control			Thermostat by electronics		—
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data		mm	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Refrigerant piping size		(in)	—		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 220/240V 50Hz.

(4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503

(5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR308HES-SA

Item		Model	FDR308HES-SA		
			FDR308-A		FDC308HES3
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-36W-E	R-PNLC-36W-E	—
Nominal cooling capacity ⁽¹⁾		W	7100		
Nominal heating capacity ⁽¹⁾		W	8000		
Power source			3 Phase, 380/415V, 50Hz		
Operation data⁽²⁾	Cooling input	kW	2.94/3.00		
	Running current (Cooling)	A	5.2/5.6		
	Power factor (Cooling)	%	86/75		
	Heating input	kW	2.58/2.64		
	Running current (Heating)	A	4.7/4.9		
	Power factor (Heating)	%	83/75		
	Inrush current	A	45		
	Noise level	dB(A)	Hi: 44 Lo: 38	Hi: 45 Lo: 39	52
Exterior dimensions					
Height × Width × Depth		mm	Unit: 355 × 950 × 635 Panel: 10 × 1240 × 750	Unit: (299+α) × 950 × 635 Panel: 10 × 1064 × 585	845 × 880 × 340
Net weight		kg	Unit: 35 Panel: 8	Unit: 35 Panel: 6	74
Refrigerant equipment			—		GT-A5534ES41 × 1
Compressor type & Q'ty			—		2.5
Motor		kW	—		Line starting
Starting method			—		Slitted fines & bare tubing
Heat exchanger			Louver fines & inner grooved tubing		Capillary tube
Refrigerant control			R22		
Refrigerant			R22		
Quantity		kg	Holding charged		1.4 [Pre-charged up to the piping length of 5m]
Refrigerant oil		ℓ	—		1.45 (BARREL FREEZE 32SAM)
Defrost control			MC controlled de-icer		
High pressure control			High pressure switch		
Air handling equipment			Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty			—		55 × 1
Motor		W	100 × 1		Line starting
Starting method			Line starting		
Air flow (Standard)		CMM	Hi: 20 Lo: 15		58
Available static pressure		Pa (mmAq)	Standard: 45 (4.5) High: 80 (8.0)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 2 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		33 (Crank case heater)
Operation control			Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch			Thermostat by electronics		—
Room temperature control			Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data		mm	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Refrigerant piping size		(in)	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating		20°C	—	7°C	6°C	

- (2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"
- (3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.
- (4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503
- (5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR408HES-SA

Item	Model	FDR408HES-SA		
		FDR408-A		FDC408HES3
Decorative panel		Silent panel	Canvas panel	—
Panel model (Option)		R-PNLS-46W-E	R-PNLC-46W-E	—
Nominal cooling capacity ⁽¹⁾	W	10000		
Nominal heating capacity ⁽¹⁾	W	11200		
Power source		3 Phase, 380/415V, 50Hz		
Operation data⁽²⁾	Cooling input	kW	4.48/4.58	
	Running current (Cooling)	A	7.6/7.9	
	Power factor (Cooling)	%	90/81	
	Heating input	kW	3.86/3.90	
	Running current (Heating)	A	6.9/7.3	
	Power factor (Heating)	%	85/74	
	Inrush current	A	53	
	Noise level	dB(A)	Hi: 45 Lo: 38	Hi: 46 Lo: 39
Exterior dimensions				
Height × Width × Depth	mm	Unit: 406 × 1370 × 635 Panel: 10 × 1660 × 750	Unit: (350+α) × 1370 × 635 Panel: 10 × 1484 × 585	1250 × 920 × 340
Net weight	kg	Unit: 50 Panel: 9	Unit: 50 Panel: 7	90
Refrigerant equipment				
Compressor type & Q'ty		—		GU-A5550ES41 × 1
Motor	kW	—		2.8
Starting method		—		Line starting
Heat exchanger		Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control		Capillary tube		
Refrigerant		R22		
Quantity	kg	Holding charged		1.7 [Pre-charged up to the piping length of 5m]
Refrigerant oil	ℓ	—		1.6 (BARREL FREEZE 32SAM)
Defrost control		MC controlled de-icer		
High pressure control		High pressure switch		
Air handling equipment				
Fan type & Q'ty		Multiblade centrifugal fan × 3		Propeller fan × 2
Motor	W	45 × 1 + 90 × 1		40 × 2
Starting method		Line starting		
Air flow (Standard)	CMM	Hi: 28 Lo: 22		70
Available static pressure	$\frac{\text{Pa}}{(\text{mmAq})}$	Standard: 50 (5.0) High: 80 (8.0)		—
Fresh air intake		Available		—
Air filter, Q'ty		Polypropylene net × 3 (washable)		—
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater	W	—		70 (Crank case heater)
Operation control		Wired remote control switch		
Operation switch		(Optional : RCD-H-E)		— (Indoor unit side)
Room temperature control		Thermostat by electronics		—
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data	mm			
Refrigerant piping size	(in)	Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")		
Connecting method		Flare piping		
Drain hose		(Connectable with VP25)		—
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit, Drain hose		
Optional parts		Decorative Panel		

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating		20°C	—	7°C	6°C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.

(4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503

(5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR508HES-SA

Item		Model	FDR508HES-SA		
			FDR508-A		FDC508HES3
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-46W-E	R-PNLC-46W-E	—
Nominal cooling capacity ⁽¹⁾		W	12500		
Nominal heating capacity ⁽¹⁾		W	14000		
Power source			3 Phase, 380/415V, 50Hz		
Operation data ⁽²⁾	Cooling input	kW	5.27/5.52		
	Running current (Cooling)	A	9.4/10.2		
	Power factor (Cooling)	%	85/75		
	Heating input	kW	4.82/4.95		
	Running current (Heating)	A	8.9/9.8		
	Power factor (Heating)	%	82/70		
	Inrush current	A	74		
	Noise level	dB(A)	Hi: 46 Lo: 39	Hi: 47 Lo: 40	55
Exterior dimensions					
Height × Width × Depth		mm	Unit: 406 × 1370 × 635 Panel: 10 × 1660 × 750	Unit: (350+α) × 1370 × 635 Panel: 10 × 1484 × 585	1250 × 920 × 340
Net weight		kg	Unit: 52 Panel: 9	Unit: 52 Panel: 7	101
Refrigerant equipment			—		GU-A5570ES41 × 1
Compressor type & Q'ty			—		3.75
Motor		kW	—		Line starting
Starting method			—		Slitted fines & bare tubing
Heat exchanger			Louver fines & inner grooved tubing		Capillary tube
Refrigerant control			R22		
Refrigerant			R22		
Quantity		kg	Holding charged		1.9 [Pre-charged up to the piping length of 5m]
Refrigerant oil		ℓ	—		1.6 (BARREL FREEZE 32SAM)
Defrost control			MC controlled de-icer		
High pressure control			High pressure switch		
Air handling equipment			Multiblade centrifugal fan × 3		Propeller fan × 2
Fan type & Q'ty			—		65 × 2
Motor		W	50 × 1 + 100 × 1		Line starting
Starting method			—		
Air flow (Standard)		CMM	Hi: 34 Lo: 27		110
Available static pressure		Pa (mmAq)	Standard: 50 (5.0) High: 80 (8.0)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 3 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		70 (Crank case heater)
Operation control			Wired remote control switch		— (Indoor unit side)
Operation switch			(Optional : RCD-H-E)		—
Room temperature control			Thermostat by electronics		—
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal thermostat for fanmotor. Abnormal discharge temperature protection.
Installation data		mm	Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")		
Refrigerant piping size		(in)	—		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

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- (3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.
- (4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503
- (5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR308HEN-A

Item	Model	FDR308HEN-A		
		FDR308-A		FDC306HEN3
Decorative panel		Silent panel	Canvas panel	—
Panel model (Option)		R-PNLS-36W-E	R-PNLC-36W-E	—
Nominal cooling capacity ⁽¹⁾	W	7100		
Nominal heating capacity ⁽¹⁾	W	7300		
Power source		1 Phase, 220/240V, 50Hz		
Operation data ⁽²⁾	Cooling input	kW	3.11/3.15	
	Running current (Cooling)	A	15.7/16.4	
	Power factor (Cooling)	%	90/80	
	Heating input	kW	2.86/2.90	
	Running current (Heating)	A	14.6/15.3	
	Power factor (Heating)	%	89/79	
	Inrush current	A	89	
	Noise level	dB(A)	Hi: 44 Lo: 38	Hi: 45 Lo: 39
Exterior dimensions				
Height × Width × Depth	mm	Unit: 355 × 950 × 635 Panel: 10 × 1240 × 750	Unit: (299+α) × 950 × 635 Panel: 10 × 1064 × 585	844 × 950 × 340
Net weight	kg	Unit: 35 Panel: 8	Unit: 35 Panel: 6	69
Refrigerant equipment		—		RC5532ENE1 × 1
Compressor type & Q'ty				
Motor	kW	—		2.24
Starting method		—		Line starting
Heat exchanger		Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control		Capillary tube		
Refrigerant		R22		
Quantity	kg	Holding charged		1.3 [Pre-charged up to the piping length of 5m]
Refrigerant oil	ℓ	—		1.63 (SUNISO 3GS)
Defrost control		IC controlled de-icer		
High pressure control		High pressure regulator valve		
Air handling equipment		Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty				
Motor	W	100 × 1		60 × 1
Starting method		Line starting		
Air flow (Standard)	CMM	Hi: 20 Lo: 15		54
Available static pressure	Pa (mmAq)	Standard: 45 (4.5) High: 80 (8.0)		—
Fresh air intake		Available		—
Air filter, Q'ty		Polypropylene net × 2 (washable)		—
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater	W	—		40 (Crank case heater)
Operation control		Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch				
Room temperature control		Thermostat by electronics		—
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal Pressure relief valve for compressor.
Installation data	mm	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Refrigerant piping size	(in)			
Connecting method		Flare piping		
Drain hose		(Connectable with VP25)		—
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit, Drain hose		
Optional parts		Decorative Panel		

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating		20°C	—	7°C	6°C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 220/240V 50Hz.

(4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503

(5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR308HES-A

Item	Model	FDR308HES-A		
		FDR308-A		FDC306HES3
Decorative panel		Silent panel	Canvas panel	—
Panel model (Option)		R-PNLS-36W-E	R-PNLC-36W-E	—
Nominal cooling capacity ⁽¹⁾	W	7100		
Nominal heating capacity ⁽¹⁾	W	7300		
Power source		3 Phase, 380/415V, 50Hz		
Operation data ⁽²⁾	Cooling input	kW	2.87/2.88	
	Running current (Cooling)	A	5.4/5.4	
	Power factor (Cooling)	%	81/74	
	Heating input	kW	2.54/2.56	
	Running current (Heating)	A	5.0/5.1	
	Power factor (Heating)	%	77/70	
	Inrush current	A	43	
	Noise level	dB(A)	Hi: 44 Lo: 38	Hi: 45 Lo: 39
Exterior dimensions				
Height × Width × Depth	mm	Unit: 355 × 950 × 635 Panel: 10 × 1240 × 750	Unit: (299+α) × 950 × 635 Panel: 10 × 1064 × 585	844 × 950 × 340
Net weight	kg	Unit: 35 Panel: 8	Unit: 35 Panel: 6	69
Refrigerant equipment		—		RC5538ESE1 × 1
Compressor type & Q'ty				
Motor	kW	—		2.24
Starting method		—		Line starting
Heat exchanger		Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control		Capillary tube		
Refrigerant		R22		
Quantity	kg	Holding charged		1.3 [Pre-charged up to the piping length of 5m]
Refrigerant oil	ℓ	—		1.63 (SUNISO 3GS)
Defrost control		IC controlled de-icer		
High pressure control		High pressure regulator valve		
Air handling equipment		Multiblade centrifugal fan × 2		Propeller fan × 1
Fan type & Q'ty				
Motor	W	100 × 1		60 × 1
Starting method		Line starting		
Air flow (Standard)	CMM	Hi: 20 Lo: 15		54
Available static pressure	Pa (mmAq)	Standard: 45 (4.5) High: 80 (8.0)		—
Fresh air intake		Available		—
Air filter, Q'ty		Polypropylene net × 2 (washable)		—
Shock & vibration absorber		Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater	W	—		40 (Crank case heater)
Operation control		Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch				
Room temperature control		Thermostat by electronics		—
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal Pressure relief valve for compressor.
Installation data	mm			
Refrigerant piping size	(in)	Liquid line: φ9.52 (3/8") Gas line: φ15.88 (5/8")		
Connecting method		Flare piping		
Drain hose		(Connectable with VP25)		—
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		Mounting kit, Drain hose		
Optional parts		Decorative Panel		

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating		20°C	—	7°C	6°C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.

(4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503

(5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR408HES-A

Item		Model	FDR408HES-A		
			FDR408-A		FDC406HES3
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-46W-E	R-PNLC-46W-E	—
Nominal cooling capacity ⁽¹⁾		W	10200		
Nominal heating capacity ⁽¹⁾		W	10500		
Power source			3 Phase, 380/415V, 50Hz		
Operation data⁽²⁾	Cooling input	kW	3.76/3.76		
	Running current (Cooling)	A	7.3/7.3		
	Power factor (Cooling)	%	78/72		
	Heating input	kW	3.46/3.46		
	Running current (Heating)	A	7.0/7.0		
	Power factor (Heating)	%	75/69		
	Inrush current	A	45		
Noise level		dB(A)	Hi: 45 Lo: 38	Hi: 46 Lo: 39	57
Exterior dimensions					
Height × Width × Depth		mm	Unit: 406 × 1370 × 635 Panel: 10 × 1660 × 750	Unit: (350+α) × 1370 × 635 Panel: 10 × 1484 × 585	1250 × 950 × 340
Net weight		kg	Unit: 50 Panel: 9	Unit: 50 Panel: 7	86
Refrigerant equipment			—		RC5547ESE1 × 1
Compressor type & Q'ty			—		2.61
Motor		kW	—		Line starting
Starting method			—		Line starting
Heat exchanger			Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control			Capillary tube		
Refrigerant			R22		
Quantity		kg	Holding charged		1.6 [Pre-charged up to the piping length of 0m]
Refrigerant oil		ℓ	—		1.63 (SUNISO 3GS)
Defrost control			IC controlled de-icer		
High pressure control			High pressure regulator valve		
Air handling equipment			Multiblade centrifugal fan × 3		Propeller fan × 2
Fan type & Q'ty			—		—
Motor		W	45 × 1 + 90 × 1		60 × 2
Starting method			Line starting		
Air flow (Standard)		CMM	Hi: 28 Lo: 22		100
Available static pressure		Pa (mmAq)	Standard: 50 (5.0) High: 80 (8.0)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 3 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		40 (Crank case heater)
Operation control			Wired remote control switch (Optional : RCD-H-E)		— (Indoor unit side)
Operation switch			—		—
Room temperature control			Thermostat by electronics		—
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal Pressure relief valve for compressor.
Installation data		mm	Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")		
Refrigerant piping size		(in)	—		
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Operation					
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.

(4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503

(5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

Model FDR508HES-A

Item		Model	FDR508HES-A		
			FDR508-A		FDC506HES3
Decorative panel			Silent panel	Canvas panel	—
Panel model (Option)			R-PNLS-46W-E	R-PNLC-46W-E	—
Nominal cooling capacity ⁽¹⁾		W	12500		
Nominal heating capacity ⁽¹⁾		W	12800		
Power source			3 Phase, 380/415V, 50Hz		
Operation data ⁽²⁾	Cooling input	kW	4.84/4.84		
	Running current (Cooling)	A	9.9/9.9		
	Power factor (Cooling)	%	74/68		
	Heating input	kW	4.46/4.48		
	Running current (Heating)	A	9.1/9.2		
	Power factor (Heating)	%	74/68		
	Inrush current	A	68		
	Noise level	dB(A)	Hi: 46 Lo: 39	Hi: 47 Lo: 40	59
Exterior dimensions			Unit: 406 × 1370 × 635		1250 × 950 × 340
Height × Width × Depth		mm	Panel: 10 × 1660 × 750		
Net weight		kg	Unit: 52 Panel: 9	Unit: 52 Panel: 7	91
Refrigerant equipment			—		RC5563ESE2 × 1
Compressor type & Q'ty					
Motor		kW	—		3.73
Starting method			—		Line starting
Heat exchanger			Louver fines & inner grooved tubing		Slitted fines & bare tubing
Refrigerant control			Capillary tube		
Refrigerant			R22		
Quantity		kg	Holding charged		2.3 [Pre-charged up to the piping length of 5m]
Refrigerant oil		ℓ	—		2.07 (SUNISO 3GS)
Defrost control			IC controlled de-icer		
High pressure control			High pressure regulator valve		
Air handling equipment			Multiblade centrifugal fan × 3		Propeller fan × 2
Fan type & Q'ty					
Motor		W	50 × 1 + 100 × 1		60 × 2
Starting method			Line starting		
Air flow (Standard)		CMM	Hi: 34 Lo: 27		100
Available static pressure		Pa (mmAq)	Standard: 50 (5.0) High: 80 (8.0)		—
Fresh air intake			Available		—
Air filter, Q'ty			Polypropylene net × 3 (washable)		—
Shock & vibration absorber			Rubber sleeve (for fan motor)		Rubber mount (for compressor)
Electric heater		W	—		40 (Crank case heater)
Operation control			Wired remote control switch		— (Indoor unit side)
Operation switch			(Optional : RCD-H-E)		
Room temperature control			Thermostat by electronics		—
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.		Internal protector for compressor. Internal thermostat for fan motor. Internal Pressure relief valve for compressor.
Installation data		mm	Liquid line: φ9.52 (3/8") Gas line: φ19.05 (3/4")		
Refrigerant piping size		(in)			
Connecting method			Flare piping		
Drain hose			(Connectable with VP25)		—
Insulation for piping			Necessary (both Liquid & Gas lines)		
Accessories			Mounting kit, Drain hose		
Optional parts			Decorative Panel		

Notes (1) The data are measured at the following conditions.

Item	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27°C	19°C	35°C	24°C	ISO-T1, JIS B8616
Heating	20°C	—	7°C	6°C	

- (2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. JIS B8616 "UNITARY AIR-CONDITIONERS"
- (3) The operation data indicate when the air-conditioner is operated at 380/415V 50Hz.
- (4) Canvas panel is used in combination with following canvas duct. Canvas duct: HA01503
- (5) Main unit height of canvas specification type is higher than the other type for canvas duct portion.

