KENTATSU

DK11-01.01.09

TECHNICAL SERVICE MANUAL

Fancoil unit

Four-way cassette

Models:

KFVE57H0EN1D

KFVE70H0EN1D

KFVE78H0EN1D

KFVE89H0EN1D

KFVE112H0EN1D

KFVE140H0EN1D

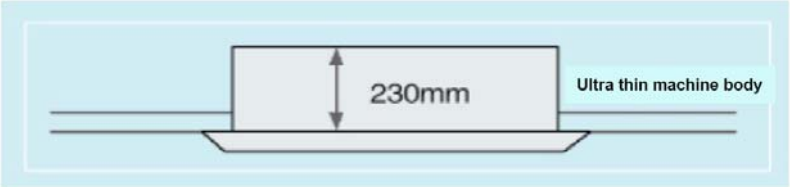
Content

1. External Appearance

- ✧ Chilled water/Hot water (2 pipes)
- ✧ Low height for easy installation
- ✧ Low noise fan direct driven by single phase, 3 speed permanent split capacitor motor.
- ✧ Copper tube/aluminum fin coils
- ✧ Hydrophilic aluminum fin coils coated (optional)
- ✧ Unit constructed by electrostatic galvanized sheet, providing maximum protection against corrosion
- ✧ Heavy gauge zinc coated steel drainage pan with good insulation processing, avoiding sweating and corrosion

2. Features

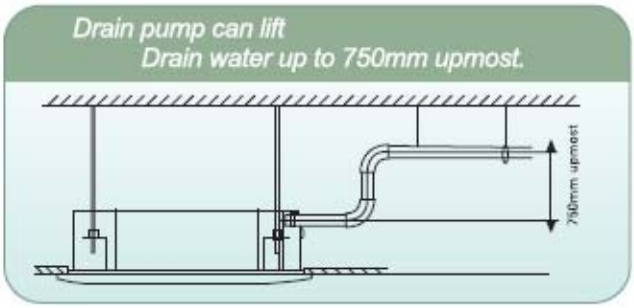
1) Ultra thin machine body to easy installation and maintenance: KFVE57-70H0EN1D: 230mm, KFVE78-140H0EN1D: 300mm.



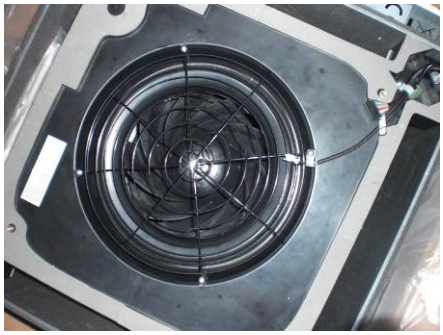
2) Panel KPU95-95C

3) Adding digital tube displaying on the display board. LED can display the Error Code to make the malfunction checking easier.

4) Drainage pump can take up the condenser water to 750mm.



5) Protection grill is standard for safety maintenance.



6) 3 Pre-cut and air outlet stopple make the air blow to other rooms.

7) Vertical water inlet and outlet are in the same line making the installation easier.

8) A full series of controller give you the most suitable solution according to the different requirement from different customers.
9) 4-speed motor provides more choices
10) Optimized structure makes the air volume and capacity improved rapidly.

3. Specification

Type			KFVE57H0EN1D	KFVE70H0EN1D	KFVE78H0EN1D
Airflow (Hi-speed)		CFM	600	750	850
		m^3/h	1000	1250	1400
Cooling Capacity (Hi-speed)		W	5718	6987	7268
Heating Capacity (Hi-speed)		W	9663	11553	12415
Noise (Hi-speed)		dB(A)	45	46	47
Water Flow		l/min	16.4	20	20.8
Water Pressure Drop		kPa	23.8	25.2	27
Indoor Coil	Number Of Rows		2	2	2
	Tube Pitch(A)×Row Pitch(B)	mm	21×13.37		
	Fin Spacing	mm	1.5		
	Fin Type		Hydrophilic aluminum		
	Tube Outside Dia. And Type	mm	φ7，bare tube		
	Coil dimension (L×H×W)	mm	1959.4×168×26.74		1959.4×252×26.74
	Number Of Circuits		8		12
Fan Motor	Type		Low noise 4-speed fan motor		
	Number		1		
	Model		YDK80-6E		YDK90-6E
	Input	W	120/110/100/90	120/110/100/90	165/143/116/100
	Capacitor	uF	3uF/450V	3.5uF/450V	2.5uF/450V
Indoor Unit	Dimension (W×H×D)	mm	840×230×840		840×300×840
	Packing (W×H×D)	mm	955×247×955		955×317×955
	Net/Gross Weight	kg	29/36		35/42
Panel	Dimension (W×H×D)	mm	950×46×950		
	Packing (W×H×D)	mm	1035×90×1035		
	Net/Gross Weight	kg	6/9		
Pipe	Water-Inlet Pipe		RC3/4” internal thread		
	Water-Return Pipe		RC3/4” internal thread		
	Condensation Water-Outlet Pipe		EVA+LDPE 3/4” external thread		

Remark: 1. All performance data above is based upon 0Pa ambient static pressure.

2. Cooling capacity test condition: air inlet Temp. : 27DB°C/19WB°C, water inlet Temp. 7°C, water Temp. difference 5°C.
3. Heating capacity test condition:

   Air inlet Temp. 21DB□, water inlet Temp. 50 DB°C

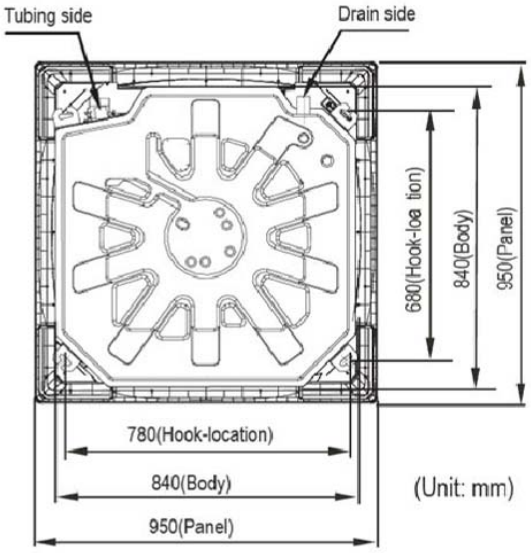
   The volume of air and water is same as cooling.
4. Noise level is tested in full-anechoic room.

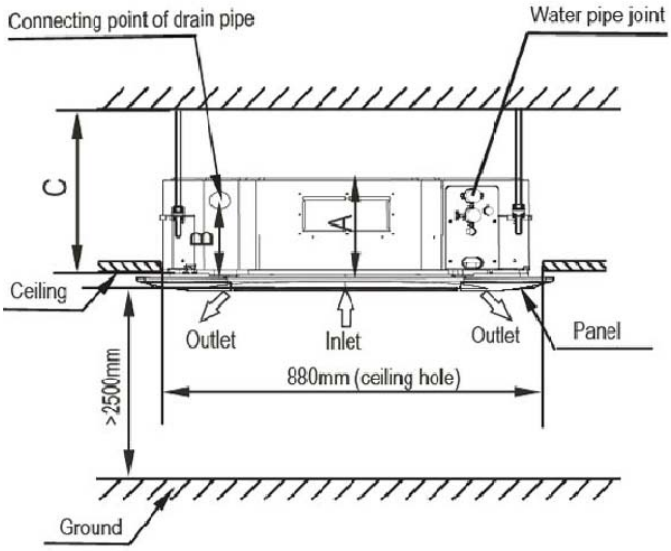
Type			KFVE89H0EN1D	KFVE112H0EN1D	KFVE140H0EN1D
Airflow (Hi-speed)		CFM	950	1200	1500
		m^3/h	1600	2000	2550
Cooling Capacity (Hi-speed)		W	8220	10390	12866
Heating Capacity (Hi-speed)		W	13845	17585	21043
Noise (Hi-speed)		dB(A)	48	49	49
Water Flow		l/min	23.6	29.8	36.9
Water Pressure Drop		kPa	31.2	44	46
Indoor Coil	Number Of Rows		2		
	Tube Pitch(A)×Row Pitch(B)	mm	21×13.37		
	Fin Spacing	mm	1.5		
	Fin Type		Hydrophilic aluminum		
	Tube Outside Dia. And Type	mm	φ7，bare tube		
	Coil dimension (L×H×W)	mm	1959.4×252×26.74		
	Number Of Circuits		12		
Fan Motor	Type		Low noise 4-speed fan motor		
	Number		1		
	Model		YDK90-6E		
	Input	W	165/143/116/100		
	Capacitor	uF	3uF/450V	3.5uF/450V	3.5uF/450V
Indoor Unit	Dimension (W×H×D)	mm	840×300×840		
	Packing (W×H×D)	mm	955×317×955		
	Net/Gross Weight	kg	35/42		
Panel	Dimension (W×H×D)	mm	950×46×950		
	Packing (W×H×D)	mm	1035×90×1035		
	Net/Gross Weight	kg	6/9		
Pipe	Water-Inlet Pipe		RC3/4” internal thread		
	Water-Return Pipe		RC3/4” internal thread		
	Condensation Water-Outlet Pipe		EVA+LDPE 3/4” external thread		

