Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS
SPLIT-TYPE, AIR CONDITIONERS

2003

No. OC289

TECHNICAL & SERVICE MANUAL

Series PCA Ceiling Suspended R407C

Indoor unit
[Model names]

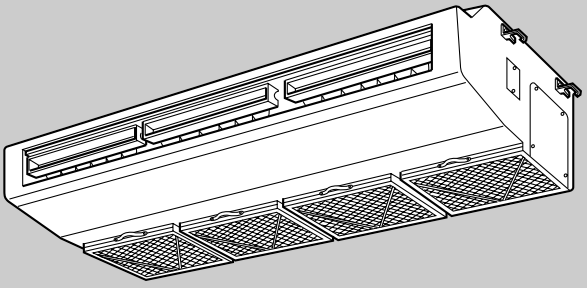
PCA-P3HA

PCA-P5HA

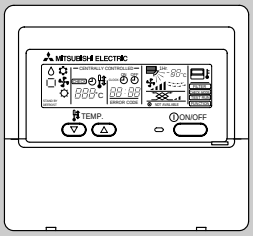
[Service Ref.]

PCA-P3HA
PCA-P5HA

- Refer to the OCT03 REVISED EDITION-E as regarding control relation.
- This manual does not cover outdoor units.When serving them, please refer to the service manual No.OC261 REVISED EDITION-B and this manual in a set.



INDOOR UNIT



REMOTE CONTROLLER

CONTENTS

Mr.SLIM™

1 SAFETY PRECAUTION

Cautions for using with the outdoor unit which adopts R407C refrigerant.

· **Do not use the existing refrigerant piping.**
-The old refrigerant and refrigerant oil in the existing piping contains a large amount of chlorine which may cause the refrigerant oil of the new unit to deteriorate.

· **Do not use copper pipes which are broken, deformed or discolour .**
In addition, be sure that the inner surfaces of the pipes are clean, free of hazardous sulphur and oxides, or have no dust / dirt, shaving particles, oils, moisture or any other contamination.
-If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the refrigerant oil will result.

· **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
-If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.

· **Use ester oil, ether oil or alkyl benzene (small amount) as the refrigerant oil to coat flares and flange connections.**
-The refrigerant oil will degrade if it is mixed with a large amount of mineral oil.

Use liquid refrigerant to fill the system.
-If gas refrigerant is used to fill the system, the composition of the refrigerant in the cylinder will change and performance may drop.

· **Do not use a refrigerant other than R407C.**
-If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerant oil to deteriorate.

· **Use a vacuum pump with a reverse flow check valve.**
-The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerant oil to deteriorate.

· **Do not use the following tools that are used with conventional refrigerant.**
(Gauge manifold , charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment)
-If the conventional refrigerant and refrigerant oil are mixed in the R407C, the refrigerant may deteriorated.
-If water is mixed in the R407C, the refrigerant oil may deteriorate.
-Since R407C does not contain any chlorine, gas leak detectors for conventional refrigerant will not react to it.

· **Do not use a charging cylinder.**
-Using a charging cylinder may cause the refrigerant to deteriorate.

· **Be especially careful when managing the tools.**
-if dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.

· **Do not use the drier which is sold in the field.**
-The drier for R407C refrigerant is per-attached to outdoor unit refrigerant circuit.
-Some drier in the field are not in conformity with R407C refrigerant .

[1] Service tools

Use the below service tools as exclusive tools for R407C refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	·Only for R407C.
		·Use the existing fitting SPECIFICATIONS. (UNF7/16)
		·Use high-tension side pressure of 3.43MPa or over.
②	Charge hose	·Only for R407C.
		·Use pressure performance of 5.10MPa or over.
③	Electronic scale	
④	Gas leak detector	·Use the detector for R407C.
⑤	Adapter for reverse flow check.	·Attach on vacuum pump.
⑥	Refrigerant charge base.	
⑦	Refrigerant cylinder.	·For R407C ·Top of cylinder (Brown) ·Cylinder with syphon
⑧	Refrigerant recovery equipment.	

