LG TOTAL HVAC SOLUTION PROVIDER

Heat Pump Water Heater

Europe
R134a(50Hz)

ENGINEERING PRODUCT DATA BOOK

LG
Life's Good

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Heat Pump Water Heater
- 50 Hz (R134a)

1. Models Line Up

Category	Picture	Chassis	Model Name	
			Water Tank Volume[L]	
			200	270
Heat Pump Water Heater		RF	WH20S.F5 (R5TT20F-SA1)	WH27S.F5 (R5TT27F-SA0)

2. Nomenclature

Model Name	R	5	T	T	2	0	F	-	S	A	1
No.	1	2	3	4	5	6	7	8	9	10	11

No.	Signification
1	**Product Type** R : Heat Pump Water Heater
2	**Refrigerant** 2 : R22 3 : R32 4 : R410A 5 : R134a 6 : R290
3	**Supply Type** -: Set N : Indoor Unit U : Outdoor Unit T : Packaged A : C/SKD Indoor Unit B : C/SKD Outdoor Unit M : Mock-Up
4	**Model Type** T : Inverter Heating Only W : Inverter Heating & Cooling
5,6	**Capacity** Ex) 27 : 270L
7	**Indoor Unit Platform** F : Frontier
8	**Outdoor Unit Platform** - : Packaged (No Outdoor Unit)
9	**Look & Color**
10	**Function**
11	**Standard Model No.**

Platform	Look& Color	Look Name	Description
Frontier	S	Frontier Silver	Silver Panel
	B	Frontier Black	Black Panel

Module	Wi-Fi	Hybrid Mode	Heat Pump Only	Function Digit
None	O	O	O	A

3. Specifications

Buyer Model / Factory Model	Set (Indoor / Outdoor)		Unit	WH20S.F5 / F5TT20F-SA1	WH27S.F5 / F5TT27F-SA0
Capacity	Volume		L	200	270
	COP (7°C)*		-	3.30 (A+)	3.45 (A+)
	COP (15°C)**	COP	-	3.50 (A+)	3.85 (A++)
		Daily electrical energy consumption	kWh	3.33	3.10
		V40	L	260	360
	Load Profile		-	Large	Large
Power Input	Upper Element		W	2,000	2,000
	Lower Element		W	2,000	2,000
	Heat Pump		W	500	500
Max Power Input			W	2,500	2,500
Annual Energy Consumption(AEC) (15°C / 7°C)			kWh	709 / 756	646 / 712
Power Supply			Ø, V, Hz	1Φ,230,50Hz	1Φ,230,50Hz
Available Voltage Range			V	195 ~ 265	195 ~ 265
Indoor	Air Flow Rate	High / Low	m^3/min	6.7 / 4.4	6.7 / 4.4
	Fan Speed	High / Low	rpm	1000 / 700	1000 / 700
	Sound Pressure Level		dB(A)	38 (Auto) 41 (Turbo)	38 (Auto) 41 (Turbo)
	Sound Power Level	IDU	dB(A)	55	55
		ODU	dB(A)	-	-
	Dimensions	Net (W x H x D)	mm	580 x 1625 x 582	580 x 2008 x 582
			in.	22 53/64 x 63 31/32 x 22 29/32	22 53/64 x 79 1/16 x 22 29/32
		Shipping (W x H x D)	mm	738 x 1775 x 690	738 x 2158 x 690
			in.	29 1/16 x 69 7/8 x 27 11/64	29 1/16 x 84 61/64 x 27 11/64
	Weight	Net	kg	100	119
			lb.	220	262
		Shipping	kg	118	137
			lb.	260	302
	Heat Pump Operation Range		°C DB	-5 ~ 48	-5 ~ 48
			°F DB	23 ~ 120	23 ~ 120
	Max. Fuse Size		A	13.5	13.5
	Exterior Color Code		-	RAL 9006	RAL 9006
Compressor	Type		-	Twin Rotary	Twin Rotary
	Model		-	EST092MBA	EST092MBA
	Motor Type		-	BLDC	BLDC
	Oil Type / Maker		-	POE (RB68A) / Sun Oil or Jx Nippon	POE (RB68A) / Sun Oil or Jx Nippon
	Oil Charge		cc	220	220
	O.L.P. Name		-	-	-
	Manufacturer / Country of Origin		-	LG Electronics / China	LG Electronics / China
Max Working Pressure (Water Tank)			kPa	1034	1034
Fan	Type		-	Propeller Fan	Propeller Fan
	Motor Type		-	BLDC	BLDC
	Motor Output		W	43	43
Heat Exchanger	Evaporator	Material, Tube / Fin	-	Cu / Al	Cu / Al
		FPI	-	21 (Φ 7)	21 (Φ 7)
		(Φ x Row x Column x FPI/FPDM x L) x No.	-	(Φ 7 x 3 x 15 x 21 x 390) x 1	(Φ 7 x 3 x 15 x 21 x 390) x 1
		Corrosion Protection	-	PCM	PCM
	Condenser	Material, Tube	-	Al	Al
		(Φ x Row x L) x No.	-	(Φ 8.0 x 1 x 62800) x 1	(Φ 8.0 x 1 x 62800) x 1
Circuit Breaker			A	15	15
Power Supply Cable			No.	3	3
			AWG	14	14
Drain Hose Size		I.D	mm	19, 12.7	19, 12.7
			in.	3/4, 1/2	3/4, 1/2
Refrigerant		Type	-	R134a	R134a
		Pre Charge	g	650	750
			oz.	23	26
			t-CO_2 eq	0.930	1.073
		GWP		1430	1430
		Additional Charge	g/m	-	-
			oz./ft.	-	-
		Control	-	Electronic Expansion Valve	Electronic Expansion Valve
Defrost Method			-	Reverse Cycle	Reverse Cycle
Anode				ICCP (Impressed Current Cathodic Protection)	ICCP (Impressed Current Cathodic Protection)
Foam Insulation			mm	40 ~ 80	40 ~ 80
Water Connection Size			inch	3/4	3/4

Note

- – : No Relation
- For Circuit Breaker Rating, please conform to local standards whenever necessary.
- Exterior color code is approximate value.
  It is difficult to measure air flow rate of sleep because of small values.
- Maximum heating capacity is for heating operation without any frost.
- Some specifications may be changed without notifications due to our policy of innovation.
- Test conditions are based on EN16147 and EN12202.
- * COP at Air 7°C water 10°C-54°C with duct
- **COP at Air 15°C water 10°C-54°C without duct

4. Function List

Category	Function	Description
Air Purifying	Prefilter(Washable)	Capture dust particles.
Reliability	Self Diagnosis	Self-diagnostic for product protection.
	Defrost Control (De-ice)	This mode will de-ice the evaporator automatically.
Convenience	Heat Pump Mode	This mode minimizes power consumption by using only heat pump for heating.
	Auto Mode	This mode provides relatively low power consumption and high recovery.
	Turbo Mode	This mode provides the highest recovery.
	Vacation Mode	In this mode, tank temperature will be maintained at about 20°C to minimize energy consumption and prevent the HPWH from freezing.
	Schedule	The customer can set up operation time and mode with ThinQ based on their demand conditions.
	Auto Restart Operation	If power is resupplied after blackout, product restarts automatically.
	Two Thermistor Control [1]	If there is a temperature difference between water tank temperature and desired temperature, the customer can use this function in other to prevent insufficient cooling and heating.
	Overheating Protection	If there is a temperature difference between water tank temperature and desired temperature, the customer can use this function in order to prevent over-heating.
	Indoor Unit Display Type	-
	Anti-Legionella	Activates the water disinfection function. The water temperature reaches 60°C during a cycle.
	Duct Mode	The fan RPM will be higher if a duct is installed.
Individual Control	Wired Remote Controller [2]	-
	Handheld Wireless Controller	-
CAC Network Function	General Central Controller (Non LGAP)	-
	Network Solution (LGAP)	-
	Dry Contact [2]	-
	PDI (Power Distribution Indicator) [2]	-
	PI 485 [2]	-
Special Function Kit	Wi-Fi [2]	Easily access and control a water heater's functions from anywhere.
	Water Level Sensor Connection [2]	Detect the water level in drain pan.
	Smart Inverter Monitoring System(SIMs) [2]	Helps the customer to easily monitor, diagnose the heat pump and get a quick resoultion
Others	Temperature Control	Basic cycle control method

Note

- These functions must be applied according to the model. Please refer to the following function list for each model.
- [1] : This function can be operated only when the wired remote controller is connected. The applicability of each function depends on the above table.
- [2] : Optional accessories must be purchased separately. If shown as "Embedded", this function is included in product.
- The function Wi-Fi is only compatible with 2.4 GHz band. (802.11 b/g/n)
- Some specifications may be changed without notification due to our policy of innovation.

4. Function List

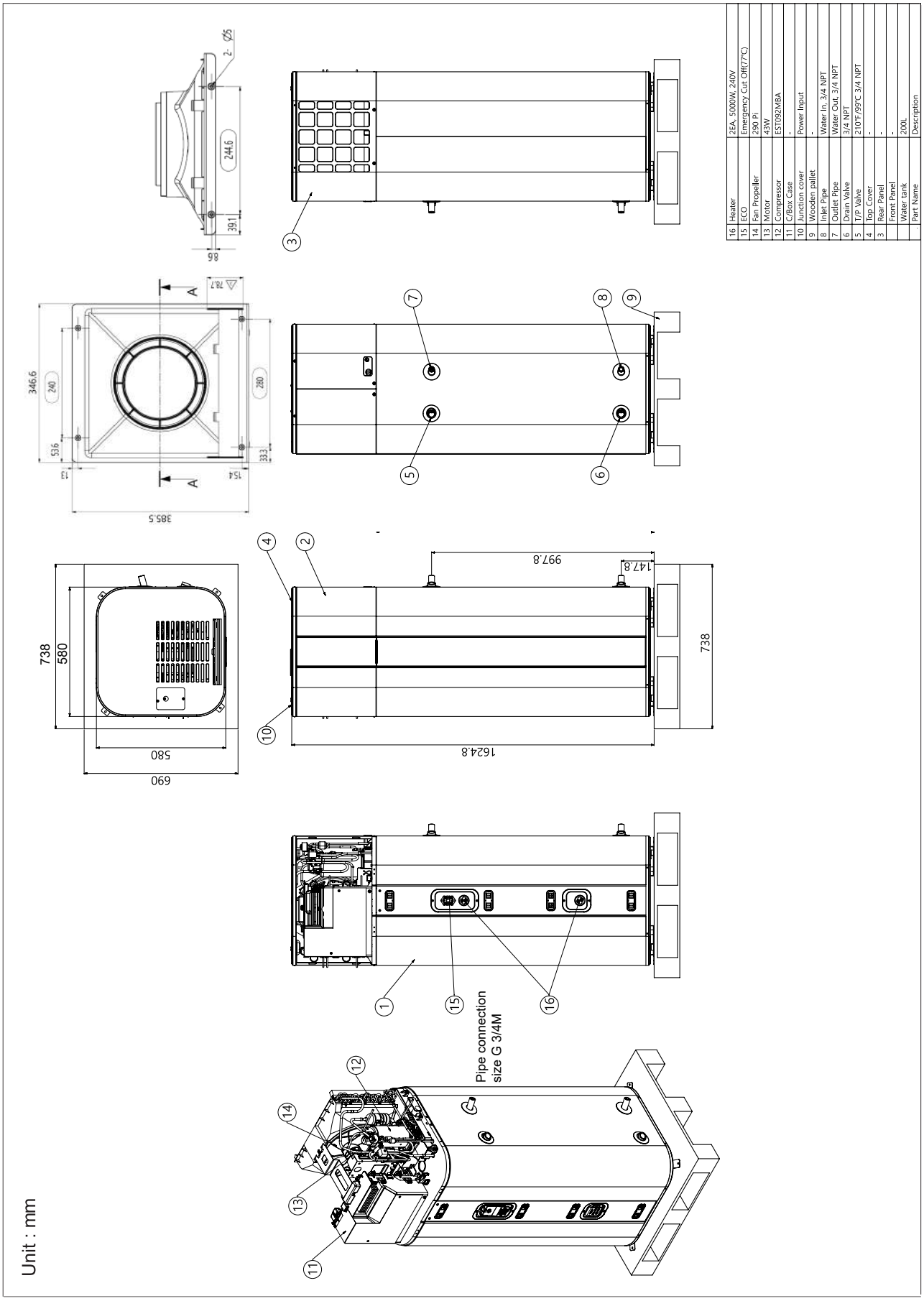
Category	Function	WH20S.F5	WH27S.F5
		R5TT20F-SA1	R5TT27F-SA0
Air Purigying	Prefilter(Washable)	○	○
Reliability	Self Diagnosis	○	○
	De-ice Control (Defrost)	○	○
Convenience	Heat Pump Mode	○	○
	Auto Mode	○	○
	Turbo Mode	○	○
	Vacation Mode	○	○
	Schedule	○	○
	Auto Restart Operation	○	○
	Two Thermistor Control [1]	○	○
	Overheating Protection	○	○
	Indoor Unit Display Type	Number Display	Number Display
	Anti-Legionella	○	○
	Duct Mode	○	○
Individual Control	Wired Remote Controller [2]	X	X
	Handheld Wireless Controller	X	X
CAC Network Function	General Central Controller (Non LGAP)	X	X
	Network Solution (LGAP)	X	X
	Dry Contact [2]	X	X
	PDI (Power Distribution Indicator) [2]	X	X
	PI 485 [2]	X	X
Special Function Kit	Wi-Fi [2]	Embedded	Embedded
	Water Level Sensor Connection [2]	Embedded	Embedded
	Smart Inverter Monitoring System(SIMs) [2]	PSWMOZ3	PSWMOZ3
Others	Temperature Control	Thermistor	Thermistor

Note

- O : Applied, X : Not applied
- Filters are optional in some specific areas.
- [1] : This function can be operated only when the wired remote controller is connected. The applicability of each function depends on the above table.
- [2] : Optional accessories must be purchased separately. If shown as "Embedded", this function is included in product.
- The function Wi-Fi is only compatible with 2.4 GHz band. (802.11 b/g/n)
- Some specifications may be changed without notifications due to our policy of innovation.