Remark:

1. All performance data above is based upon 0Pa ambient static pressure.
2. Cooling capacity test condition: air inlet Temp. : 27DB°C □/19WB°C □, water inlet Temp. 7°C, water Temp. difference 5°C.
3. Heating capacity test condition: Air inlet Temp. 20DB°C, water inlet Temp. 50 DB°C, the volume of air and water is same as cooling.
4. Noise level is tested in full-anechoic room.

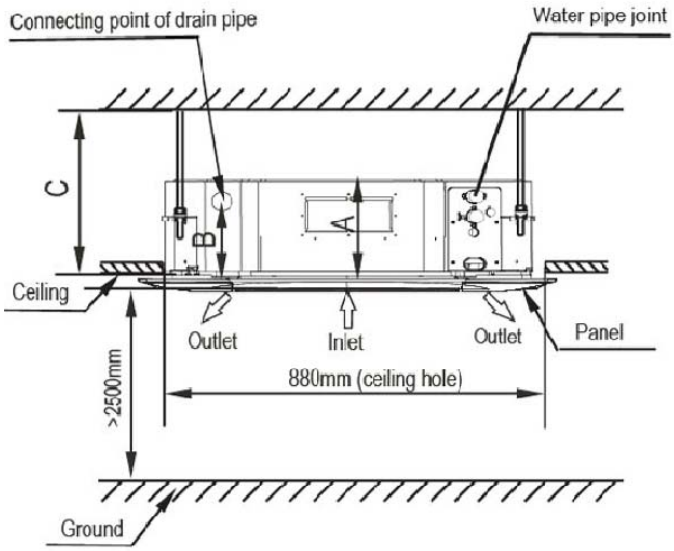
4. Dimensions

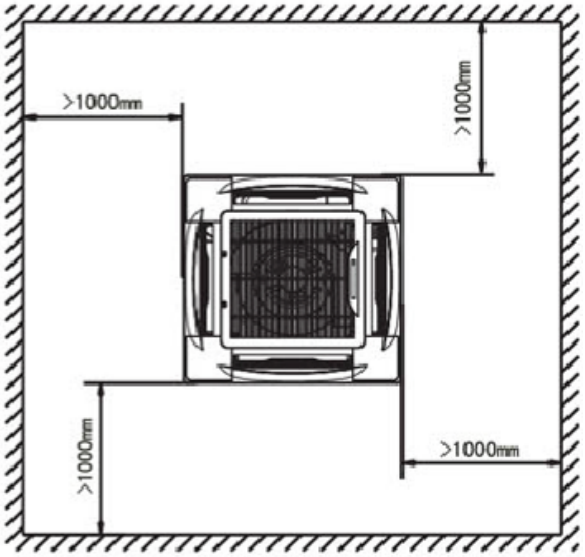


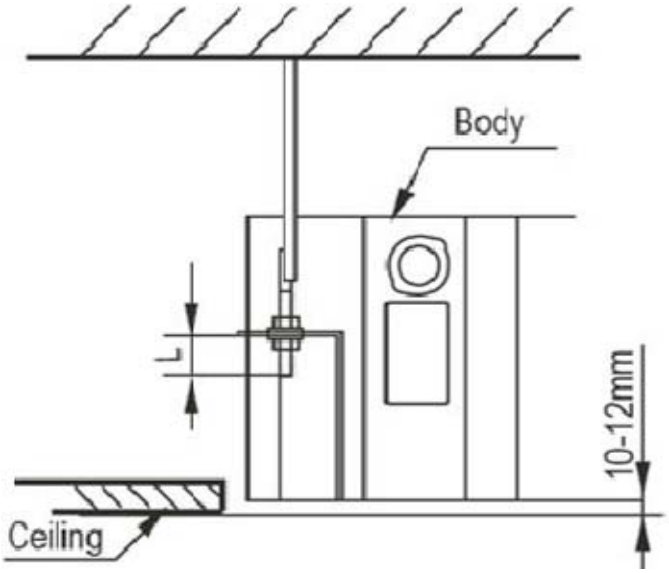


Model A		B	C
KFVE57-70H0EN1D	230	170	>260
KFVE78-89-112-140H0EN1D	300	190	>330

5. Service Spaces



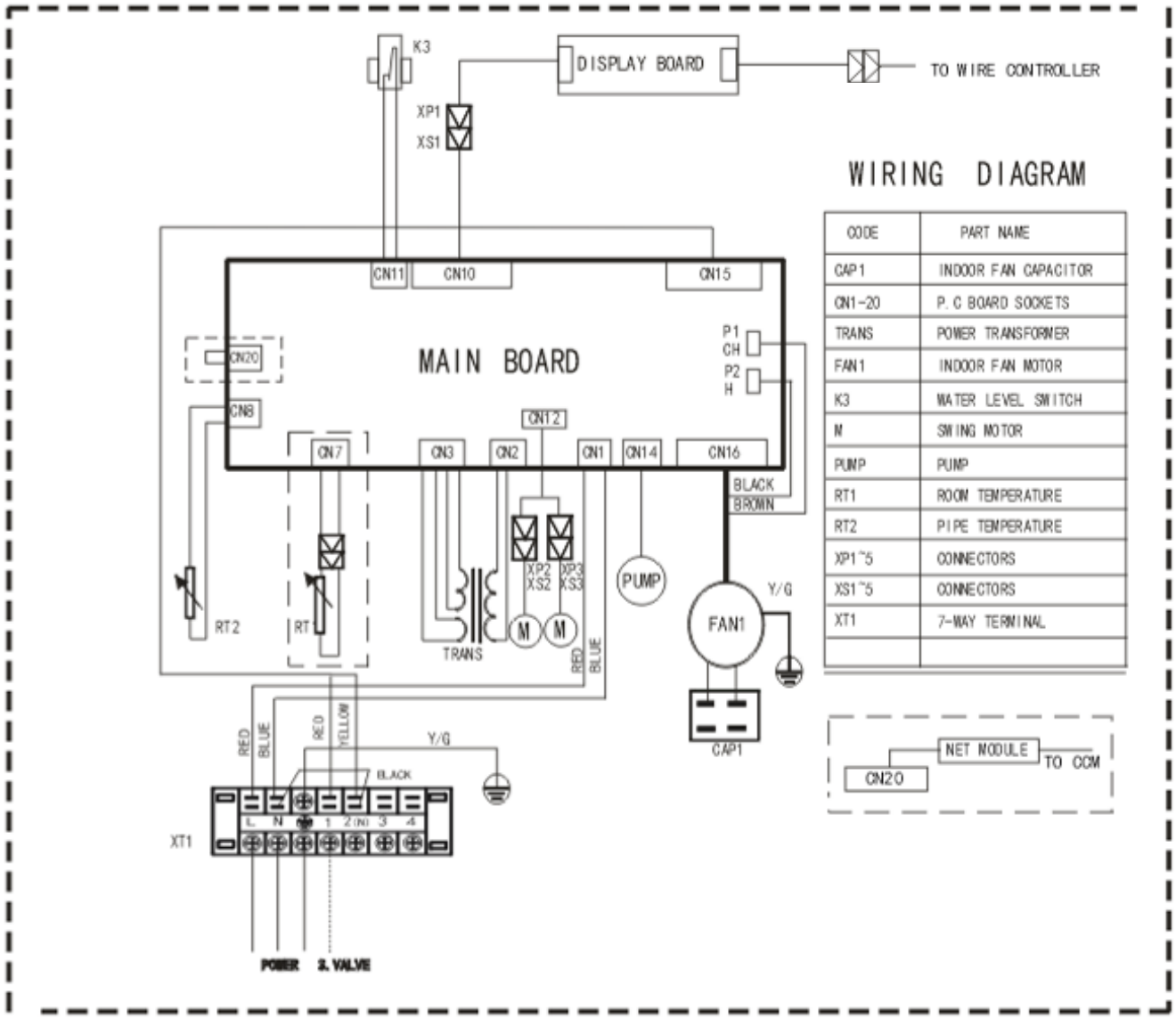




Model A		B	C
KFVE57-70H0EN1D	230	170	>260
KFVE78-89-112-140H0EN1D	300	190	>330

6. Wiring Diagram

KFVE57-70-78-89-112-140H0EN1D



CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-20	P.C BOARD SOCKETS
TRANS	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~5	CONNECTORS
XS1~5	CONNECTORS
XT1	7-WAY TERMINAL

