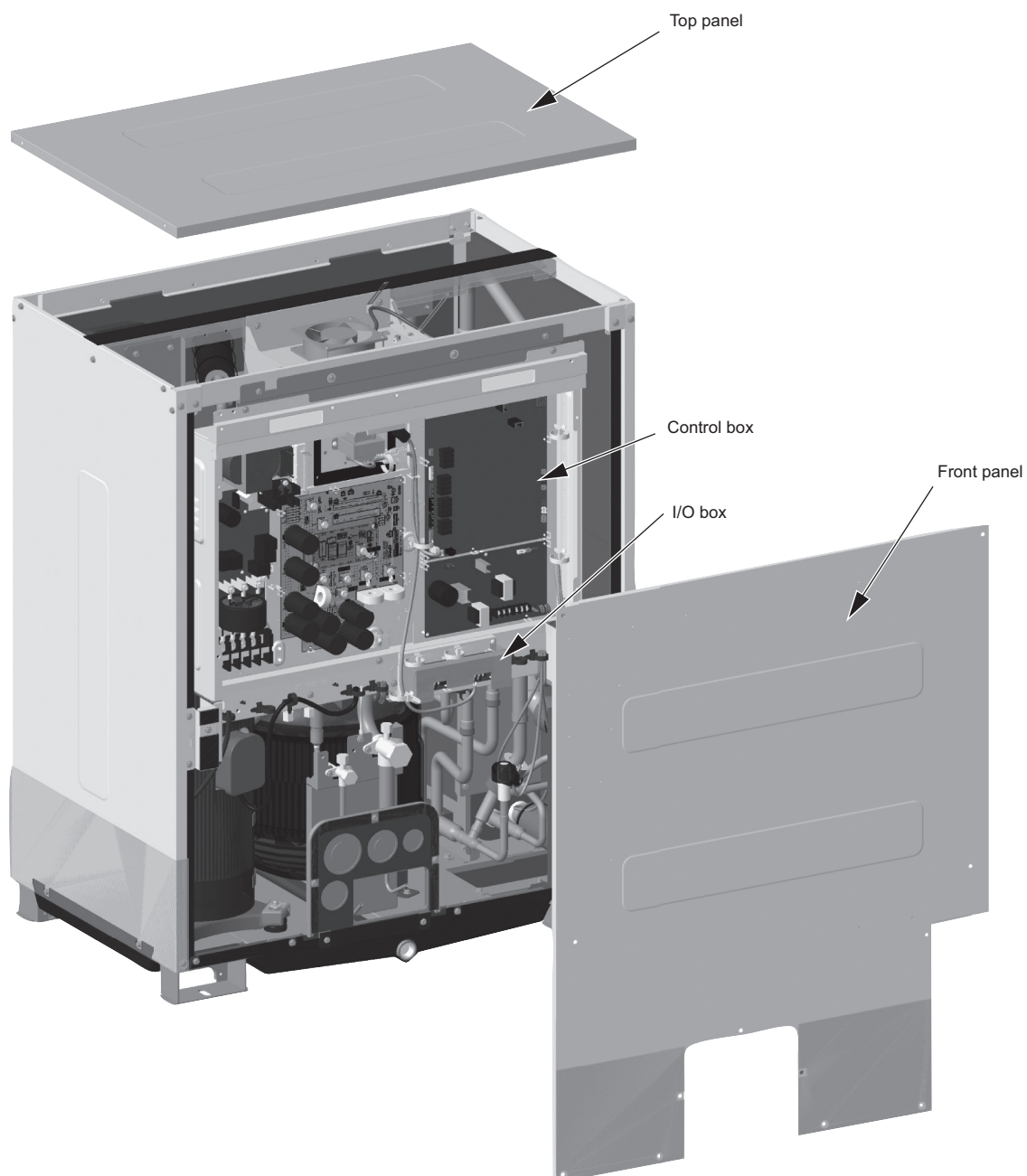


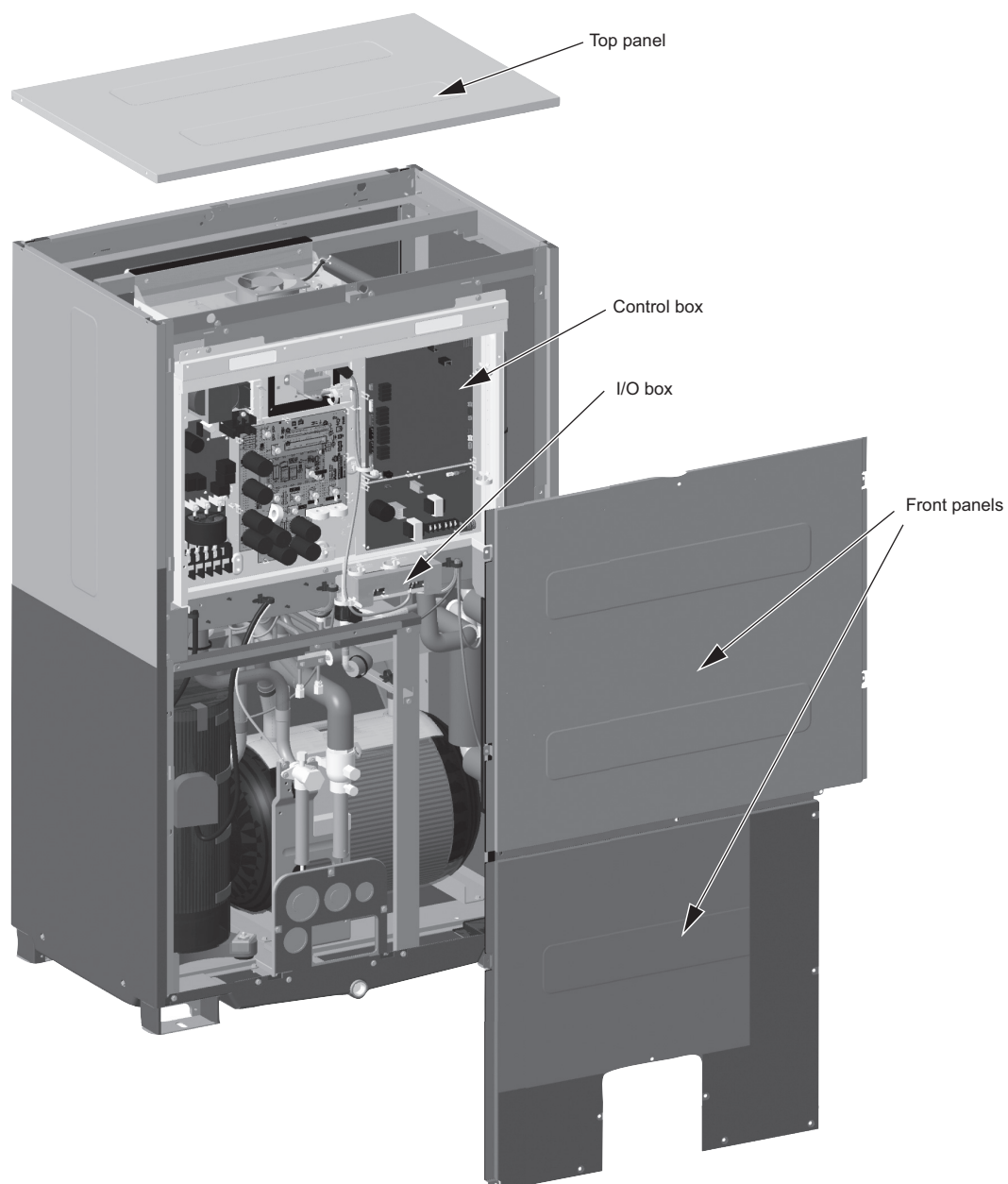
[1] Heat source Unit Components and Refrigerant Circuit

1. Front view of a heat source unit

(1) PQHY-P200, 250, 300YLM-A1(A2), PQRV-P200, 250, 300YLM-A1(A2)