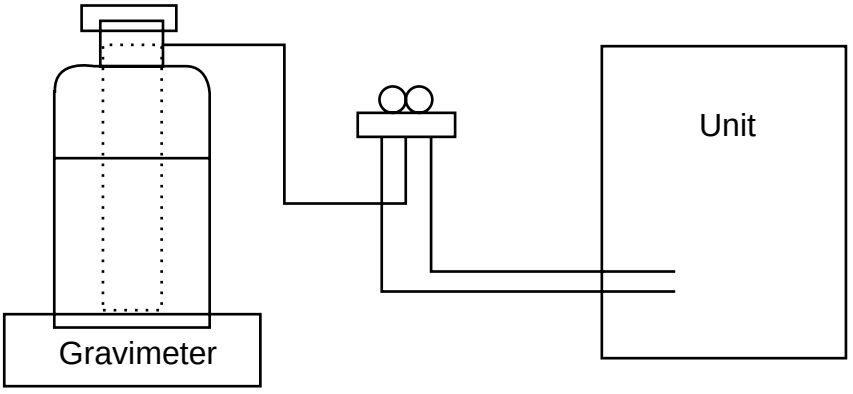
[2] Notice on repair service

·After recovering the all refrigerant in the unit, proceed to working.
·Do not release refrigerant in the air.
·After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[3] Refrigerant recharging

(1) Refrigerant recharging process

①Direct charging from the cylinder.
·R407C cylinder are available on the market has a syphon pipe.
·Leave the syphon pipe cylinder standing and recharge it.
(By liquid refrigerant)

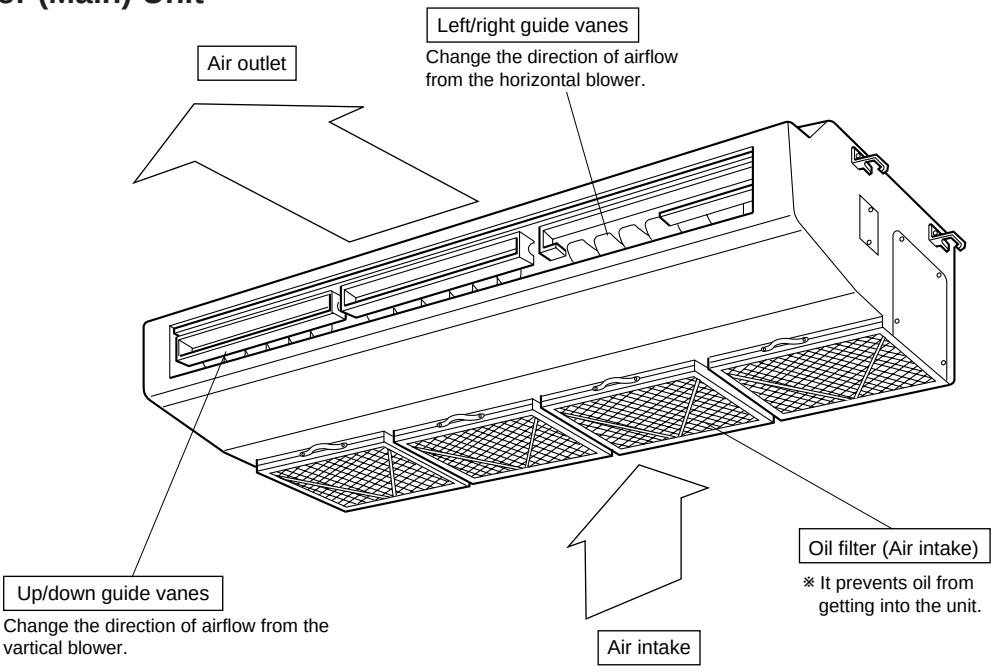


(2) Recharge in refrigerant leakage case

·After recovering the all refrigerant in the unit, proceed to working.
·Do not release the refrigerant in the air.
·After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