7. Capacity Tables

Cooling Capacity:

Model	Speed	Air On FCU		Water		Delta Water Temp.	Speed of Fan	Air Flow	Air Off FCU		Capacity		Water Flow	Water Pressure Drop	Weight	Input	
		DB	WB	EWT	LWT				DB	WB	Total	Sens.				PWR	Fan Motors
		℃	℃	℃	℃	℃	rpm	m^3/h	℃	℃	kW	kW	m3/h	kPa	kg	W	nos.
KFVE57H0EN1D	High	26.7	19.4	7	12	5	800	1020	14.6	13.9	5.63	4.70	0.97	25.37	29	120	1
				5.5	14.5	9	800	1020	17.6	16.6	3.10	2.59	0.49	12.68	29	120	1
		27	19	7	12	5	800	1020	14.6	13.6	5.73	4.81	0.99	23.80	29	120	1
				5.5	14.5	9	800	1020	17.1	16.2	2.93	2.69	0.46	11.90	29	120	1
		29	21	7	12	5	800	1020	15	14	7.20	5.40	1.24	32.43	29	120	1
				5.5	14.5	9	800	1020	18.4	17.4	3.96	2.97	0.62	16.22	29	120	1
	Mid	26.7	19.4	7	12	5	670	772	14.2	13.2	4.64	3.78	0.80	20.92	29	110	1
				5.5	14.5	9	670	772	17	16.2	2.55	2.08	0.40	10.46	29	110	1
		27	19	7	12	5	670	772	14	13.1	4.73	3.87	0.81	19.88	29	110	1
				5.5	14.5	9	670	772	16.9	16	2.42	2.16	0.38	9.94	29	110	1
		29	21	7	12	5	670	772	14.2	13.3	5.91	4.34	1.02	26.68	29	110	1
				5.5	14.5	9	670	772	18	17.1	3.25	2.39	0.51	13.34	29	110	1
	Low	26.7	19.4	7	12	5	550	600	13.6	12.7	3.89	3.10	0.67	17.52	29	100	1
				5.5	14.5	9	550	600	17	16	2.14	1.71	0.34	8.76	29	100	1
		27	19	7	12	5	550	600	13.8	12.9	3.96	3.17	0.68	16.48	29	100	1
				5.5	14.5	9	550	600	16.7	15.7	1.98	1.77	0.32	8.24	29	100	1
		29	21	7	12	5	550	600	13.5	12.6	4.93	3.55	0.85	22.23	29	100	1
				5.5	14.5	9	550	600	17.6	16.7	2.70	1.95	0.43	11.12	29	100	1
KFVE70H0EN1D	High	26.7	19.4	7	12	5	800	1275	14.6	13.9	6.87	5.87	1.18	26.55	29	120	1
				5.5	14.5	9	800	1275	17.6	16.6	3.78	3.23	0.59	13.28	29	120	1
		27	19	7	12	5	800	1275	14.6	13.6	7.01	6.01	1.20	25.20	29	120	1
				5.5	14.5	9	800	1275	17.1	16.2	3.58	3.37	0.56	12.60	29	120	1
		29	21	7	12	5	800	1275	15	14	8.84	6.74	1.52	34.20	29	120	1
				5.5	14.5	9	800	1275	18.4	17.4	4.86	3.71	0.76	17.10	29	120	1
	Mid	26.7	19.4	7	12	5	670	922	14.2	13.2	5.52	4.57	0.95	21.38	29	110	1

				5.5	14.5	9	670	922	17	16.2	3.04	2.51	0.48	10.69	29	110	1
		27	19	7	12	5	670	922	14	13.1	5.62	4.67	0.97	20.25	29	110	1
				5.5	14.5	9	670	922	16.9	16	2.87	2.61	0.45	10.13	29	110	1
		29	21	7	12	5	670	922	14.2	13.3	7.05	5.24	1.21	27.23	29	110	1
				5.5	14.5	9	670	922	18	17.1	3.88	2.88	0.61	13.61	29	110	1
	Low	26.7	19.4	7	12	5	550	717	13.6	12.7	4.63	3.75	0.80	18.00	29	100	1
				5.5	14.5	9	550	717	17	16	2.55	2.06	0.40	9.00	29	100	1
		27	19	7	12	5	550	717	13.8	12.9	4.72	3.84	0.81	16.88	29	100	1
				5.5	14.5	9	550	717	16.7	15.7	2.41	2.15	0.38	8.44	29	100	1
		29	21	7	12	5	550	717	13.5	12.6	5.89	4.30	1.01	22.73	29	100	1
				5.5	14.5	9	550	717	17.6	16.7	3.24	2.37	0.51	11.36	29	100	1
KFVE78H0EN1D	High	26.7	19.4	7	12	5	840	1445	14.6	13.9	7.14	5.94	1.23	28.63	35	165	1
				5.5	14.5	9	840	1445	17.6	16.6	3.93	3.27	0.62	14.31	35	165	1
		27	19	7	12	5	840	1445	14.6	13.6	7.28	6.07	1.25	27.00	35	165	1
				5.5	14.5	9	840	1445	17.1	16.2	3.72	3.39	0.58	13.50	35	165	1
		29	21	7	12	5	840	1445	15	14	9.13	6.81	1.57	36.54	35	165	1
				5.5	14.5	9	840	1445	18.4	17.4	5.02	3.75	0.79	18.27	35	165	1
	Mid	26.7	19.4	7	12	5	770	1218	14.2	13.2	6.35	5.20	1.09	25.37	35	143	1
				5.5	14.5	9	770	1218	17	16.2	3.49	2.86	0.55	12.69	35	143	1
		27	19	7	12	5	770	1218	14	13.1	6.46	5.31	1.11	23.97	35	143	1
				5.5	14.5	9	770	1218	16.9	16	3.31	2.97	0.52	11.99	35	143	1
		29	21	7	12	5	770	1218	14.2	13.3	8.09	5.96	1.39	32.35	35	143	1
				5.5	14.5	9	770	1218	18	17.1	4.45	3.28	0.70	16.18	35	143	1
	Low	26.7	19.4	7	12	5	640	1020	13.6	12.7	5.61	4.52	0.96	22.34	35	116	1
				5.5	14.5	9	640	1020	17	16	3.09	2.49	0.48	11.17	35	116	1
		27	19	7	12	5	640	1020	13.8	12.9	5.71	4.62	0.98	21.18	35	116	1
				5.5	14.5	9	640	1020	16.7	15.7	2.92	2.58	0.46	10.59	35	116	1
		29	21	7	12	5	640	1020	13.5	12.6	7.12	5.18	1.22	28.40	35	116	1
				5.5	14.5	9	640	1020	17.6	16.7	3.92	2.85	0.61	14.20	35	116	1
KFVE89H0EN1D	High	26.7	19.4	7	12	5	840	1615	14.6	13.9	8.09	6.80	1.39	31.59	35	165	1
				5.5	14.5	9	840	1615	17.6	16.6	4.45	3.74	0.70	15.80	35	165	1