14.2.2 Range of usage & limitations

Models FDR208~508 (FDC208~508 type)

Item	Models	FDR208, 258 (FDC208, 258 type)	FDR308~508 (FDC308~508 type)
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart	
Outdoor air temperature (Upper, lower limits)			
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature: 28°C or less, relative humidity: 80% or less	
Refrigerant line (one way) length		Max. 30m	Max. 50m
Vertical height difference between outdoor unit and indoor unit		Max. 20m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)	Max. 30m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)
Power source voltage		Rating ± 10%	
Voltage at starting		Min. 85% of rating	
Frequency of ON-OFF cycle		Max. 10 times/h	
ON and OFF interval		Max. 3 minutes	

Models FDR308~508 (FDC306~506 type)

Item	Models	FDR308~508 (FDC306~506 type)
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart
Outdoor air temperature (Upper, lower limits)		
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature: 28°C or less, relative humidity: 80% or less
Refrigerant line (one way) length		Max. 30m
Vertical height difference between outdoor unit and indoor unit		Max. 15m
Power source voltage		Rating ± 10%
Voltage at starting		Min. 85% of rating
Frequency of ON-OFF cycle		Max. 10 times/h
ON and OFF interval		Max. 3 minutes

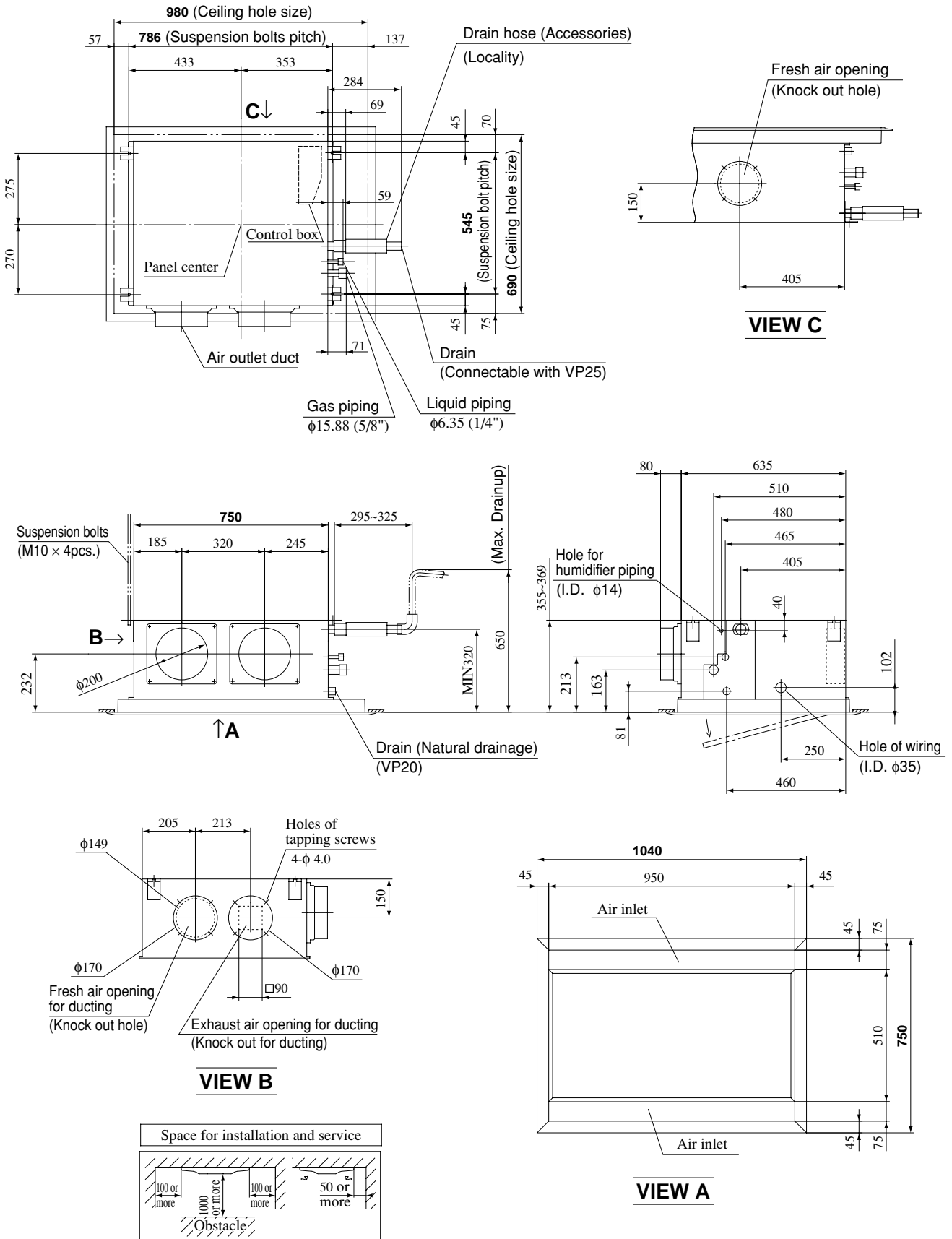
14.2.3 Exterior dimensions

(1) Indoor unit

Model FDR208-A

Silent Panel (Model: R-PNLS-26W-E)

Unit : mm

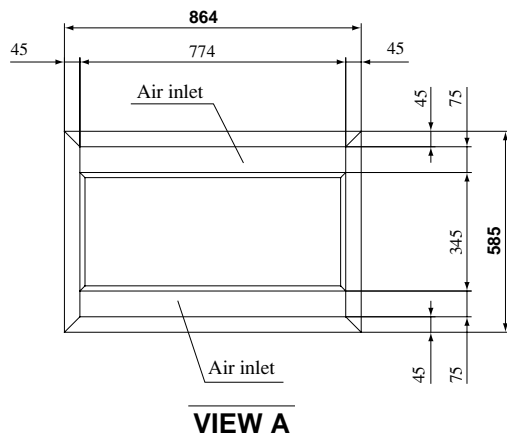
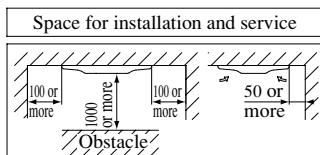
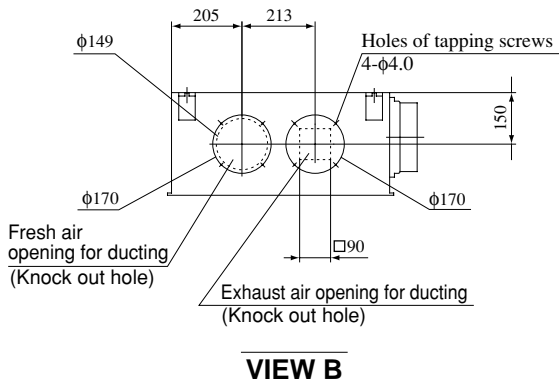
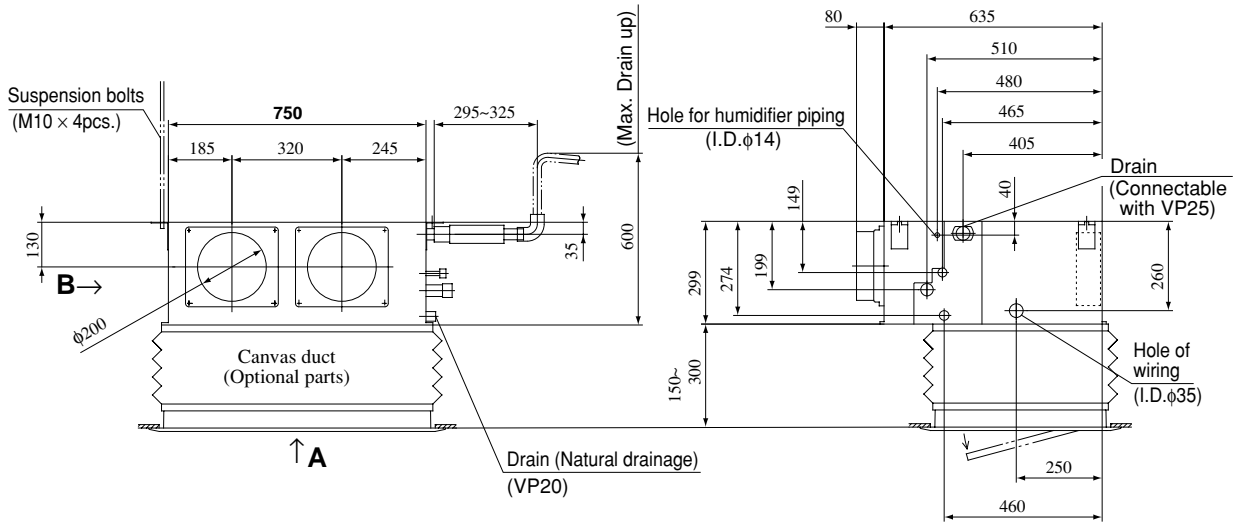
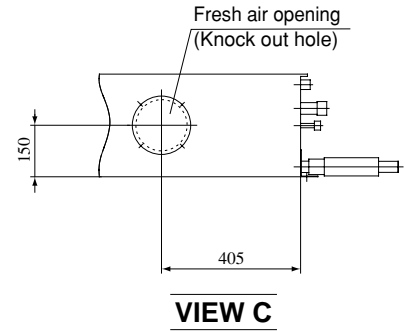
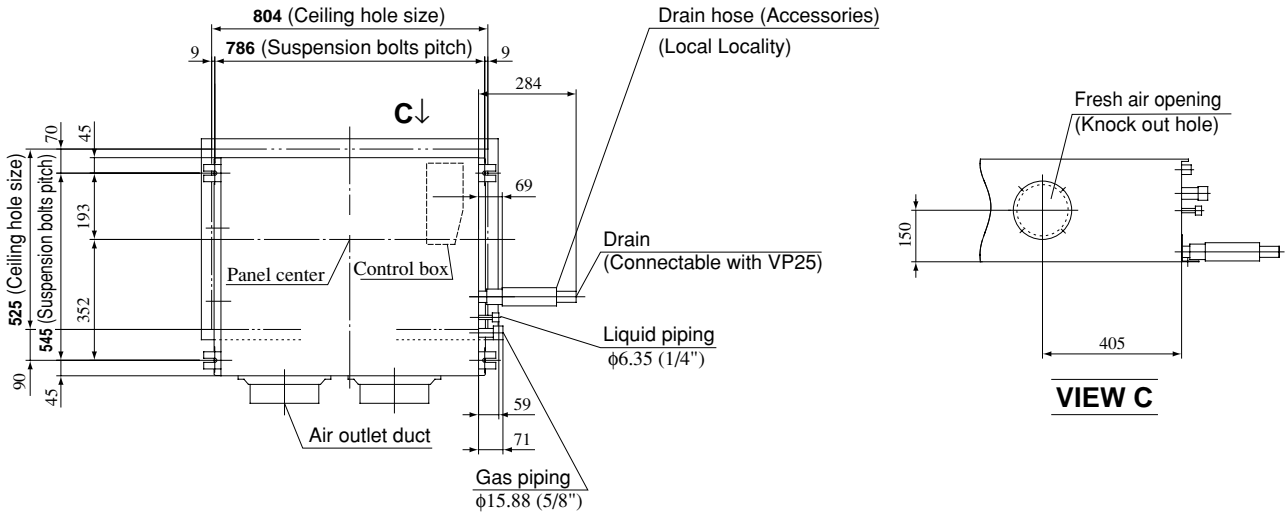


FDR-H

Model FDR208-A

Canvas Panel (Model: R-PNLC-26W-E)

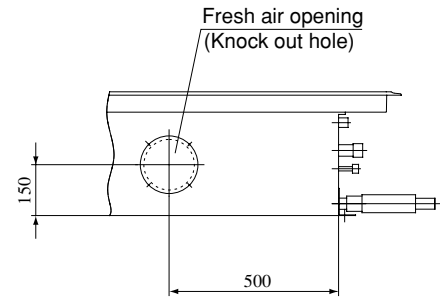
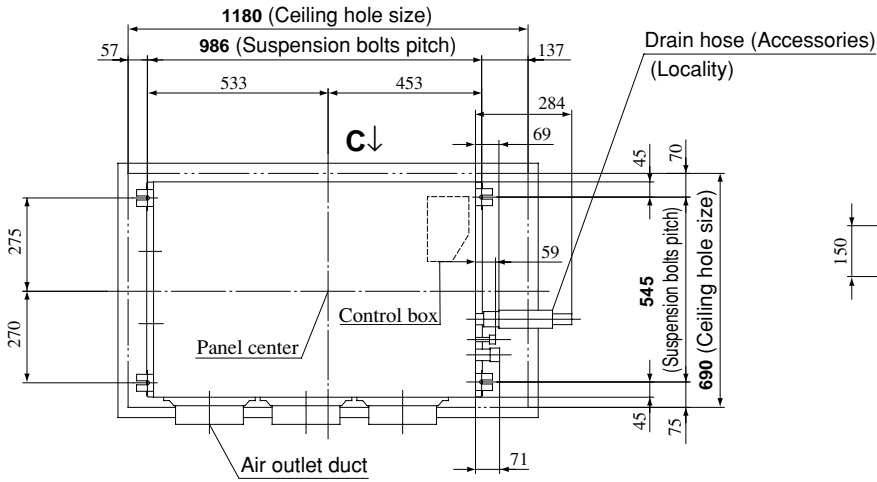
Unit : mm



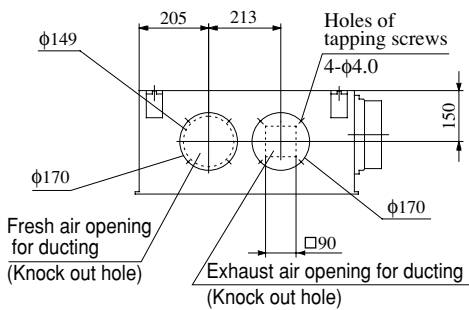
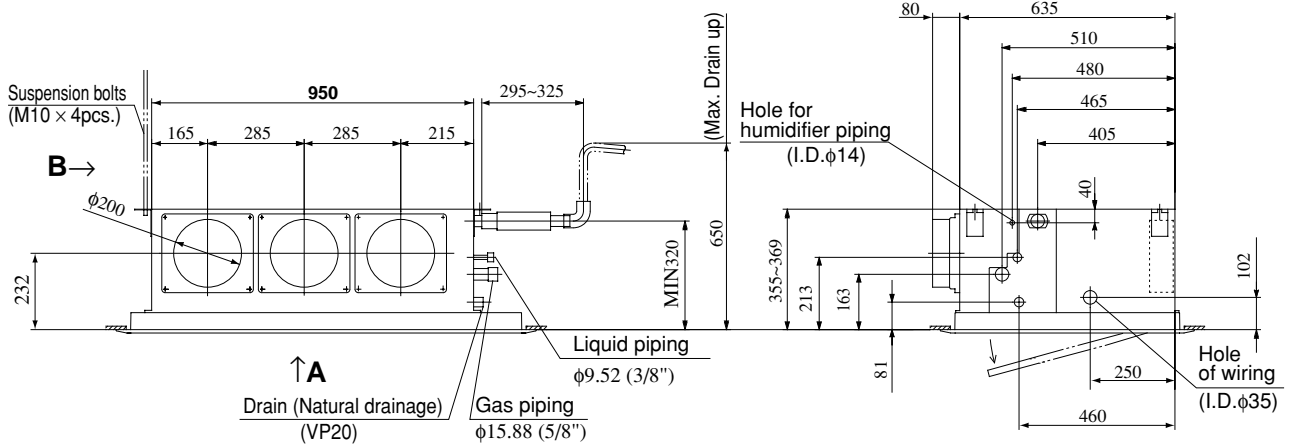
Models **FDR258-A, 308-A**

Silent Panel (Model: R-PNLS-36W-E)

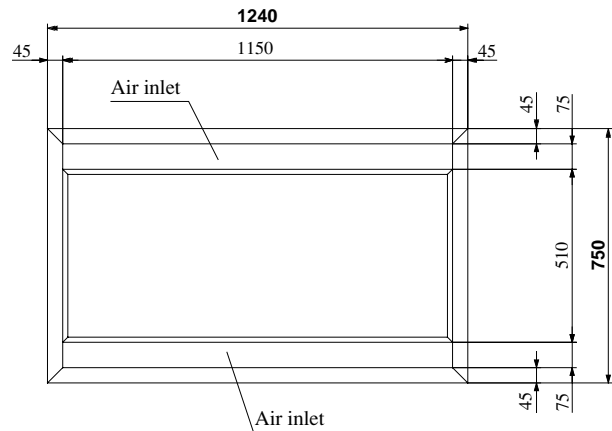
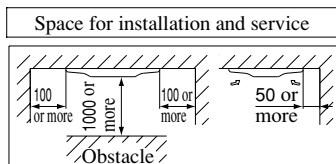
Unit : mm



VIEW C



VIEW B



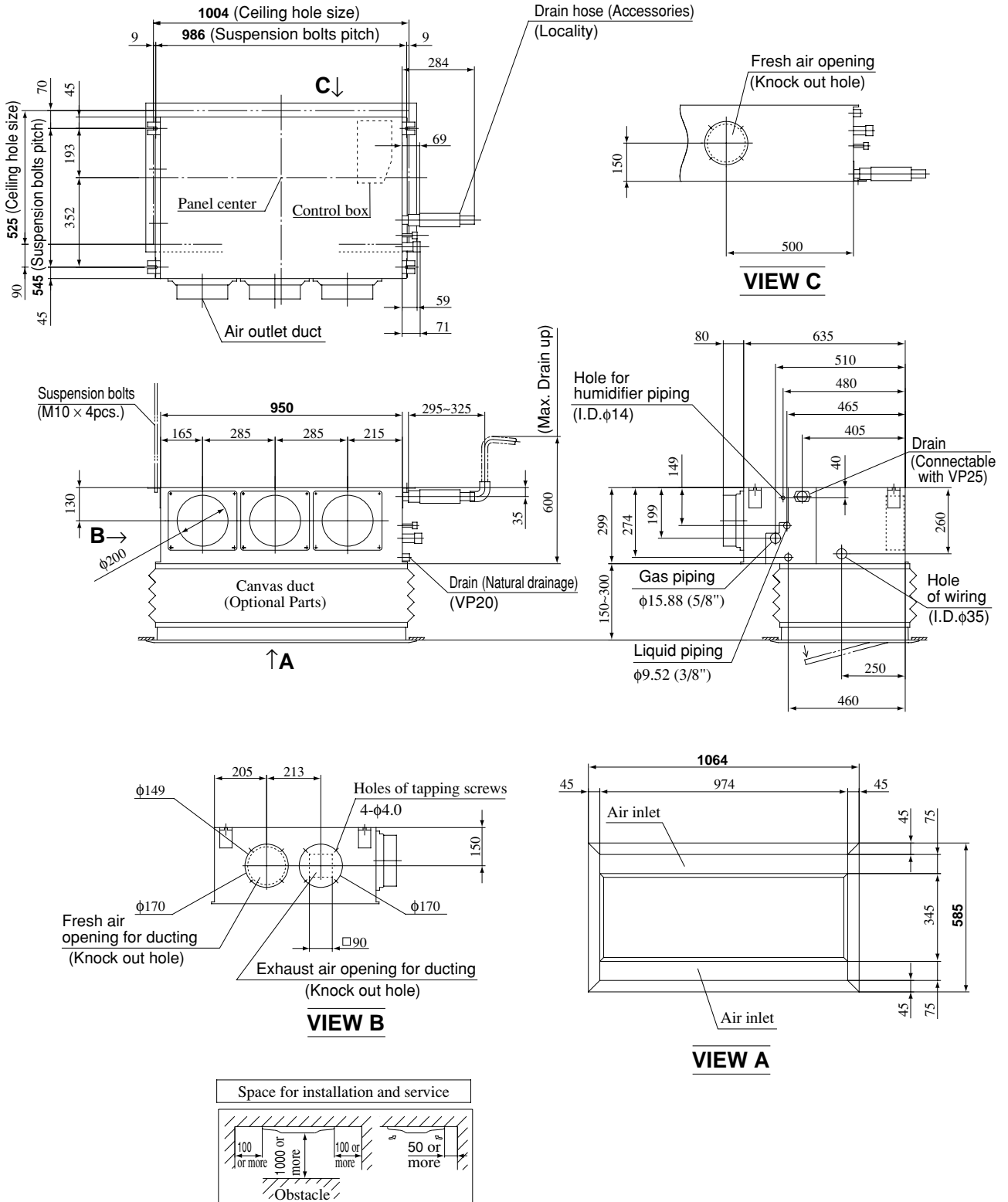
VIEW A

FDR-H

Models FDR258-A, 308-A

Canvas Panel (Model: R-PNLC-36W-E)

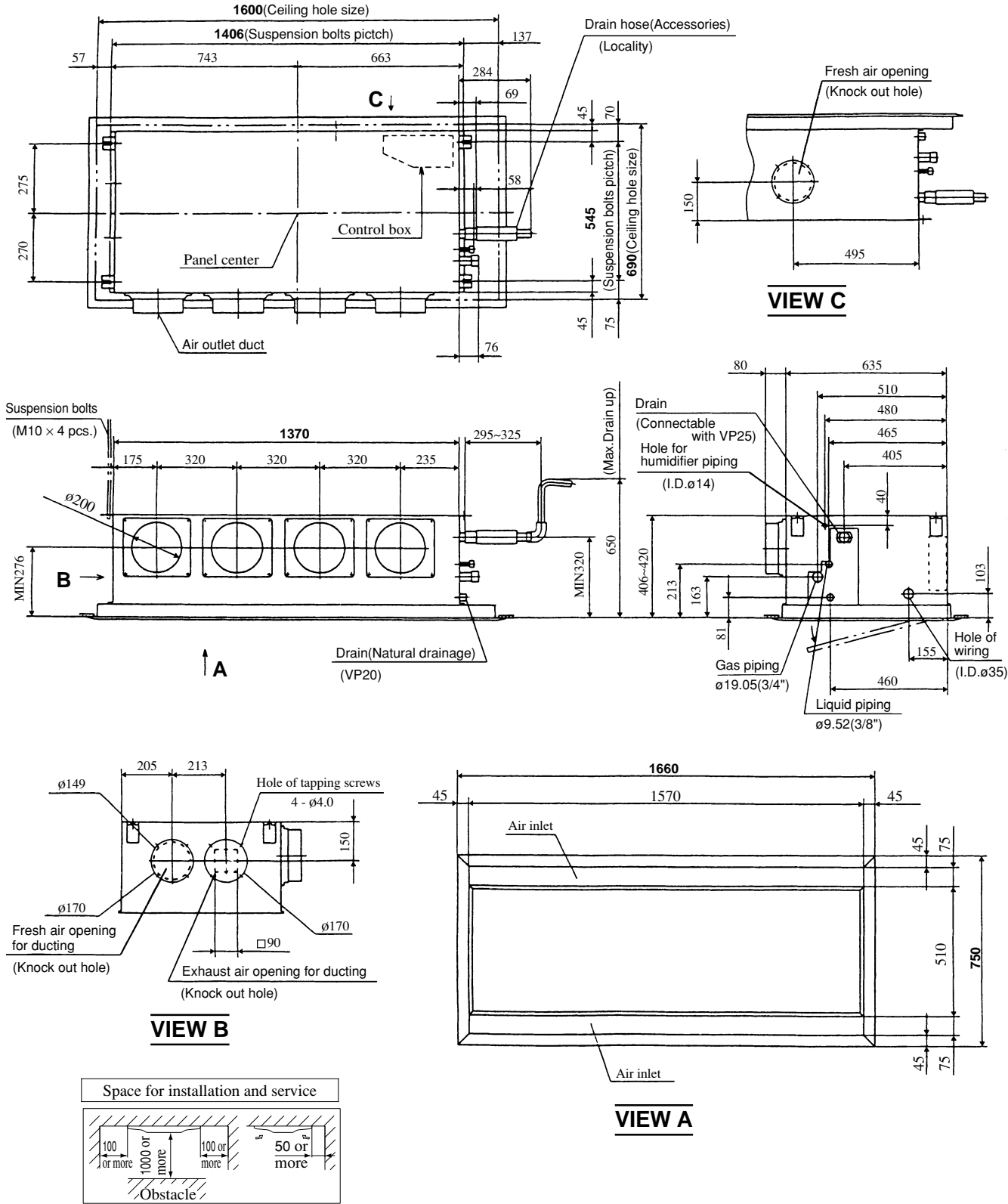
Unit : mm



Models FDR408-A, 508-A

Unit : mm

Silent Panel (Model: R-PNLS-46W-E)