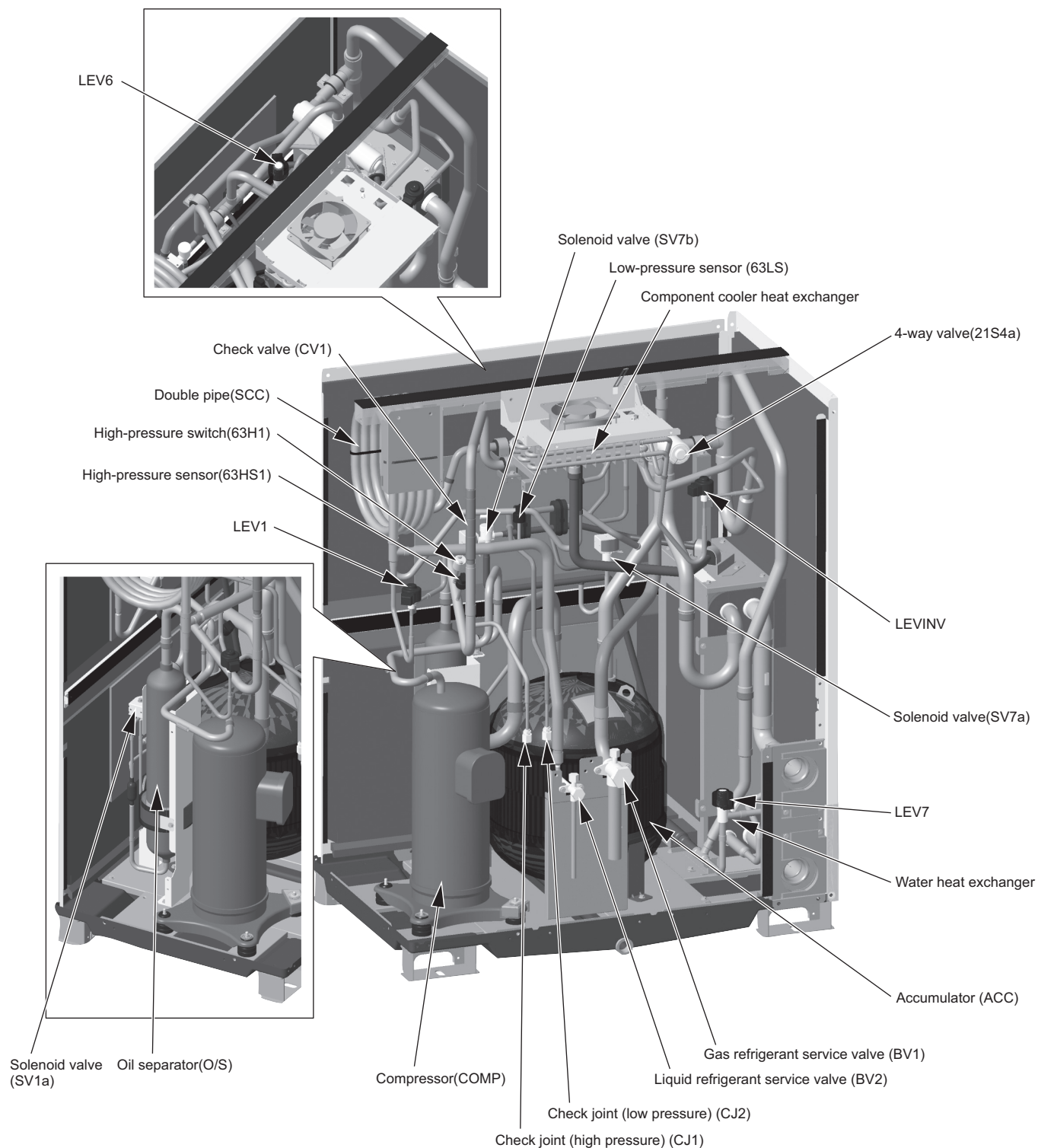


(2) PQHY-P350, 400, 450, 500, 550, 600YLM-A1(A2), PQRY-P350, 400, 450, 500, 550, 600YLM-A1(A2)