2 PART NAMES AND FUNCTIONS

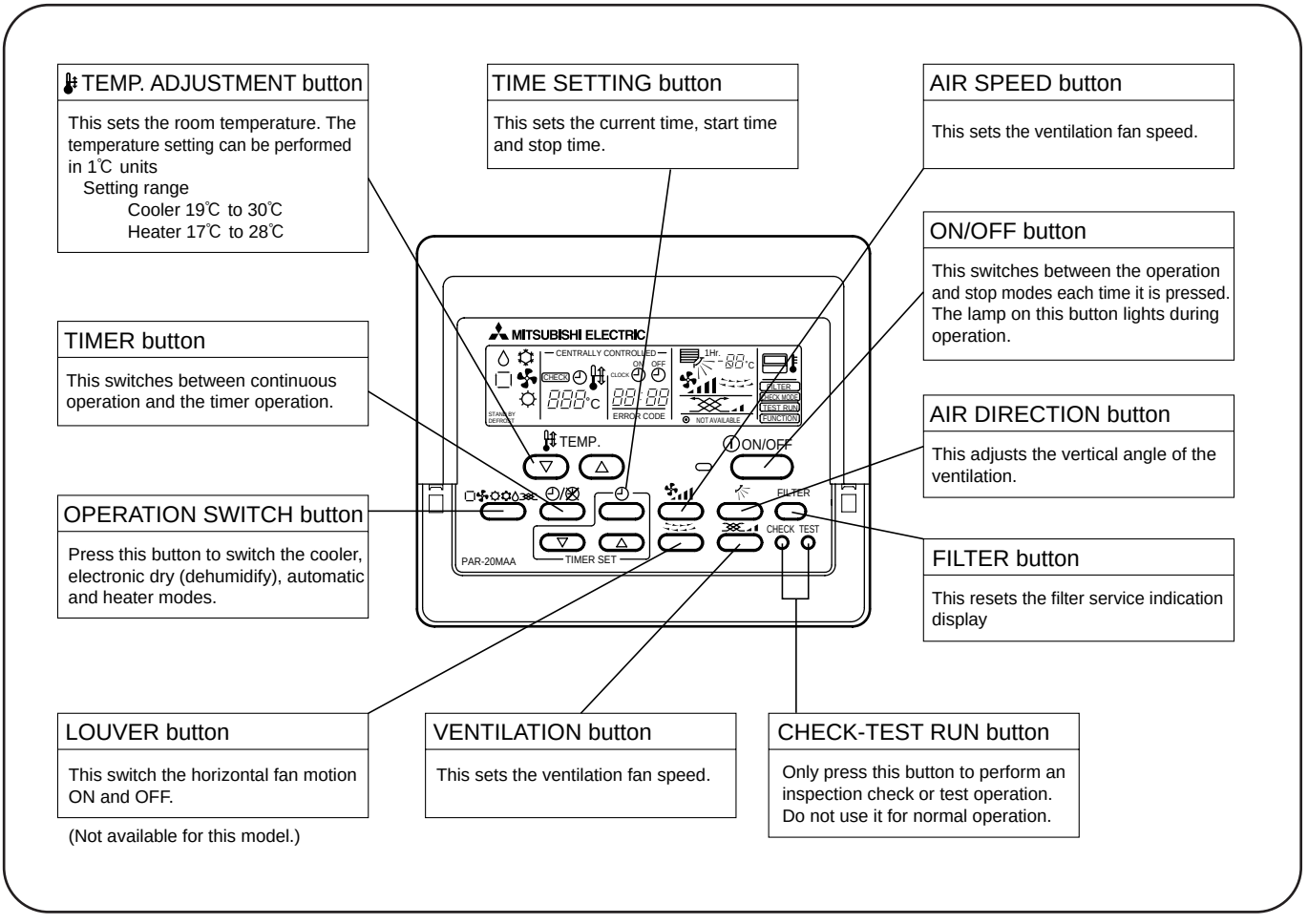
● Indoor (Main) Unit



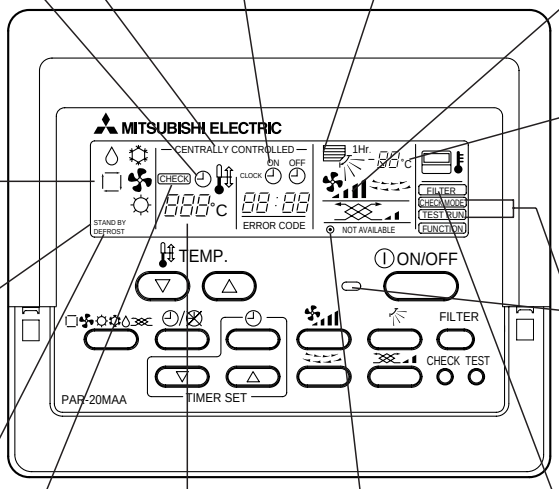
● Remote controller

Once the controls are set, the same operation mode can be repeated by simply pressing the ON/OFF button.