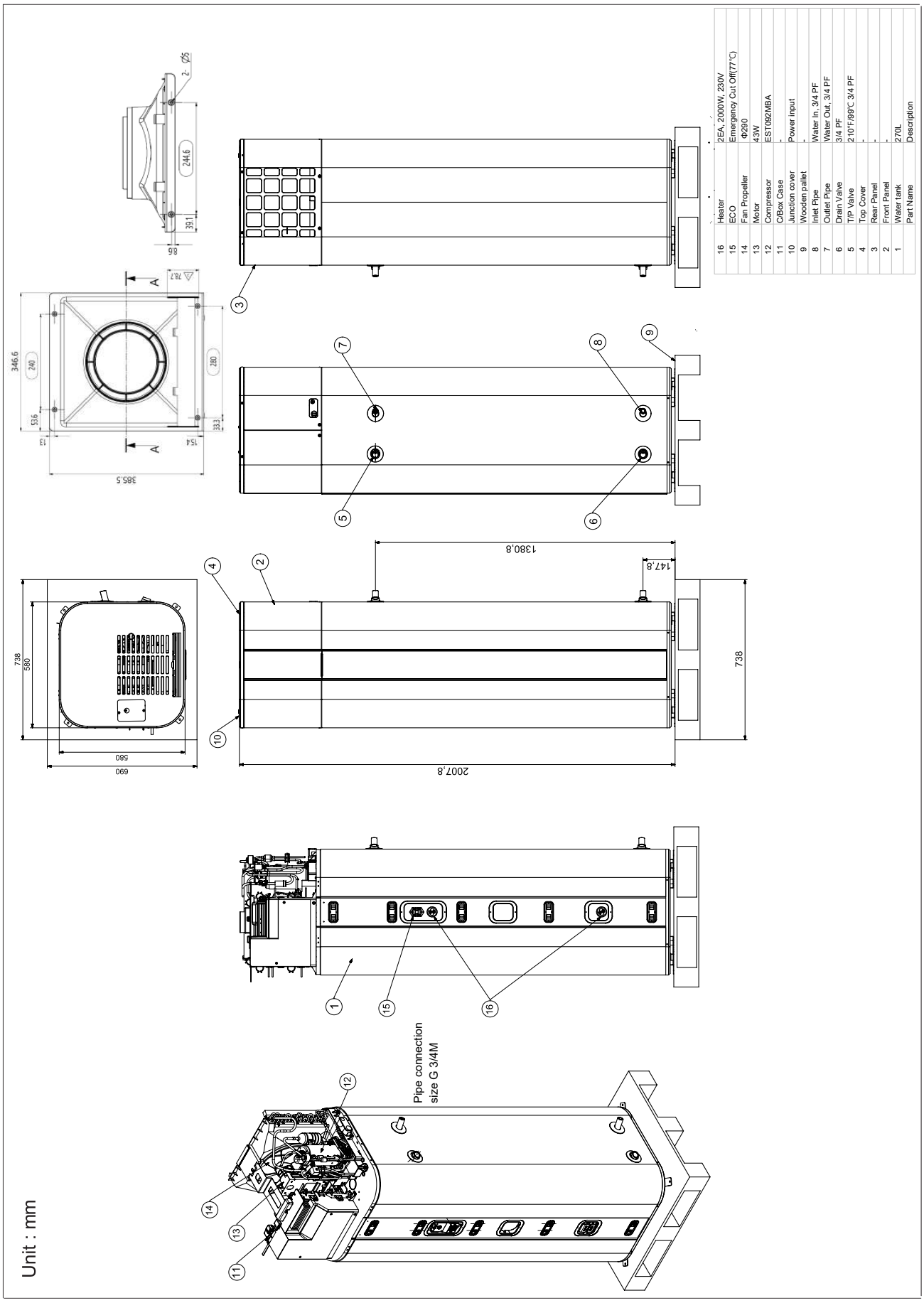
5. Dimensional Drawings

WH20S.F5(R5TT20F-SA1)



5. Dimensional Drawings

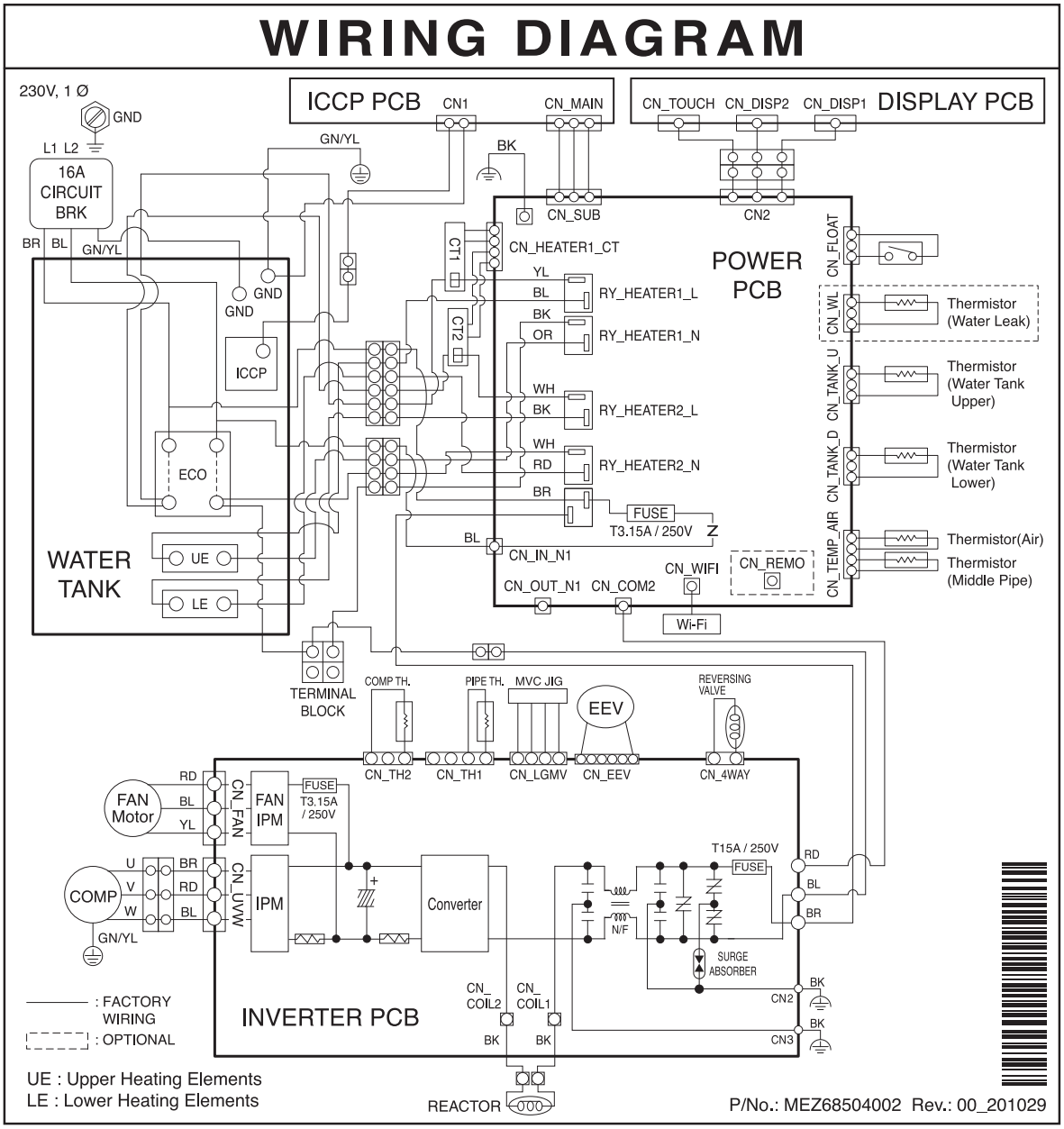
WH27S.F5(R5TT27F-SA0)



16	Heater	2EA, 2000W, 230V
15	ECO	Emergency Cut Off(77℃)
14	Fan Propeller	Φ290
13	Motor	43W
12	Compressor	EST092MBA
11	C/Box Case	-
10	Junction cover	Power input
9	Wooden pallet	-
8	Inlet Pipe	Water In, 3/4 PF
7	Outlet Pipe	Water Out, 3/4 PF
6	Drain Valve	3/4 PF
5	T/P Valve	210℃/99℃ 3/4 PF
4	Top Cover	-
3	Rear Panel	-
2	Front Panel	-
1	Water tank	270L
	Part Name	Description

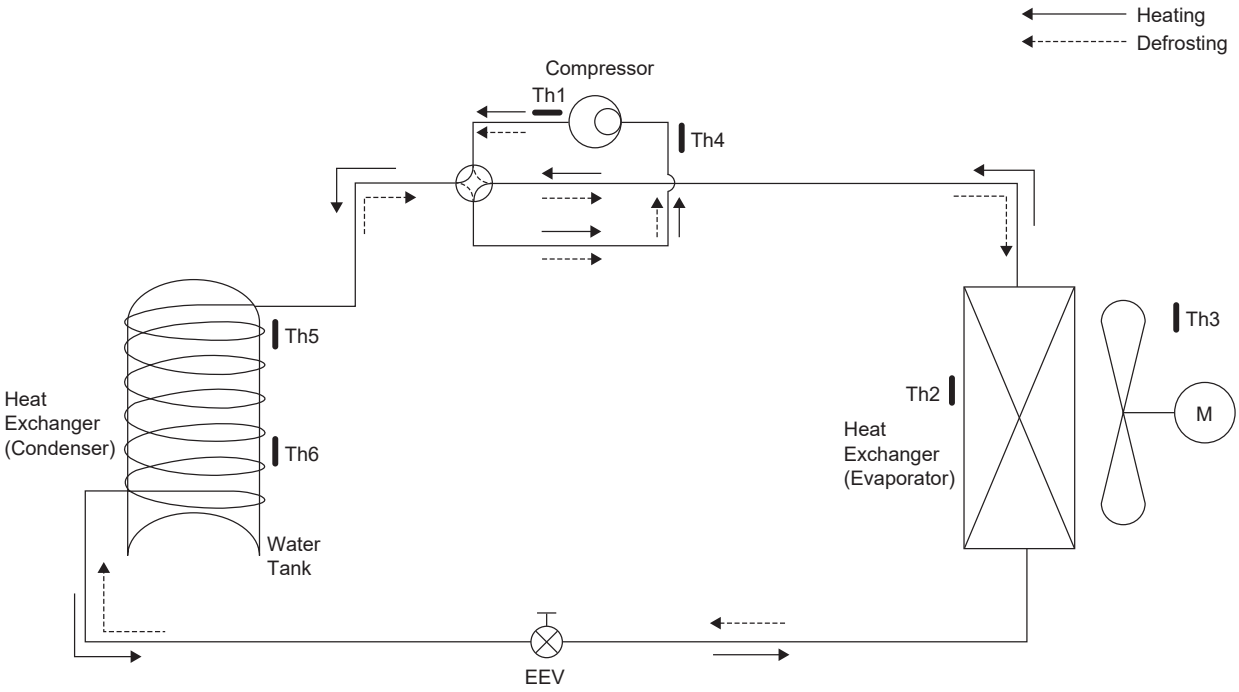
6. Wiring Diagrams

WH20S.F5(R5TT20F-SA1), WH27S.F5(R5TT27F-SA0)



7. Refrigerant Cycle Diagrams

WH20S.F5(R5TT20F-SA1), WH27S.F5(R5TT27F-SA0)



LOC	Description	PCB Connector
Th1	Thermistor for discharge pipe temperature	CN_TH2
Th2	Thermistor for evaporating temperature	CN_TEMP_AIR
Th3	Thermistor for indoor air temperature	CN_TEMP_AIR
Th4	Thermistor for suction pipe temperature	CN_TH1
Th5	Thermistor for upper water tank temperature	CN_TANK_D
Th6	Thermistor for lower water tank temperature	CN_TANK_U

*EEV : Electronic Expansion Valve.