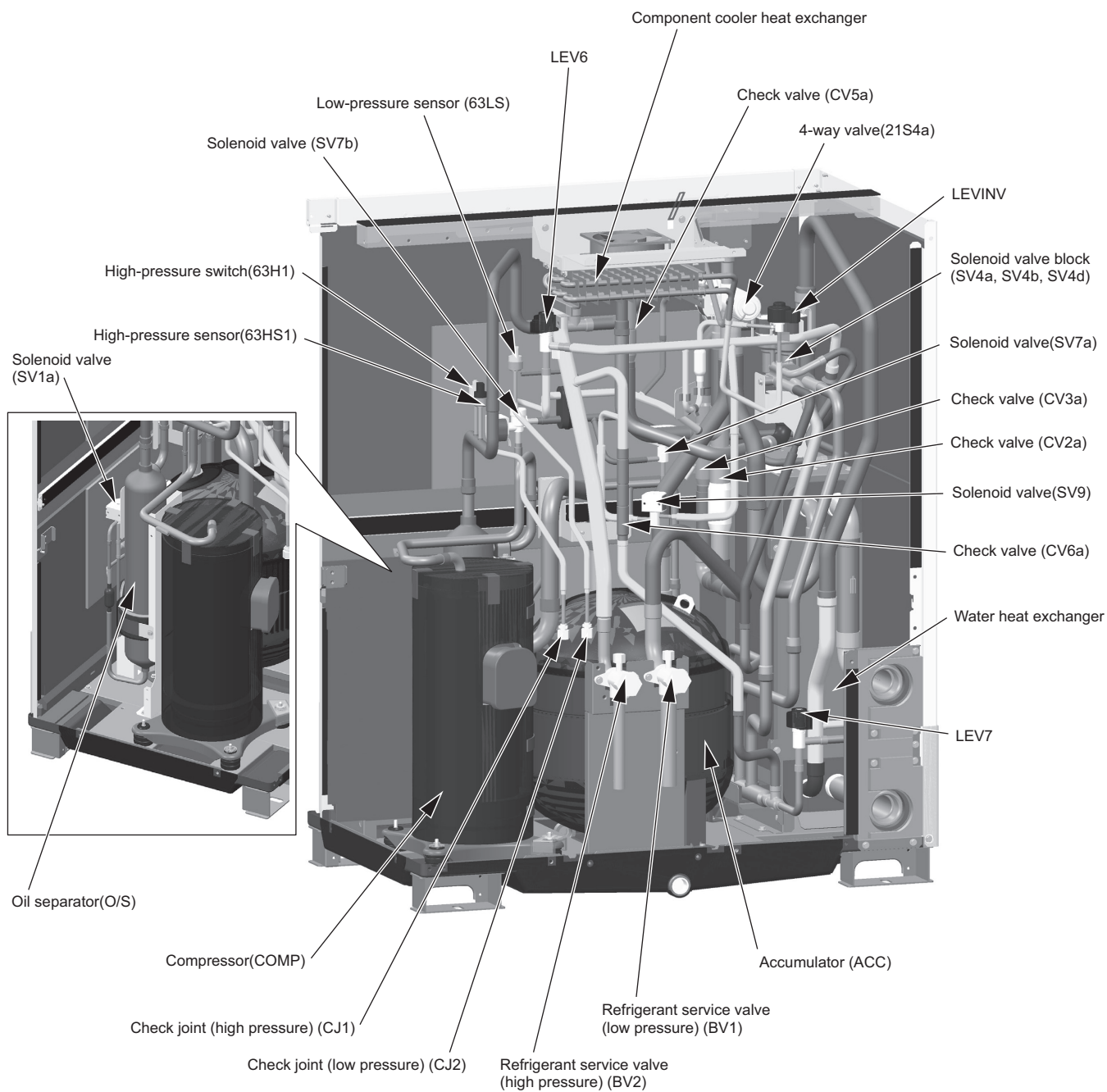


2. Refrigerant circuit

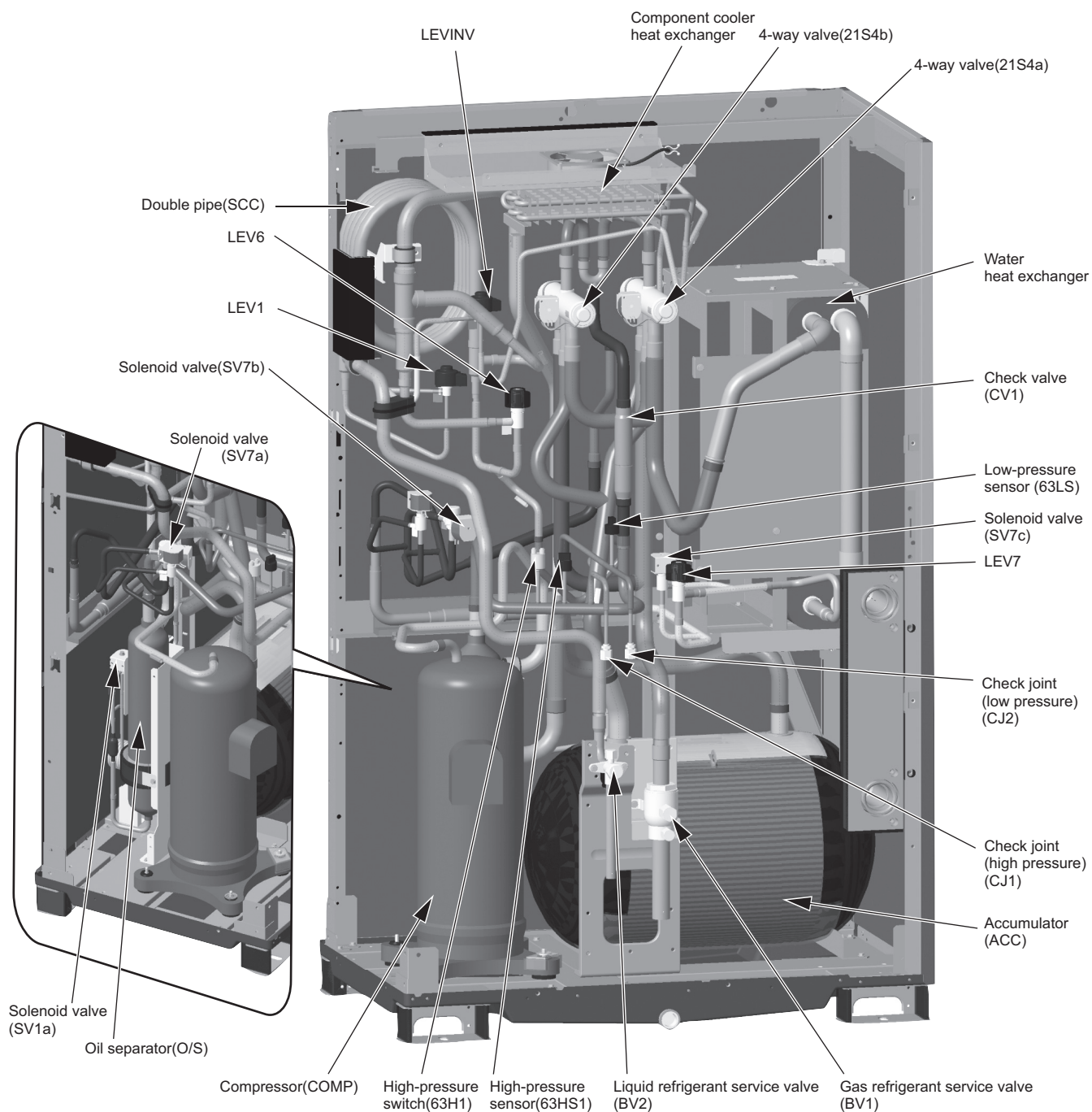
(1) PQHY-P200, 250, 300YLM-A1(A2)