● Operation buttons



● Display



CENTRALLY CONTROLLED display

This indicates when the unit is controlled by optional features such as central control type remote controller.

CLOCK display

The current time , start time and stop time can be displayed in ten second intervals by pressing the time switch button. The start time or stop time is always displayed during the timer operation.

In this display example on the bottom left, a condition where all display lamps light is shown for explanation purposes although this differs from actual operation.

AIR DIRECTION display

This displays the air direction.

TIMER display

This indicates when the continuous operation and time operation modes are set.
It also display the time for the timer operation at the same time as when it is set.

FAN SPEED display

The selected fan speed is displayed.

ROOM TEMPERATURE display

The temperature of the suction air is displayed during operation. The display range is 8° to 39°C. The display flashes 8°C when the actual temperature is less than 8° and flashes 39°C when the actual temperature is greater than 39°C.

OPERATION MODE display

This indicates the operation mode.

STANDBY display

This indicates when the standby mode is set from the time the sleep operation starts until the heating air is discharged.

Operation lamp

This lamp lights during operation, goes off when the unit stops and flashes when a malfunction occurs.

CHECK MODE / TEST RUN display

This display lights in the check mode or when a test operation is performed.

DEFROST display

This indicates when the defrost operation is performed.

FILTER display

This lamp lights when the filter need to be cleaned.

CHECK display

This indicates when a malfunction has occurred in the unit which should be checked.

SET TEMPERATURE display

This displays the selected setting temperature.

POWER display

This lamp lights when electricity is supplied to the unit.

Caution

- Only the Power display lights when the unit is stopped and power supplied to the unit.
- When power is turned ON for the first time the (CENTRAL CTRL) display appears to go off momentarily but this is not a malfunction.
- When the central control remote control unit, which is sold separately, is used the ON-OFF button, operation switch button and TEMP. adjustment button do not operate.
- “NOT AVAILABLE” is displayed when the Air speed button are pressed.This indicates that this room unit is not equipped with the fan direction adjustment function and the louver function.
- When power is turned ON for the first time, it is normal that “H0” is displayed on the room temperature indication (For max. 2minutes). Please wait until this “H0” indication disappear then start the operation.