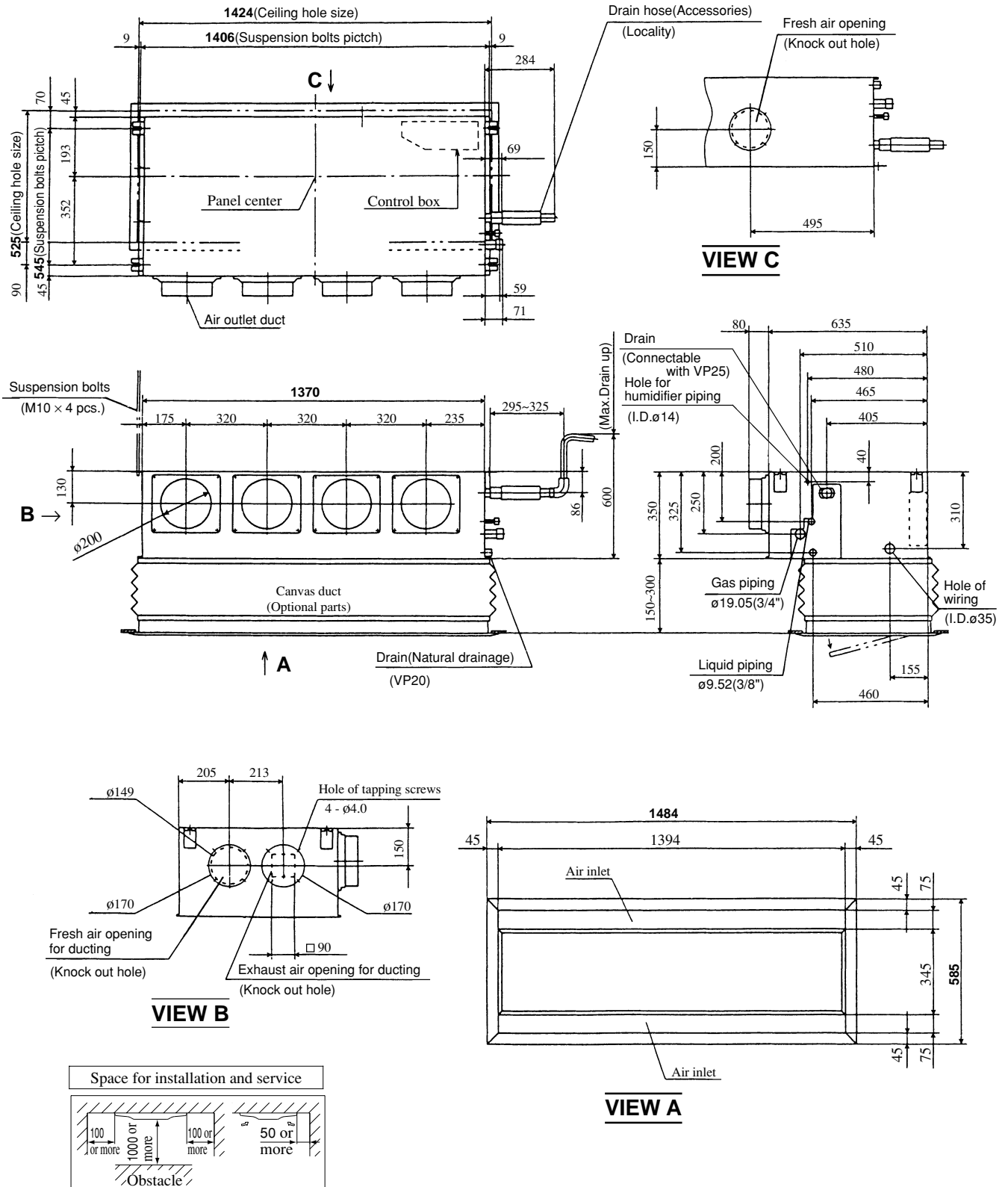


FDR-H

Models FDR408-A, 508-A

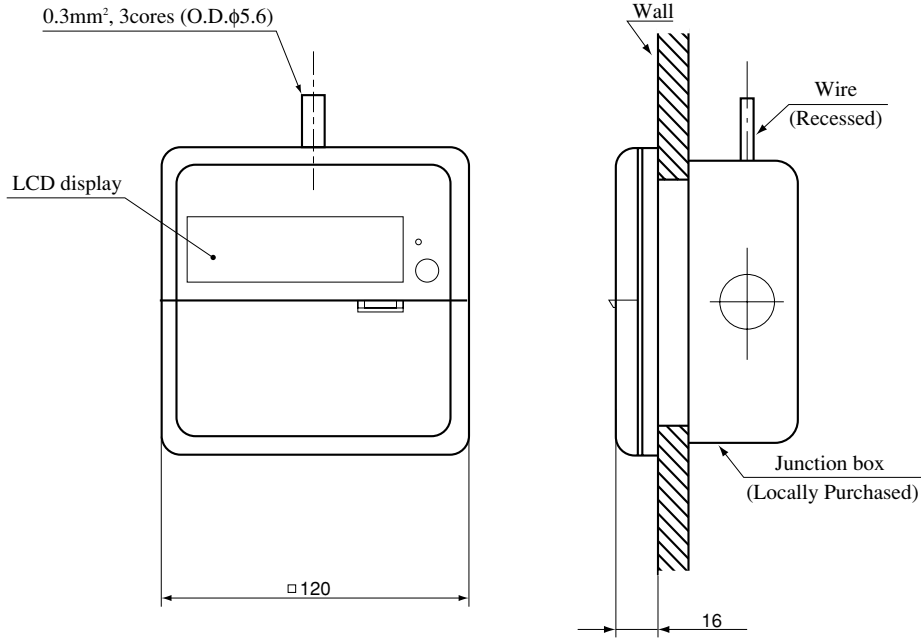
Unit : mm

Canvas Panel (Model: R-PNLC-46W-E)

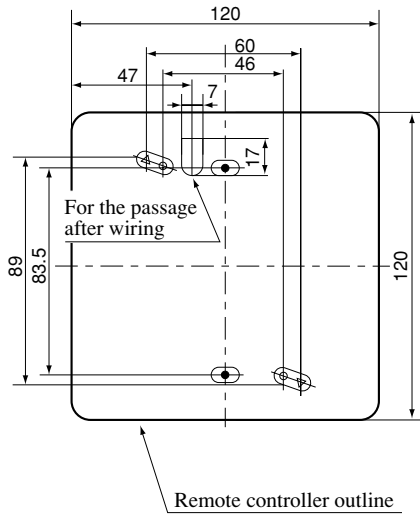


(2) Remote controller (Optional parts)

Unit : mm



Remote controller mounting dimensions



- ◆ Usable JIS box, JIS C 8336
 - Switch box for 1 piece (without cover)
(use of the ● mark hole as illustrated on the left)
 - Switch box for 2 pieces
(use of the ○ mark hole as illustrated on the left)
(without cover)
(use of the △ mark hole as illustrated on the left)
(when installing the cover)

Notes (1) Allowable length of remote controller cable: 600 m

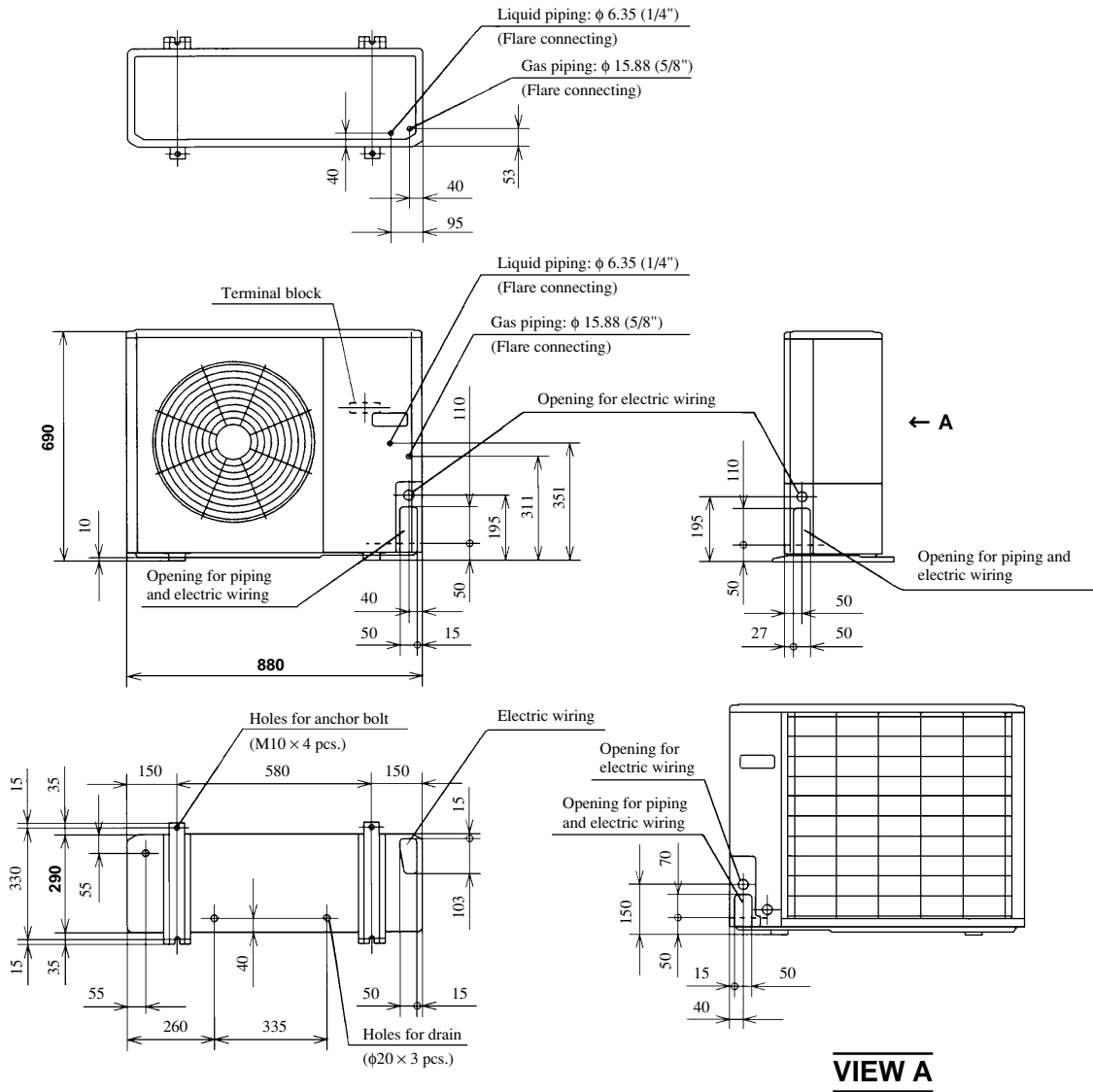
Allowable rang of wire thickness and length

Standard Within	0.3 mm ²	× Within 100 m
	0.5 mm ²	× Within 200 m
	0.75 mm ²	× Within 300 m
	1.25 mm ²	× Within 400 m
	2 mm ²	× Within 600 m

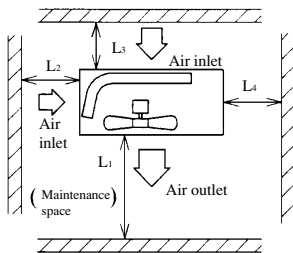
FDR-H

(3) Outdoor unit Model FDC208HEN3A

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

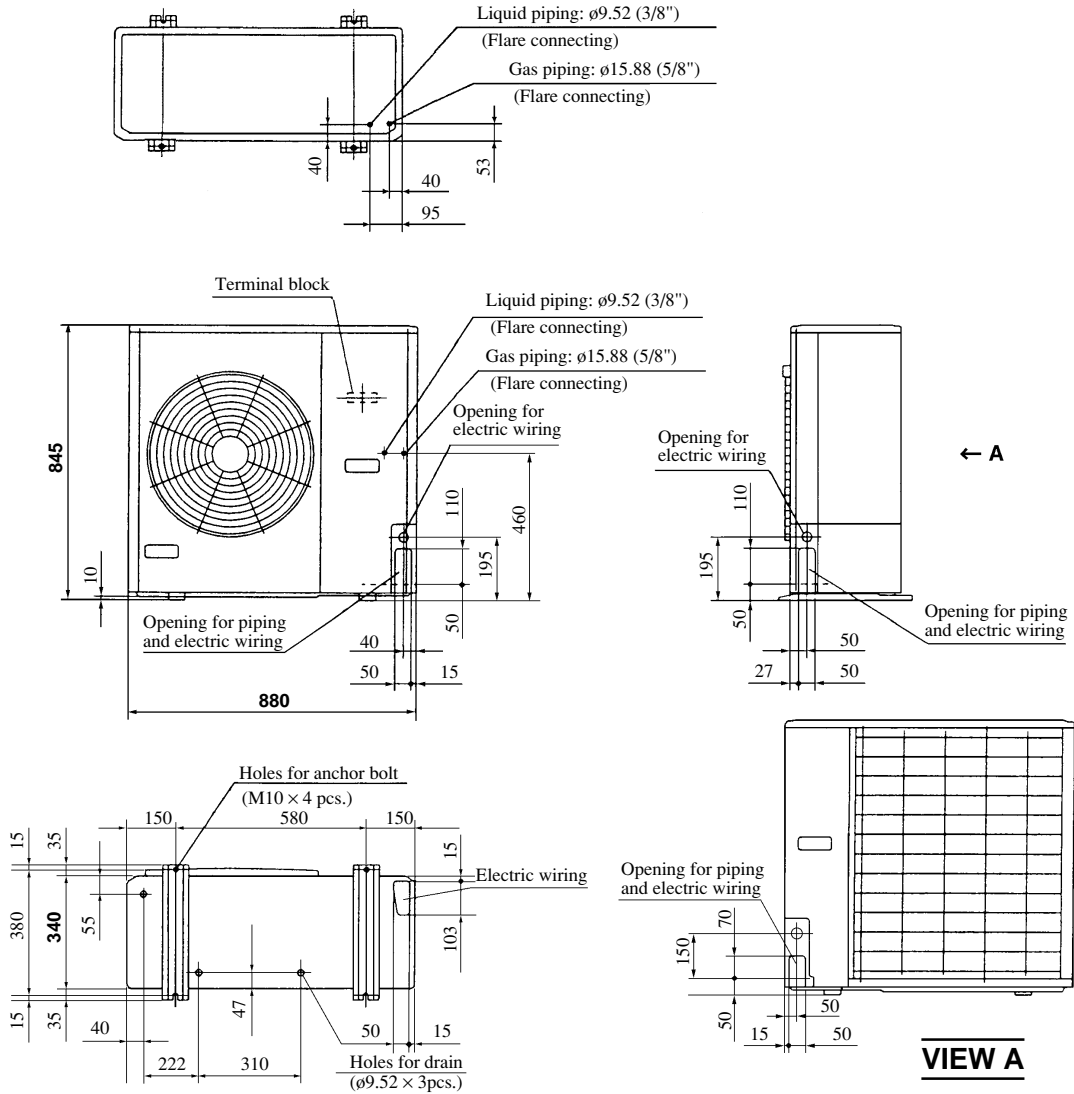
Mark	Installation type	Unit:mm		
		I	II	III
L ₁	Open	Open	500	
L ₂	300	5	Open	
L ₃	100	150	100	
L ₄	5	5	5	

Notes

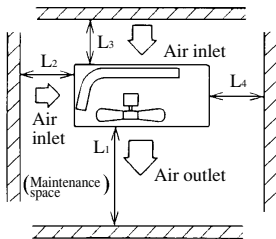
- (1) Avoid the location where four sides are entirely surrounded by walls.
- (2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
- (3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
- (4) Secure the space of 1 m and over at the top of unit.
- (5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

Models FDC258HEN3A, 308HEN3, 308HES3

Unit: mm



Required space for maintenance and air flow



Unit:mm

Minimum allowable space to the obstacles

Mark	Installation type	Installation type		
		I	II	III
L1		Open	Open	500
L2		300	5	Open
L3		100	150	100
L4		5	5	5

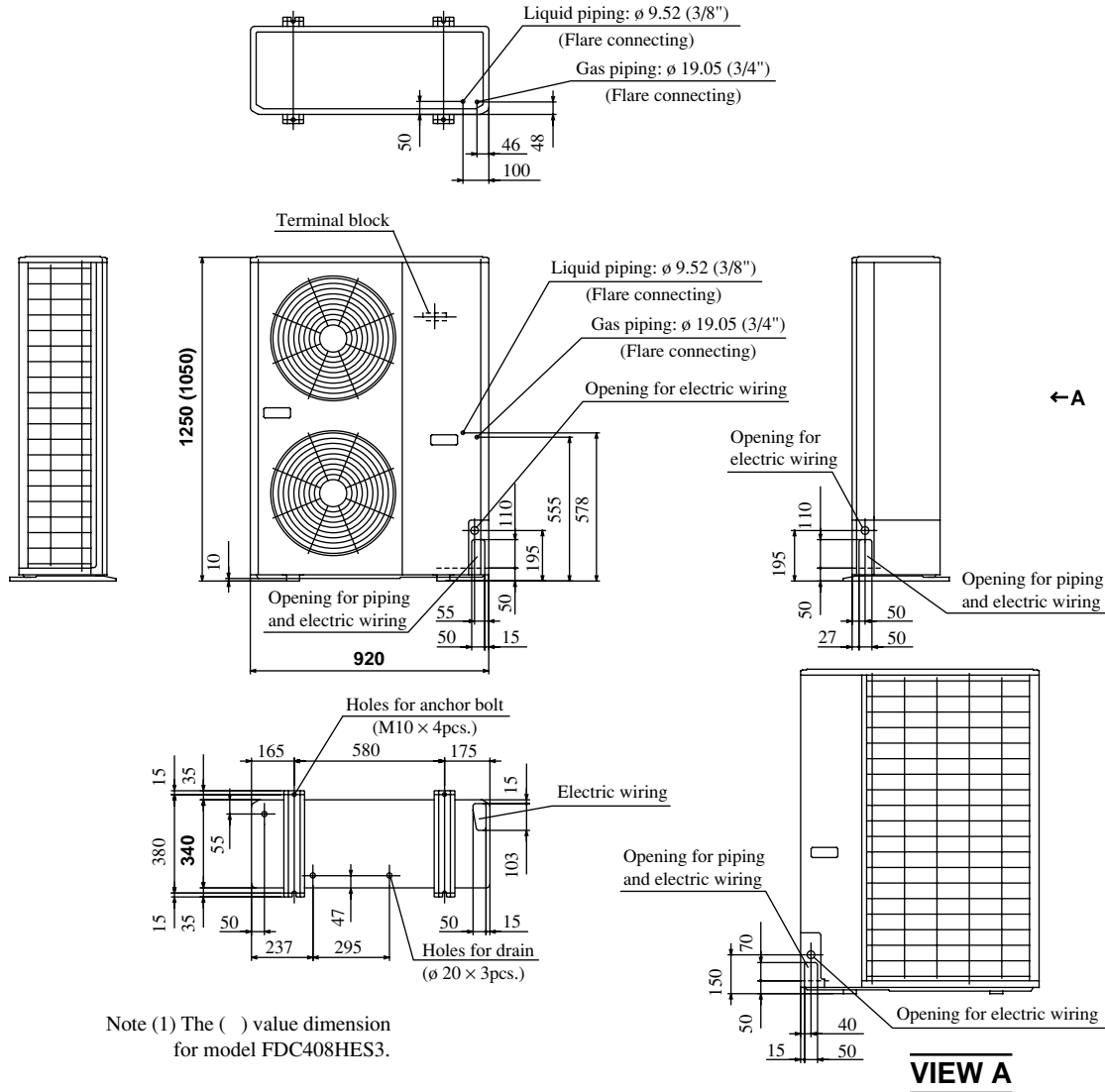
Notes

- (1) Avoid the location where four sides are entirely surrounded by walls.
- (2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
- (3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
- (4) Secure the space of 1 m and over at the top of unit.
- (5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