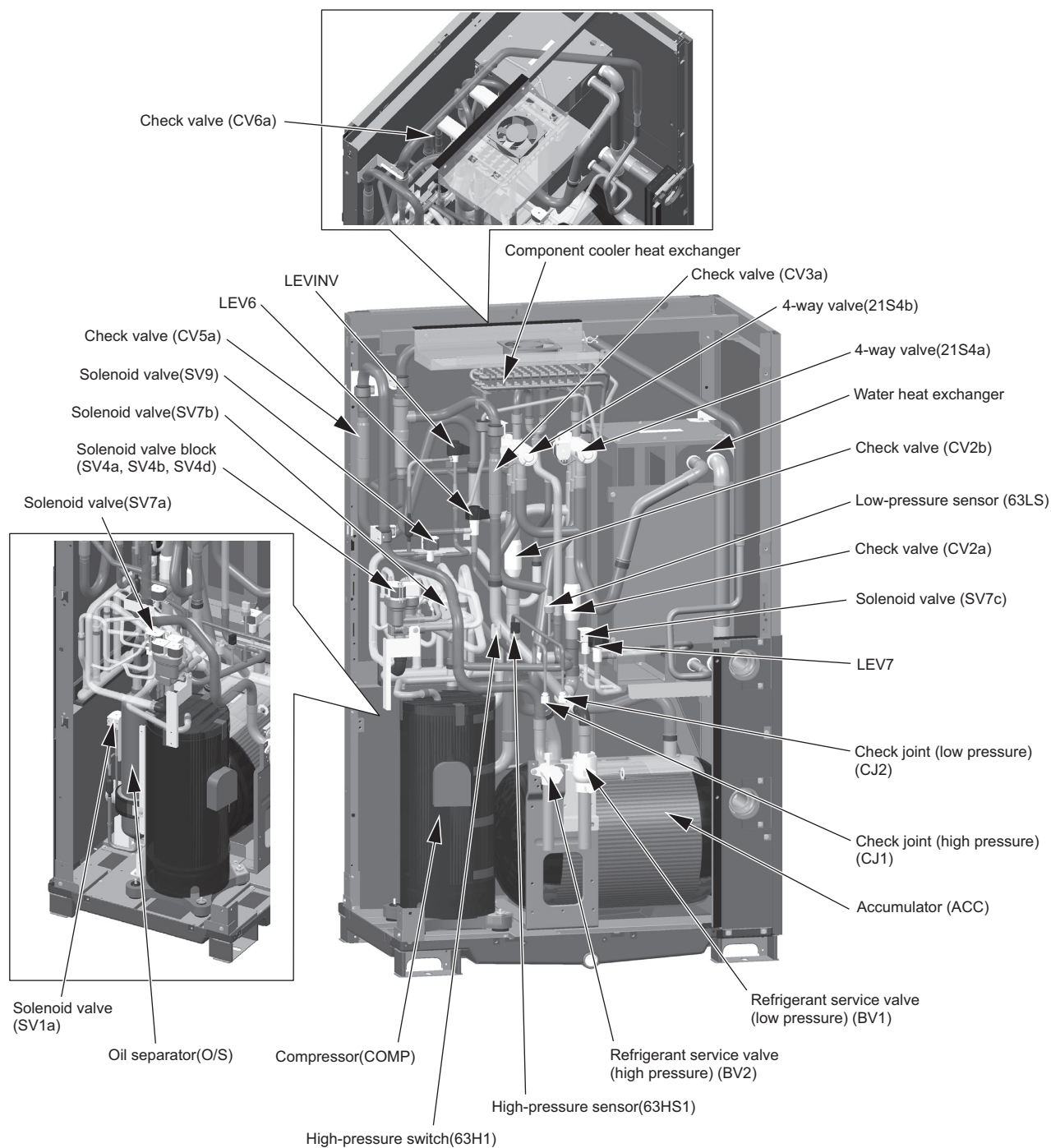
(2) PQRY-P200, 250, 300YLM-A1(A2)