3 SPECIFICATIONS

1. Heat pump type Rating Conditions (ISO T1)

	Item / Service Ref.			PCA-P3HA	
Function				Cooling	Heating
Capacity			Btu/h	25,600	31,400
			W	7,500	9,200
Total input			kW	3.36	3.41
INDOOR UNIT	**Service Ref.**			**PCA-P3HA**	
	Power supply			Single phase, 50Hz, 220-230-240V	
		Input	kW	0.09	0.09
		Running current	A	0.43	0.43
		Starting current	A	0.86	0.86
	External finish			Stainless steel	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Sirocco (direct) x 2	
		Fan motor output	kW	0.04	
		Airflow(Lo-Hi)	m³/min(CFM)	17-19 <600-670>	
		External static pressure	Pa(mmAq)	0 (direct blow)	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Lo-Hi)		dB	34-38	
	Unit drain pipe I.D.		mm(in.)	26(1)	
	Dimensions	W	mm(in.)	1,136(44-3/4)	
		D	mm(in.)	650(25-5/8)	
		H	mm(in.)	280(11)	
	Weight		kg(lbs)	41(90)	
OUTDOOR UNIT	**Service Ref.**			**PUH-P3VGAA1.UK / PUH-P3YGAA1.UK**	
	Power supply			Single phase, 50Hz, 220-230-240V / 3 phase, 50Hz, 380-400-415V (4wires)	
		Running current	A	14.83 / 4.96	14.85/ 5.04
		Starting current	A	93 / 47	
	External finish			Munsell 5Y 7/1	
	Refrigerant control			Linear Expansion Valve	
	Compressor			Hermetic	
		Model		NE52VNJMT / NE52YDKMT	
		Motor output	kW	2.5	
		Starter type		Line start	
		Protection devices		Inner thermostat, HP switch, Discharge thermo. / Anti-phase protector, Thermal relay, HP switch, Discharge thermo.	
	Crankcase heater		W	38	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Propeller (direct) x 1	
		Fan motor output	kW	0.070	
		Airflow	m³/min(CFM)	50(1,770)	
	Defrost method			Reverse cycle	
	Noise level	Cooling	dB	49	
		Heating	dB	51	
	Dimensions	W	mm(in.)	900(35-7/16)	
		D	mm(in.)	330+20(13+3/4)	
		H	mm(in.)	855(33-5/8)	
	Weight		kg(lbs)	79(174)	
REFRIGERANT PIPING	Refrigerant			R407C	
		Charge	kg(lbs)	3.3(7.3)	
		Oil (Model)	L	1.3 (Ester) MEL56	
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)	
		Gas	mm(in.)	15.88(5/8)	
	Connection method	Indoor side		Flared	
		Outdoor side		Flared	
	Between the indoor & outdoor unit	Height difference		Max. 50m	
		Piping length		Max. 50m	

Notes1. Rating Conditions (ISO T1)
Cooling : Indoor : D.B. 27˚C(80˚F), W.B. 19˚C (66˚F) Outdoor : D.B. 35˚C(95˚F), W.B. 24˚C (75˚F)
Heating : Indoor : D.B. 20˚C(68˚F) Outdoor : D.B. 7˚C(45˚F), W.B. 6˚C (43˚F)
Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35˚C, W.B. 22.5˚C	D.B. 46˚C
	Lower limit	D.B. 19˚C, W.B. 15˚C	D.B. -5˚C
Heating	Upper limit	D.B. 28˚C	D.B. 24˚C, W.B. 18˚C
	Lower limit	D.B. 17˚C	D.B. -11˚C, W.B. -12˚C

3. Above data based on indicated voltage
Indoor Unit Single phase 230V 50Hz
Outdoor Unit Single phase 230V 50Hz / 3 phase 400V 50Hz

Rating Conditions (ISO T1)

Item \ Service Ref.				PCA-P5HA	
Function				Cooling	Heating
Capacity			Btu/h	44,400	54,600
			W	13,000	16,000
Total input			kW	4.90	4,98
INDOOR UNIT	**Service Ref.**			**PCA-P5HA**	
	Power supply			Single phase, 50Hz, 220-230-240V	
		Input	kW	0.26	0.26
		Running current	A	1.19	1.19
		Starting current	A	2.38	2.38
	External finish			Stainless steel	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Sirocco (direct) x 4	
		Fan motor output	kW	0.08+0.08	
		Airflow(Lo-Hi)	m³/min(CFM)	30-38 <1,060-1,350>	
		External static pressure	Pa(mmAq)	0 (direct blow)	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Lo-Hi)		dB	44-50	
	Unit drain pipe I.D.		mm(in.)	26(1)	
	Dimensions	W	mm(in.)	1,520(59-7/8)	
		D	mm(in.)	650(25-5/8)	
		H	mm(in.)	280(11)	
	Weight		kg(lbs)	56(124)	
OUTDOOR UNIT	**Service Ref.**			**PUH-P5YGAA1.UK**	
	Power supply			3 phase, 50Hz, 380-400-415V (4wires)	
		Running current	A	6.85	7.07
		Starting current	A	65.5	
	External finish			Munsell 5Y 7/1	
	Refrigerant control			Linear Expansion Valve	
	Compressor			Hermetic	
		Model		ZR61KCW-TFD	
		Motor output	kW	3.5	
		Starter type		Line start	
		Protection devices		Anti-phase protector, Internal thermostat, HP switch,Thermal relay, Discharge thermo	
	Crankcase heater		W	38	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Propeller (direct) x 2	
		Fan motor output	kW	0.070+0.070	
		Airflow	m³/min(CFM)	95(3,360)	
	Defrost method			Reverse cycle	
	Noise level	Cooling	dB	55	
		Heating	dB	56	
	Dimensions	W	mm(in.)	1,050(41-5/16)	
		D	mm(in.)	330+20(13+3/4)	
		H	mm(in.)	1,260(49-5/8)	
	Weight		kg(lbs)	112(247)	
REFRIGERANT PIPING	Refrigerant			R407C	
		Charge	kg(lbs)	4.6(10.1)	
		Oil (Model)	L	1.690 (Ester) 3MAW-POE	
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)	
		Gas	mm(in.)	19.05(3/4)	
	Connection method	Indoor side		Flared	
		Outdoor side		Flared	
	Between the indoor & outdoor unit	Height difference		Max. 50m	
		Piping length		Max. 50m	