8. Capacity Tables

8.1 Auto Mode

WH20S.F5(R5TT20F-SA1)

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	4.10	1.59	3.67	3.03	5.37	0.65	-	-							
	20	3.86	1.60	3.65	2.76	5.40	0.65	-	-							
	48	3.01	1.69	3.45	1.78	7.26	0.48	-	-							
40	-5	4.59	1.50	4.68	4.20	5.17	0.90	1.87	5.81	0.40	-	-				
	20	4.34	1.50	4.66	3.82	5.20	0.90	1.70	5.85	0.40	-	-				
	48	3.46	1.59	4.39	2.47	7.00	0.67	1.10	7.87	0.30	-	-				
45	-5	5.08	1.43	5.69	4.10	1.59	3.67	3.03	5.37	0.65	-	-				
	20	4.82	1.44	5.66	3.86	1.60	3.65	2.76	5.40	0.65	-	-				
	48	3.91	1.53	5.33	3.01	1.69	3.45	1.78	7.26	0.48	-	-				
50	-5	5.56	1.39	6.71	4.59	1.50	4.68	4.20	5.17	0.90	1.87	5.81	0.40	-	-	-
	20	5.30	1.40	6.66	4.34	1.50	4.66	3.82	5.20	0.90	1.70	5.85	0.40	-	-	-
	48	4.36	1.49	6.27	3.46	1.59	4.39	2.47	7.00	0.67	1.10	7.87	0.30	-	-	-
55	-5	5.76	1.28	8.18	4.78	1.33	6.15	3.81	1.41	4.12	2.84	1.67	2.10	-	-	-
	20	5.78	1.37	7.67	4.82	1.44	5.66	3.86	1.60	3.65	2.76	5.40	0.65	-	-	-
	48	4.81	1.46	7.21	3.91	1.53	5.33	3.01	1.69	3.45	1.78	7.26	0.48	-	-	-
60	-5	6.01	1.15	10.19	5.04	1.14	8.16	4.06	1.14	6.13	3.09	1.14	4.10	0.93	1.25	1.87
	20	6.26	1.35	8.67	5.30	1.40	6.66	4.34	1.50	4.66	3.82	5.20	0.90	1.70	5.85	0.40
	48	5.26	1.43	8.15	4.36	1.49	6.27	3.46	1.59	4.39	2.47	7.00	0.67	1.10	7.87	0.30

WH27S.F5(R5TT27F-SA0

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	5.54	1.59	4.95	3.94	5.37	0.88	-	-							
	20	5.22	1.60	4.93	3.58	5.40	0.87	-	-							
	48	4.06	1.69	4.66	2.32	7.26	0.65	-	-							
40	-5	6.20	1.50	6.32	5.51	5.17	1.22	2.36	5.81	0.54	-	-				
	20	5.86	1.50	6.29	5.01	5.20	1.21	2.15	5.85	0.54	-	-				
	48	4.67	1.59	5.93	3.24	7.00	0.90	1.39	7.87	0.40	-	-				
45	-5	6.85	1.43	7.69	5.07	1.59	4.95	3.94	5.37	0.88	-	-				
	20	6.01	1.44	7.64	4.71	1.60	4.93	3.58	5.40	0.87	-	-				
	48	4.62	1.53	7.20	3.41	1.69	4.66	2.32	7.26	0.65	-	-				
50	-5	7.51	1.39	9.06	6.20	1.50	6.32	5.51	5.17	1.22	2.36	5.81	0.54	-	-	-
	20	7.16	1.40	9.00	5.86	1.50	6.29	5.01	5.20	1.21	2.15	5.85	0.54	-	-	-
	48	5.88	1.49	8.47	4.67	1.59	5.93	3.24	7.00	0.90	1.39	7.87	0.40	-	-	-
55	-5	7.77	1.28	11.04	6.46	1.33	8.30	5.15	1.41	5.57	3.83	1.67	2.83	-	-	-
	20	7.81	1.37	10.35	6.51	1.44	7.64	5.22	1.60	4.93	3.58	5.40	0.87	-	-	-
	48	6.49	1.46	9.74	5.28	1.53	7.20	4.06	1.69	4.66	2.32	7.26	0.65	-	-	-
60	-5	8.11	1.15	13.75	6.80	1.14	11.01	5.49	1.14	8.27	4.17	1.14	5.54	1.26	1.25	2.52
	20	8.45	1.35	11.71	7.16	1.40	9.00	5.86	1.50	6.29	5.01	5.20	1.21	2.15	5.85	0.54
	48	7.10	1.43	11.01	5.88	1.49	8.47	4.67	1.59	5.93	3.24	7.00	0.90	1.39	7.87	0.40

Symbol
DB : Dry Bulb Temperature [°C]
RT : Recovery Time [h]
PI : Power Input (integ.) [kWh]
COP : Coefficient of performance

Note
1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. Do not extrapolate.
3. Capacities are based on the following conditions.
   – No ducted

H/P operation
H/P + Heater operation
Heater Only operation

8. Capacity Tables

8.2 Heat Pumpe Mode

WH20S.F5(R5TT20F-SA1)

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	5.37	2.53	2.31	3.03	2.68	1.30	-	-							
	20	2.82	4.39	1.33	1.60	4.66	0.75	-	-							
	48	1.63	6.64	0.88	0.92	7.05	0.50	-	-							
40	-5	6.53	2.49	2.81	4.20	2.58	1.81	1.87	2.91	0.80	-	-				
	20	3.44	4.33	1.62	2.21	4.49	1.04	0.98	5.05	0.46	-	-				
	48	1.98	6.55	1.07	1.27	6.79	0.69	0.57	7.64	0.31	-	-				
45	-5	7.70	2.47	3.31	5.37	2.53	2.31	3.03	2.68	1.30	-	-				
	20	4.05	4.29	1.90	2.82	4.39	1.33	1.60	4.66	0.75	-	-				
	48	2.33	6.48	1.26	1.63	6.64	0.88	0.92	7.05	0.50	-	-				
50	-5	8.87	2.45	3.81	6.53	2.49	2.81	4.20	2.58	1.81	1.87	2.91	0.80	-	-	-
	20	4.67	4.26	2.19	3.44	4.33	1.62	2.21	4.49	1.04	0.98	5.05	0.46	-	-	-
	48	2.69	6.43	1.45	1.98	6.55	1.07	1.27	6.79	0.69	0.57	7.64	0.31	-	-	-
55	-5	9.68	2.23	4.71	7.35	2.20	3.71	5.02	2.16	2.71	2.68	2.05	1.70	-	-	-
	20	5.28	4.23	2.48	4.05	4.29	1.90	2.82	4.39	1.33	1.60	4.66	0.75	-	-	-
	48	3.04	6.40	1.64	2.33	6.48	1.26	1.63	6.64	0.88	0.92	7.05	0.50	-	-	-
60	-5	10.27	1.98	5.88	7.93	1.91	4.88	5.60	1.81	3.87	3.27	1.63	2.87	0.93	1.25	1.87
	20	5.89	4.21	2.77	4.67	4.26	2.19	3.44	4.33	1.62	2.21	4.49	1.04	0.98	5.05	0.46
	48	3.39	6.37	1.83	2.69	6.43	1.45	1.98	6.55	1.07	1.27	6.79	0.69	0.57	7.64	0.31

WH27S.F5(R5TT27F-SA0

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	7.25	2.53	3.12	4.10	2.68	1.76	-	-							
	20	3.81	4.39	1.79	2.16	4.66	1.01	-	-							
	48	2.20	6.64	1.19	1.24	7.05	0.67	-	-							
40	-5	8.82	2.49	3.79	5.67	2.58	2.44	2.52	2.91	1.08	-	-				
	20	4.64	4.33	2.18	2.98	4.49	1.40	1.33	5.05	0.62	-	-				
	48	2.67	6.55	1.44	1.72	6.79	0.93	0.76	7.64	0.41	-	-				
45	-5	10.40	2.47	4.47	7.25	2.53	3.12	4.10	2.68	1.76	-	-				
	20	5.47	4.29	2.57	3.81	4.39	1.79	2.16	4.66	1.01	-	-				
	48	3.15	6.48	1.70	2.20	6.64	1.19	1.24	7.05	0.67	-	-				
50	-5	11.81	2.48	5.08	8.66	2.54	3.72	5.51	2.66	2.37	2.36	3.10	1.02	-	-	-
	20	6.22	4.31	2.92	4.56	4.41	2.14	2.90	4.62	1.36	1.24	5.39	0.58	-	-	-
	48	3.58	6.52	1.93	2.63	6.67	1.42	1.67	6.98	0.90	0.72	8.15	0.39	-	-	-
55	-5	13.07	2.23	6.36	9.92	2.20	5.01	6.77	2.16	3.65	3.62	2.05	2.30	-	-	-
	20	7.05	4.28	3.31	5.39	4.35	2.53	3.73	4.49	1.75	2.07	4.85	0.97	-	-	-
	48	4.06	6.47	2.19	3.10	6.58	1.68	2.15	6.79	1.16	1.19	7.33	0.64	-	-	-
60	-5	13.86	1.98	7.94	10.71	1.91	6.58	7.56	1.81	5.23	4.41	1.63	3.87	1.26	1.25	2.52
	20	7.88	4.26	3.70	6.22	4.31	2.92	4.56	4.41	2.14	2.90	4.62	1.36	1.24	5.39	0.58
	48	4.53	6.43	2.45	3.58	6.52	1.93	2.63	6.67	1.42	1.67	6.98	0.90	0.72	8.15	0.39

Symbol
DB : Dry Bulb Temperature
RT : Recovery Time [°C]
PI : Power Input (integ.) [h]
COP : Coefficient of performance [kWh]

Note
1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. Do not extrapolate.
3. Capacities are based on the following conditions.
   – No ducted

H/P operation
H/P + Heater operation
Heater Only operation

8. Capacity Tables

8.3 Turbo Mode

WH20S.F5(R5TT20F-SA1)

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	3.78	1.38	4.22	2.81	1.66	2.11	-	-							
	20	2.66	1.60	3.65	1.78	2.01	1.74	-	-							
	48	2.10	1.76	3.32	1.30	2.20	1.59	-	-							
40	-5	4.27	1.33	5.27	3.30	1.48	3.16	1.87	2.91	0.80	-	-				
	20	3.10	1.52	4.60	2.22	1.73	2.70	0.98	5.05	0.46	-	-				
	48	2.50	1.67	4.18	1.70	1.90	2.46	0.57	7.64	0.31	-	-				
45	-5	4.75	1.29	6.33	3.78	0.96	6.05	2.81	2.18	1.60	-	-				
	20	3.54	1.47	5.55	2.66	1.27	4.59	1.78	2.41	1.45	-	-				
	48	2.91	1.62	5.04	2.10	1.52	3.83	1.30	2.50	1.40	-	-				
50	-5	5.24	1.26	7.39	4.27	1.33	5.27	3.30	1.48	3.16	1.87	2.91	0.80	-	-	-
	20	3.98	1.43	6.51	3.10	1.52	4.60	2.22	1.73	2.70	0.98	5.05	0.46	-	-	-
	48	3.31	1.58	5.91	2.50	1.67	4.18	1.70	1.90	2.46	0.57	7.64	0.31	-	-	-
55	-5	5.76	1.19	8.82	4.78	1.22	6.70	3.81	1.27	4.59	2.84	1.41	2.48	-	-	-
	20	4.43	1.41	7.46	3.54	1.47	5.55	2.66	1.60	3.65	1.78	2.01	1.74	-	-	-
	48	3.71	1.55	6.77	2.91	1.62	5.04	2.10	1.76	3.32	1.30	2.20	1.59	-	-	-
60	-5	6.01	1.09	10.69	5.04	1.09	8.58	4.06	1.08	6.46	3.09	1.07	4.35	0.93	1.25	1.87
	20	4.87	1.40	8.33	3.98	1.45	6.43	3.10	1.54	4.54	2.22	1.76	2.64	0.98	5.05	0.46
	48	4.11	1.55	7.53	3.31	1.60	5.82	2.50	1.70	4.11	1.70	1.94	2.40	0.57	7.64	0.31

WH27S.F5(R5TT27F-SA0

Water Tank Setting Temp.	Ambient Temp.	Initial Water Tank Temperature : °C DB														
		10			20			30			40			50		
°C DB	°C DB	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI	RT	COP	PI
35	-5	5.11	1.38	5.69	3.79	1.66	2.84	-	-							
	20	3.59	1.60	4.92	2.40	2.01	2.35	-	-							
	48	2.84	1.76	4.48	1.75	2.20	2.15	-	-							
40	-5	5.76	1.33	7.12	4.45	3.77	1.67	2.52	2.91	1.08	-	-				
	20	4.19	1.52	6.21	3.00	6.06	1.04	1.33	5.05	0.62	-	-				
	48	3.38	1.67	5.64	2.30	8.80	0.72	0.76	7.64	0.41	-	-				
45	-5	6.42	1.29	8.54	5.11	1.38	5.69	3.79	1.66	2.84	-	-				
	20	4.78	1.47	7.50	3.59	1.60	4.92	2.40	2.01	2.35	-	-				
	48	3.92	1.62	6.81	2.84	1.76	4.48	1.75	2.20	2.15	-	-				
50	-5	7.07	1.26	9.97	5.76	1.33	7.12	4.45	1.48	4.27	2.36	3.10	1.02	-	-	-
	20	5.38	1.43	8.78	4.19	1.52	6.21	3.00	1.73	3.64	1.24	5.39	0.58	-	-	-
	48	4.46	1.58	7.97	3.38	1.67	5.64	2.30	1.90	3.31	0.72	8.15	0.39	-	-	-
55	-5	7.34	1.20	11.84	6.02	1.23	8.99	4.71	1.28	6.14	3.40	1.44	3.29	-	-	-
	20	5.97	1.41	10.07	4.78	1.47	7.50	3.59	1.60	4.92	2.40	2.01	2.35	-	-	-
	48	5.01	1.55	9.14	3.92	1.62	6.81	2.84	1.76	4.48	1.75	2.20	2.15	-	-	-
60	-5	7.68	1.10	14.37	6.37	1.09	11.52	5.05	1.09	8.67	3.74	1.08	5.82	1.26	1.25	2.52
	20	6.57	1.39	11.36	5.38	1.43	8.78	4.19	1.52	6.21	3.00	1.73	3.64	1.24	5.39	0.58
	48	5.55	1.53	10.30	4.46	1.58	7.97	3.38	1.67	5.64	2.30	1.90	3.31	0.72	8.15	0.39