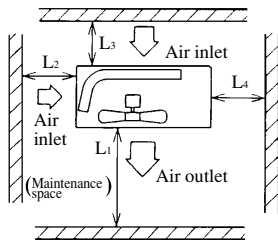
FDR-H

Models FDC408HES3, 508HES3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

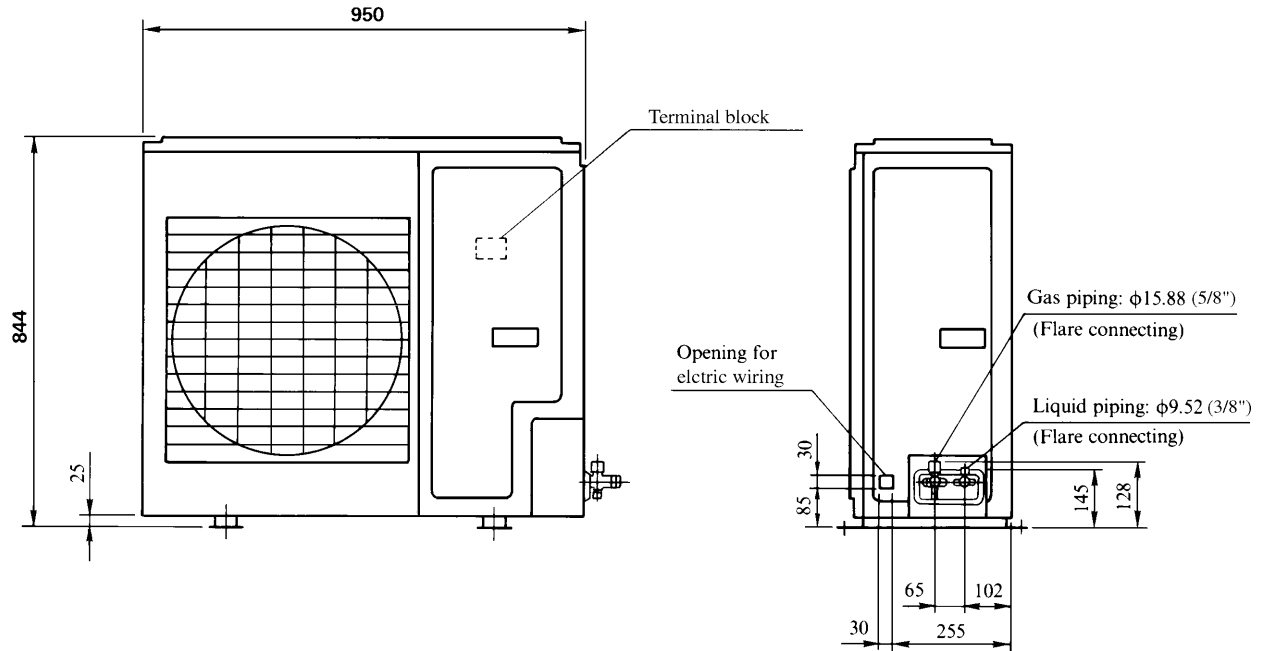
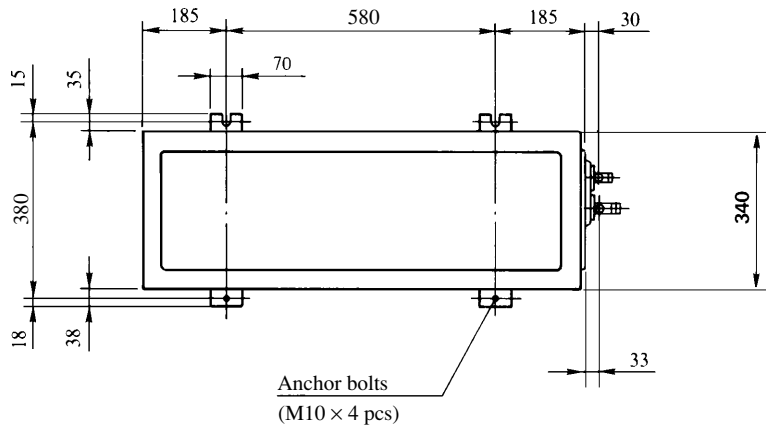
Mark	Installation type	Unit:mm		
		I	II	III
L ₁	Open	Open	500	
L ₂	300	5	Open	
L ₃	150	300	150	
L ₄	5	5	5	

Notes

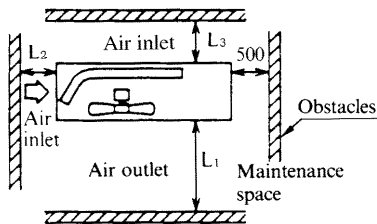
- (1) Avoid the location where four sides are entirely surrounded by walls.
- (2) Fix the unit by anchor bolts without fail. Restrict the protrusion length of anchor bolt to 15 mm and under.
- (3) When strong wind blows against the unit, direct the discharge port at a right angle to the wind direction.
- (4) Secure the space of 1 m and over at the top of unit.
- (5) Make the height of obstruction wall in front of discharge port lower than the height of unit.

Models FDC306HEN3, 306HES3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark	Installation type	Unit:mm		
		I	II	III
L_1	Open	Open	500	
L_2	300	0	Open	
L_3	100	150	100	

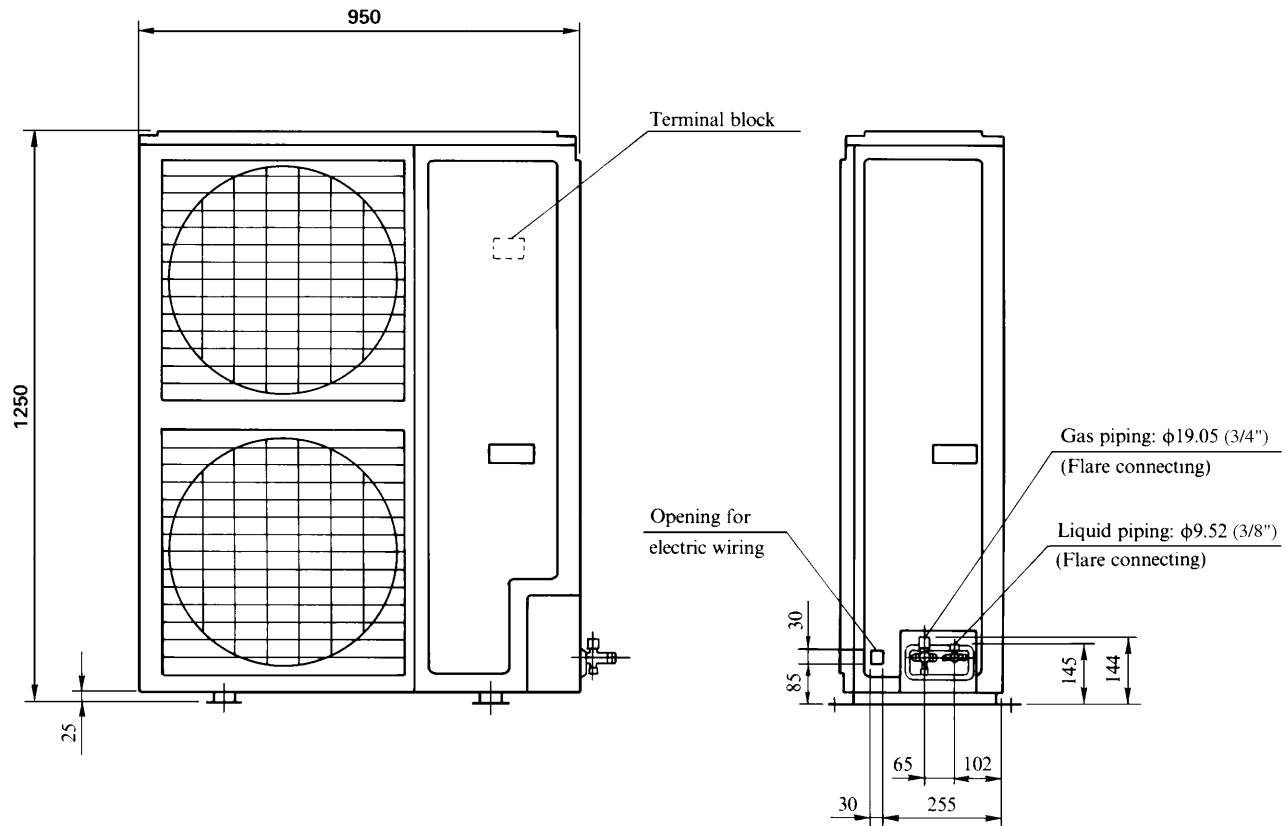
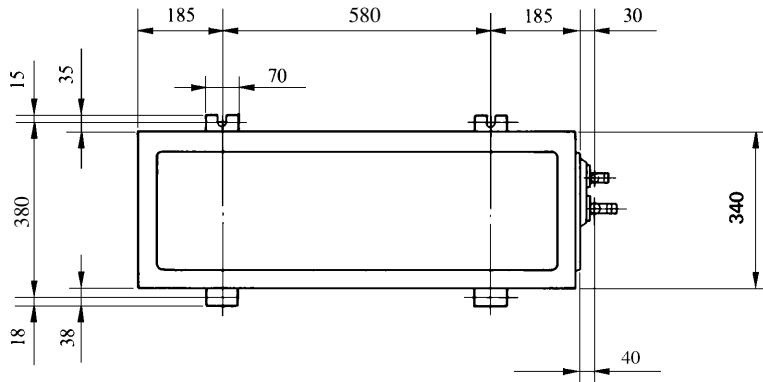
Notes

- (1) Fix the unit with anchor bolts.
- (2) Strong wind must not be directed to the air outlet.
- (3) Free space over the unit must be larger than 1 m.
- (4) The unit should not be surrounded by obstructions in all direction. At least one direction around the unit must be free.

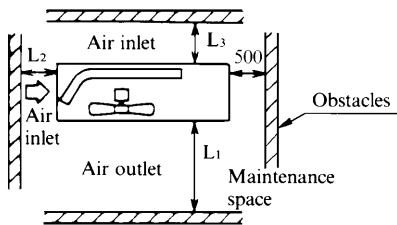
FDR-H

Models FDC406HES3, 506HES3

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark	Installation type		
	I	II	III
L ₁	Open	Open	500
L ₂	300	0	Open
L ₃	150	300	150

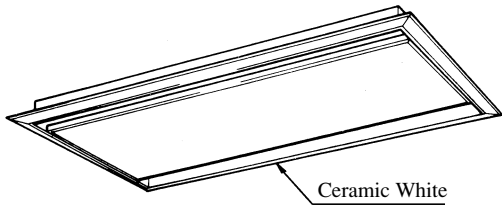
Notes

- (1) Fix the unit with anchor bolts.
- (2) Strong wind must not be directed to the air outlet.
- (3) Free space over the unit must be larger than 1 m.
- (4) The unit should not be surrounded by obstructions in all direction.
At least one direction around the unit must be free.