		27	19	7	12	5	840	1615	14.6	13.6	8.25	6.95	1.42	31.20	35	165	1
				5.5	14.5	9	840	1615	17.1	16.2	4.21	3.89	0.66	15.00	35	165	1
		29	21	7	12	5	840	1615	15	14	10.37	7.80	1.78	40.45	35	165	1
				5.5	14.5	9	840	1615	18.4	17.4	5.70	4.29	0.89	20.23	35	165	1
	Mid	26.7	19.4	7	12	5	770	1376	14.2	13.2	7.25	6.00	1.25	28.41	35	143	1
				5.5	14.5	9	770	1376	17	16.2	3.99	3.30	0.63	14.20	35	143	1
		27	19	7	12	5	770	1376	14	13.1	7.39	6.14	1.27	26.82	35	143	1
				5.5	14.5	9	770	1376	16.9	16	3.77	3.43	0.59	13.41	35	143	1
		29	21	7	12	5	770	1376	14.2	13.3	9.27	6.88	1.59	36.14	35	143	1
				5.5	14.5	9	770	1376	18	17.1	5.10	3.78	0.80	18.07	35	143	1
	Low	26.7	19.4	7	12	5	640	1153	13.6	12.7	6.42	5.23	1.10	25.00	35	116	1
				5.5	14.5	9	640	1153	17	16	3.53	2.88	0.55	12.50	35	116	1
		27	19	7	12	5	640	1153	13.8	12.9	6.54	5.35	1.12	23.64	35	116	1
				5.5	14.5	9	640	1153	16.7	15.7	3.34	2.99	0.52	11.82	35	116	1
		29	21	7	12	5	640	1153	13.5	12.6	8.17	5.99	1.40	31.82	35	116	1
				5.5	14.5	9	640	1153	17.6	16.7	4.49	3.29	0.70	15.91	35	116	1
KFVE112H0EN1D	High	26.7	19.4	7	12	5	840	2040	14.6	13.9	10.18	8.75	1.75	46.67	35	165	1
				5.5	14.5	9	840	2040	17.6	16.6	5.60	4.81	0.88	23.33	35	165	1
		27	19	7	12	5	840	2040	14.6	13.6	10.38	8.96	1.78	44.00	35	165	1
				5.5	14.5	9	840	2040	17.1	16.2	5.30	5.02	0.83	22.00	35	165	1
		29	21	7	12	5	840	2040	15	14	13.12	10.05	2.26	60.27	35	165	1
				5.5	14.5	9	840	2040	18.4	17.4	7.22	5.53	1.13	30.13	35	165	1
	Mid	26.7	19.4	7	12	5	770	1720	14.2	13.2	9.08	7.68	1.56	41.60	35	143	1
				5.5	14.5	9	770	1720	17	16.2	4.99	4.22	0.78	20.80	35	143	1
		27	19	7	12	5	770	1720	14	13.1	9.25	7.85	1.59	39.47	35	143	1
				5.5	14.5	9	770	1720	16.9	16	4.72	4.39	0.74	19.73	35	143	1
		29	21	7	12	5	770	1720	14.2	13.3	11.65	8.81	2.00	53.33	35	143	1
				5.5	14.5	9	770	1720	18	17.1	6.41	4.85	1.00	26.67	35	143	1
	Low	26.7	19.4	7	12	5	640	1440	13.6	12.7	8.04	6.69	1.38	36.80	35	116	1
				5.5	14.5	9	640	1440	17	16	4.42	3.68	0.69	18.40	35	116	1
		27	19	7	12	5	640	1440	13.8	12.9	8.20	6.84	1.41	34.93	35	116	1

				5.5	14.5	9	640	1440	16.7	15.7	4.19	3.82	0.66	17.47	35	116	1
		29	21	7	12	5	640	1440	13.5	12.6	10.29	7.67	1.77	47.20	35	116	1
				5.5	14.5	9	640	1440	17.6	16.7	5.66	4.22	0.89	23.60	35	116	1
KFVE140H0EN1D	High	26.7	19.4	7	12	5	840	2550	14.6	13.9	12.63	11.11	2.17	48.69	35	165	1
				5.5	14.5	9	840	2550	17.6	16.6	6.95	6.11	1.09	24.35	35	165	1
		27	19	7	12	5	840	2550	14.6	13.6	12.89	11.37	2.21	46.00	35	165	1
				5.5	14.5	9	840	2550	17.1	16.2	6.57	6.37	1.03	23.00	35	165	1
		29	21	7	12	5	840	2550	15	14	16.36	12.76	2.81	63.05	35	165	1
				5.5	14.5	9	840	2550	18.4	17.4	9.00	7.02	1.41	31.53	35	165	1
	Mid	26.7	19.4	7	12	5	770	2150	14.2	13.2	11.28	9.75	1.94	43.53	35	143	1
				5.5	14.5	9	770	2150	17	16.2	6.20	5.36	0.97	21.77	35	143	1
		27	19	7	12	5	770	2150	14	13.1	11.51	9.98	1.98	41.06	35	143	1
				5.5	14.5	9	770	2150	16.9	16	5.87	5.59	0.92	20.53	35	143	1
		29	21	7	12	5	770	2150	14.2	13.3	14.55	11.20	2.50	56.10	35	143	1
				5.5	14.5	9	770	2150	18	17.1	8.00	6.16	1.25	28.05	35	143	1
	Low	26.7	19.4	7	12	5	640	1800	13.6	12.7	10.02	8.51	1.72	38.60	35	116	1
				5.5	14.5	9	640	1800	17	16	5.51	4.68	0.86	19.30	35	116	1
		27	19	7	12	5	640	1800	13.8	12.9	10.21	8.70	1.75	36.58	35	116	1
				5.5	14.5	9	640	1800	16.7	15.7	5.21	4.87	0.82	18.29	35	116	1
		29	21	7	12	5	640	1800	13.5	12.6	12.87	9.76	2.21	49.59	35	116	1
				5.5	14.5	9	640	1800	17.6	16.7	7.08	5.37	1.11	24.80	35	116	1

Remark:
ESP: external static pressure; **DB:** dry bulb temp.; **WB:** wet bulb temp.; **EWT:** enter water temp.;
LWT: leaving water temp.; **PWR:** power; **nos:** numbers.;

Heating Capacity:

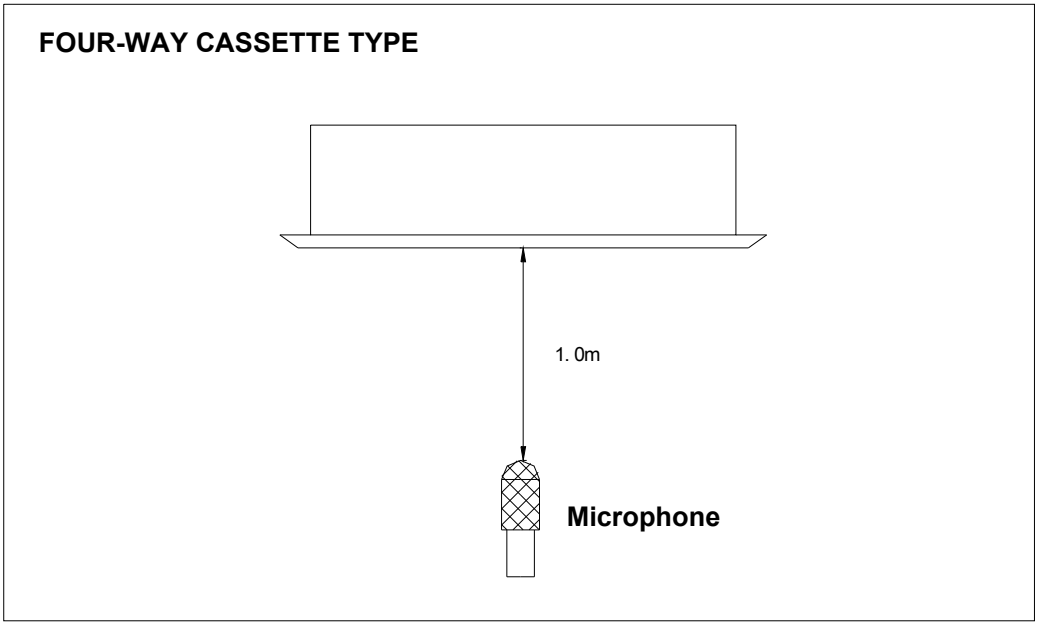
Model	Air flow volume (Hi)	Water temp. change	Air inlet temp. (21℃ DB)																					
			Water inlet temp. (℃)																					
			35			40			45			50			55			60			65			70		
			Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop	Capacity	Water flow volume	Water pressure drop
	m^3/h	℃	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa	kW	m^3/h	kPa
KFVE57H0EN1D	1020	10	1.06	0.09	2.23	2.31	0.20	4.96	3.53	0.30	7.44	4.74	0.41	10.17	5.95	0.51	12.65	7.15	0.61	15.13	8.36	0.72	17.86	9.57	0.82	20.34
		8	1.55	0.17	4.22	2.77	0.30	7.44	3.98	0.43	10.66	5.19	0.56	13.89	6.40	0.69	17.11	7.61	0.82	20.34	8.81	0.95	23.56	10.02	1.08	26.78
		7	1.79	0.22	5.46	3.00	0.37	9.18	4.21	0.52	12.90	5.42	0.66	16.37	6.63	0.81	20.09	7.83	0.96	23.81	9.04	1.11	27.53	10.25	1.26	31.25
		6	2.02	0.29	7.19	3.23	0.46	11.41	4.44	0.64	15.87	5.64	0.81	20.09	6.85	0.98	24.30	8.06	1.15	28.52	9.27	1.33	32.98	10.48	1.50	37.20
		5	2.25	0.39	9.67	3.46	0.59	14.63	4.66	0.80	19.84	5.87	1.01	25.05	7.08	1.22	30.26	8.29	1.42	35.22	9.50	1.63	40.42	10.71	1.84	45.63
KFVE70H0EN1D	1275	10	1.22	0.10	2.19	2.70	0.23	5.04	4.16	0.36	7.89	5.61	0.48	10.52	7.06	0.61	13.37	8.51	0.73	15.99	9.96	0.86	18.84	11.42	0.95	20.81
		8	1.81	0.19	4.16	3.27	0.35	7.67	4.72	0.51	11.17	6.17	0.66	14.46	7.62	0.82	17.97	9.07	0.97	21.25	10.53	1.13	24.76	11.98	1.29	28.26
		7	2.10	0.26	5.70	3.55	0.44	9.64	5.00	0.61	13.37	6.45	0.79	17.31	7.90	0.97	21.25	9.36	1.15	25.20	10.81	1.33	29.14	12.27	1.51	33.08
		6	2.38	0.34	7.45	3.83	0.55	12.05	5.28	0.76	16.65	6.73	0.96	21.03	8.19	1.17	25.63	9.64	1.38	30.24	11.10	1.59	34.84	12.55	1.80	39.44
		5	2.66	0.46	10.08	4.11	0.71	15.56	5.56	0.96	21.03	7.02	1.21	26.51	8.47	1.46	31.99	9.93	1.71	37.47	11.39	1.96	42.94	12.85	2.21	48.42
KFVE78H0EN1D	1445	10	1.54	0.13	2.54	3.32	0.29	5.68	5.07	0.44	8.61	6.80	0.58	11.35	8.53	0.73	14.29	10.26	0.88	17.22	11.99	1.03	20.16	13.71	1.18	23.09
		8	2.23	0.24	4.70	3.99	0.43	8.42	5.72	0.61	11.94	7.45	0.80	15.66	9.18	0.99	19.37	10.90	1.17	22.90	12.63	1.36	26.62	14.36	1.54	30.14
		7	2.57	0.32	6.26	4.31	0.53	10.37	6.04	0.74	14.48	7.77	0.95	18.59	9.50	1.17	22.90	11.22	1.38	27.01	12.95	1.59	31.12	14.68	1.80	35.23
		6	2.90	0.42	8.22	4.64	0.66	12.92	6.36	0.91	17.81	8.09	1.16	22.70	9.82	1.41	27.59	11.55	1.65	32.29	13.28	1.90	37.18	15.01	2.15	42.08
		5	3.23	0.55	10.76	4.96	0.85	16.63	6.65	1.15	22.51	8.41	1.45	28.38	10.04	1.74	34.05	11.87	2.04	39.92	13.60	2.34	45.79	15.34	2.64	51.66
KFVE89H0EN1D	1615	10	1.65	0.14	2.80	3.60	0.31	6.20	5.51	0.47	9.40	7.41	0.64	12.80	9.30	0.80	16.00	11.20	0.96	19.20	13.09	1.12	22.40	14.98	1.29	25.80
		8	2.41	0.26	5.20	4.33	0.47	9.40	6.23	0.67	13.40	8.12	0.87	17.40	10.02	1.08	21.60	11.91	1.28	25.60	13.81	1.48	29.60	15.70	1.69	33.80
		7	2.79	0.34	6.80	4.69	0.58	11.60	6.59	0.81	16.20	8.48	1.04	20.80	10.37	1.27	25.40	12.27	1.51	30.20	14.17	1.74	34.80	16.06	1.97	39.40
		6	3.15	0.45	9.00	5.05	0.72	14.40	6.94	0.99	19.80	8.84	1.27	25.40	10.73	1.54	30.80	12.63	1.81	36.20	14.53	2.08	41.60	16.43	2.35	47.00
		5	3.51	0.60	12.00	5.41	0.93	18.60	7.30	1.25	25.00	9.20	1.58	31.60	10.09	1.91	38.20	12.99	2.23	44.60	14.89	2.56	51.20	16.80	2.89	57.80
KFVE112H0EN1D	2040	10	1.91	0.16	3.91	4.24	0.36	8.80	6.54	0.56	13.69	8.84	0.76	18.57	11.13	0.96	23.46	13.42	1.15	28.11	15.72	1.35	32.99	18.01	1.55	37.88
		8	2.83	0.30	7.33	5.15	0.55	13.44	7.44	0.80	19.55	9.73	1.05	25.66	12.02	1.29	31.53	14.32	1.54	37.64	16.62	1.78	43.50	18.92	2.03	49.61
		7	3.29	0.40	9.78	5.59	0.69	16.86	7.88	0.97	23.71	10.18	1.25	30.55	12.47	1.53	37.39	14.77	1.81	44.24	17.07	2.10	51.32	19.37	2.38	58.17
		6	3.74	0.54	13.20	6.04	0.86	21.02	8.11	1.19	29.08	10.63	1.52	37.15	12.92	1.85	45.21	15.22	2.18	53.28	17.53	2.51	61.34	19.83	2.84	69.41
		5	4.19	0.72	17.60	9.48	1.11	27.13	8.78	1.51	36.90	11.08	1.90	46.44	13.38	2.30	56.21	15.68	2.70	65.99	17.99	3.09	75.52	20.30	3.49	85.30
KFVE140H0EN1D	2550	10	2.18	0.19	3.50	4.95	0.43	7.91	7.70	0.66	12.14	10.44	0.90	16.56	13.19	1.13	20.79	15.94	1.37	25.21	18.69	1.61	29.62	21.44	1.84	33.86
		8	3.30	0.35	6.44	6.05	0.65	11.96	8.79	0.94	17.30	11.54	1.24	22.82	14.29	1.53	28.15	17.04	1.83	33.67	19.80	2.13	39.19	22.56	2.42	44.53
		7	3.85	0.47	8.65	6.60	0.81	14.90	9.34	1.15	21.16	12.09	1.48	27.23	14.84	1.82	33.49	17.60	2.16	39.74	20.36	2.50	46.00	23.13	2.84	52.26
		6	4.40	0.63	11.59	7.14	1.02	18.77	9.89	1.42	26.13	12.65	1.81	33.30	15.40	2.21	40.66	18.17	2.60	47.84	20.93	3.00	55.20	23.70	3.39	62.38
		5	4.95	0.85	15.64	7.69	1.32	24.29	10.45	1.80	33.12	13.20	2.27	41.77	15.97	2.74	50.42	18.74	3.22	59.25	21.51	3.70	68.08	24.28	4.17	76.73

Heating capacity modification coefficient table:

Model	KFVE57H0EN1D	KFVE70H0EN1D	KFVE78H0EN1D	KFVE89H0EN1D	KFVE112H0EN1D	KFVE140H0EN1D
Mid-speed	0.88	0.87	0.86	0.88	0.86	0.88
Low-speed	0.74	0.75	0.75	0.76	0.74	0.75