Symbol
DB : Dry Bulb Temperature [°C]
RT : Recovery Time [h]
PI : Power Input (integ.) [kWh]
COP : Coefficient of performance

Note
1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. Do not extrapolate.
3. Capacities are based on the following conditions.
   – No ducted

H/P operation
H/P + Heater operation
Heater Only operation

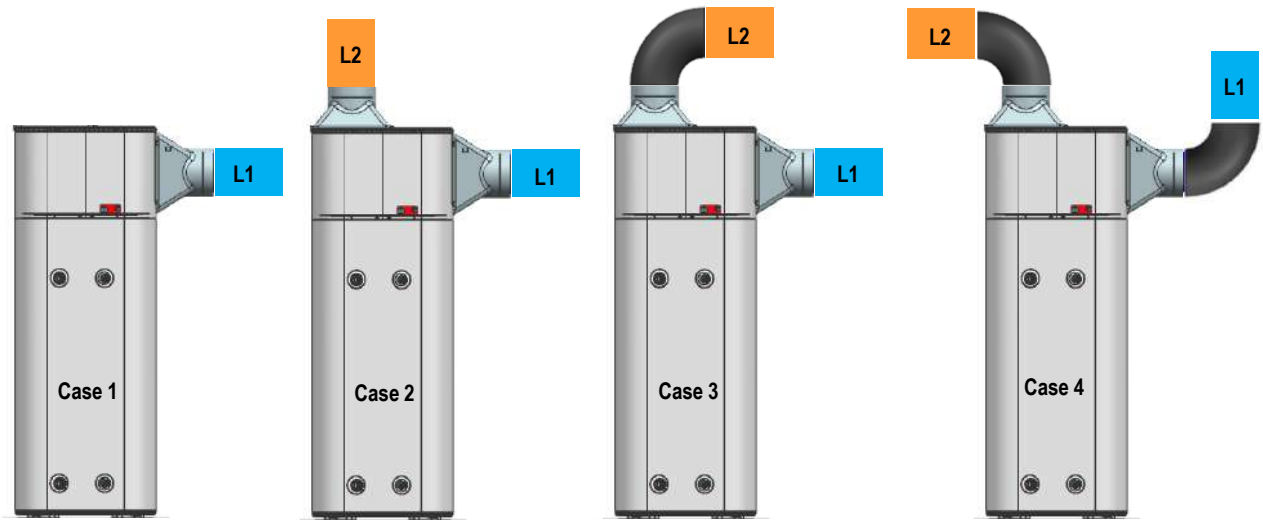
9. Capacity Coefficient Factor

9.1 Recovery Time Change Rate (%)

Model	CASE	Mode	Duct Length										
			No Duct	1m	2m	3m	4m	5m	6m	7m	8m	9m	10m
WH20S.F5(R5TT20F-SA1) WH27S.F5(R5TT27F-SA0)	1	Heat Pump	100	118	125	128	129	131	133	136	136	137	139
WH20S.F5(R5TT20F-SA1) WH27S.F5(R5TT27F-SA0)	3	Auto	100	101	103	104	105	106	108	109	110	112	113

9.2 Maximum Duct Length

Model	Case	1		2		3		4	
	Duct Diameter	Φ200	Φ160	Φ200	Φ160	Φ200	Φ160	Φ200	Φ160
WH20S.F5(R5TT20F-SA1) WH27S.F5(R5TT27F-SA0)	Max length(m)	62	25	55	22	52	19	49	16

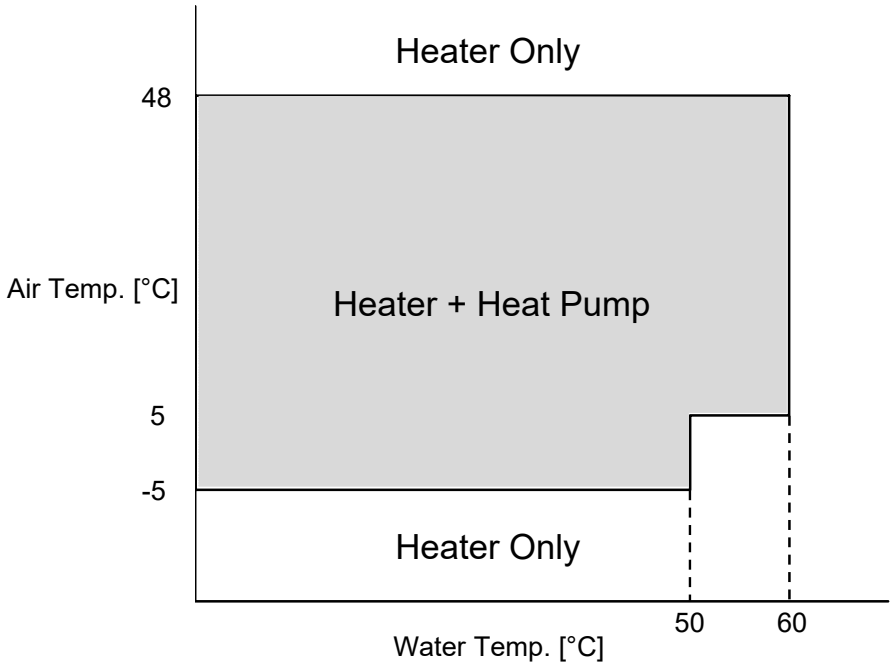


Note

- Recovery Time is 45°C → 50°C heating time at 20°C ambient Temp., Φ200
- Duct Length = Inlet duct length (L1) + Outlet duct length(L2)
- Max Length = Inlet duct length (L1) + Outlet duct length(L2)

10. Operation Range

WH20S.F5(R5TT20F-SA1), WH27S.F5(R5TT27F-SA0)



Note

The figures is baseed on the following condtitions : No ducted

11. Sound Levels (Reference Data)

11.1 Sound Pressure Level

Model	Sound Levels		
	Mode	Auto	Turbo / HeatPump
WH20S.F5 (R5TT20F-SA1) WH27S.F5 (R5TT27F-SA0)	dB(A)	38	41

Note
- Sound measured at 2 m away from the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure 0dB=20μPa.
- Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.
- Sound pressure level is measured on the rated condition in the anechoic rooms by EN12202 standard.
- Sound level is measured in an anechoic room and may be different according to the test condition or equipment.

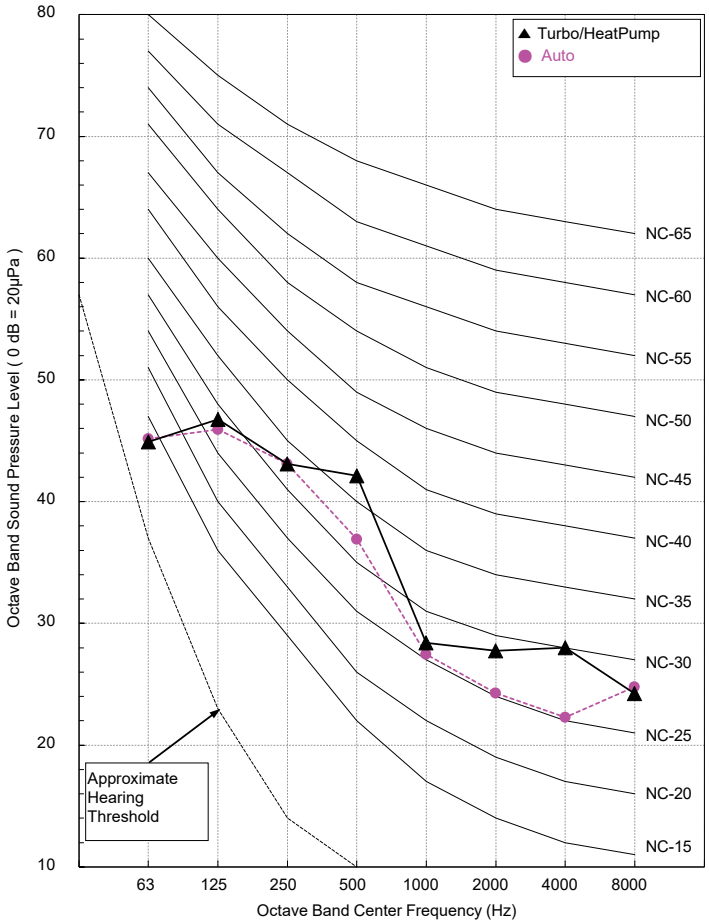
11.2 Sound Power Level

Model	Sound Levels	
	Mode	Auto
WH20S.F5 (R5TT20F-SA1) WH27S.F5 (R5TT27F-SA0)	dB(A)	55

Note
- Data is valid at diffuse field condition.
- Data is valid at nominal operating condition.
- Sound level can be increased in static pressure mode or usedair guide.
- Sound power level is measured on the rated condition in the reverberation rooms.
- Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular room in which the equipment in installed.
- Reference acoustic intensity 0 dB = 10E-6 μW/m²
- Sound power level is measured on the rated condition in the reverberation rooms by ISO 3741 standard.

11. Sound Levels (Reference Data)

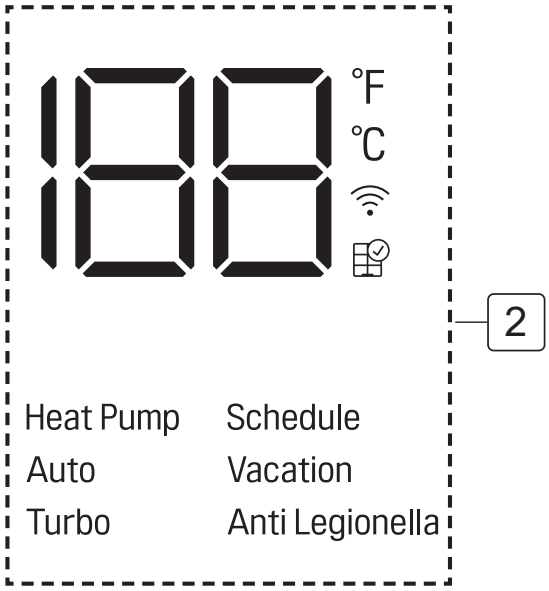
WH20S.F5(R5TT20F-SA1), WH27S.F5(R5TT27F-SA0)

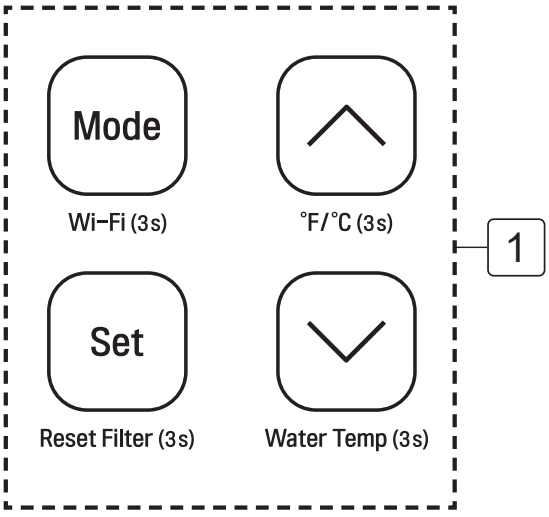


12. Controller

Using Basic Control

DISPLAY SCREEN





1 Button	2 Display Screen	Description
Mode	Heat Pump	To select the heat pump mode.
	Auto	To select the auto mode.
	Turbo	To select the turbo mode.
	Vacation	To select the Vacation mode.
-	Schedule	Set schedule mode only in LG ThinQ application.
-	Anti Legionella	To select the Anti Legionella mode.
Set	-	To set the desired water temperature.
∧ ∨	188	To adjust the desired water temperature.
Wi-Fi (3s)		To enable the Wi-Fi pairing.
Reset Filter (3s)		To reset the filter alarm.
°F/°C (3s)	°F °C	To change unit between °F and °C.
Water Temp (3s)	188	To display the current water temperature for 5 seconds.

DUCT MODE

Press and hold Set & ↓ button about 3 seconds to set duct mode. Fan speed is increased to 1150rpm.

13. Installation

13.1 Safety Instructions

READ ALL INSTRUCTIONS BEFORE USE

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and follow all safety messages.

⚠ This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or injure you and others. All safety messages will follow the safety alert symbol and either the word DANGER, WARNING or CAUTION. These words mean:

⚠ CAUTION

You may be slightly injured or cause damage to the product if you do not follow instructions.