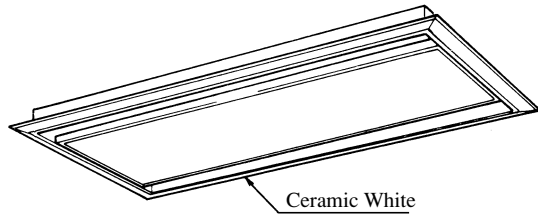
14.2.4 Exterior appearance

(1) Indoor unit (Operation panel): All Models

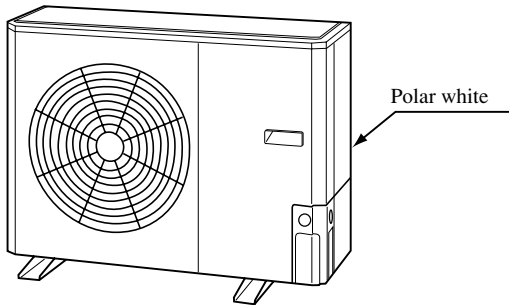
Silent panel type



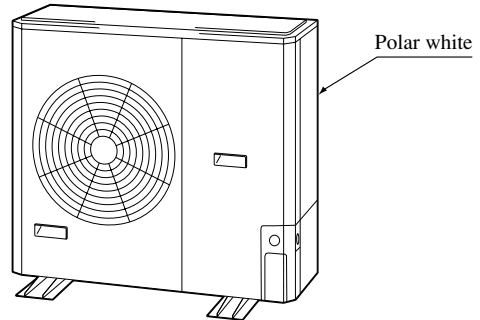
Canvas-duct panel type



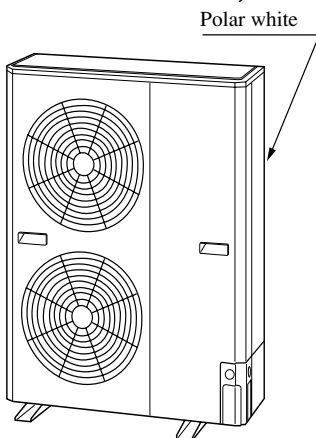
(2) Outdoor unit
Model FDC208HEN3A



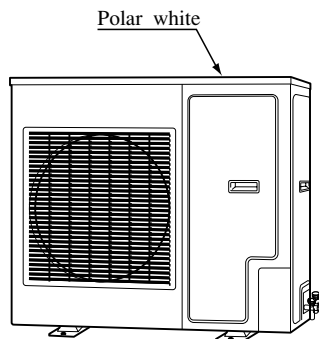
Models FDC258HEN3A, 308HEN3, 308HES3



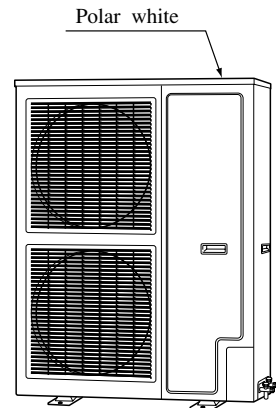
Models FDC408HEN3, 508HES3



Models FDC306HEN3, 306HES3

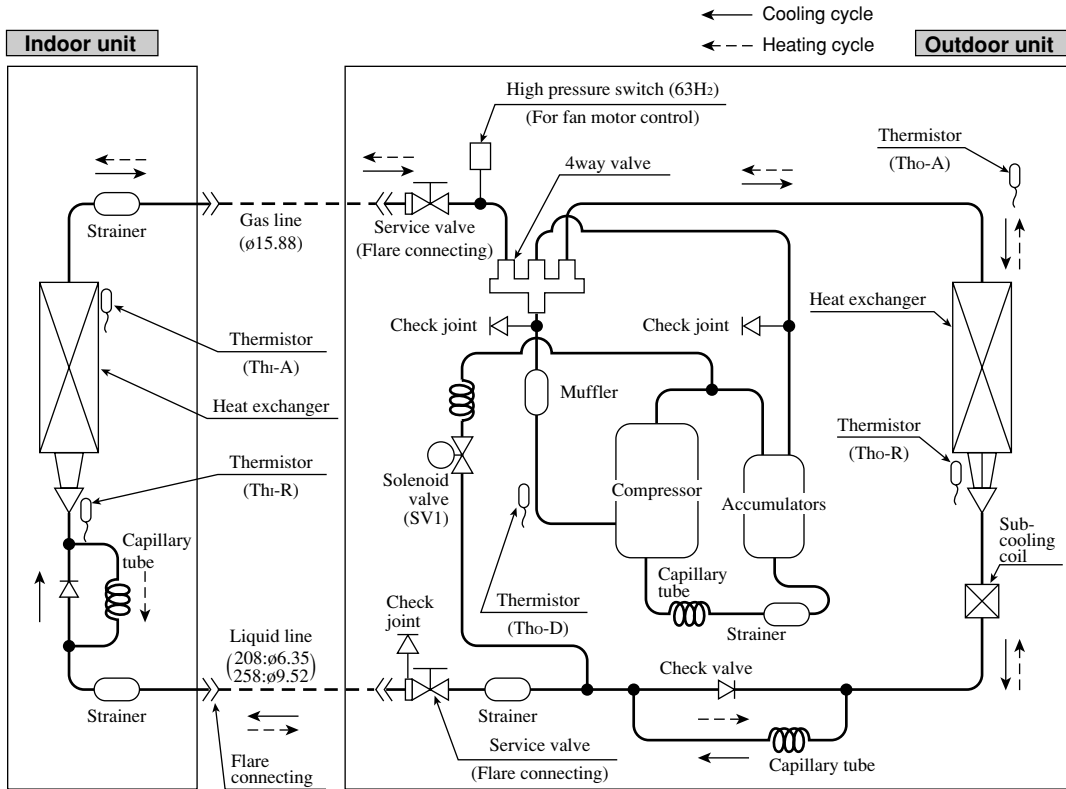


Models FDC406HES3, 506HES3

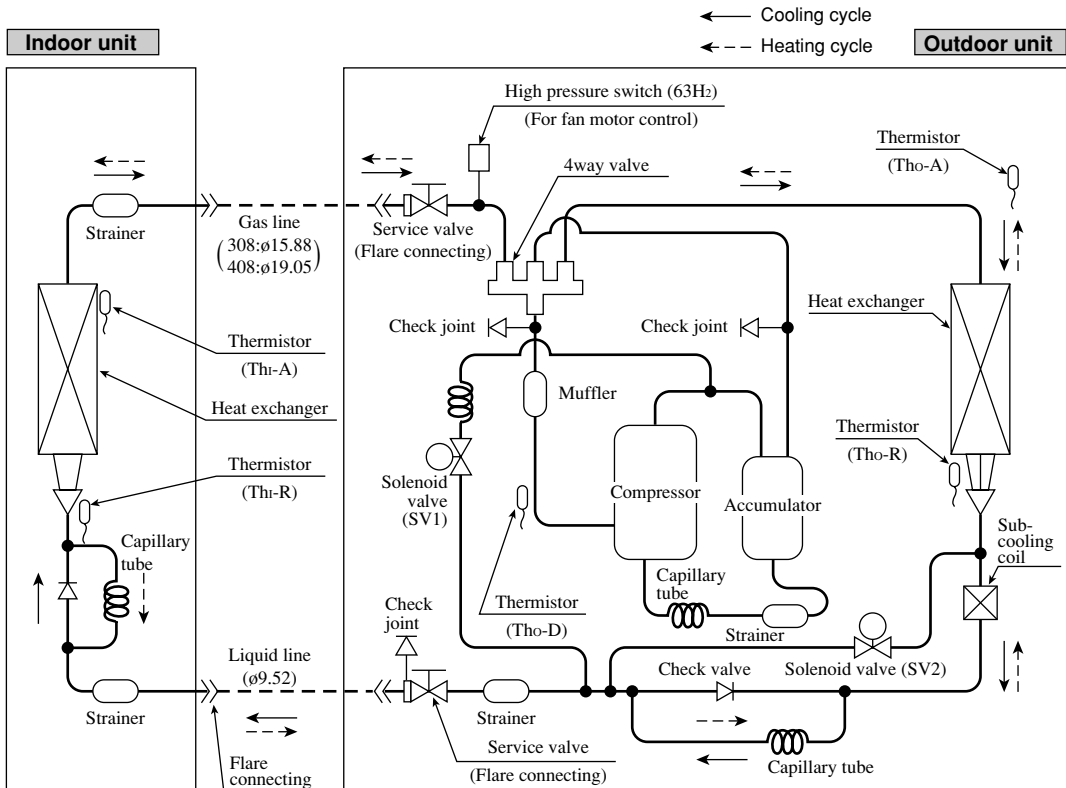


14.2.5 Piping system

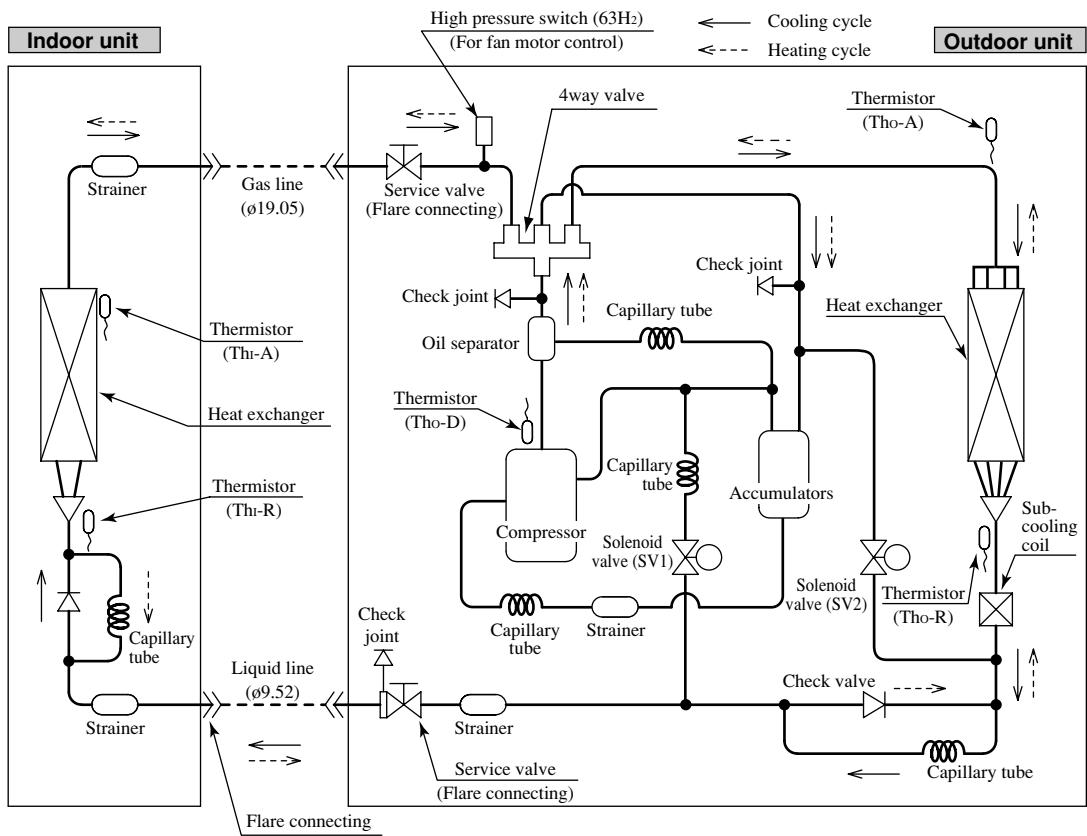
Models FDR208HEN-SA, 258HEN-SA



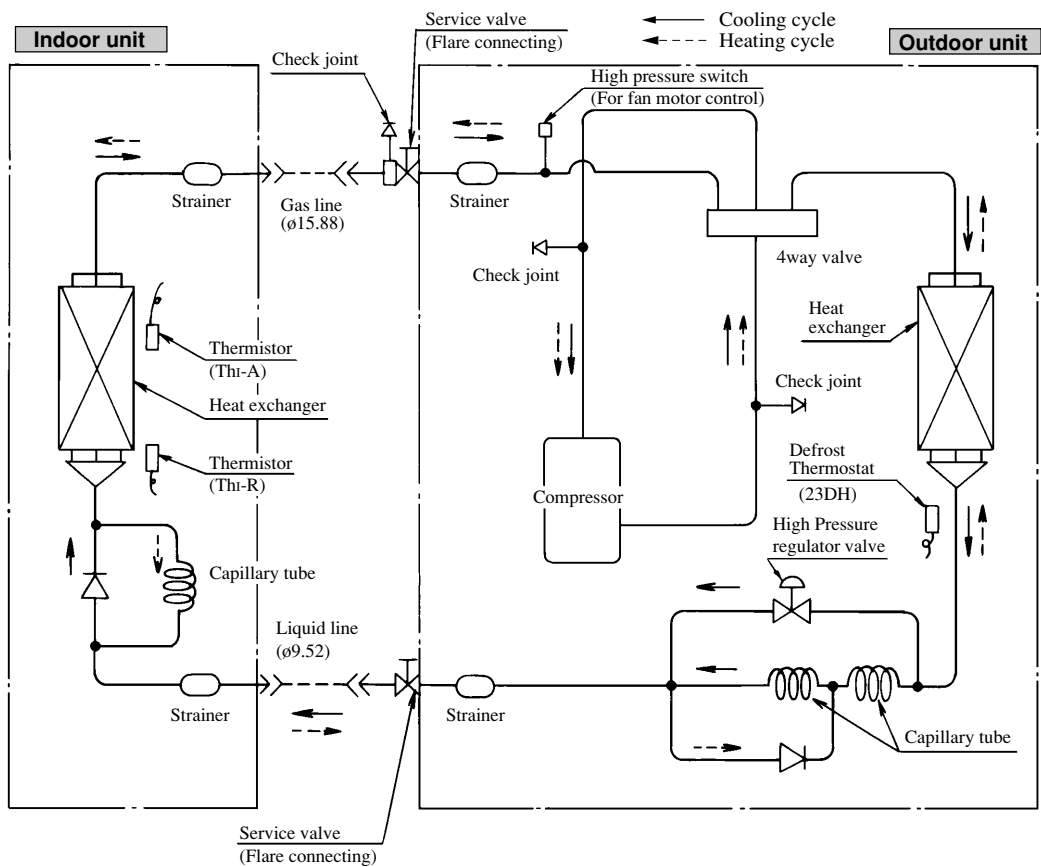
Models FDR308HEN-SA, 308HES-SA, 408HES-SA



Model FDR508HES-SA

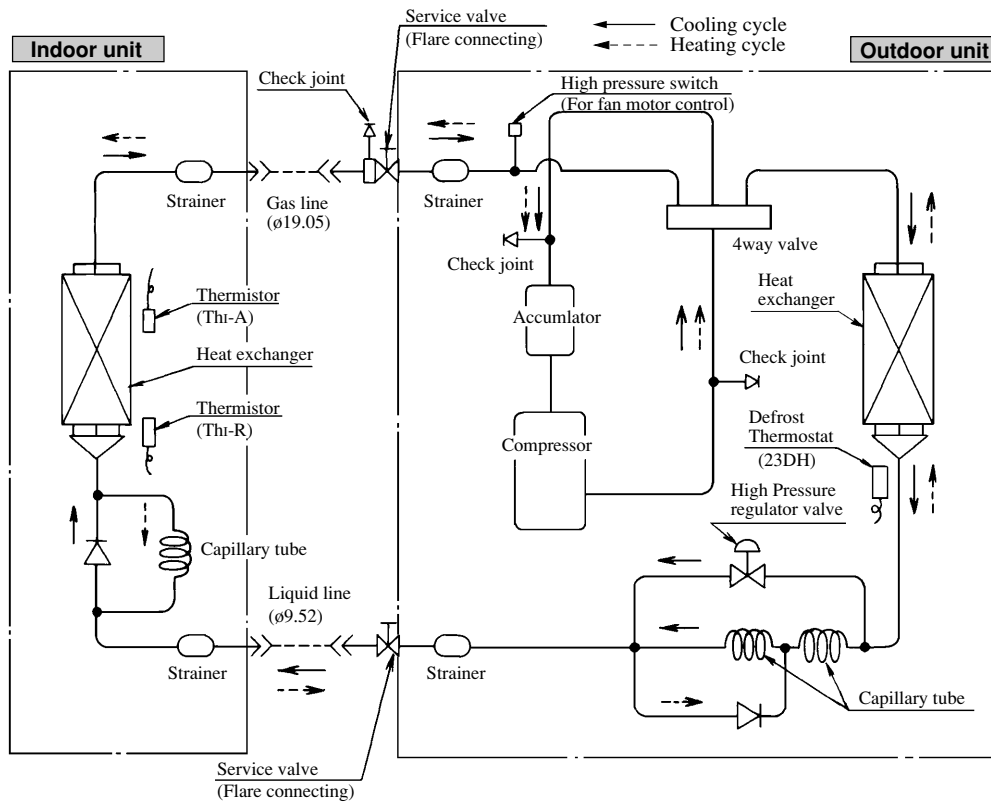


Models FDR308HEN-A, 308HES-A



FDR-H

Models FDR408HES-A, 508HES-A



Preset point of the protective devices

Parts name	Mark	Equipped unit	FDR208~508 (FDC208~508 type)
Thermistor (for protection over-loading in heating)	Thi-R	Indoor unit	OFF 68°C ON 61°C
Thermistor (for frost prevention)			OFF 2.5°C ON 10°C
Thermistor (for detecting discharge pipe temp.)	Tho-D	Outdoor unit	OFF 135°C ON 90°C
Thermistor (for detecting heat exchange temp.)	Tho-R	Outdoor unit	OFF 70°C ON 60°C
High pressure switch (for controlling FMO)	63H ₂	Outdoor unit	OFF 2.5MPa (25.5 Kgf/cm ²) ON 2.06MPa (21 kgf/cm ²)

Parts name	Mark	Equipped unit	FDR308~508 (FDC306~506 type)
Thermistor (for protection over-loading in heating)	THi-R	Indoor unit	OFF 68°C ON 61°C
Thermistor (for frost prevention)			OFF 2.5°C ON 10°C
Defrost thermostat	23DH ₂ 23DH ₁	Outdoor unit	OFF 12°C ON -6°C
High pressure switch (for controlling FMO)	63H ₂	Outdoor unit	OFF 2.5MPa (25.5 Kgf/cm ²) ON 1.86MPa (19 kgf/cm ²)

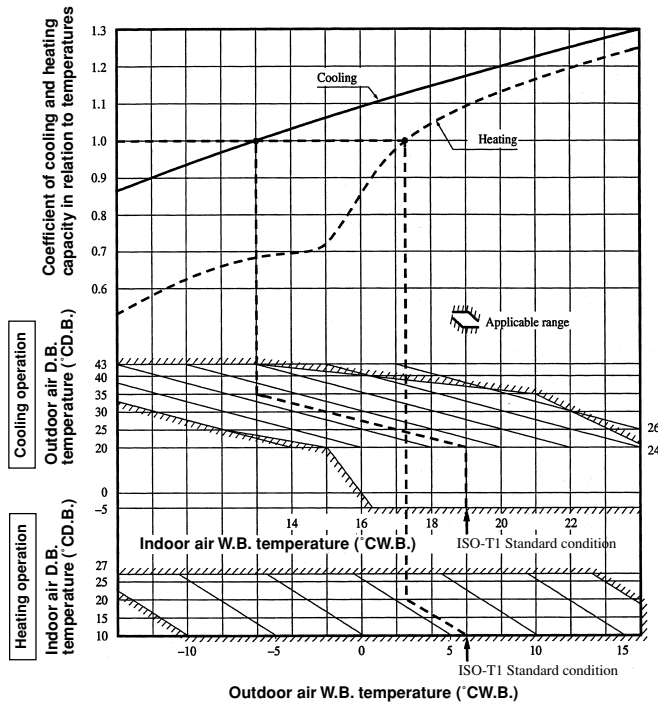
14.2.6 Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(1) Coefficient of cooling and heating capacity in relation to temperatures

(a) Only case of ISO-T1 models (Only case of FDC308~508 type)



(b) Only case of ISO-T1 models (Only case of FDC208, 258, FDC306~506 type)

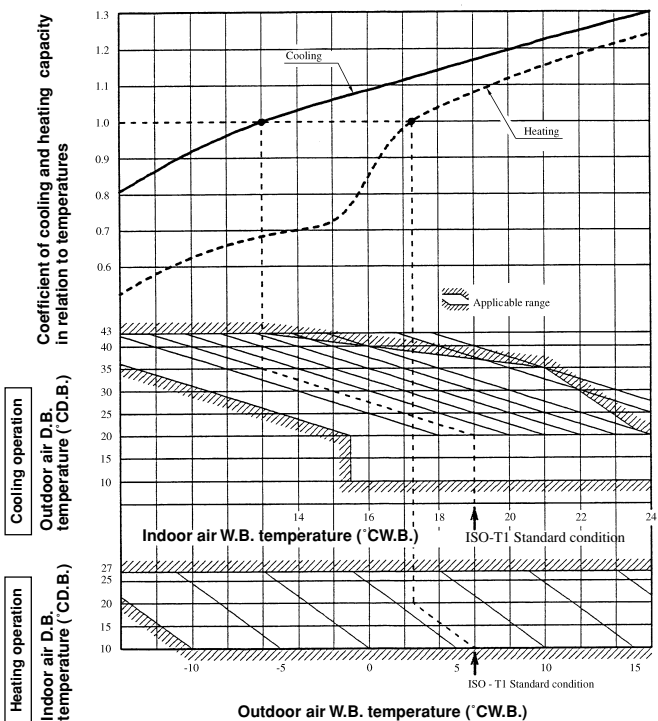


Table of bypass factor

Model		FDR 208 type	FDR 258 type	FDR 308 type	FDR 408 type	FDR 508 type
Air flow	Hi	0.035	0.032	0.039	0.085	0.035
	Lo	0.021	0.020	0.023	0.060	0.023

(2) Correction of cooling and heating capacity in relation to air flow rate control (fan speed)

Coefficient: 1.00 at High, 0.95 at Low

(3) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

Equivalent piping length ⁽¹⁾ m		5	10	15	20	25	30	35	40	45	50	55
Heating		1.0	1.0	1.0	1.0	1.0	0.995	0.995	0.99	0.99	0.985	0.985
Cooling	FDR208 type	1.0	0.995	0.995	0.99	0.985	0.985	0.98	—	—	—	—
	FDR258 type	1.0	0.995	0.99	0.985	0.98	0.975	0.97	—	—	—	—
	FDR308 type (FDC308 type)	1.0	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.9
	FDR408 type (FDC408 type)	1.0	0.995	0.985	0.98	0.97	0.965	0.955	0.95	0.94	0.935	0.925
	FDR508 type (FDC508 type)	1.0	0.99	0.975	0.965	0.95	0.94	0.925	0.915	0.9	0.89	0.875
	FDR508 type (FDC306 type)	1.0	0.99	0.98	0.97	0.96	0.95	0.94	—	—	—	—
	FDR408 type (FDC406 type)	1.0	0.995	0.985	0.98	0.97	0.965	0.955	—	—	—	—
	FDR508 type (FDC506 type)	1.0	0.99	0.975	0.965	0.95	0.94	0.925	—	—	—	—

Note (1) Equivalent piping length can be obtained by calculating as follows.

208, 258, 308 series [φ15.88(5/8")]: Equivalent piping length = Real piping length + (0.10 × Number of bends in piping)

408, 508 series [φ19.05(3/4")]: Equivalent piping length = Real piping length + (0.15 × Number of bends in piping)

[Equivalent piping length < Limitation length of piping + 5m]

(4) When the outdoor unit is located at a lower height than the indoor unit in cooling operation and when the outdoor unit is located at a higher height than the indoor unit in heating operation, the following values should be subtracted from the values in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	5m	10m	15m	20m	25m	30m
Adjustment coefficient	0.01	0.02	0.03	0.04	0.05	0.06

Piping length limitations

Model	FDR208, 258 type	FDR308~508 type (FDC308~508 type)	FDR308~508 type (FDC306~506 type)
Item			
Max. one way piping length	30m	50m	30m
Max. vertical height difference	Outdoor unit is higher 20m Outdoor unit is lower 15m	Outdoor unit is higher 30m Outdoor unit is lower 15m	15m

Note (1) Values in the table indicate the one way piping length between the indoor and outdoor units.

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDR308HEN-SA with the air flow "High", the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0 °C and outdoor dry-bulb temperature 35 °C is

$$\text{Net cooling capacity} = \underset{\substack{\uparrow \\ \text{FDR308HEN-SA}}}{7100} \times \underset{\substack{\uparrow \\ \text{Air flow "High"}}}{1.00} \times \underset{\substack{\uparrow \\ \text{Length 15m.} \\ \text{Height difference 5 m}}}{(0.98 - 0.01)} \times \underset{\substack{\uparrow \\ \text{Factor by air} \\ \text{temperatures}}}{1.0} = 6887 \text{ w}$$

14.2.7 Characteristics of fan

(1) Cassetteria type (FDR)

• External static pressure table

Unit: Pa (mmAq)

Type	Duct specs. Air flow (m³/min)	1 spot closing ⁽¹⁾		Standard ⁽²⁾		Square duct ⁽³⁾	
		Stand- ard	High speed ⁽⁴⁾	Stand- ard	High speed ⁽⁴⁾	Stand- ard	High speed ⁽⁴⁾
FDR208-A	14	—	—	50(5)	85(8.5)	50(5)	90(9)
FDR258-A	18	30(3)	65(6.5)	45(4.5)	80(8)	50(5)	85(8.5)
FDR308-A	20	25(2.5)	60(6)	45(4.5)	80(8)	50(5)	85(8.5)
FDR408-A	28	40(4)	70(7)	50(5)	80(8)	50(5)	85(8.5)
FDR508-A	34	40(4)	70(7)	50(5)	80(8)	55(5.5)	85(8.5)

Notes (1) 1 spot closing: Round duct flange at center is removed and shield with a decorative panel (option).

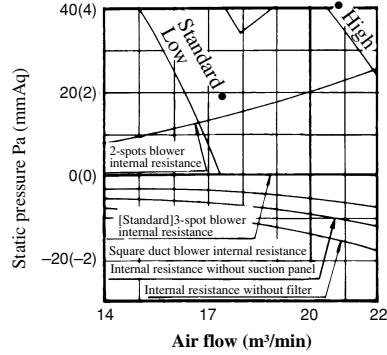
(2) Standard: ø200 ducts are installed at all blowout holes.

(3) Square duct: All round ducts are removed and replaced with special square duct flanges (option).

(4) When operating at a high speed, invert the connection of white and red connectors on the flank of control box.

How to interpret the blower characteristics table

Example : Case of FDR308-A



① 2-spot blowout.....

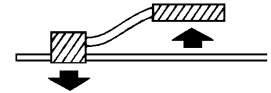
Internal resistance increases more than the standard 3-spot blowout. Approx. 14 (1.4) Pa (mmAq) at 17m³/min.

② Square duct blowout.....

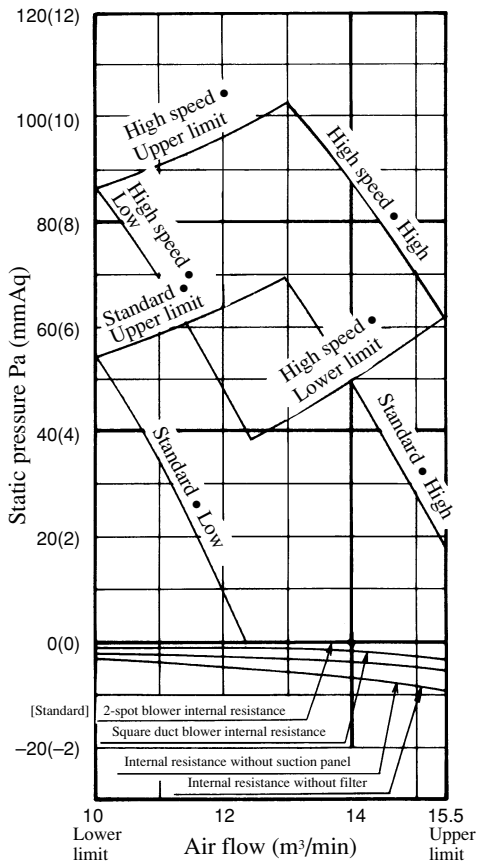
Internal resistance decreases more than the standard round duct (ø200 3-spot). 3 (0.3) Pa (mmAq) at 17 m³/min. (External static pressure increases in reverse.)

③ Decorative panel.....

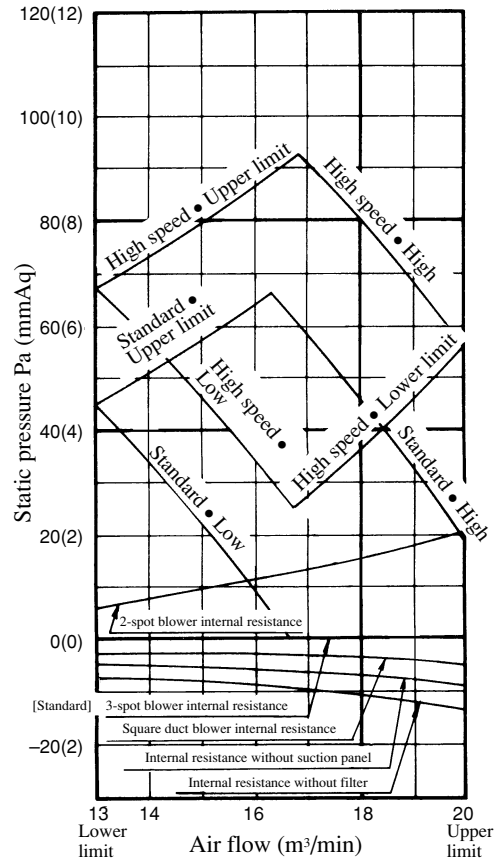
When the decorative panel is not used with the ceiling return type, the part of internal resistance related to the panel decrease. 3 (0.3) Pa (mmAq) at 17mm³/min.