Notes1. Rating Conditions (ISO T1)
Cooling : Indoor : D.B. 27˚C(80˚F), W.B. 19˚C (66˚F) Outdoor : D.B. 35˚C(95˚F), W.B. 24˚C (75˚F)
Heating : Indoor : D.B. 20˚C(68˚F) Outdoor : D.B. 7˚C(45˚F), W.B. 6˚C (43˚F)
Refrigerant piping length (one way) : 5m (16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35˚C, W.B. 22.5˚C	D.B. 46˚C
	Lower limit	D.B. 19˚C, W.B. 15˚C	D.B. -5˚C
Heating	Upper limit	D.B. 28˚C	D.B. 24˚C, W.B. 18˚C
	Lower limit	D.B. 17˚C	D.B. -11˚C, W.B. -12˚C

3. Above data based on indicated voltage
Indoor Unit Single phase 230V 50Hz
Outdoor Unit 3 phase 400V 50Hz

Rating Conditions (ISO T1)

Item \ Service Ref.					**PCA-P3HA**
Function					Cooling
Capacity				Btu/h	25,600
				W	7,500
Total input				kW	3.36
INDOOR UNIT	**Service Ref.**				**PCA-P3HA**
	Power supply				Single phase, 50Hz, 220-230-240V
		Input		kW	0.09
		Running current		A	0.41
		Starting current		A	0.86
	External finish				Stainless steel
	Heat exchanger				Plate fin coil
	Fan	Fan(drive) x No.			Sirocco (direct) X 2
		Fan motor output		kW	0.04
		Airflow(Lo-Hi)		m³/min <CFM>	17-19 <600-670>
		External static pressure		Pa(mmAq)	0 (direct blow)
	Operation control & Thermostat				Remote controller & built-in
	Noise level(Lo-Hi)			dB	34-38
	Unit drain pipe I.D.			mm(in.)	26(1)
	Dimensions		W	mm(in.)	1,136(44-3/4)
			D	mm(in.)	650(25-5/8)
			H	mm(in.)	280(11)
	Weight			kg(lbs)	41(90)
OUTDOOR UNIT	**Service Ref.**				**PU-P3VGAA1.UK / PU-P3YGAA1.UK**
	Power supply				Single-phase, 50Hz, 220-230-240V / 3-phase, 50Hz, 380-400-415V (4wires)
		Running current		A	14.02 / 4.78
		Starting current		A	93 / 47
	External finish				Munsell 5Y 7/1
	Refrigerant control				Linear Expansion Valve
	Compressor				Hermetic
		Model			NE52VNJMT / NE52YDKMT
		Motor output		KW	2.5
		Starter type			Line start
		Protection devices			Inner thermostat, HP switch, Discharge thermo / Anti-phase protector, Thermal relay, HP switch, Discharge thermo
	Crankcase heater			W	38
	Heat exchanger				Plate fin coil
	Fan	Fan(drive) x No.			Propeller (direct) X 1
		Fan motor output		kW	0.070
		Airflow		m³/min <CFM>	50(1,770)
	Defrost method				—
	Noise level		Cooling	dB	49
	Dimensions		W	mm(in.)	900(35-7/16)
			D	mm(in.)	330+20(13+3/4)
			H	mm(in.)	855(33-5/8)
	Weight			kg(lbs)	79(174)
REFRIGERANT PIPING	Refrigerant				R407C
		Charge		kg(lbs)	3.3(7.3)
		Compressor oil (Model)		L	1.3 (Ester) MEL56
	Pipe size O.D.		Liquid	mm(in.)	9.52(3/8)
			Gas	mm(in.)	15.88(5/8)
	Connection method		Indoor side		Flared
			Outdoor side		Flared
	Between the indoor & outdoor unit		Height difference		Max. 50m
			Piping length		Max. 50m