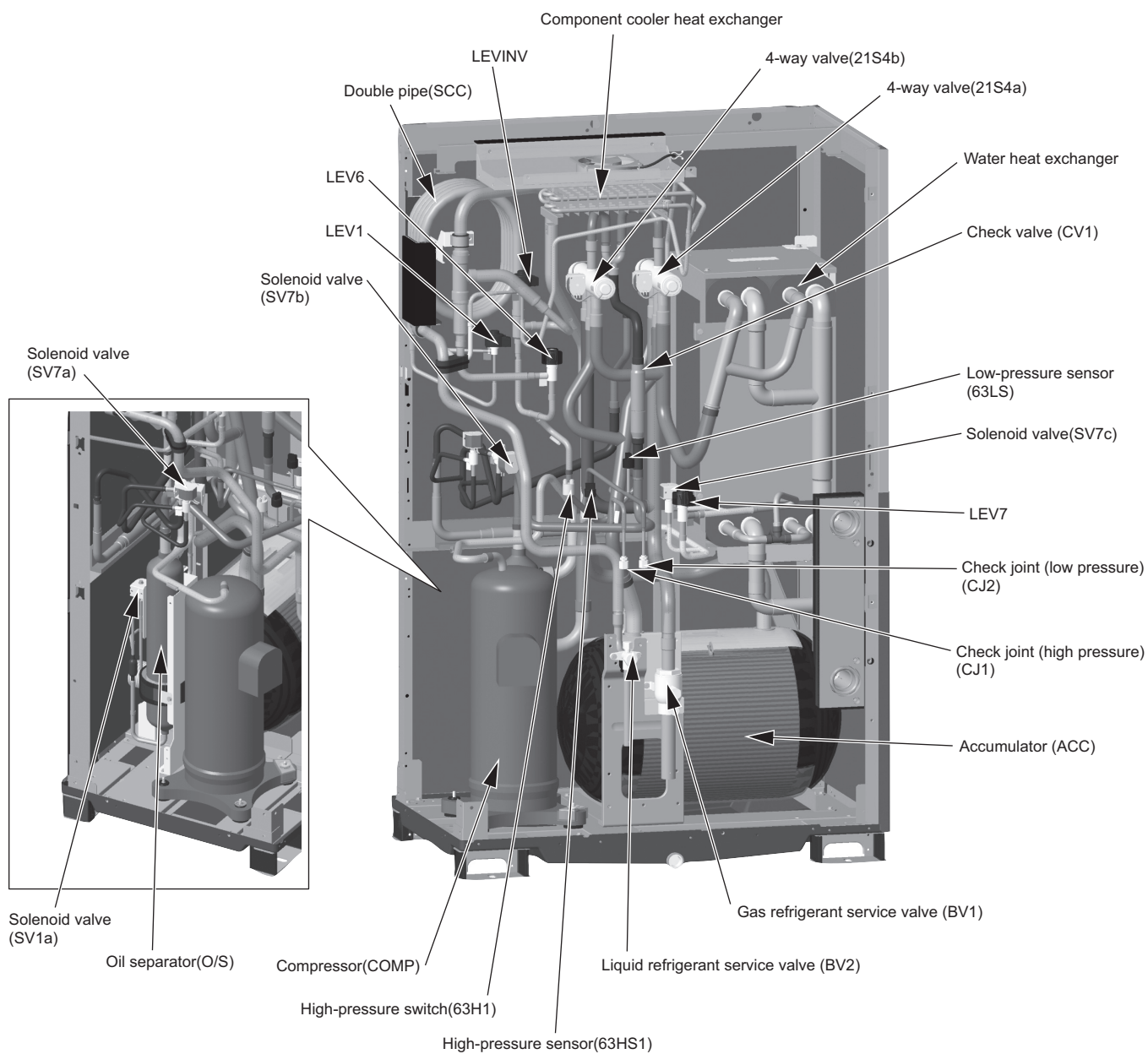
(3) PQHY-P350, 400, 450, 500YLM-A1(A2)