8. Sound Levels

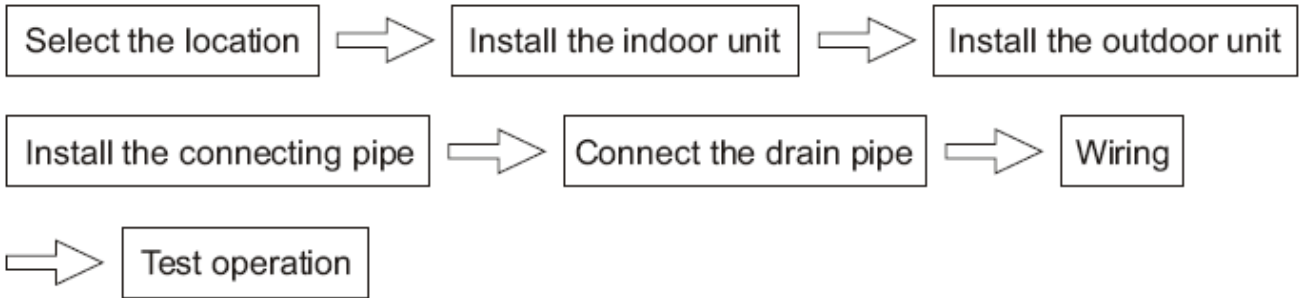
TYPE		KFVE57H0EN1D	KFVE70H0EN1D	KFVE78H0EN1D	KFVE89H0EN1D	KFVE112H0EN1D	KFVE140H0EN1D
Noise	dB(A)	45	46	47	48	49	49



9. The Installation of KFVE

Before Installation

Please check whether the accessories are of full scope. If there are some fittings free from use, please restore them carefully.



9.1.1 Inst allation space

(refer to fig.1,fig.2,fig.3 and table 1 for specification.)

The indoor unit should be installed in a location that meets the following requirements:

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The outlet and the inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The connecting water pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters.

Caution:

Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)

9.1.2 Installation procedures for fresh air intake duct connection

- Preparing the connection hole
- Cut off the knockout hole on the side plate with a nipper.
- Cut the inner insulation of the hole portion with a cutter.
- Placing the insulation
- Put the insulation tightly around the hole of the unit as shown. The ends of the side plate and the inner insulation must be completely adhered without leaving any clearance along the circumference of the hole. Make sure the inner surface of insulation tightly contacts the inner insulation edge and the side plate. (refer to fig.5)

9.1.3 Install the Main Body

A. The existing ceiling (to be horizontal)

a. Cut a quadrangular hole of 880×880mm in the ceiling according to the shape of the installation paper board.

- The center of the hole should be at the same position of that of the air conditioner body.
- Determine the lengths and outlets of the connecting pipe, drain pipe and cables.
- To balance the ceiling and to avoid vibration, please enforce the ceiling when necessary.

b. Select the position of installation hooks according to the hook holes on the installation board.

- Drill four holes of Ø12mm, 50~55mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).
- Face the concave side of the installation hooks toward the expansible hooks. Determine the length of the installation hooks from the height of ceiling, and then cut off the unnecessary part.
- If the ceiling is extremely high, please determine the length of the installation hook according to facts.

c. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body.

- If the drainpipe is awry, leakage will be caused by the malfunction of the water-level switch.
- Adjust the position to ensure the gaps between the body and the four sides of ceiling are even. The body's lower part should sink into the ceiling for 10~12 mm (refer to fig.6).
- In general, L is half of the screw length of the installation hook. (refer to fig.6)
- Locate the air conditioner firmly by wrenching the nuts after having adjusted the body's position well. (refer to fig.7)

B. New built houses and ceilings

a. In the case of new built house, the hook can be embedded in advance (refer to the A.b mentioned above). But it should be strong enough to bear the indoor unit and will not become loose because of concrete shrinking.

b. After installing the body, please fasten the installation paper board onto the air conditioner with bolts (M6*12) to determine in advance the sizes and positions of the hole opening on ceiling. (refer to fig.8)

- Please first guarantee the flatness and horizontal of ceiling when installing it.
- Refer to the A.a mentioned above for others.

c. Refer to the A.c mentioned above for installation.

d. Remove the installation paper board.

Caution:

After installing the body, the four bolts(M6x12)must be fastened to the air conditioner onto ensure the body is grounded well.

FIGURES 1

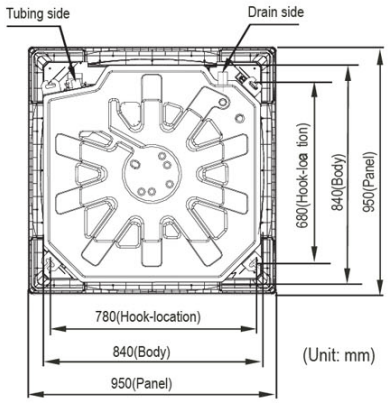


fig.1

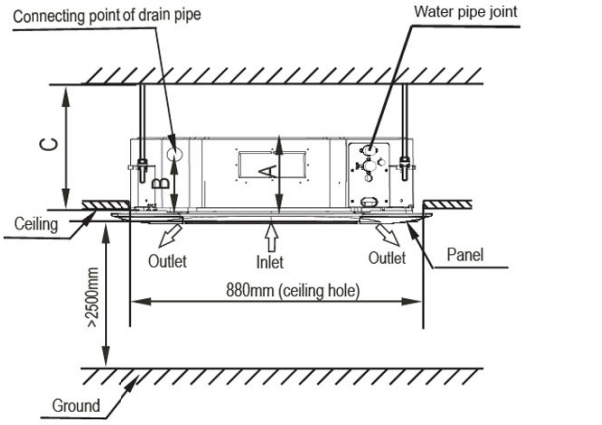


fig.2

Table 1 mm

MODEL	A	B	C
12.5	230	170	≥260
16/20	300	190	≥330

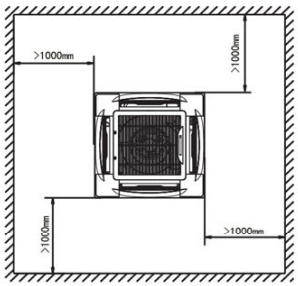
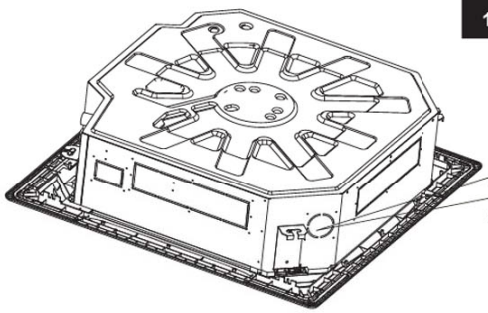


fig.3



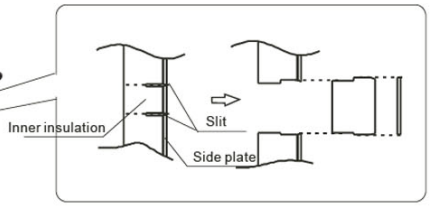


fig.4

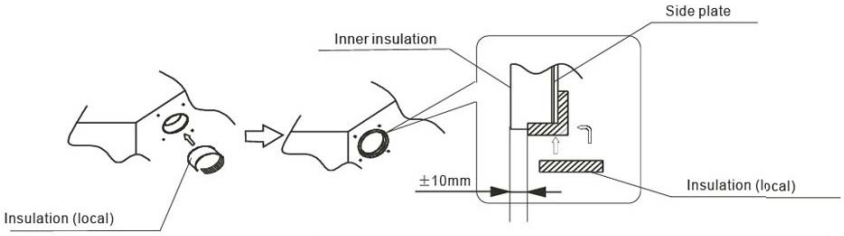


fig.5

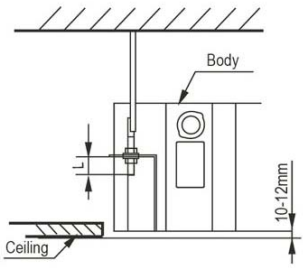


fig.6

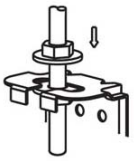


fig.7

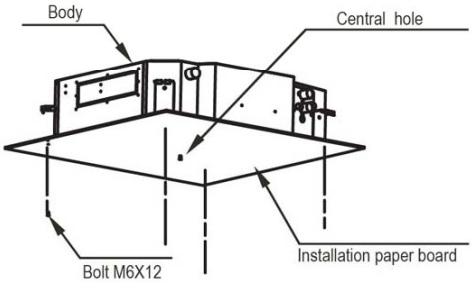


fig.8

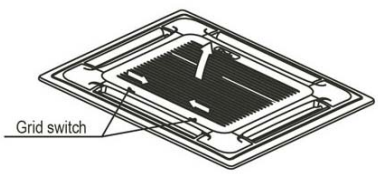


fig.9

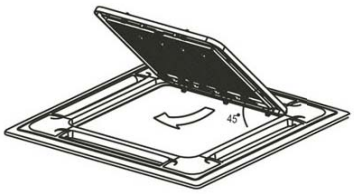


fig.10

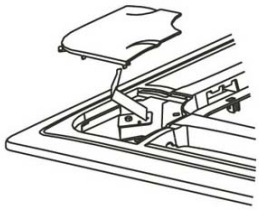


fig.11

9.1.4 Inst all the Panel

Caution:

Never put the panel face down on floor or against the wall, or on bulgy objects.