Notes1. Rating Conditions (ISO T1)

Cooling : Indoor : D.B. 27℃(80°F), W.B. 19℃(66°F)

Outdoor : D.B. 35℃(95°F), W.B. 24℃(75°F)

Refrigerant piping length (one way) : 5m(16ft)

2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35℃, D.B. 22.5℃	D.B. 46℃
	Lower limit	D.B. 19℃, D.B. 15℃	D.B. -5℃

3. Above data based on indicated voltage

Indoor Unit Single phase 230V 50Hz

Outdoor Unit Single phase 230V 50Hz / 3 phase 400V 50Hz

Rating Conditions (ISO T1)

	Item / Service Ref.			PCA-P5HA
	Function			Cooling
	Capacity		Btu/h	44,400
			W	13,000
	Total input		kW	4.90
INDOOR UNIT	**Service Ref.**			**PCA-P5HA**
	Power supply			Single phase, 50Hz, 220-230-240V
		Input	kW	0.26
		Running current	A	1.19
		Starting current	A	2.38
	External finish			Stainless steel
	Heat exchanger			Plate fin coil
	Fan	Fan(drive) x No.		Sirocco (direct) X 4
		Fan motor output	kW	0.08+0.08
		Airflow(Lo-Hi)	m³/min <CFM>	30-38 <1,060-1,350>
		External static pressure	Pa(mmAq)	0 (direct blow)
	Operation control & Thermostat			Remote controller & built-in
	Noise level(Lo-Hi)		dB	44-50
	Unit drain pipe I.D.		mm(in.)	26(1)
	Dimensions	W	mm(in.)	1,520(59-7/8)
		D	mm(in.)	650(25-5/8)
		H	mm(in.)	280(11)
	Weight		kg(lbs)	56(124)
OUTDOOR UNIT	**Service Ref.**			**PU-P5YGAA1.UK**
	Power supply			3-phase, 50Hz, 380-400-415V (4wires)
		Running current	A	6.85
		Starting current	A	65.5
	External finish			Munsell 5Y 7/1
	Refrigerant control			Linear Expansion Valve
	Compressor			Hermetic
		Model		ZR61KCW-TFD
		Motor output	KW	3.5
		Starter type		Line start
		Protection devices		Anti-phase protector, Internal thermostat, HP switch, Thermal relay, Discharge thermo
	Crankcase heater		W	38
	Heat exchanger			Plate fin coil
	Fan	Fan(drive) x No.		Propeller (direct) X 2
		Fan motor output	kW	0.070+0.070
		Airflow	m³/min <CFM>	95(3,360)
	Defrost method			—
	Noise level		dB	55
	Dimensions	Cooling	mm(in.)	1,050(41-5/16)
		W	mm(in.)	330+20(13+3/4)
		D	mm(in.)	1,260(49-5/8)
	Weight	H	kg(lbs)	112(247)
REFRIGERANT PIPING	Refrigerant			R407C
		Charge	kg(lbs)	4.6(10.1)
		Compressor oil (Model)	L	1.690 (Ester) 3MAW-POE
	Pipe size O.D.	Liquid	mm(in.)	9.52(3/8)
		Gas	mm(in.)	19.05(3/4)
	Connection method	Indoor side		Flared
		Outdoor side		Flared
	Between the indoor & outdoor unit	Height difference		Max. 50m
		Piping length		Max. 50m

Notes1. Rating Conditions (ISO T1)
Cooling : Indoor : D.B. 27℃(80°F), W.B. 19℃(66°F)
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2. Guaranteed operating range