Model FDR208-A

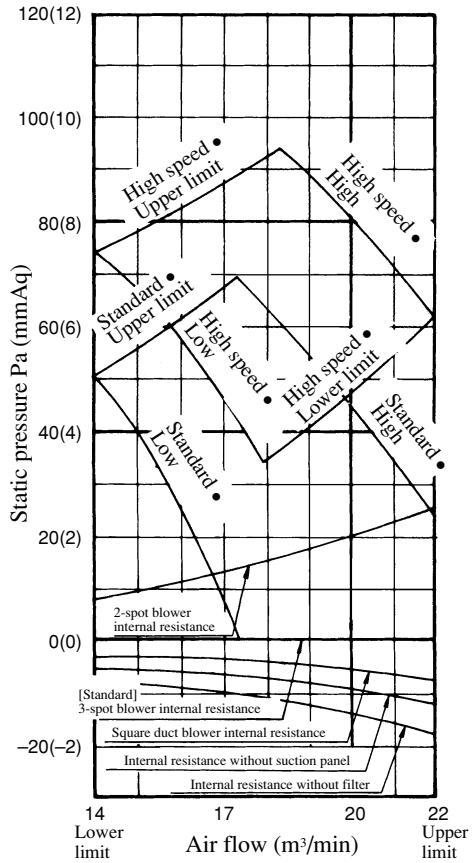


Model FDR258-A

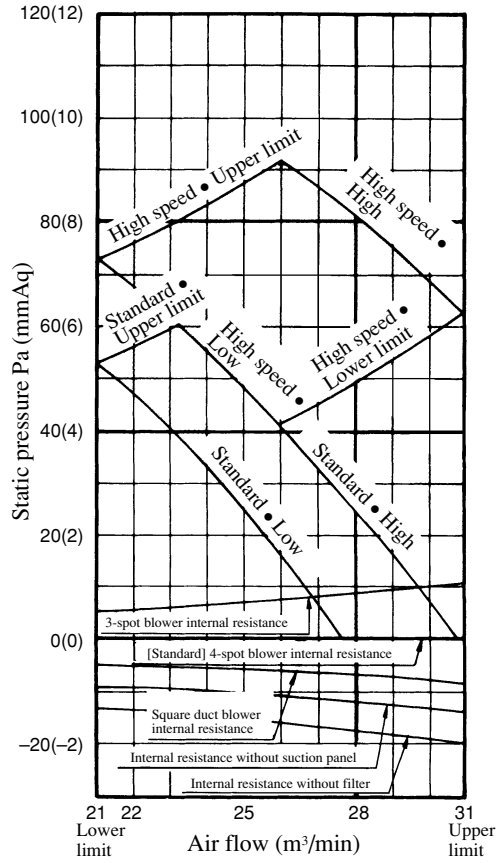


FDR-H

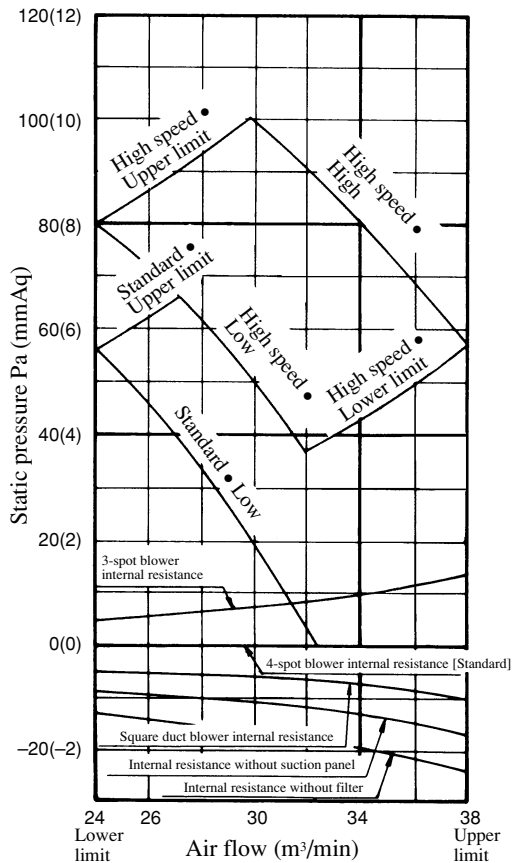
Model FDR308-A



Model FDR408-A



Model FDR508-A

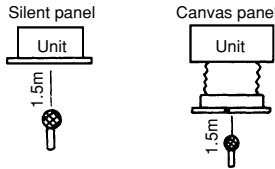


14.2.8 Noise level

Note (1) The data are based on the following conditions.

- Ambient air temperature:
Indoor unit 27°C DB, 19°C WB.
Outdoor unit 35°C DB.

Indoor unit
Measured based on JIS B 8616
Mike position as below



Outdoor unit
Measured based on JIS B 8616
Mike position: at highest noise level
in position as below
Distance from front side 1 m
Height 1 m

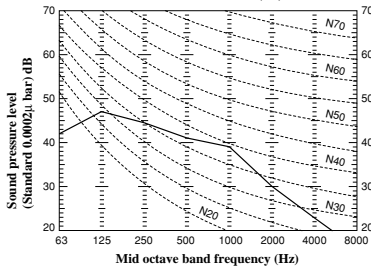
- (2) The data in the chart are measured in an anechoic room.
- (3) The noise levels measured in the field are usually higher than the data because of reflection.

(1) Indoor unit

(a) Silent panel

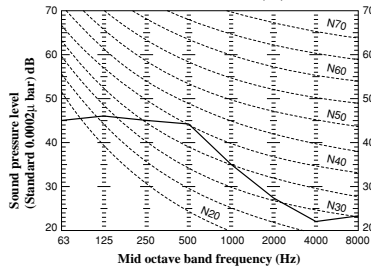
Model FDR208-A

Noise level 43 dB (A) at HIGH
37 dB (A) at LOW



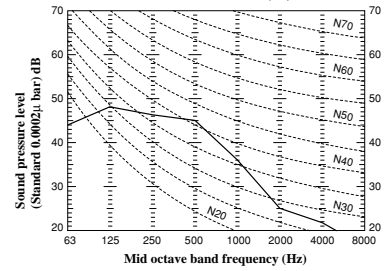
Model FDR258-A

Noise level 43 dB (A) at HIGH
37 dB (A) at LOW



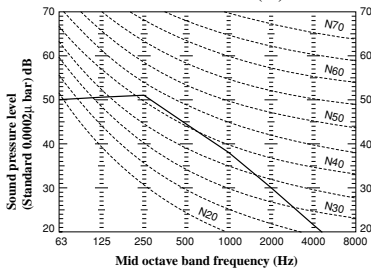
Model FDR308-A

Noise level 44 dB (A) at HIGH
38 dB (A) at LOW



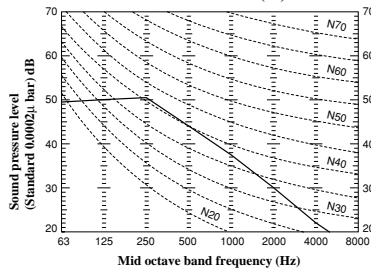
Model FDR408-A

Noise level 45 dB (A) at HIGH
38 dB (A) at LOW



Model FDR508-A

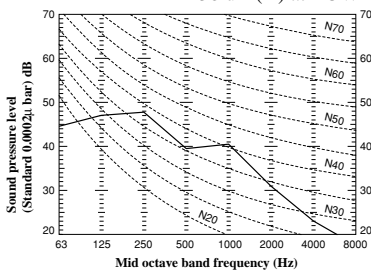
Noise level 46 dB (A) at HIGH
39 dB (A) at LOW



(b) Canvas panel

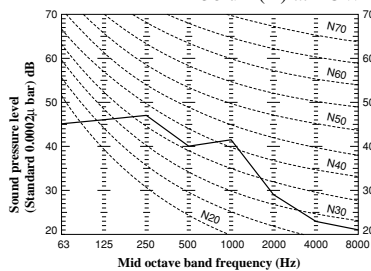
Model FDR208-A

Noise level 44 dB (A) at HIGH
38 dB (A) at LOW



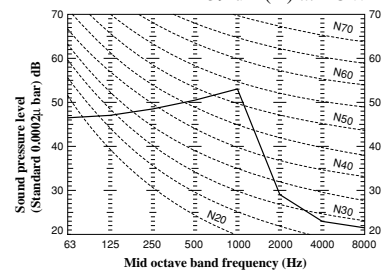
Model FDR258-A

Noise level 44 dB (A) at HIGH
38 dB (A) at LOW



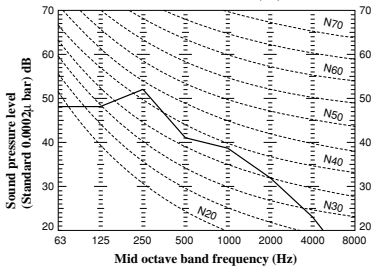
Model FDR308-A

Noise level 45 dB (A) at HIGH
39 dB (A) at LOW



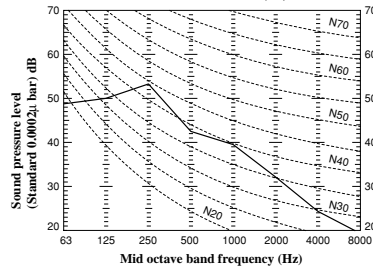
Model FDR408-A

Noise level 46 dB (A) at HIGH
39 dB (A) at LOW



Model FDR508-A

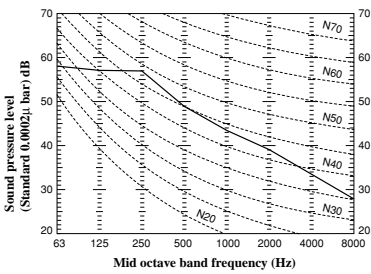
Noise level 47 dB (A) at HIGH
40 dB (A) at LOW



(2) Outdoor unit

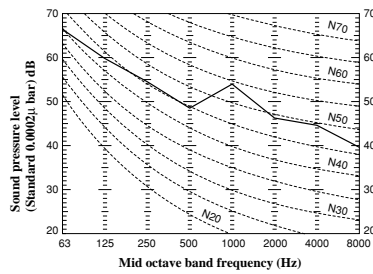
Model FDC208HEN3A

Noise level 52 dB (A)



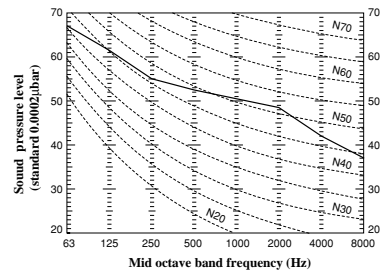
Model FDC258HEN3A

Noise level 52 dB (A)



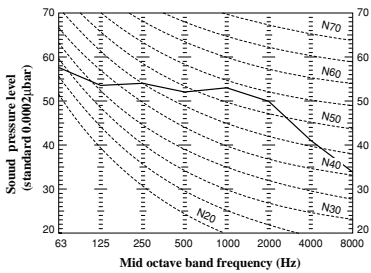
Models FDC308HEN3, 308HES3

Noise level 52 dB (A)



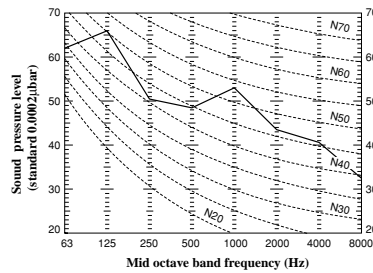
Model FDC306HEN3

Noise level 56 dB (A)



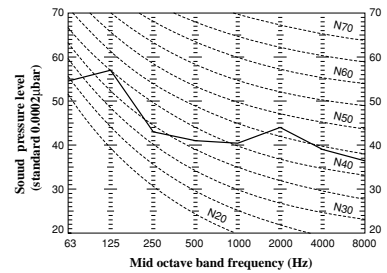
Model FDC306HES3

Noise level 56 dB (A)



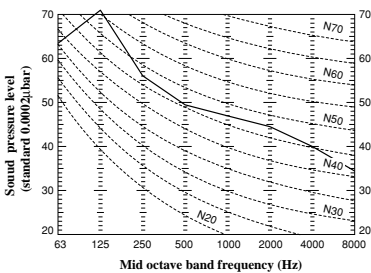
Model FDC408HES3

Noise level 54 dB (A)



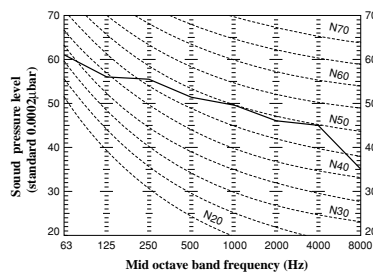
Model FDC406HES3

Noise level 57 dB (A)



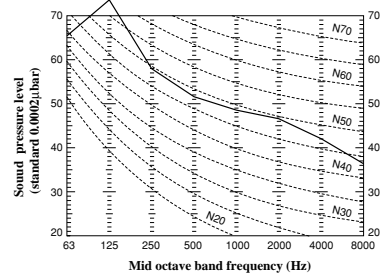
Model FDC508HES3

Noise level 55 dB (A)



Model FDC506HES3

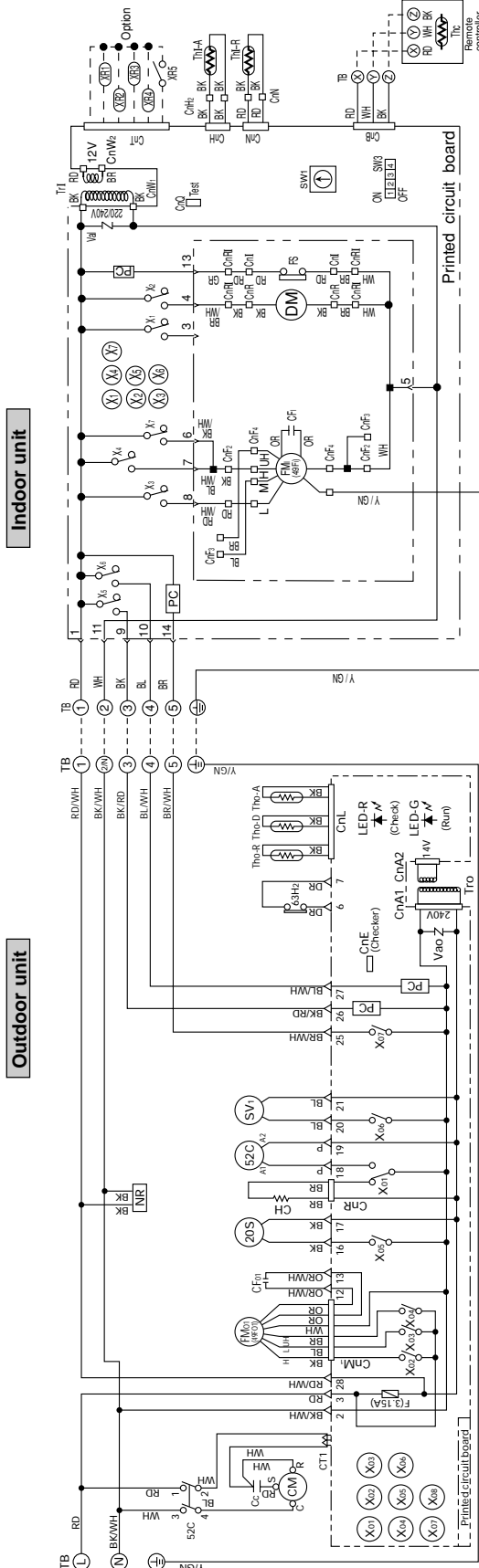
Noise level 59 dB (A)



14.3 ELECTRICAL DATA

14.3.1 Electrical wiring

Models FDR208HEN-SA, 258HEN-SA



Power source
1 Phase 220/240V 50Hz

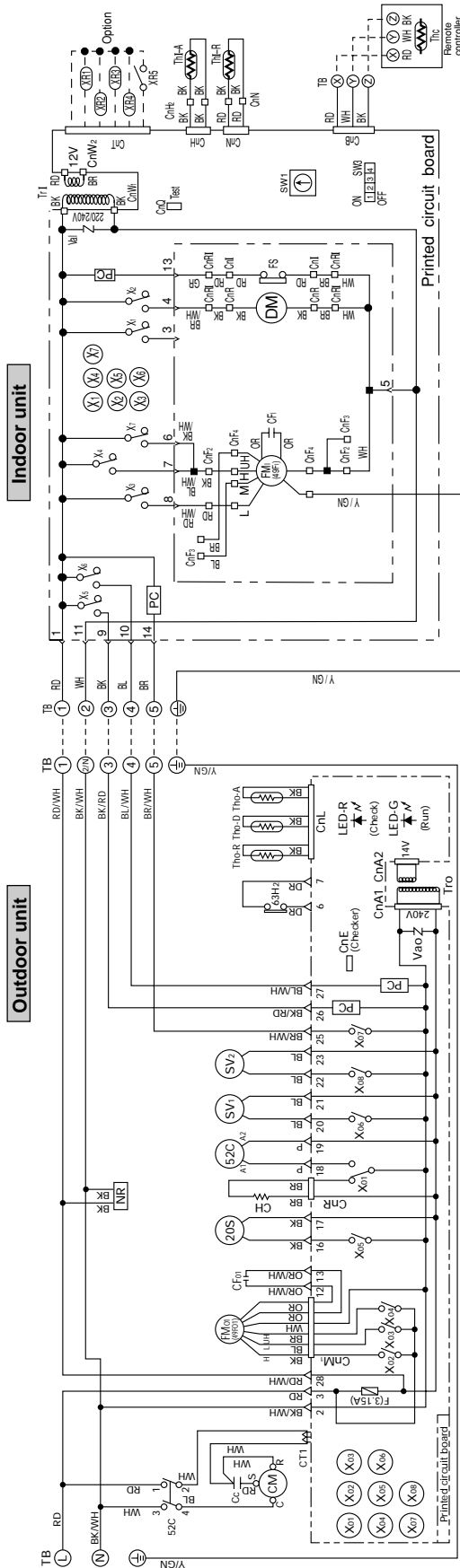
Meaning of marks

Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	Th-R	Thermistor
CFi	Capacitor for FMi	Tho-A	Thermistor
CFo	Capacitor for FMo	Tho-D	Thermistor
CH	Crankcase heater	Tho-R	Thermistor
CM	Compressor motor	Tn	Transformer (Indoor unit)
ChA ~ W	Connector (□ mark)	Tro	Transformer (Outdoor unit)
CT1	Current sensor	Val	Valve solenoid
F	Fuse	Vao	Variator
FMi	Fan motor (Indoor unit)	20S	4-way valve solenoid
FMo	Fan motor (Outdoor unit)	49Fi	Internal thermostat for FMi
DM	Drain motor	49Fo	Internal thermostat for FMo
FS	Float switch	SZC	Magnetic contactor for CM
NR	Surge suppressor	X1-7	Auxiliary relay
PC	Photo coupler	X01-08	High pressure switch (for control)
SV1	Solenoid coil (for control)	63H2	Terminal (F)
SW1	Switch (Address set)	▽	Connector
SW3	Changeover switch	LED-G	Indication lamp (Green)
TB	Terminal block (○ mark)	LED-R	Indication lamp (Red)
Th-A	Thermistor		

Color mark

Mark	Color	Mark	Color
BK	Black	BK/RD	Black/Red
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	OR/WH	Orange/White
P	Pink	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