Never crash or strike it.

(1) Remove the air inlet grill.

a. Slide two grid switches toward the middle at the same time, and then pull them up. (Refer to fig. 9)

b. Draw the grid up to an angle of about 45o, and remove it. (Refer to fig. 10)

(2) Remove the installation covers at the four corners.

Wrench off the bolts, loose the rope of the installation covers, and remove them. (Refer to fig. 11)

(3) Install the panel

a. Align the swing motor on the panel to the tubing joints of the body properly.

b. Fix hooks of the panel at swing motor and its opposite sides to the hooks of corresponding water receiver. Then hang the other two panel hooks onto corresponding hangers of the body.

Cautions

Do not coil the wiring of the swing motor into the seal sponge.

c. Adjust the four panel hook screws to keep the panel horizontal, and screw them up to the ceiling evenly. (Refer to chart 12)

d. Regulate the panel in the direction of the arrow in Chart12 slightly to fit the panel's center to the center of the ceiling's opening. Guarantee that hooks of four corners are fixed well.

e. Keep fastening the screws under the panel hooks, until the thickness of the sponge between the body and the panel's outlet has been reduced to about 4~6mm. The edge of the panel should contact with the ceiling well. (Refer to chart 13)

Malfunction described in Chart14 can be caused by inappropriate tightness the screw.

If the gap between the panel and ceiling still exists after fastening the screws, the height of the indoor unit should be modified again. (Refer to chart 15-left)

You can modify the height of the indoor unit through the openings on the panel's four corners; if the lift of the indoor unit and the drainpipe is not influenced (refer to chart 15-right).

(4) Hang the air-in grid to the panel, and then connect the lead terminator of the swing motor and that of the control box with corresponding terminators on the body respectively.

(5) Relocate the air-in grid in the procedure of reversed order.

(6) Relocate the installation cover.

a. Fasten the rope of installation cover on the bolt of the installation cover. (Refer to chart 16-left)

b. Press the installation cover into the panel slightly. (Refer to chart 16-right)

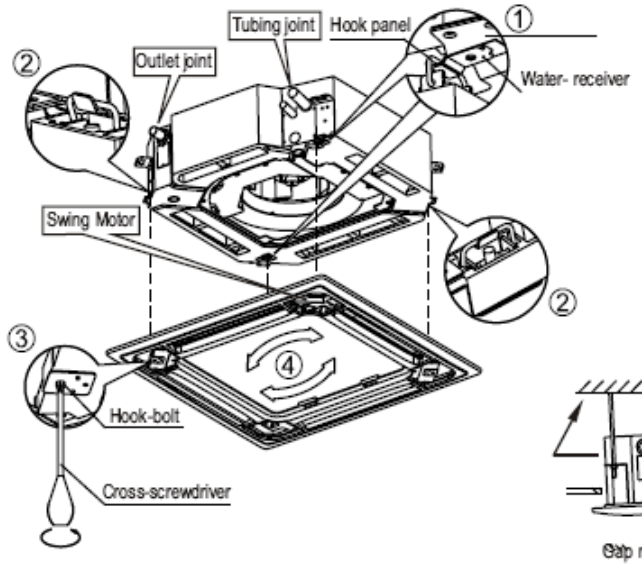


Chart 12

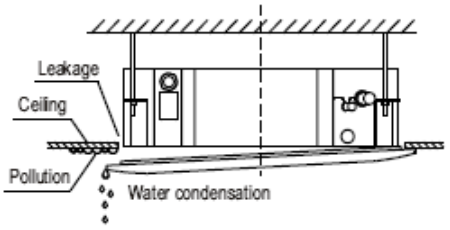


Chart 14

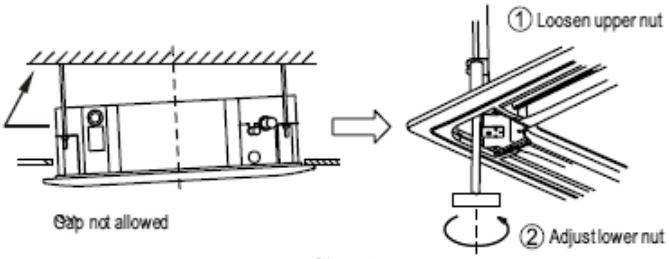


Chart 15

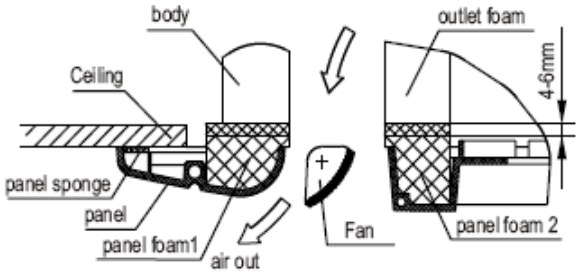


Chart 13

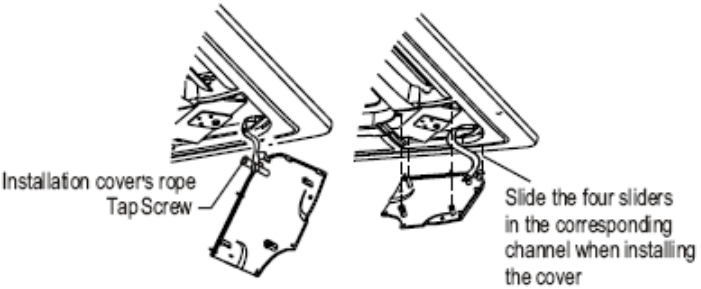


Chart 16

9.1.5 Connect the Drain Pipe

Install the drainpipe of the indoor unit

- You can use a polyethylene tube as the drainpipe (out-dia. 37~39mm, in-dia. 32mm). It could be bought at local market or from your dealer.
- Set the mouth of the drainpipe onto the root of the body's pump-pipe, and clip the drainpipe and the out-let pipe sheath (fittings) together firmly with the out-let pipe clasp (fitting).

Cautions: Use your strength carefully to prevent the pump-pipe from breaking.

- The body's pump pipe and the drainpipe (especially the indoor part) should be covered evenly with the out-let pipe sheath (fittings) and be bound tightly with the constrictor to prevent condensation caused by entered air.
- To prevent water from flowing backwards into the air conditioner while the air conditioner stops, please lean the drainpipe down toward outdoor (outlet-side) at a degree of over 1/50. And please avoid any bulge or water deposit. (Refer to Chart a)
- Do not drag the drainpipe violently when connecting to prevent the body from being pulled.
- Meanwhile, one support-point should be set every 1~1.5m to prevent the drainpipe from yielding (Refer to Chart b). Or you can tie the drainpipe with the connecting pipe to fix it. (Refer to Chart.c)
- In the case of prolonged drainpipe, you had better tighten its indoor part with a protection tube to prevent it from loosing.
- If the outlet of the drainpipe is higher than the body's pump joint, the pipe should be arranged as vertically as possible. And the lift distance must be less than 750mm, otherwise the water will overflow when the air conditioner stops. (Refer to Chart d)
- The end of the drainpipe should be over 50mm higher than the ground or the bottom of the drainage chute, and do not immerse it in water. If you discharge the water directly into sewage is sure to make a U-form aqua seal by bending the pipe up to prevent the smelly gas entering the house through the drain

pipe.

Cautions: All the joints of the drain system must be sealed to prevent water leakage.