⚠ WARNING

You may be killed or seriously injured if you do not follow instructions.

⚠ DANGER

This indicates that the failure to follow the instructions will cause serious injury or death.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what may happen if the instructions are not followed.

⚠ WARNING

To reduce the risk of explosion, fire, death, electric shock, injury or scalding to persons, instructions in this manual must be followed.

Be sure to fully understand the user's manual before you install and operate this appliance. If you have any difficultly in understanding or following the instructions in this manual, or have any questions, contact an authorized service center or the local electric utility.

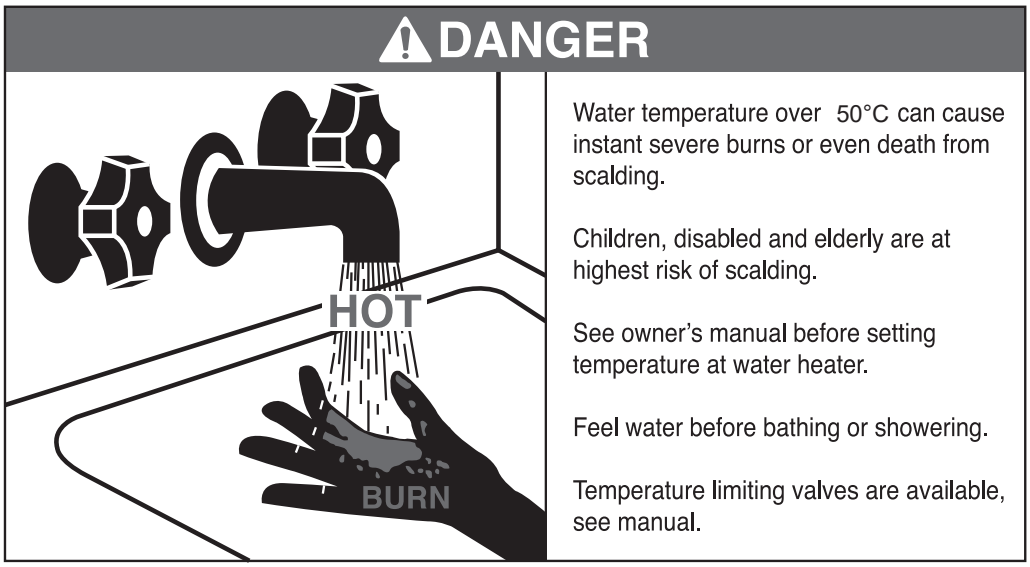
13. Installation

Safety Precaution

Water Temperature Setting

⚠ DANGER

Water temperature above 50°C can cause severe burns instantly or death from scalding. Be sure to read and follow the warnings on the label pictured below.



For determining the proper water temperature for your home, refer to the chart below.

Temperature	Time to Produce a Serious Burn
49°C	More than 5 minutes
52°C	1 ½ to 2 minutes
54°C	About 30 seconds
57°C	About 10 seconds
60°C	Less than 5 seconds
63°C	Less than 3 seconds
65°C	About 1 ½ seconds
68°C	About 1 second

NOTE

•To reduce point of use water temperature, Thermostatic Mixing Valves are recommended. These valves automatically mix hot and cold water in branch water lines. It is recommended to use a mixing valve.

⚠ DANGER

Households with the elderly, children, or people with disabilities may require a 48°C or lower thermostat setting to prevent contact with "HOT" water.

13. Installation

⚠ DANGER

Higher water temperature increases the potential for Hot Water SCALDS
Water temperature in the heater is regulated by the buttons on display. The water temperature of this water heater is factory set to 50°C to comply with safety regulations. For information about adjusting the water temperature, refer to the operation section in this manual.

Local Installation Regulations

This appliance must be installed accordance with instructions of this manual, national regulations, and any regulations issued by local authorities and public health bodies.

13. Installation

Important Safety Instructions

⚠WARNING

To reduce the risk of explosion, fire, death, electric shock, scalding or injury to persons when using this product, follow basic precautions, including the following:

Children in the Household:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Take care so that children may not step on the product. Otherwise, children may be seriously injured due to falling down.

For use in Europe:

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Installation

- To reduce the risk of severe injury or death, follow all installation instructions.
- Be sure your appliance is properly installed in compliance with local codes and the provided installation instructions.
- Do not replace any part of your water heater and use only original accessories and spare part unless it is specifically recommended in this manual.
- Do not turn on the electrical power to water heater unless the tank is completely full of water.
- Never attempt to operate this appliance if it is damaged, malfunctioning, partially disassembled, or has missing or broken parts.
- When the product is soaked (flooded or submerged) in water, contact an Authorized Service Center for repair before using it again.
- Moving or installation of the appliance requires two or more people.
- Turn off the power by opening the circuit breaker or removing the fuses before installing.
- Even if the water heater thermostat is set to relatively low, hot water has the potential for scalding. To reduce the risk of scalding, thermostatic mixing valves are recommended.
- Keep packing materials out of the reach of children. Packaging material can be dangerous for children. There is a risk of suffocation.
- Destroy the carton, plastic bag, and other packing materials after the appliance is unpacked. Children might use them for play. Cartons covered with rugs, bedspreads, or plastic sheets can become airtight chambers.
- Connect to a properly rated, protected, and sized power circuit to avoid electrical overload.

13. Installation

- This appliance must be positioned near to an electrical power supply. Use a power supply of 1.5 mm^2 or more in the nominal cross-sectional area
- Do not install the water heater on an unstable surface or in a place where there is danger of it falling.
- For installation, always contact the dealer or an Authorized Service Center. There is risk of fire, electric shock, explosion or injury.
- Do not install the water heater in a place where flammable liquids or gases such as gasoline, propane, paint thinner, etc., are stored.
- Always ground the product. There is risk of fire or electric shock
- Install the panel and the cover of the control box safety.
- Do not touch heat exchanger fins with your bare hands. Otherwise, you may get a cut in your hands.
- Do not input air or gas into the system except with the specific refrigerant.
- Do not turn on the circuit breaker or power when covers are removed or opened.
- Make the connection securely so that screw in terminals may not be loosed when pulling cable.

Operation

- Use this appliance only for its intended purpose.
- If the water heater has been subjected to fire, flood or physical damage, disconnect all power to water heater immediately, and DO NOT operate it again until it has been inspected by a qualified person.
- Do not turn on the water heater unless the tank is completely full of water.
- Do not turn on the water heater if cold water supply shut-off valve is closed.
- Feel water before bathing or showering.
- Even at 50°C, hot water can scald.
- Do not block the inlet or outlet of air flow.
- Never touch, operate, or repair the water heater with wet hands.
- Do not leave flammable substances such as gasoline, benzene, or thinner near the water heater. (Do not install the unit in potentially explosive atmospheres.)
- Cut off the power supply if there is any noise, smell, or smoke coming from the water heater.
- Make sure that the power cable is neither dirty, loose, nor broken.
- Do not place any objects on the power cable.
- Do not modify or extend the power cable. Scratches or peeling insulation on the power cables may result in fire or electric shock, and should be replaced.
- The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.

13. Installation

- Do not expose people, animals, or plants to the cold wind from the water heater for extended periods of time.
- Take care to ensure that power cable could not be pulled out or damaged during operation. There is risk of fire or electric shock.
- Do not touch refrigerant pipe, water pipe and any internal parts while the unit is operating or immediately after operation. There is risk of burns or frostbite, personal injury.
- Additional refrigerant injection is not possible.

Maintenance

- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Disconnect this appliance from the power supply before cleaning and attempting any user maintenance.
- Before draining water heater, turn off the power to product.
- Do not turn on the electrical power to the water heater unless the tank is completely full of water.

Technical Safety

- Installation or repairs made by unauthorized persons can pose hazards to you and others.
- The information contained in the manual is intended for use by a qualified service technician who is familiar with the safety procedures and equipped with the proper tools and test instruments.
- Failure to read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

⚠ CAUTION

To reduce the risk of minor injury to persons, malfunction, or damage to the product or property when using this product, follow basic precautions, including the following:

Installation

- Install the product on a firm and level floor.
- Do not install the water heater in a place where leakage of the tank or connections will result in damage to the area adjacent to it or to lower floors of the structure. Where such areas cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the water heater.

13. Installation

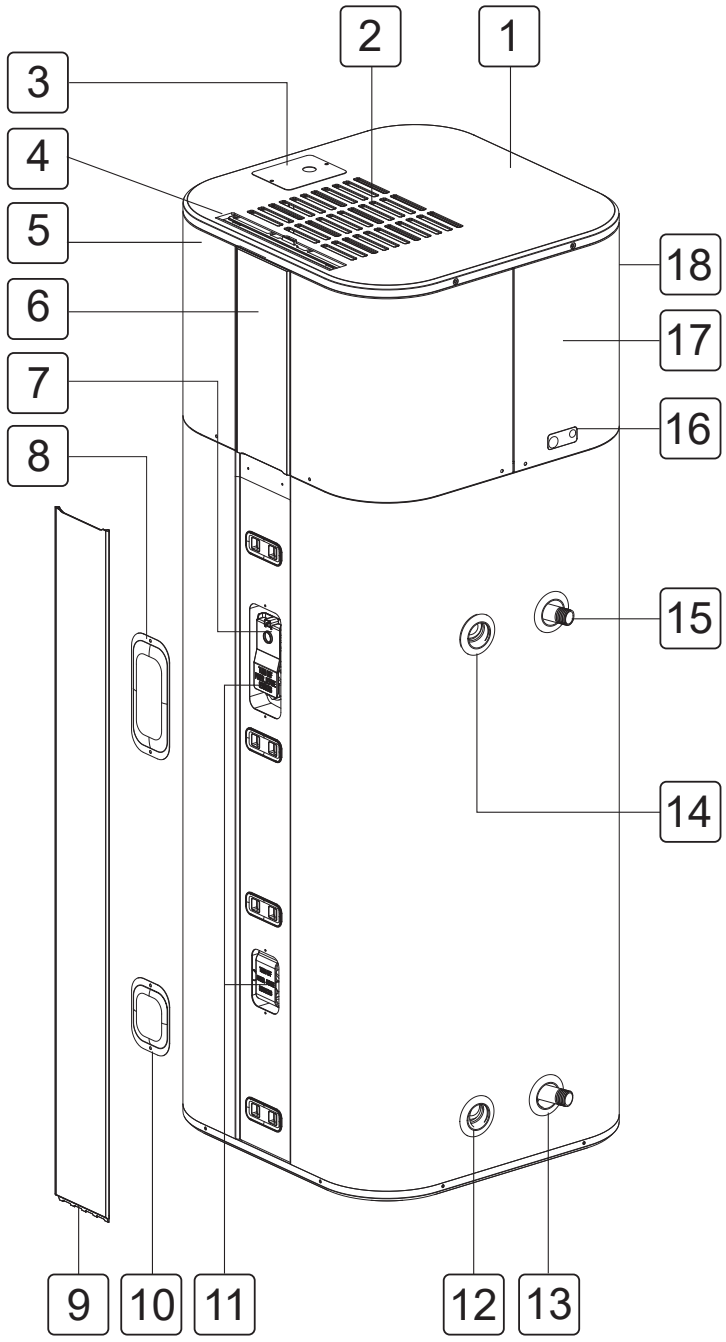
- Install the product so that the noise or hot wind from the appliance may not cause any damage to the neighbors. Otherwise, it may cause dispute with the neighbors.
- Install the drain hose properly for the smooth drainage of water condensation.
- Always inspect gas leakage after the installation and repair of product. Otherwise, it may cause the failure of product.
- In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

Operation

- Do not step on the product and do not put anything on it.
- Do not use this appliance if any part have been underwater. Immediately contact an Authorized Service Center for replace flooded water heater. Do not attempt to repair the unit. It must be replaced.
- Turn off the power and water supply to water heater and drain water heater if the appliance is to be left for an extended period of time, such as during vacations.