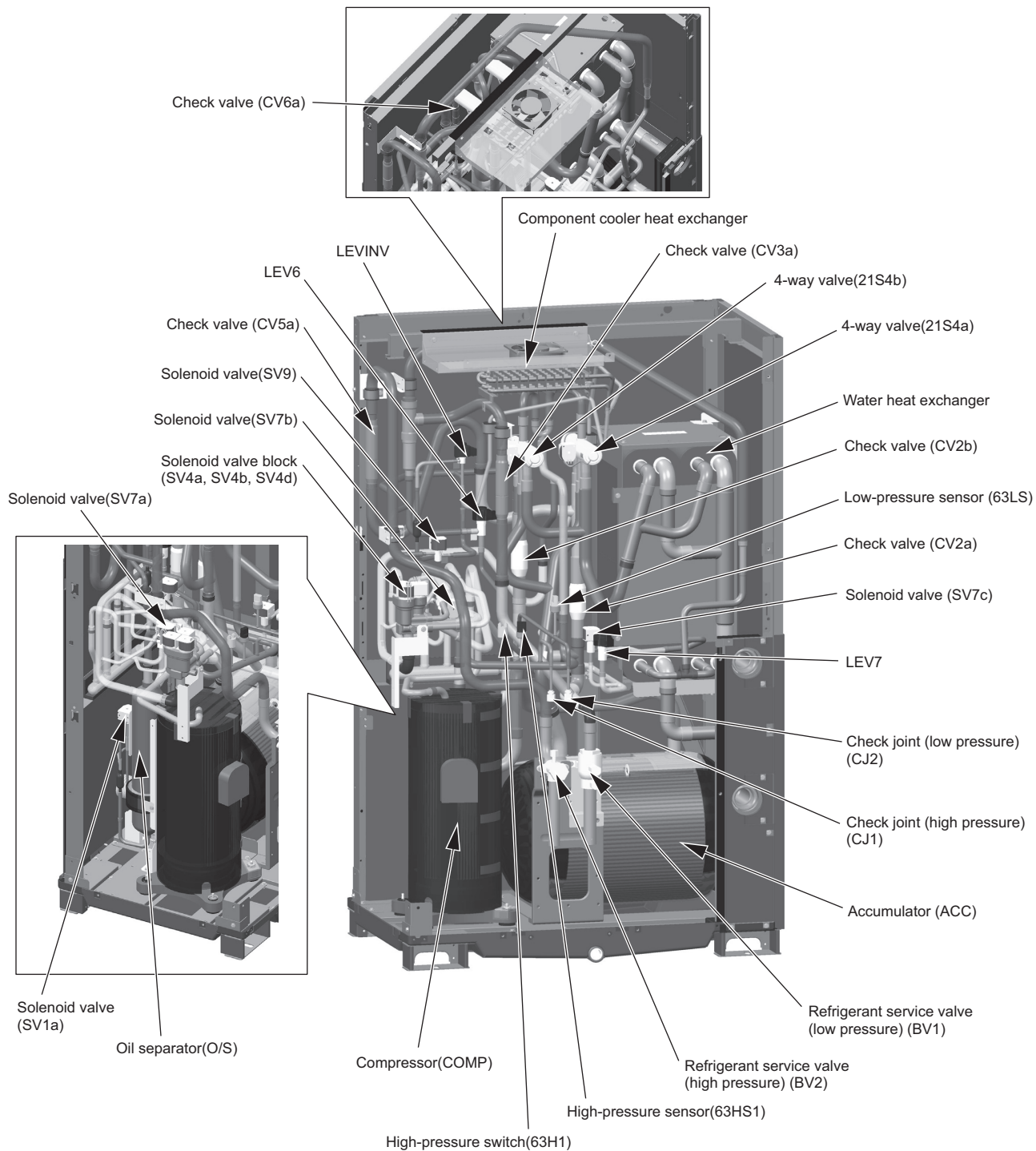
(4) PQRY-P350, 400, 450, 500YLM-A1(A2)



(5) PQHY-P550, 600YLM-A1(A2)



(6) PQRY-P550, 600YLM-A1(A2)





[2] Principal Parts and Functions**1. Heat source unit**

Part name	Symbols (functions)	Notes	Usage	Specifications	Check method
Com-pressor	MC1 (Comp1)		Adjusts the amount of circulating refrigerant by adjusting the operating frequency based on the operating pressure data	P200-P300 models Low-pressure shell scroll compressor wirewound resistance 20°C [68°F] : 0.72Ω P350-P500 models Low-pressure shell scroll compressor wirewound resistance 20°C [68°F] : 0.297Ω P550-P600 models Low-pressure shell scroll compressor wirewound resistance 20°C [68°F] : 0.611Ω	
High pressure sensor	63HS1		1) Detects high pressure 2) Regulates frequency and provides high-pressure protection	<p>Pressure 0~4.15 MPa [601psi] Vout 0.5~3.5V 0.071V/0.098 MPa [14psi] Pressure [MPa] =1.38 x Vout [V]-0.69 Pressure [psi] =(1.38 x Vout [V] - 0.69) x 145 1 GND (Black) 2 Vout (White) 3 Vcc (DC5V) (Red)</p>	
Low pressure sensor	63LS		1) Detects low pressure 2) Provides low-pressure protection	<p>Pressure 0~1.7 MPa [247psi] Vout 0.5~3.5V 0.173V/0.098 MPa [14psi] Pressure [MPa] =0.566 x Vout [V] - 0.283 Pressure [psi] =(0.566 x Vout [V] - 0.283) x 145 1 GND (Black) 2 Vout (White) 3 Vcc (DC5V) (Red)</p>	
Pressure switch	63H1		1) Detects high pressure 2) Provides high-pressure protection	4.15MPa[601psi] OFF setting	
Thermistor	TH4 (Discharge)		1) Detects discharge air temperature 2) Provides high-pressure protection	<p>Degrees Celsius</p> $R_{120} = 7.465k\Omega$ $R_{25/120} = 4057$ $R_t = 7.465 \exp \left\{ 4057 \left(\frac{1}{273+t} - \frac{1}{393} \right) \right\}$ <p>0°C[32°F] :698kohm 10°C[50°F] :413kohm 20°C[68°F] :250kohm 30°C[86°F] :160kohm 40°C[104°F] :104kohm 50°C[122°F] : 70kohm 60°C[140°F] : 48kohm 70°C[158°F] : 34kohm 80°C[176°F] : 24kohm 90°C[194°F] :17.5kohm 100°C[212°F] :13.0kohm 110°C[230°F] : 9.8kohm</p>	Resistance check