Power source
1 Phase 220/240V 50Hz



Color mark

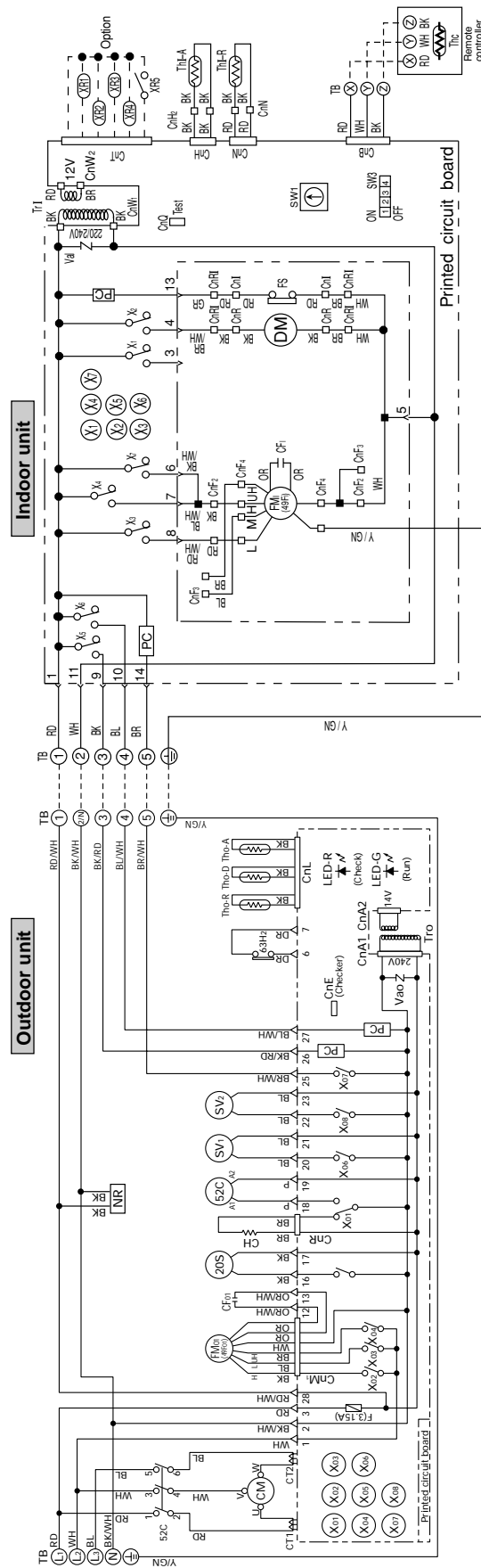
Mark	Color	Mark	Color
BK	Black	BK/RD	Black/Red
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	OR/WH	Orange/White
P	Pink	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

Meaning of marks

Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	Thi-R	Thermistor
CF1	Capacitor for FMI	Tho-A	Thermistor
CFO	Capacitor for FMO	Tho-D	Thermistor
CH	Crankcase heater	Tho-R	Thermistor
CM	Compressor motor	Tr1	Transformer (Indoor unit)
CnA ~ W	Connector (C mark)	Tr0	Transformer (Outdoor unit)
CT1	Current sensor	Val	Valve
F	Fuse	Vao	Varistor
FMI	Fan motor (Indoor unit)	20S	4-way valve solenoid
FMO	Fan motor (Outdoor unit)	49Fi	Internal thermostat for FMI
DM	Drain motor	49Fo	Internal thermostat for FMO
FS	Float switch	52C	Magnetic contactor for CM
NR	Surge suppressor	X1-7	Auxiliary relay
PC	Photo coupler	X01-08	Auxiliary relay
SV1,2	Solenoid coil (for control)	63Hz	High pressure switch (for control)
SW1	Switch (Address set)	◁	Terminal (F)
SW3	Changeover switch	◻	Connector
TB	Terminal block (O mark)	LED-G	Indication lamp (Green)
Thc	Thermistor	LED-R	Indication lamp (Red)
Thi-A	Thermistor		

Model FDR308HES-SA

Power source
3 Phase 380/415V 50Hz



Color mark

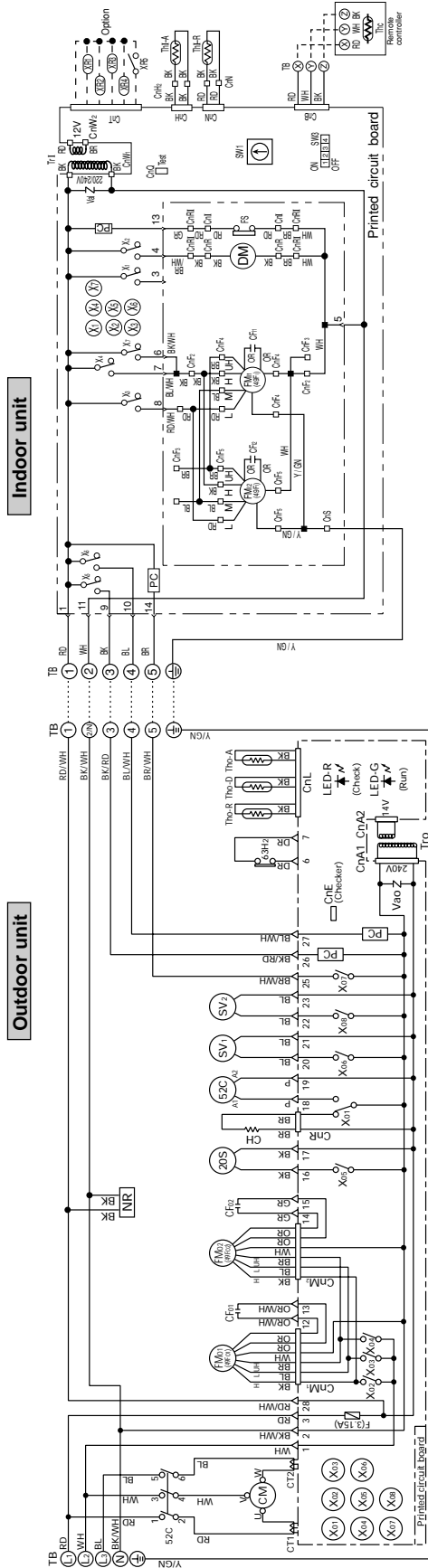
Mark	Color	Mark	Color
BK	Black	BK/RD	Black/Red
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	OR/WH	Orange/White
P	Pink	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

Meaning of marks

Mark	Parts name	Mark	Parts name
CF1	Capacitor for FM1	Thc	Thermistor
CF01	Capacitor for FM0	Thi-A	Thermistor
CH	Crankcase heater	Thi-R	Thermistor
CM	Compressor motor	Tho-A	Thermistor
CnA ~ Z	Connector (C mark)	Tho-D	Thermistor
CT1,2	Current sensor	Tho-R	Thermistor
F	Fuse	Tr1	Transformer (Indoor unit)
FM1	Fan motor (Indoor unit)	Tr0	Transformer (Outdoor unit)
FM01	Fan motor (Outdoor unit)	Val	Valvistor
DM	Drain motor	Vao	Varistor
FS	Float switch	20S	4-way valve solenoid
LED-G	Indication lamp (Green)	49F1	Internal thermostat for FM1
LED-R	Indication lamp (Red)	49Fo1	Internal thermostat for FM0
NR	Surge suppressor	52C	Magnetic contactor for CM
PC	Photo coupler	X1-7	Auxiliary relay
SV1,2	Solenoid coil (for control)	X01-08	Auxiliary relay
SW1	Switch (Address set)	63H2	High pressure switch (for control)
SW3	Changeover switch	▽	Terminal (F)
TB	Terminal block (O mark)	■	Connector

Models FDR408HES-SA, 508HES-SA

Power source
3 Phase 380/415V 50Hz



Color mark

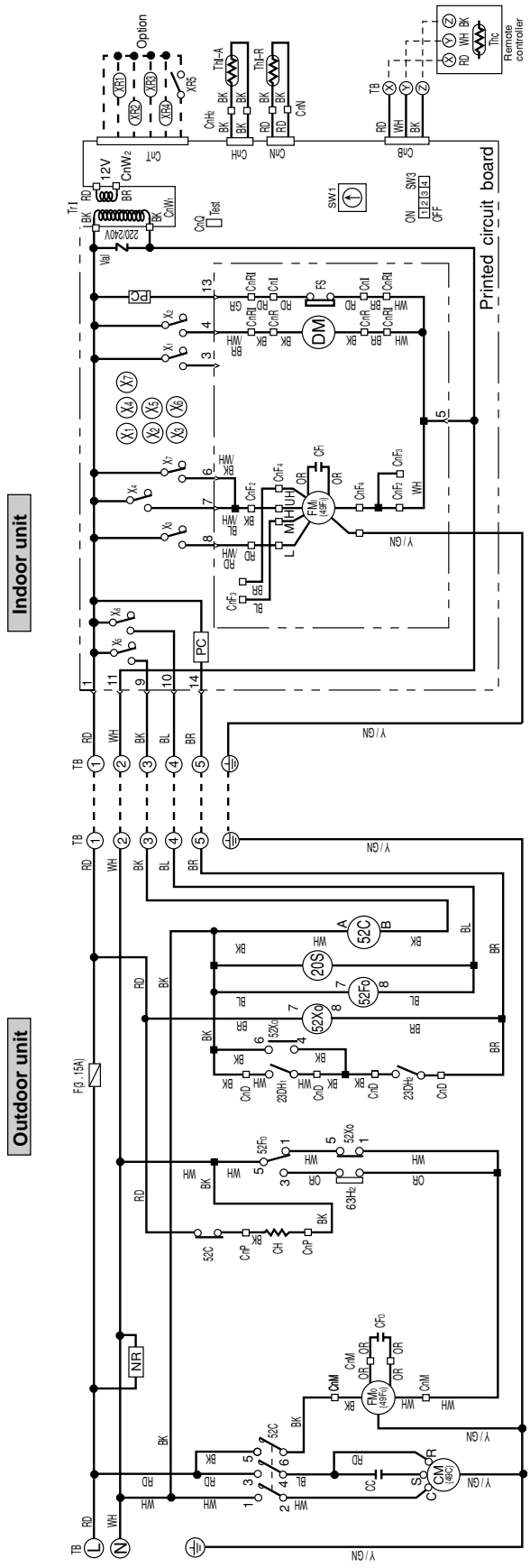
Mark	Color	Mark	Color
BK	Black	BK/RD	Black/Red
BL	Blue	BK/WH	Black/White
BR	Brown	BL/WH	Blue/White
GR	Gray	BR/WH	Brown/White
OR	Orange	OR/WH	Orange/White
P	Pink	RD/WH	Red/White
RD	Red	Y/GN	Yellow/Green
WH	White		

Meaning of marks

Mark	Parts name	Mark	Parts name
CF1,2	Capacitor for FMI	Thc	Thermistor
CFo1,2	Capacitor for FMo	Thi-A	Thermistor
CH	Crankcase heater	Thi-R	Thermistor
CM	Compressor motor	Tho-A	Thermistor
CnA ~ Z	Connector (C mark)	Tho-D	Thermistor
CT1,2	Current sensor	Tho-R	Thermistor
F	Fuse	Tr1	Transformer (Indoor unit)
FM1,2	Fan motor (Indoor unit)	Tr0	Transformer (Outdoor unit)
FMo1,2	Fan motor (Outdoor unit)	Val	Valve
DM	Drain motor	Vac	Varistor
FS	Float switch	20S	4-way valve solenoid
LED-G	Indication lamp (Green)	49Fi	Internal thermostat for FMI
LED-R	Indication lamp (Red)	49Fo1,2	Internal thermostat for FMo
NR	Surge suppressor	52C	Magnetic contactor for CM
PC	Photo coupler	X1-7	Auxiliary relay
SV1,2	Solenoid coil (for control)	X01-08	Auxiliary relay
SW1	Switch (Address set)	63H2	High pressure switch (for control)
SW3	Changeover switch	▽	Terminal (F)
TB	Terminal block (O mark)	■	Connector

Model FDR308HEN-A

Power source
1 Phase 220/240V 50Hz



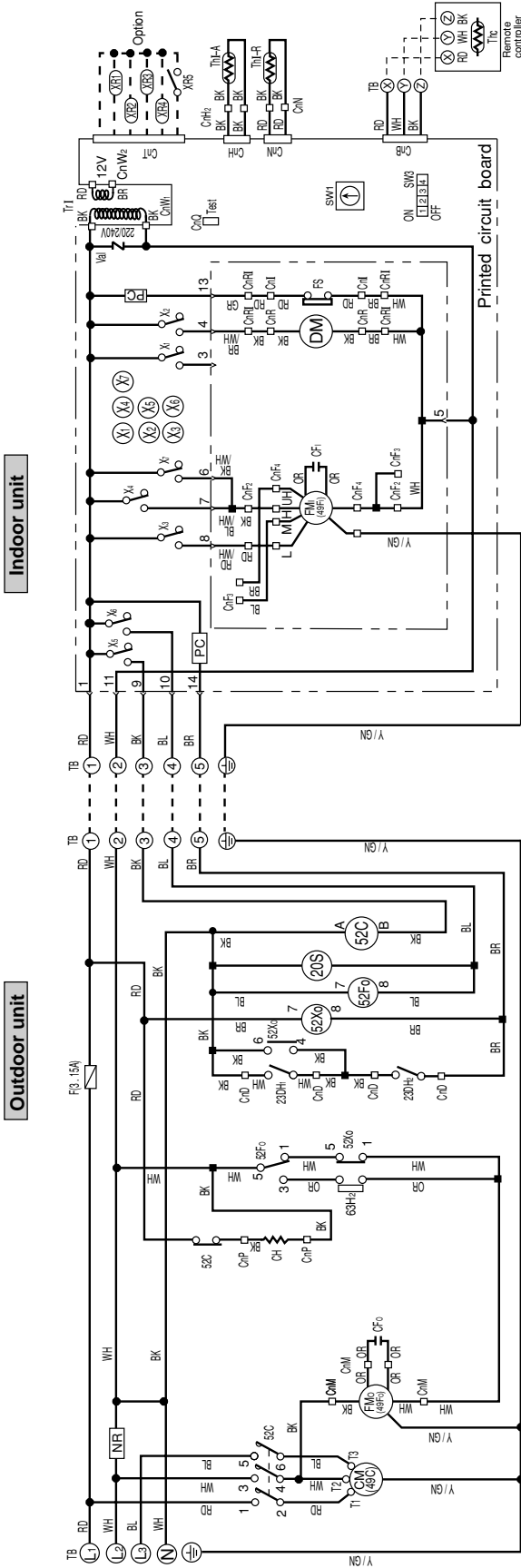
Color mark

Mark	Color	Mark	Color
BK	Black	BK/WH	Black/White
BL	Blue	BL/WH	Blue/White
BR	Brown	BR/WH	Brown/White
GR	Gray	RD/WH	Red/White
OR	Orange	Y/GN	Yellow/Green
RD	Red		
WH	White		

Meaning of marks

Mark	Parts name	Mark	Parts name
CC	Capacitor for CM	Thi-A	Thermistor
CFi	Capacitor for FMi	Thi-R	Thermistor
CFo	Capacitor for FMo	Tri	Transformer
CH	Crankcase heater	Val	Valve
CM	Compressor motor	20S	20S valve solenoid
CnA ~ W	Connector (□ mark)	23DH	Thermostat (deicer)
DM	Drain motor	49C	Internal thermostat for CM
F	Fuse	49Fi	Internal thermostat for FMi
FMi	Fan motor (Indoor unit)	49Fo	Internal thermostat for FMo
FMo	Fan motor (Outdoor unit)	52C	Magnetic contactor for CM
FS	Float switch	52Fo	Magnetic contactor for FMo
NR	Surge suppressor	52Xo	Relay for FMo
PC	Photo coupler	X1~7	Relay for fan control
SW1	Switch (Address set)	63Hz	Auxiliary relay
SW3	Changeover switch	▽	High pressure switch (for control)
TB	Terminal block (○ mark)	○	Terminal (F)
Thc	Thermistor	◼	Connector

Power source
3 Phase 380/415V 50Hz

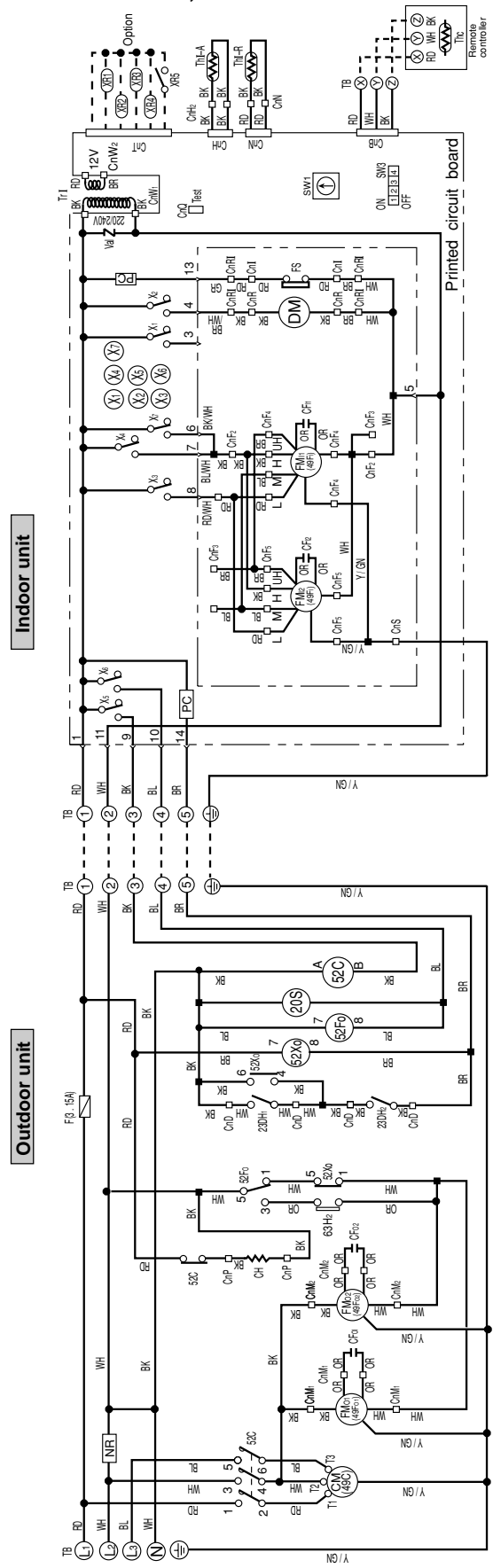


Color mark	
Mark	Color
BK	Black
BL	Blue
BR	Brown
GR	Gray
OR	Orange
RD	Red
WH	White
BK/WH	Black/White
BL/WH	Blue/White
BR/WH	Brown/White
RD/WH	Red/White
Y/GN	Yellow/Green

Meaning of marks	
Mark	Parts name
CFi	Capacitor for FMi
CFO	Capacitor for FMO
CH	Crankcase heater
CM	Compressor motor
CnA ~ W	Connector (□ mark)
DM	Drain motor
F	Fuse
FMi	Fan motor (Indoor unit)
FMO	Fan motor (Outdoor unit)
FS	Float switch
NR	Surge suppressor
PC	Photo coupler
SW1	Switch (Address set)
SW3	Changeover switch
TB	Terminal block (○ mark)
Thc	Thermistor
Th-A	Thermistor
Th-R	Thermistor
Trl	Transformer
Val	Valve
20S	20S
23DH	4-way valve solenoid
49C	Thermostat (deicer)
49Fi	Internal thermostat for CM
49Fo	Internal thermostat for FMi
52C	Internal thermostat for FMO
52Fo	Magnetic contactor for CM
52Xo	Relay for FMO
X1~7	Relay for fan control
63H2	Auxiliary relay
△	High pressure switch (for control)
■	Terminal (F)
○	Connector

Models FDR408HES-A, 508HES-A

Power source
3 Phase 380/415V 50Hz



Color mark

Mark	Color	Mark	Color
BK	Black	BK/WH	Black/White
BL	Blue	BL/WH	Blue/White
BR	Brown	BR/WH	Brown/White
GR	Gray	RD/WH	Red/White
OR	Orange	Y/GN	Yellow/Green
RD	Red		
WH	White		

Meaning of marks

Mark	Parts name	Mark	Parts name
CF1,2	Capacitor for FMi	Th-A	Thermistor
CF0,1,2	Capacitor for FMO	Th-R	Thermistor
CH	Crankcase heater	Tr1	Transformer
CM	Compressor motor	Val	Valvistor
CnA ~ W	Connector (□ mark)	20S	4-way valve solenoid
DM	Drain motor	23DH	Thermostat (deicer)
F	Fuse	49C	Internal thermostat for CM
FM1,2	Fan motor (Indoor unit)	49FI	Internal thermostat for FMi
FM0,1,2	Fan motor (Outdoor unit)	52C	Internal thermostat for FMO
FS	Float switch	52C	Magnetic contactor for CM
NR	Surge suppressor	52Fo	Relay for FMO
PC	Photo coupler	52Xo	Relay for fan control
SW1	Switch (Address set)	X1-7	Auxiliary relay
SW3	Changeover switch	63H2	High pressure switch (for control)
TB	Terminal block (○ mark)		Terminal (F)
Thc	Thermistor		Connector

14.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

Same as the cooling/heating equipment for FDT(N) heat pump type. Refer to page 317.