13. Installation

13.2 Product Overview



1 Top cover

2 Air intake vents

3 Junction box

4 Air filter

5 Front panel

6 Display décor / Control panel

7 ECO

8 Upper element cover

9 Front décor

10 Lower element cover

11 Heating element

12 Opening for drain valve

13 Water inlet

14 Opening for T&P relief valve

15 Water outlet

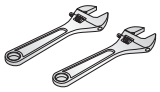
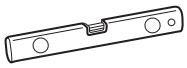
16 Condensate drain

17 Rear panel

18 Air outlet Vents

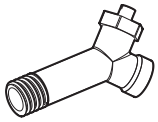
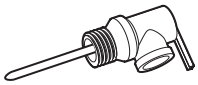
13. Installation

Installation Tools

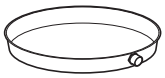
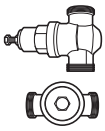
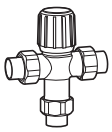
Figure	Name	Figure	Name
	Screw driver		Teflon tape
	Spanner		Level
	Multi-meter		

Accessories

Included Accessories:

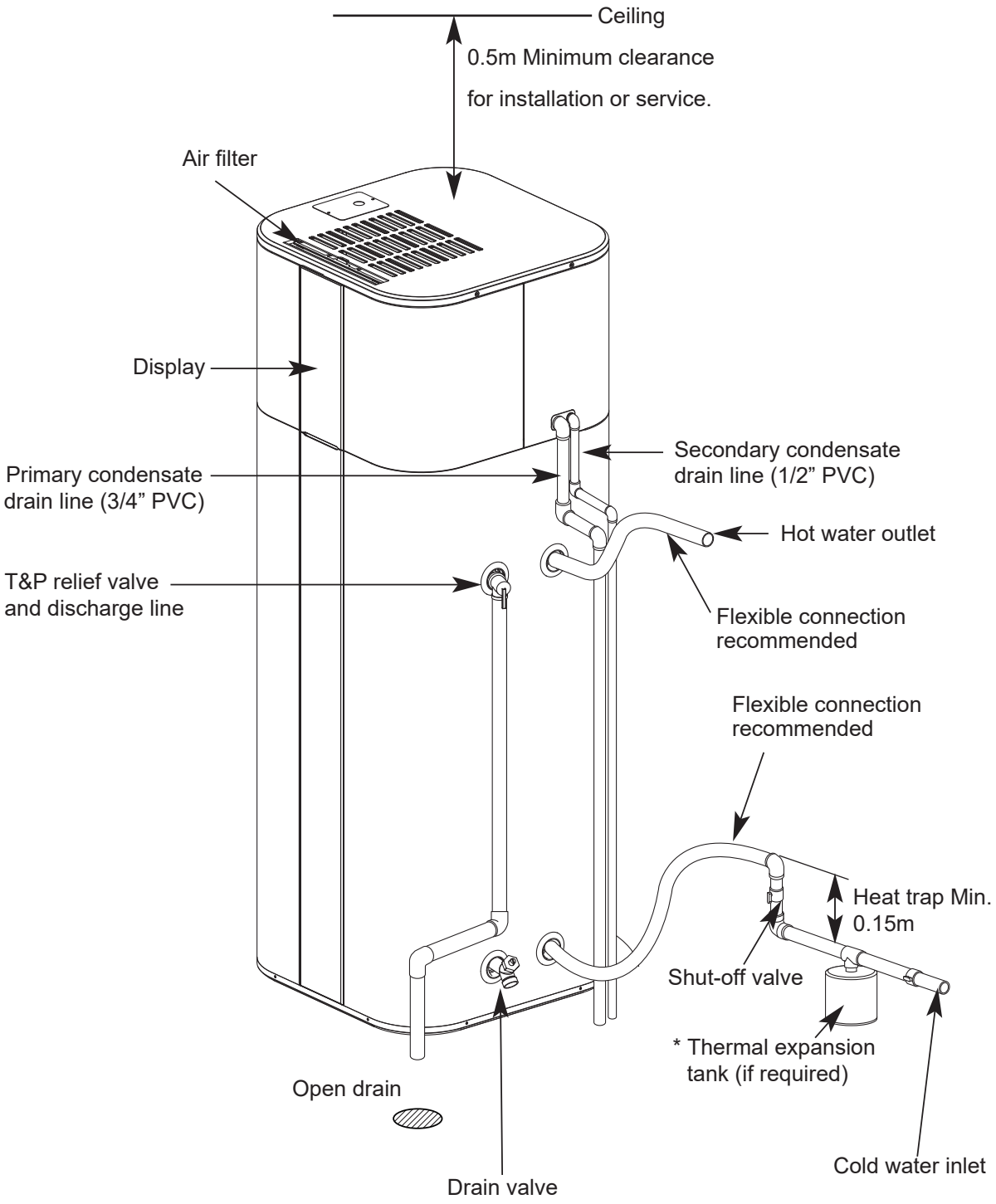
Figure	Name	Figure	Name
	Drain valve		T&P relief valve

Recommended Accessories:

Figure	Name	Figure	Name
	Drain pan		Thermal expansion tank
	Pressure reducing valve		Thermostatic mixing valve

13. Installation

Installation Instructions



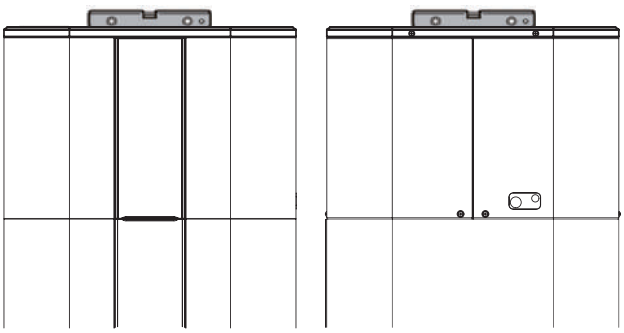
* In closed system, connect a thermal expansion tank to cold water supply line See "Thermal Expansion" Section (p.30).

13.3 Installation Place

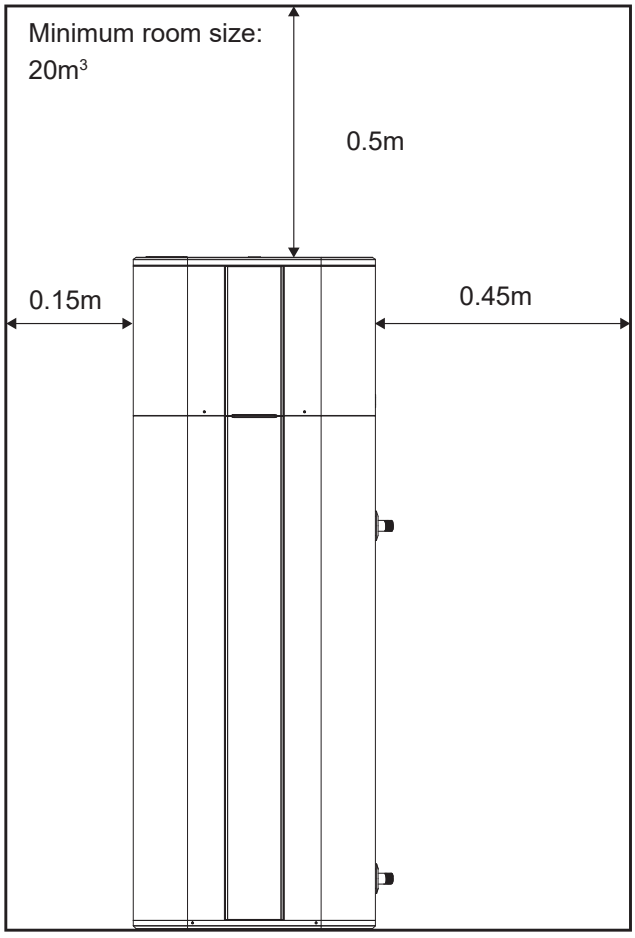
NOTE

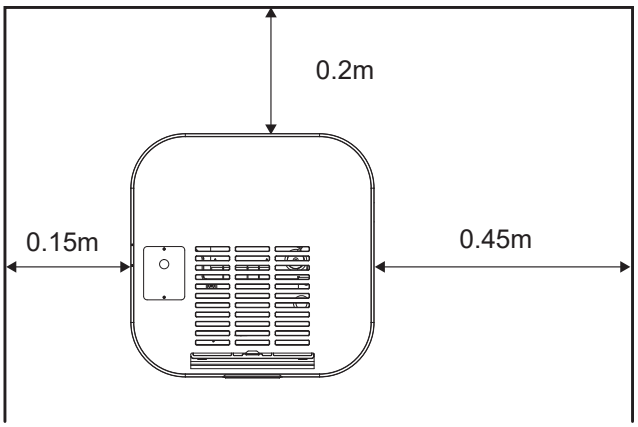
- Installation in a confined space without proper ventilation will lead to higher power consumption.
- Auxiliary drain pan MUST be installed in compliance with local codes.
  Drain pan kits are available from the store where the water heater purchased, or any water heater distributor.
  Drain pan should not obstruct cold water inlet or drain valve.

- Select space where has enough space for periodic servicing. The air filter, covers, and front panels can be removed to permit inspection and servicing.
- Take the weight of the water heater into account and select a place where the floor is strong enough to support the weight of full water heater.
- The water heater and water lines should be protected from freezing and high corrosive elements. Do not install water heater in outdoor or unprotected areas.
- Install the water heater close to the area of greatest heater water demand and the center of plumbing system. Long un-insulated hot water lines can waste energy.
- Insufficient air exchange will result in increased energy consumption level.
- The installation site must be over 1 °C.
- Ensure the water heater is horizontal using a spirit level.
- Keep level parallel in installing the product. Otherwise, it may cause vibration or water leakage. It may cause injury or an accident.



Minimum Clearances (considering service)





13. Installation

13.4 Installing the Unit

Unpacking and Removing Shipping Bolts

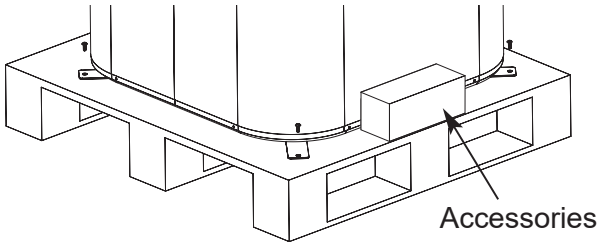
NOTE

- Accessories (drain valve and T&P relief valve) are attached on pallet. Keep it for installation.

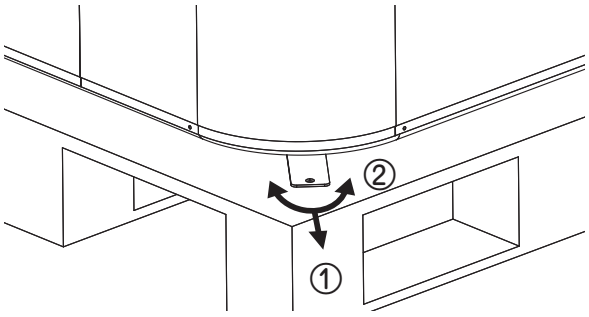
Unpack all shipping materials from the water heater for proper operation and inspect it for shipping damage.

1 Remove carton and shipping materials.

2 Remove the screws from the shipping brackets.



3 Pull out the shipping brackets.



4 Slightly tip the water heater and carefully roll the water heater off the pallet.

Thermal Expansion

Determine if a check valve is present on the inlet water line. Check with your local water utility. A check valve located in cold water inlet line will create a “closed water system”. As water is heated, it creates an increase in pressure within the water system because the increased volume of water doesn’t have a place to go.

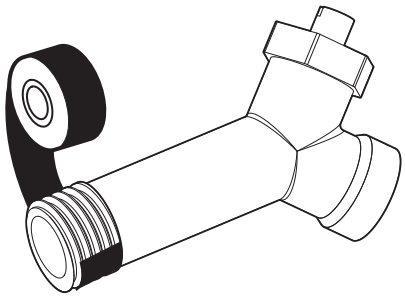
Referred to as “thermal expansion”, the rapid pressure increase can quickly reach the safety setting of the relief valve. This will cause the relief valve to open during each heating cycle. We recommend installing an expansion tank to control thermal expansion.

Connect the thermal expansion tank to the cold water supply line (see Installation Instructions). For additional information, contact installing contractor, plumbing inspector, or water supplier.

Installing Drain Valve

Use drain valve included in packing.

1 Apply Teflon tape on the G end to prevent leaking.



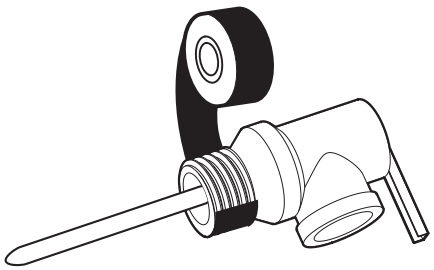
2 Install the drain valve in the opening marked “Drain Valve”.

13. Installation

Installing T&P Relief Valve

Use T&P relief valve included in packing.

1 Apply Teflon tape on the G end to prevent leaking.



2 Install the T&P relief valve in the opening marked T&P relief valve.

Connecting T&P Relief Valve Discharge Pipe

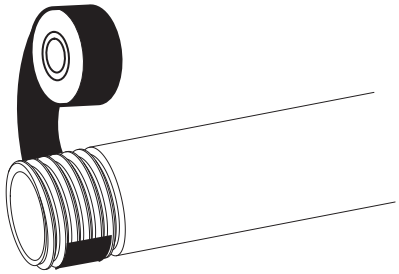
> **⚠ WARNING**
>
> **The pressure rating of the relief valve must not exceed 1MPa, the maximum working pressure of the water heater as specified on the data plate.**

> **⚠ WARNING**
>
> **DO NOT connect any valve or other restriction to the T&P plumbing. DO NOT connect the T&P plumbing to the condensate plumbing. It must be directly piped to an adequate open drain.**

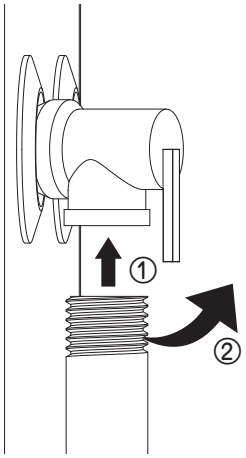
Install T&P Relief Valve discharge pipe according to local codes and the following instructions.