Part name	Symbols (functions)	Notes	Usage	Specifications	Check method
Thermistor	TH2	PQHY only	LEV1 is controlled based on the TH2, TH3, and TH6 values	Degrees Celsius $R_0 = 15k\Omega$ $R_{0/60} = 3460$ $R_t = 15 \exp\{3460 (\frac{1}{273+t} - \frac{1}{273})\}$ 0°C[32°F]: 15kohm 10°C[50°F]: 9.7kohm 20°C[68°F]: 6.4kohm 25°C[77°F]: 5.3kohm 30°C[86°F]: 4.3kohm 40°C[104°F]: 3.1kohm	Resistance check
	TH3 (Pipe temperature)	PQHY only	Controls defrosting during heating operation 1) Frequency control 2) LEV1 is controlled according to the amount of subcool at the heat exchanger outlet, which is calculated based on the HPS data and TH3 value.		
	TH7 (Water inlet temperature)		1) Detects water inlet temperature 2) Protects water heat exchanger from high and low temperatures 3) Controls water heat exchanger		
	TH8 (Water outlet temperature)		1) Detects water inlet temperature 2) Protects water heat exchanger from freezing up		
	TH5		Water heat exchanger is controlled based on the 63LS and TH5 values.		
	TH6	PQHY only	LEV1 is controlled based on the TH2, TH3, and TH6 values		
	THINV		Determines the LEV that controls refrigerant flow on the component cooler		
	THHS Inverter heat sink temperature		Controls inverter cooling fan based on THHS temperature	Degrees Celsius $R_{50} = 17k\Omega$ $R_{25/120} = 4016$ $R_t = 17 \exp\{4016 (\frac{1}{273+t} - \frac{1}{323})\}$ 0°C[32°F]: 161kohm 10°C[50°F]: 97kohm 20°C[68°F]: 60kohm 25°C[77°F]: 48kohm 30°C[86°F]: 39kohm 40°C[104°F]: 25kohm	

Part name	Symbols (functions)	Notes	Usage	Specifications	Check method
Solenoid valve	SV1a Discharge-suction bypass		1) High/low pressure bypass at start-up and stopping, and capacity control during low-load operation 2) High-pressure-rise prevention	AC220 - 240V Open while being powered/ closed while not being powered	Continuity check with a tester
	SV4a, SV4b, SV4d Heat exchanger capacity control	PQRY only	Controls heat source unit heat exchanger capacity		
	SV7a,7b Heat exchanger capacity control		Controls heat source unit heat exchanger capacity	AC220 - 240V Open while being powered/ closed while not being powered	
	SV7c Heat exchanger capacity control	P350 P400 P450 P500 P550 P600 models only	Controls heat source unit heat exchanger capacity	AC220 - 240V Open while being powered/ closed while not being powered	
	SV9	PQRY only	High-pressure-rise prevention	AC220 - 240V Closed while being powered/ open while not being powered	
Heater	CH11		Heats the refrigerant in the compressor	Cord heater 1280 ohm 45W	Resistance check
4-way valve	21S4a		Changeover between heating and cooling	AC220-240V Dead: cooling cycle Live: heating cycle	Continuity check with a tester
	21S4b	P350 P400 P450 P500 P550 P600 models only			
Electronic expansion valve	LEVINV		Controlling the refrigerant flow in the inverter cooling heat exchanger	12 VDC Stepping motor driven valve opening 0-480 pulses (direct driven)	Same as with the indoor LEV. The resistance values differs from that of the LEVs on indoor unit. (Refer to the section on Troubleshooting the LEV(page 352))
	LEV1 (for SC control)	PQHY only	Regulates the amount of bypass flow from the heat source unit liquid pipe during cooling		
	LEV6		Controls heat source unit heat exchanger capacity	12 VDC Stepping motor driven valve opening 41 - 3000 pulses	Refer to the section "Continuity Test with a Tester". Continuity between white and orange. Continuity between yellow, brown, and blue.
	LEV7				