14.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these “Safety Precautions” first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings, **⚠WARNING** and **⚠CAUTION**, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the **⚠WARNING** section. However, there is also a possibility of serious consequences in relationship to the points listed in the **⚠CAUTION** section as well.

In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.

- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner’s manual. Moreover, ask the customer to keep this sheet together with the owner’s manual.

⚠WARNING

- This system should be applied to places of office, restaurant, residence and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- When a large air-conditioning system is installed to a small room, it is necessary to have a prior planned countermeasure for the rare case of a refrigerant leakage, to prevent the exceeding of threshold concentration. In regards to preparing this countermeasure, consult with the company from which you purchased the equipment, and make the installation accordingly. In the rare event that a refrigerant leakage and exceeding of threshold concentration does occur, there is the danger of a resultant oxygen deficiency accident.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- Execute the prescribed installation construction to prepare for earthquakes and the strong winds of typhoons and hurricanes, etc. Improper installations can result in accidents due to a violent falling over of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used. Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it. Improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward, and accurately install the lid/service panel. Its improper installation can also result in heat generation or fire.
- When setting up or moving the location of the air-conditioner, do not mix air etc. or anything other than the designated refrigerant (R22) within the refrigeration cycle. Rupture and injury caused by abnormal high pressure can result from such mixing.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.

⚠CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire. Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary depending on the established location of the unit. Not installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas. The rare event of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

NOTICE

All phases of this installation must comply with **NATIONAL, STATE AND LOCAL CODES**. These instructions do not cover all variations for every kind of installation circumstance. Should further information be desired or should particular problems occur, the matter should be referred to Mitsubishi Heavy Industries, Ltd. through your local distributor.

WARNING

BE SURE TO READ THESE INSTRUCTIONS CAREFULLY BEFORE BEGINNING INSTALLATION. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE SERIOUS INJURY OR DEATH, EQUIPMENT MALFUNCTION AND/OR PROPERTY DAMAGE.

14.5.1 Installation of indoor unit

(1) Preparation of indoor unit

Before of during the installation of the unit, assemble necessary optional panel, etc. depending on the specific type.

(2) Select places for installation satisfying following conditions and, at the same time, obtain the consent on the part of your client user.

(a) Places where chilled or heated air circulates freely.

When the installation height exceeds 3m warmed air stays close to the ceiling. In such cases, suggest your client users to install air circulators.

(b) Places where perfect drainage can be prepared and sufficient drainage.

(c) Places free from air disturbances to the suction port and blowout hole of the indoor unit, places where the fire alarm may not malfunction or short-circuit.

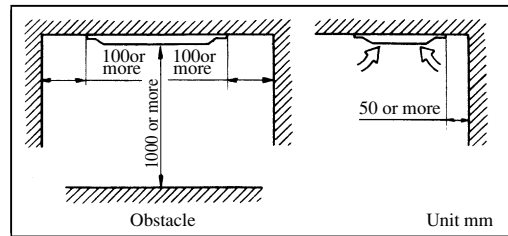
(d) Places with the environmental dew-point temperature is lower than 28°C and the relative humidity is less than 80%.

(When installing at a place under a high humidity environment, pay sufficient attention the prevention of dewing such as thermal insulation of the unit proper.)

(e) Ceiling height shall have the following height.

Panel \ Models	FDR208,258,308	FDR408,508
Combination with silent panel	365mm	416mm
Combination with canvas panel	459mm	510mm

● Installation space.



(3) Avoid installation and use at those places listed below.

(a) Places exposed to oil splashes or steam (e.g. kitchens and machine plants.)

Installation and use at such places incur deteriorations in the performance or corrosion with the heat exchanger or damage in molded synthetic resin parts.

(b) Places where corrosive gas (such as sulfurous acid gas) or inflammable gas (thinner, gasoline, etc) in generated or remains.

Installation and use at such places cause corrosion in the heat exchanger and damage in molded synthetic resin parts.

(c) Places adjacent to equipment generating electromagnetic waves or high-frequency waves such as in hospitals.

Generated noise may cause malfunctioning of the controller.

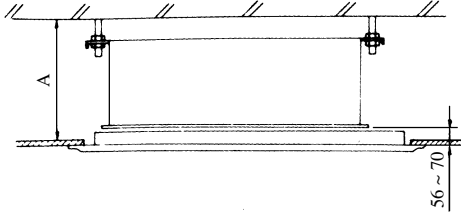
FDR-H

(4) Preparation for suspending the unit

(a) Selection of hanging pattern

When the unit is hung from ceiling, select one of following patterns depending on the dimensions of the ceiling.

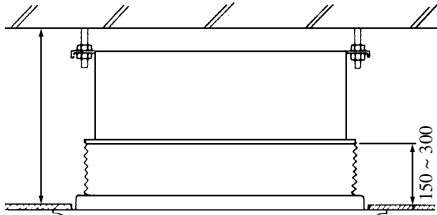
< Combination with silent panel >



Unit: mm

Dimensions	A
Models	
FDR208,258,308	365 or over
FDR408,508	416 or over

< Combination with canvas panel >

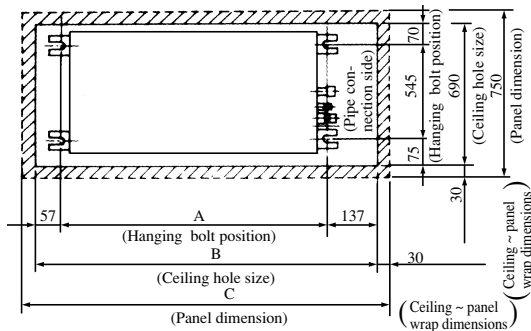


Unit: mm

Dimensions	A
Models	
FDR208,258,308	459 or over
FDR408,508	510 or over

(b) Size of hole at ceiling and position of hanging bolts

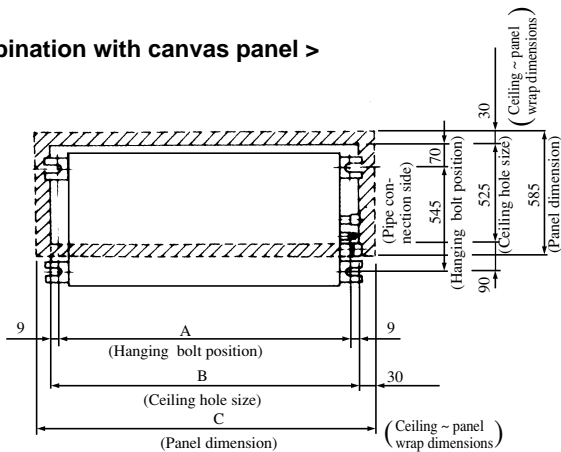
< Combination with silent panel >



Unit: mm

Dimensions	A	B	C
Models			
FDR208	786	980	1040
FDR258,308	986	1180	1240
FDR408,508	1406	1600	1660

< Combination with canvas panel >

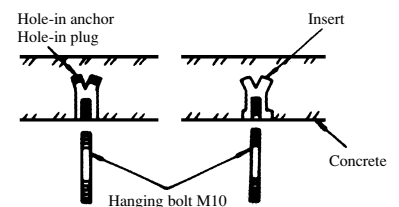


Unit: mm

Dimensions	A	B	C
Models			
FDR208	786	804	864
FDR258,308	986	1004	1064
FDR408,508	1406	1424	1484

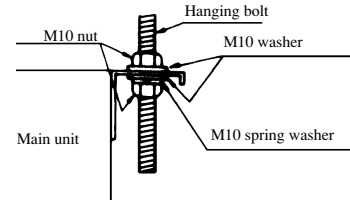
(c) Hanger bolts installation

- Use care of the piping direction when the unit is installed.



(5) Installation of indoor unit

- Fix the indoor unit to the hanger bolts.
- If required, it is possible to suspend the unit to the beam, etc.
- Directly by use of the bolts without using the hanger bolts.

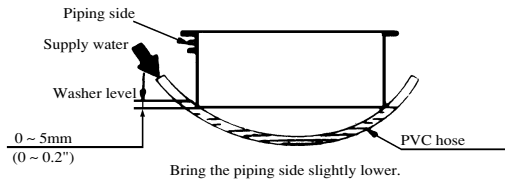


Note

When the dimensions of main unit and ceiling holes does not match, it can be adjusted with the slot holes of hanging bracket.

Adjusting to the levelness

- Adjust the out-of levelness using a level or by the following method.
 - Make adjustment so that the relation between the lower surface of the unit proper and water level in the hose becomes as given below.



- Unless the adjustment to the levelness is made properly, malfunctioning or failure of the float switch may occur.

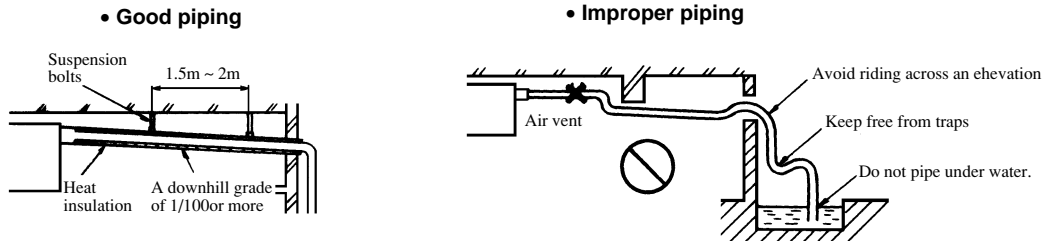
Tap selection on blower unit (When the high performance filter is used.)

Taps of blower unit are set at the standard selection at the shipping from factory. Where the static pressure is raised by employing such option as the high performance filter, etc., change the connection of connectors provided at the flank of control box as shown below.

Standard tap (at shipping)			High speed tap		
Control box side	Red	Connector, white	Red	Motor side	Blue
	Black		Blue		Black
	White	White	Black		Brown
			White		White
		Connector, white	Red		

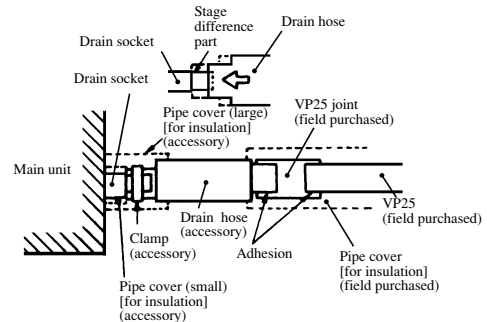
(6) Drain Piping

- Drain piping should always be in a downhill grade (1/50~1/100) and avoid riding across an elevation or making traps.

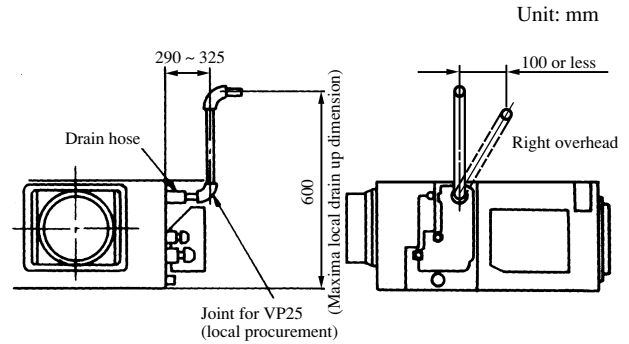
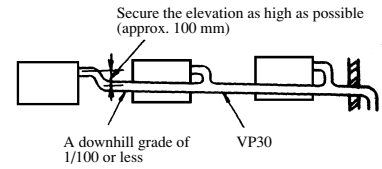


- When connecting the drain pipe to unit, pay sufficient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.

- For drain pipe, use hard PVC general purpose pipe VP-25(I.D.1") which can be purchased locally. When connecting, insert a PVC pipe end securely into the drain socket before tightening securely using the attached drain hose and clamp. Adhesive must not be used connection of the drain socket and drain hose (accessory).



- (d) When constructing drain piping for several units, position the common pipe about 100mm below the drain outlet of each unit as shown in the sketch. Use VP-30(1 1/4") or thicker pipe for this purpose.
- (e) Be sure to provide heat insulation to hard PVC pipes of indoor placement.
- (f) Do not ever provide an air vent.
- (g) The height of the drain head can be elevated up to a point 600mm from the bottom of unit, and when an obstacle exists in the ceiling space, elevate the piping to avoid the obstacle using an elbow or corresponding gadget. When doing this, if the stretch for the needed height is higher than 600mm, the back-flow quantity of drain at the event of interruption of the operation gets too much and it may cause overflow at the drain pan. Therefore, make the height of the drain pipe within the distance given in the sketch below.
- (h) Avoid positioning the drain piping outlet at a place where generation of odor may be stimulated. Do not lead the drain piping direct into a sewer from where sulfur gas may generate.

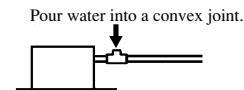
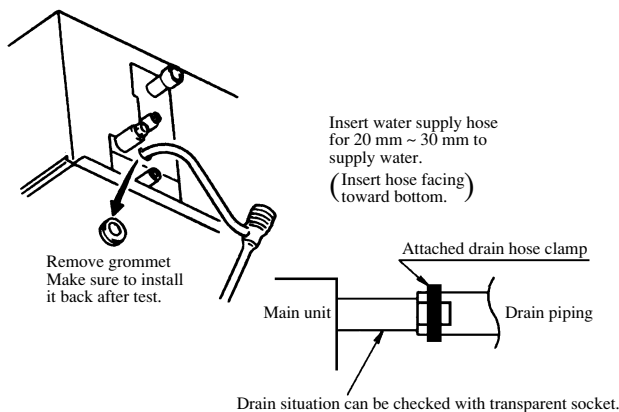


Drainage Test

- ① Conduct a drainage test after completion of the electrical work.
- ② During the trial, make sure that drain flows properly through the piping and that no water leaks from connections.
- ③ In case of a new building, conduct the test before it is furnished with the ceiling.
- ④ Be sure to conduct this test even when the unit is installed in the heating season.

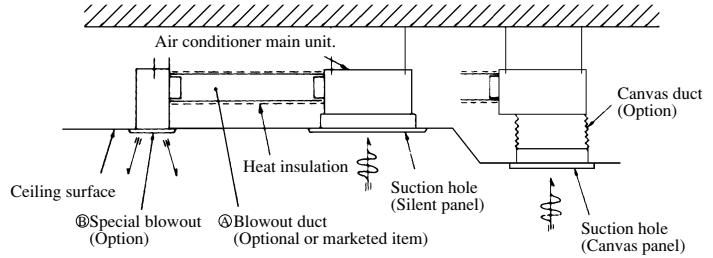
Procedures

- ① Supply about 1000cc of water to the unit through the air outlet using a feed water pump.
- ② Check the drain while cooling operation.



(In the electrical work has not been completed, connect a convex joint in the drain pipe connection to provide a water inlet.
Then, check if water leaks from the piping system and that drain flows through the drain pipe normally.)

(7) Installation work for air outlet ducts



Calculate the draft and external static pressure and select the length, shape and blowout.

(A) Blowout duct

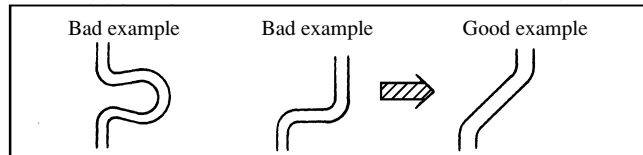
- 2-spot, 3-spot and 4-spot with ϕ 200 type duct are the standard specifications. Determine the number of spots based on following table.

FDR208	FDR258,308	FDR408,508
2-spot	2~3-spot ⁽¹⁾	3~4-spot ⁽²⁾

Notes (1) Shield the central blowout hole for 2-spot.

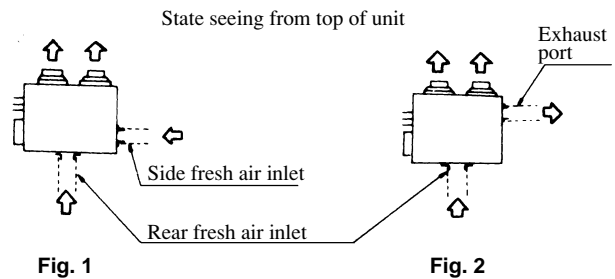
(2) Shield the blowout hole around the center for 3-spot.

- Limit the difference in length between spots at less than 2 : 1.
- Reduce the length of duct as much as possible.
- Reduce the number of bends as much as possible. (Corner R should be as larger as possible.)



- Use a band, etc. to connect the main unit and the blowout duct flange.
- Conduct the duct installation work before finishing the ceiling.

(8) Connection of suction, exhaust ducts



(a) Duct connecting position

i) Fresh air inlet

- Inlet can be selected from the side or rear faces depending on the working conditions.
- Use the rear fresh air inlet when the simultaneous intake and exhaust is conducted. (Side inlet cannot be used.)


ii) Exhaust (Make sure to use also the suction.)

Use the side exhaust port.

(9) Installation of ornament panel

<Case of silent panel>

i) Accessory

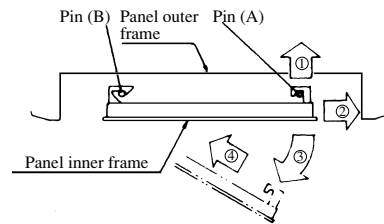
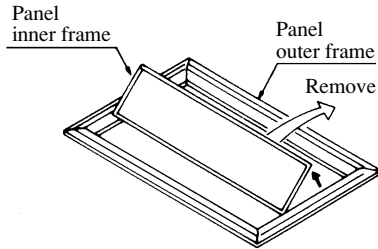
Name	Q'ty	Position
Round head set screw (M5 × 35) 	4 pcs.	Securing the panel

ii) Installation procedures

(a) Remove the inner frame of panel

• **How to remove the panel inner frame**

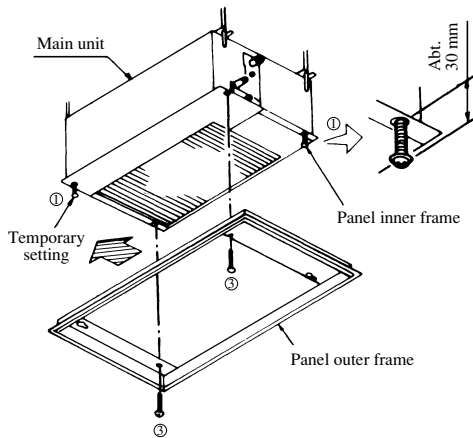
- ① Detach from pins (A) in the order of arrow ①→②.
- ② Open slightly as the arrow ③ and move toward the arrow ④ and detach from pin (B).



(b) Install the panel outer frame on the main unit.

• **Steps of installation**

- ① Secure the panel tentatively with 2 of 4 panel set screws (panel accessory) as shown above.
- ② When the panel is supported with a pair of set screws, slide it in the arrow direction.
[Note: Panel outer frame has the orientation.]
- ③ Lock the former 2 and remaining 2 set screws.
- ④ Install the panel inner frame in the reverse order of removal.



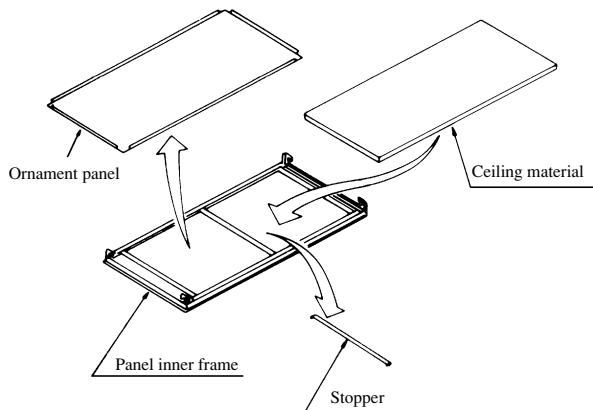
<Case of canvas panel>

See installation manual which is equipped with canvas panel.

Attachment of ceiling material

Ceiling material can be attached to the panel inner frame.

(Plate thickness max. 15mm)



Attachment procedures

- ① Remove the stopper.
- ② Remove the ornament plate and attach the ceiling material.
- ③ Hold down the ceiling material and return the stopper in position.

Note (1) If the ceiling material is attached, the ornament plate is not used.

14.5.2 Installation of remote controller

Same as the cooling/heating equipment for FDT(N) heat pump type. Refer to page 337.

14.5.3 Installation of outdoor unit

Same as the cooling/heating equipment for FDT(N) heat pump type. Refer to page 338.

14.6 MAINTENANCE DATA

Same as the cooling/heating equipment for FDT(N) heat pump type. Refer to page 348.