- The inside diameter of the discharge pipe must be at least 3/4“.
- The discharge pipe must be approved for hot water distribution and withstand 100°C without distortion.
- The end of the discharge pipe should not be threaded or concealed and should be protected from freezing.
- Do not insert or install any type of valve, restriction, or reducer coupling in the discharge pipe.

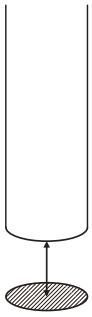
1 Apply Teflon tape on the NPT end to prevent leaking.



2 Attach the discharge pipe to outlet of the T&P relief valve. The discharge pipe must pitch downward from the valve to allow complete drainage of both T&P relief valve and discharge pipe.



3 The end of the discharge pipe must be piped to an adequate open drain.



13. Installation

* The water may drip from the discharge pipe of the pressure-relief device and that this pipe must be left open to the atmosphere.
* The pressure-relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.
* A discharge pipe connected to the pressure-relief device is to be installed in a continuously downward direction and in a frost-free environment.

Installing Condensate Drain Lines

NOTE

- When making drain fitting connections to the drain tubing, DO NOT overtighten. Overtightening fittings could crack or damage the condensate drain pan.
- Condensate from this unit is not acidic.

The condensate drain lines and connections to the drain piping must meet state and local codes.

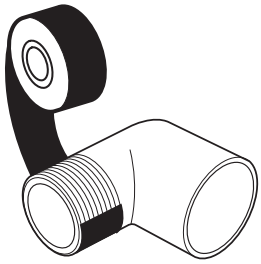
Do not reduce the drain line size to less than the condensate connection size provided.

Ensure that the condensate drain lines maintain a downward slope for proper drainage.

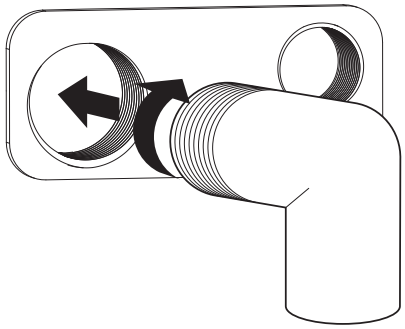
The drain line should be insulated to prevent condensation from forming on the outside of the drain line.

If no floor drain is available or the drain is above the level of the condensate line, then a common condensate pump with a capacity no less than 7.5 liters per day must be installed.

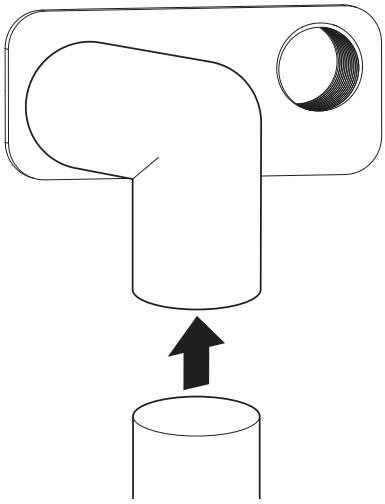
1 Apply Teflon tape on the G end to prevent leaking.



2 Attach elbow with 3/4” slip &3/4”G to the primary drain connection.



3 Using an approved sealant, insert the PVC pipe into the female end. Condensate drain must be piped to an adequate drain.



4 Using 1/2“ PVC piping, a elbow with 1/2“ slip & 1/2“ G, and an approved sealant, attach the elbow to secondary drain connection and insert the PVC pipe into the female end.

13. Installation

Connecting the Water Supply

NOTE

• DO NOT directly solder or braze to hot or cold water connections. If sweat connections are used, sweat tubing to adapter before installing the adapter to the hot or cold water connections on heater. Any heat applied to the water supply fittings will permanently damage the internal plastic lining in these ports.

* The maximum pressure in cold water supply line is 0.8MPa. If the supply water is greater than 0.8MPa, install a pressure reducing valve.

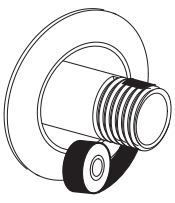
* Connect the water for filling or refilling the heating system as specified by EN1717/ EN 61770 to avoid contamination of drinking water by return flow.

Maximum and minimum water operating temperatures (°C)	35 / 62
Maximum and minimum water operating pressure (MPa)	- / 0.8

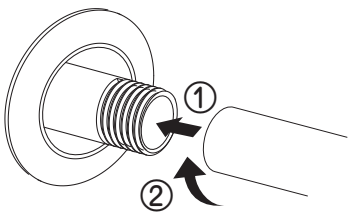
Refer to “Installation Instructions” for suggested typical installation.

1 Check the type of water pipes in your home. Use fittings adequate for the type of pipe in your home.

2 Apply Teflon tape on the G end to prevent leaking.



3 Connect cold and hot water supply using 3/4” G.



For ease of disconnecting the water heater for service or replacement, the installation of unions is recommended on the water connections.

4 Install a shut-off valve in the cold water line near the water heater.

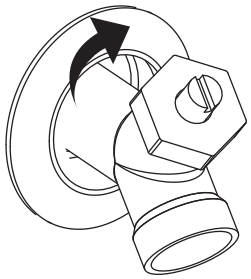
5 Install the insulation on the cold and hot water pipes. Insulating hot water pipe can increase energy efficiency.

To Fill the Water Heater

⚠ WARNING

Do not turn on the electrical power to water heater unless the tank is completely full of water. The water heater warranty does not cover damage or failure resulting from operation with empty or partially empty tank.

1 Make sure that the drain valve on water heater is completely closed.



2 Turn on the cold water supply

3 Open each hot water faucet slowly and allow the water to run until it flows with a full stream.

4 Let the water run full stream for a few

13. Installation

Making Electrical Connections

⚠ WARNING

Disconnect all power before working on any electrical connections.

⚠ WARNING

The ground connection is mandatory.

⚠ WARNING

Never supply power to heating element directly. Upper and lower heating elements are installed on the product. (230V, 2kW)

NOTE

- All wiring must conform to European and national standards, and must be protected by a 30mA RCD(Residual current device).
- Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules

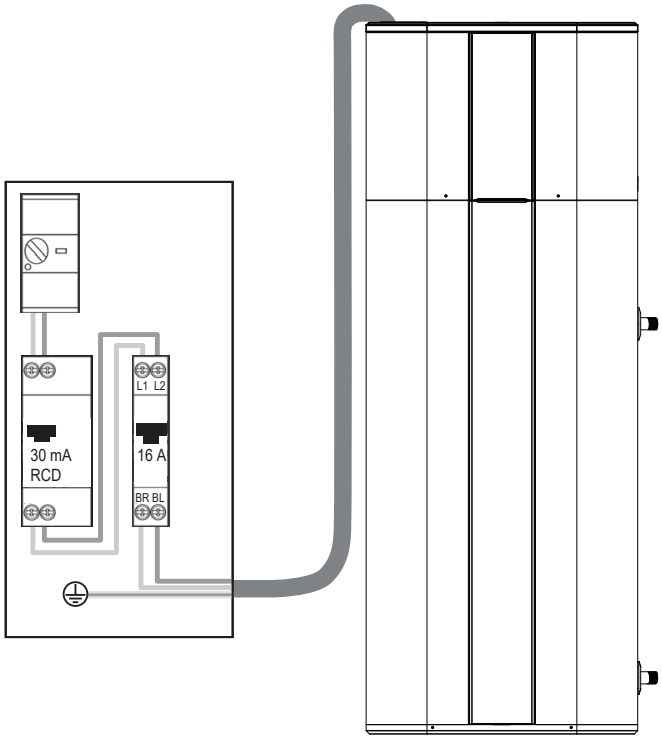
The water heater must be permanently powered by electricity to ensure correct operation of the impressed current titanium anode (ICCP).
Do not turn on power until water heater is completely filled.
The appliance can only be connected and operated on a single-phase 230V AC grid. The electrical installation will include:

- The installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.
- The rating of the residual current device (RCD) to be installed

The supply cord cannot be disconnected from the product.
The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.

⚠ CAUTION

In order to avoid a hazard due to inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.



13. Installation

Safety Controls

CAUTION

You must have a qualified person investigate the cause of the high temperature condition and take corrective action before placing the water heater in service again.

There is temperature limiting control(ECO) that is located above the upper heating element. If the water temperature becomes excessively high, the temperature limiting control(ECO) shuts off the power to the heating elements.

Once the control opens, it must be reset manually.

To reset temperature limiting control(ECO):

1. Turn off the power by opening the circuit breaker or removing the fuses.
2. Remove the front decor and upper element cover.
3. Press the red ECO RESET button.

Insulation Blanket Kits

External insulation blanket, available to the general public, for water heater is not necessary.

The manufacturer's warranty does not cover any damage or failure caused by installing or using any type of unauthorized energy-saving or other devices.

The manufacturer is not responsible for any injury or loss resulting from the use of such unauthorized devices.

CAUTION

If local codes require application of any external insulation blanket kit to water heater, it will require careful attention so as not to restrict the proper function and operation of this appliance:

- DO NOT block the air openings of the water heater.
- DO NOT cover or attempt to relocate the information or warning labels attached to the water heater.
- DO NOT cover the control panel, T&P relief valve, drain valve, and junction box.
- Inspect the blanket frequently.

13. Installation

Installation Checklist

Location

- ▫ Sufficient room for air exchange and periodic service.
- ▫ Floor is strong enough to support water heater.
- ▫ Indoor and protected from high corrosive elements.
- ▫ Close to the area of heater water demand.
- ▫ Over 1 °C.
- ▫ Area free of flammable liquids and gases.

Drain valve

- ▫ Drain valve properly installed.

T&P relief valve

- ▫ T&P relief valve properly installed.
- ▫ Discharge line maintains a downward slope and runs to adequate drain.
- ▫ Discharge pipe protected from freezing.

Condensate Drain

- ▫ Drain lines maintain a downward slope and run to adequate drain.

Water supply

- ▫ Tank is completely full of water.
- ▫ Remove air from water heater and piping.
- ▫ Water connections tight and free of leakage.
- ▫ Flexible water connections recommended.

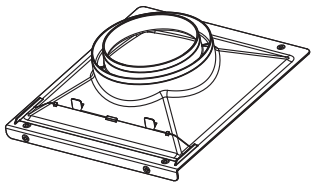
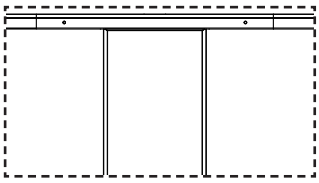
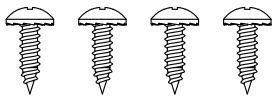
Wiring

- ▫ Power supply voltage agree with rating voltage on data plate.
- ▫ Proper size of branch circuit wire and fusing or circuit breaker.
- ▫ Unit properly grounded.