1. All field piping must be provided by a licensed water technician and must comply with the relevant local and national codes.
2. Do not let air, dust, or other impurities fall in the pipe system during the time of installation.
3. The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
4. Keep the connecting pipe dry, and do not let moisture in during installation.

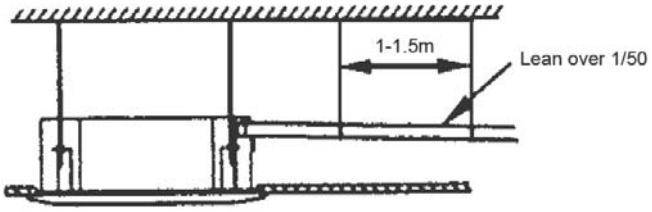


Chart a

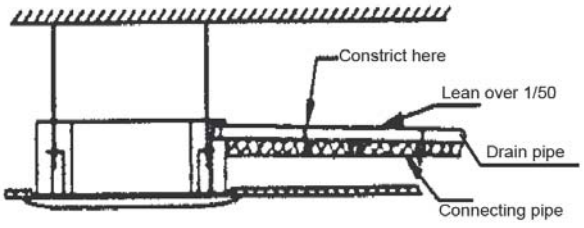


Chart c

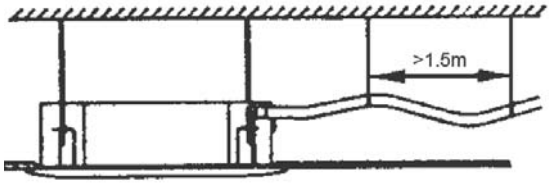


Chart b

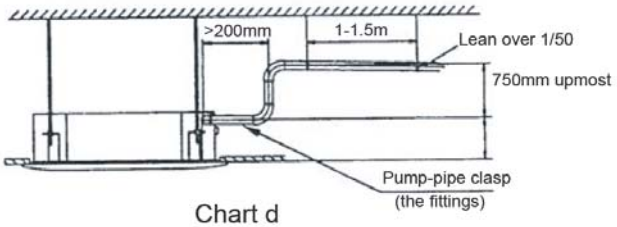


Chart d

Note: All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

9.1.6 Drainage test

- Check whether the drainpipe is unhindered
- New built house should have this test done before paving the ceiling.

1. Remove the test cover, and stow water of about 2000ml to the water receiver through the stow tube. (Refer to Chart 19)

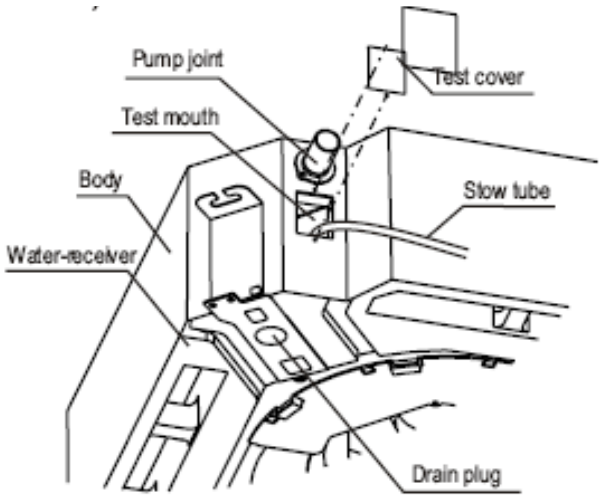


Chart 19

2. Turn on the power, and operate the air conditioner under the "COOLING" mode. Listen to the sound of the drain pump. Check whether the water is discharged well (a lag of 1min is allowed before discharging, according to the length of the drain pipe), and check whether water leaks from the joints.

Cautions: If there is any malfunction, please resolve it immediately.

3. Stop the air conditioner for there minutes, check if everything is ok. If the drain hose is located unreasonable, water overflow will cause the Alarm indicator lamp flashing (For both cooling and heating type or cooling only type), even the water leak out from the water receiver.
4. Check the drain pump whether drain water immediately when alarm sound for the high water lever. If the water lever can't come down below to the limited water lever, the air conditioner will stop. Restart it until turn off the power and drain off all the water.
5. Turn off the power, drain the water away.

- The drain plug is used to empty the water-receiver for maintenance of the air conditioner. Please stuff it imposition at all times during operation to avoid leakage.

9.1.7 W iring

Caution:

1. The air conditioner should use separate power supply with rated voltage.
2. The external power supply to the air conditioner should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.
3. The wiring work should be done by qualified persons according to circuit drawing.
4. An all-pole disconnection switch having a contract separation of at least 3mm in a pole should be connected in fixed wiring.
5. Be sure to locate the power wiring and the signal wiring well to avoid cross-disturbance.
6. Do not turn on the power until you have checked carefully after wiring.

Note:

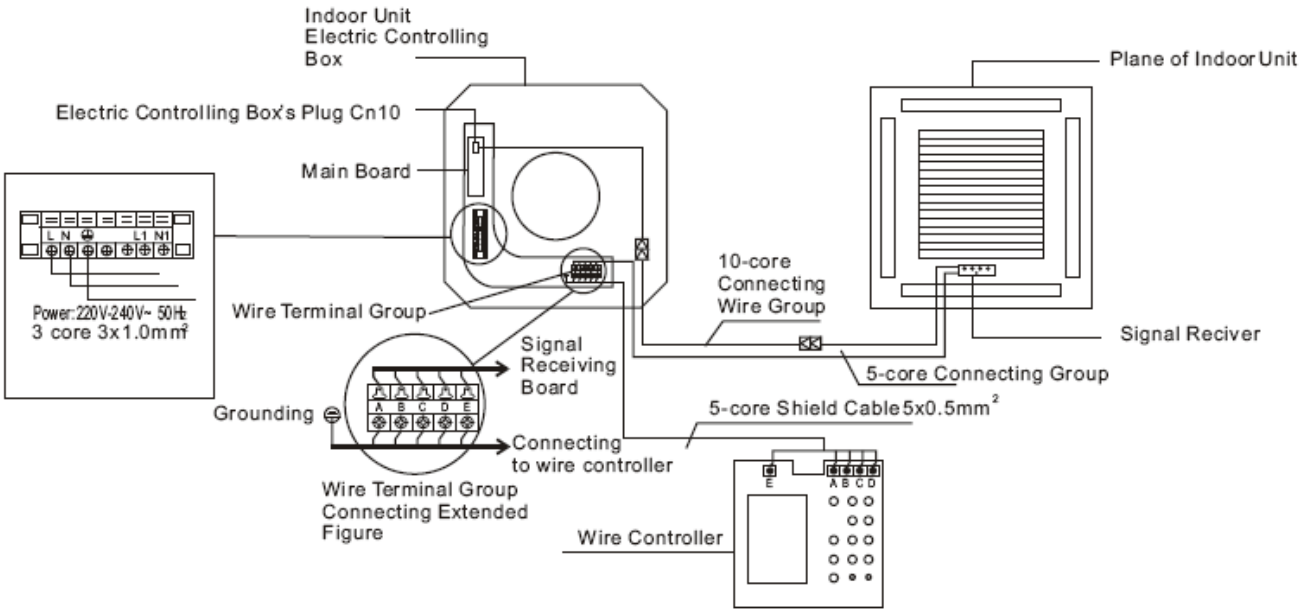
Remark per EMC Directive 89/336/EEC to prevent flicker impressions during the start of the compressor (technical process), following installation conditions do apply.

1. The power connection for the air conditioner has to be done at the main power distribution. The distribution has to be of a low impedance, normally the required impedance reaches at a 32 A fusing point.
2. No other equipment has to be connected with this power line.
3. For detailed installation acceptance please refer to your power supplier, if restrictions do apply for products like washing machines, air conditioners or electrical ovens.
4. For power details of the air conditioner refer to the rating plate of the product.
5. For any question contact your local dealer.

9.1.8 Connect the cable

- Dissemble the bolts from the cover.(If there isn't a cover on the outdoor unit, disassemble the bolts from the maintenance board, and pull it in the direction of the arrow to remove the protection board.)
- Connect the connective cables to the terminals as identified with their respective mached numbers on the terminal block of indoor and outdoor units.
- Re-install the cover or the protection board.

9.1.9 W iring figure



Note: If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.