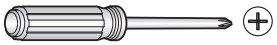
13. Installation

13.5 Duct Installation

Parts and Functions

Figure	Name	Figure	Name
	Duct + Duct cover		Duct hole guide
	Screw		

Installation Tools

Figure	Name
	Screw driver

13. Installation

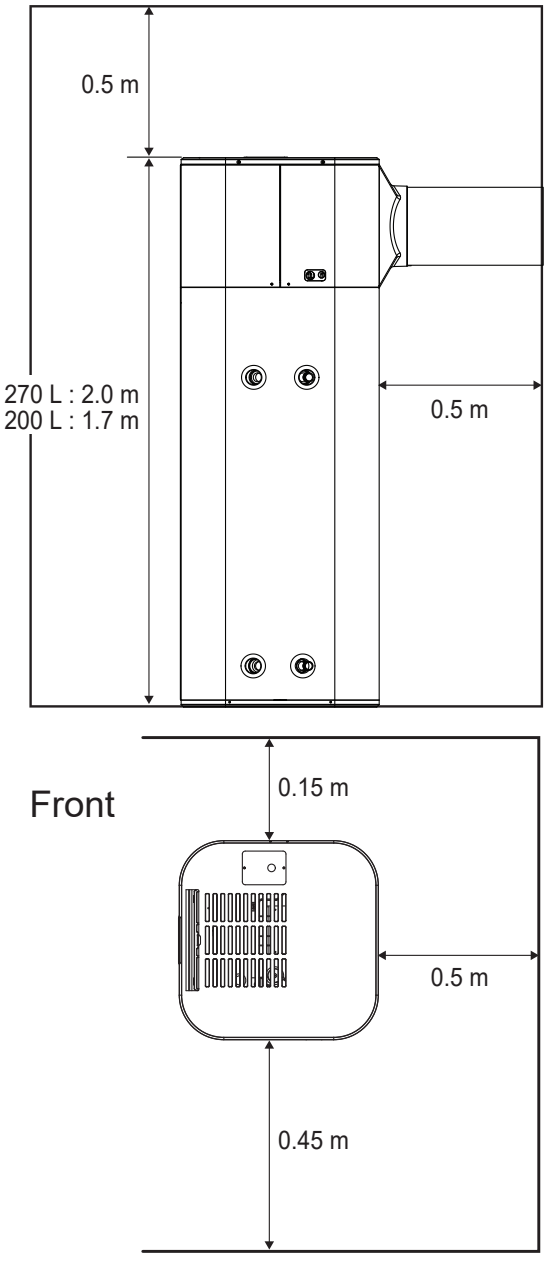
13.5 Duct Installation

Select the best Location

1) Semi-duct

Minimum Clearances

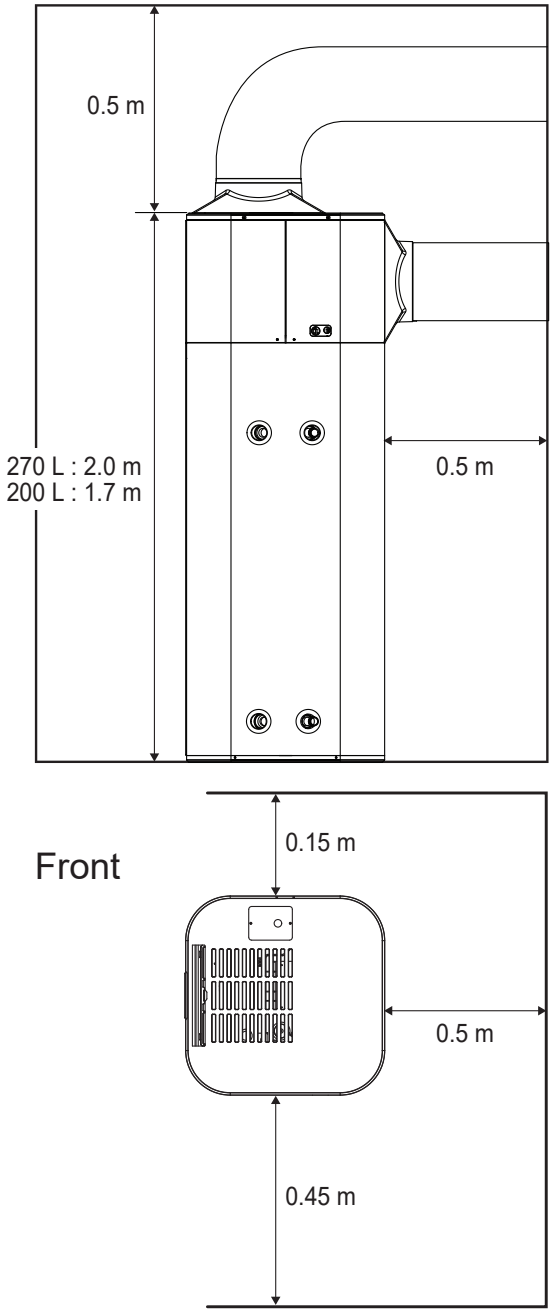
(Semi-ducted configuration)



2) Duct

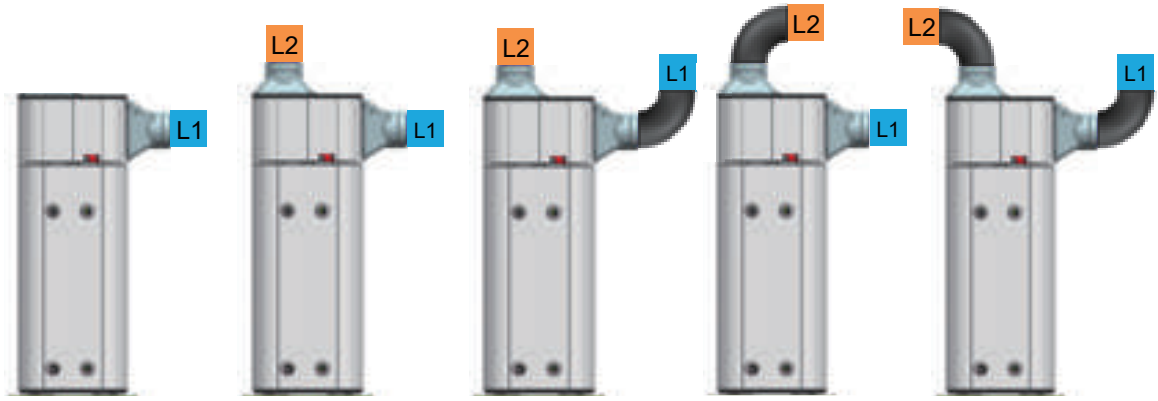
Minimum Clearances

(Ducted configuration)



13. Installation

Allowable duct length



Case 1 **Case 2** **Case 3** **Case 4** **Case 5**

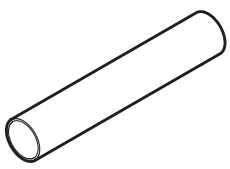
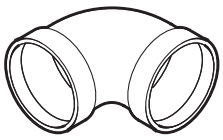
System Static Pressure		Case	Case 1		Case 2		Case 3		Case 4		Case 5	
1150 rpm	P(Pa)	Size	Ø 200	Ø 160	Ø 200	Ø 160	Ø 200	Ø 160	Ø 200	Ø 160	Ø 200	Ø 160
		Remark	Outlet only		No Elbow		Elbow x 1		Elbow x 1		Elbow x 2	
3.6 CMM	55	L1+L2	62	25	55	22	52	19	52	19	49	16
4.5 CMM	43	(m)	31	12	27	10	24	7	24	7	21	4

NOTE

• Total of static pressure must not exceed 55 Pa.

Static pressure calculation table

	3.6 CMM			4.5 CMM		
Component	Smooth	Smooth 90˚	Duct adapter	Smooth	Smooth 90˚	Duct adapter
	PVC Duct (Pa/m)	PVC Bend (Pa/EA)	(Suc. & Dis. set) (Pa)	PVC Duct (Pa/m)	PVC Bend (Pa/EA)	(Suc. & Dis. set) (Pa)
Ø160	2	6	-	3.1	9.4	-
Ø200	0.8	2.3		1.2	3.7	
Adaptor			5.5 + 5.5			5.8 + 5.8

PVC Duct	PVC 90˚ Bend
	

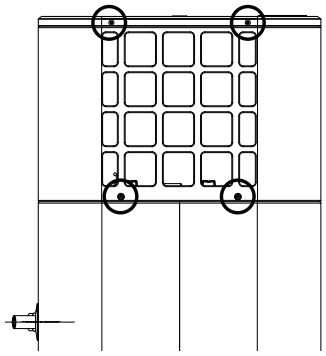
13. Installation

Installing duct adaptor(Outlet)

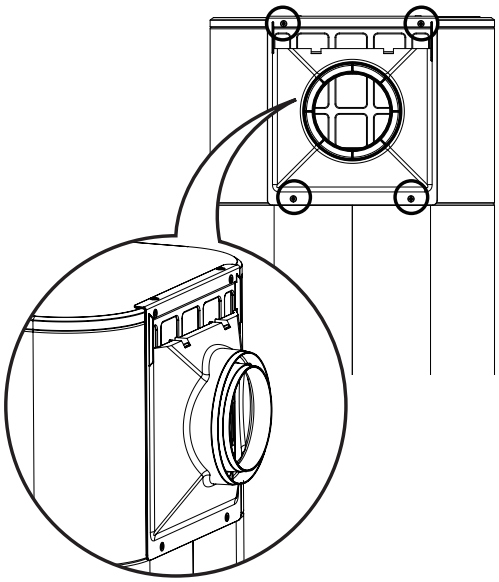
⚠ CAUTION

Turn off the power by opening the circuit breaker or removing the fuses before installing.

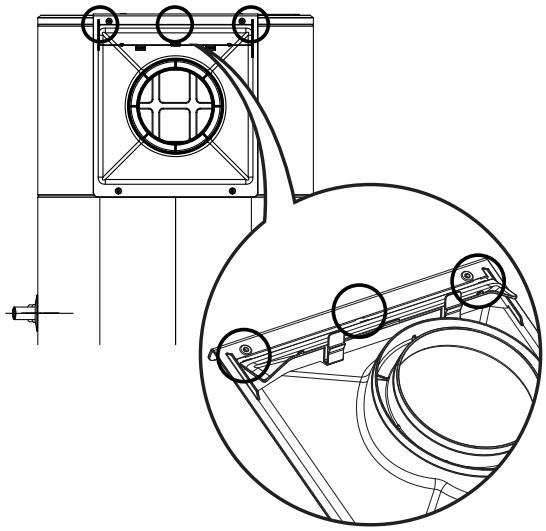
1 Remove the screws.



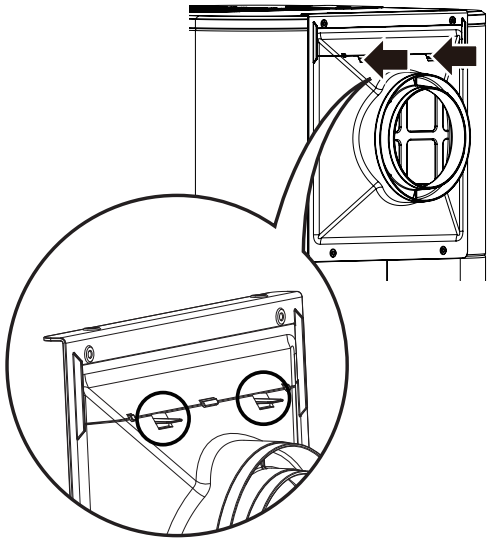
2 Place the duct adaptor and align the each holes and fasten it with additional screws in the installation box.



3 Assemble the duct cover with guiding ribs.



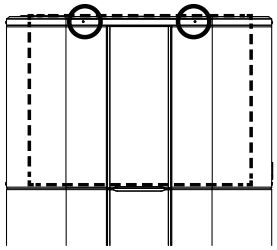
4 Install the cover until it makes click sound.



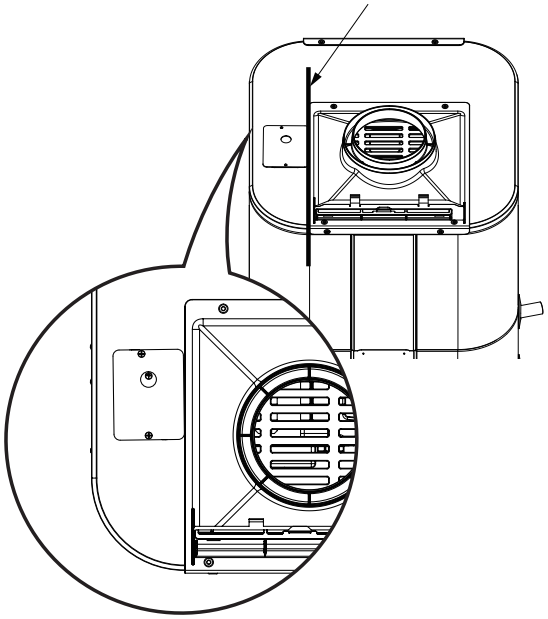
13. Installation

Installing duct adaptor (Inlet)

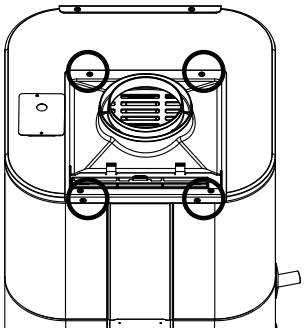
1 Make two holes using the duct hole guide.



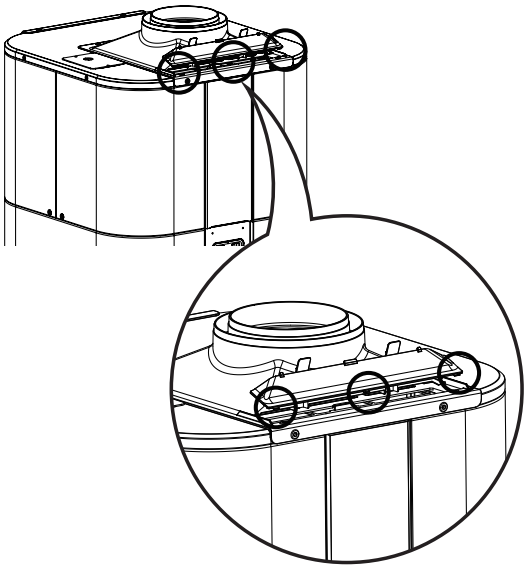
2 Align the duct adaptor with the end line of power cord cover



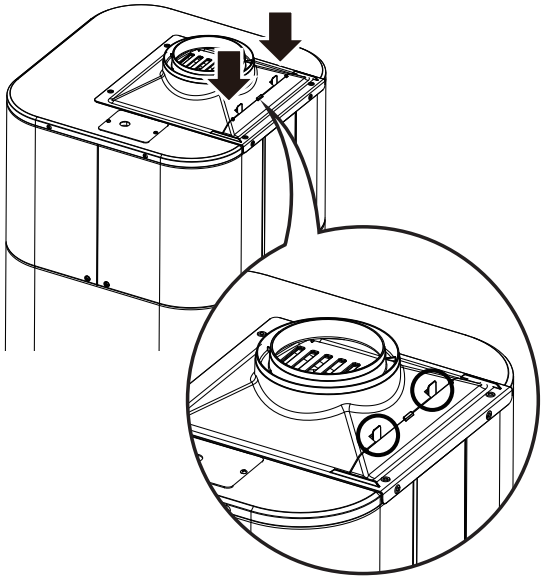
3 Fasten it with additional screws in the installation box.



4 Assemble the duct cover with guiding ribs.



5 Install the cover until it makes click sound.



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The air conditioners manufactured by LG have received ISO9001 certificate for quality assurance and ISO14001 certificate for environmental management system.
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