		Indoor	Outdoor
Cooling	Upper limit	D.B. 35℃, D.B. 22.5℃	D.B. 46℃
	Lower limit	D.B. 19℃, D.B. 15℃	D.B. -5℃

3. Above data based on indicated voltage
Indoor Unit Single phase 230V 50Hz
Outdoor Unit 3 phase 400V 50Hz

4 DATA

1. PERFORMANCE DATA (240V)

1) COOLING CAPACITY<1>

PCA-P3HA

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		20				25				30			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	7,425	4,604	0.62	2.69	7,200	4,464	0.62	2.84	6,975	4,325	0.62	3.01
20	18	7,950	3,975	0.50	2.74	7,725	3,863	0.50	2.89	7,463	3,731	0.50	3.09
20	20	8,550	3,249	0.38	2.82	8,363	3,178	0.38	2.96	8,138	3,092	0.38	3.16
22	16	7,425	5,198	0.70	2.69	7,200	5,040	0.70	2.84	6,975	4,883	0.70	3.01
22	18	7,950	4,611	0.58	2.74	7,725	4,481	0.58	2.89	7,463	4,328	0.58	3.09
22	20	8,550	3,933	0.46	2.82	8,363	3,847	0.46	2.96	8,138	3,743	0.46	3.16
24	16	7,425	5,792	0.78	2.69	7,200	5,616	0.78	2.84	6,975	5,441	0.78	3.01
24	18	7,950	5,247	0.66	2.74	7,725	5,099	0.66	2.89	7,463	4,925	0.66	3.09
24	20	8,550	4,617	0.54	2.82	8,363	4,516	0.54	2.96	8,138	4,394	0.54	3.16
26	16	7,425	6,386	0.86	2.69	7,200	6,192	0.86	2.84	6,975	5,999	0.86	3.01
26	18	7,950	5,883	0.74	2.74	7,725	5,717	0.74	2.89	7,463	5,522	0.74	3.09
26	20	8,550	5,301	0.62	2.82	8,363	5,185	0.62	2.96	8,138	5,045	0.62	3.16
28	16	7,425	6,980	0.94	2.69	7,200	6,768	0.94	2.84	6,975	6,557	0.94	3.01
28	18	7,950	6,519	0.82	2.74	7,725	6,335	0.82	2.89	7,463	6,119	0.82	3.09
28	20	8,550	5,985	0.70	2.82	8,363	5,854	0.70	2.96	8,138	5,696	0.70	3.16
30	16	7,425	7,425	1.00	2.69	7,200	7,200	1.00	2.84	6,975	6,975	1.00	3.01
30	18	7,950	7,155	0.90	2.74	7,725	6,953	0.90	2.89	7,463	6,716	0.90	3.09
30	20	8,550	6,669	0.78	2.82	8,363	6,523	0.78	2.96	8,138	6,347	0.78	3.16
32	16	7,425	7,425	1.00	2.69	7,200	7,200	1.00	2.84	6,975	6,975	1.00	3.01
32	18	7,950	7,791	0.98	2.74	7,725	7,571	0.98	2.89	7,463	7,313	0.98	3.09
32	20	8,550	7,353	0.86	2.82	8,363	7,192	0.86	2.96	8,138	6,998	0.86	3.16
34	16	7,425	7,425	1.00	2.69	7,200	7,200	1.00	2.84	6,975	6,975	1.00	3.01
34	18	7,950	7,950	1.00	2.74	7,725	7,725	1.00	2.89	7,463	7,463	1.00	3.09
34	20	8,550	8,037	0.94	2.82	8,363	7,861	0.94	2.96	8,138	7,649	0.94	3.16

Notes CA : Capacity (W) SHC(W) : Sensible heat capacity
P.C. : Power consumption (kW) SHF : Sensible heat factor

COOLING CAPACITY<2>
PCA-P3HA

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		35				40				45			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	6,675	4,139	0.62	3.23	6,375	3,953	0.62	3.46	6,075	3,767	0.62	3.75
20	18	7,200	3,600	0.50	3.31	6,975	3,488	0.50	3.56	6,525	3,263	0.50	3.83
20	20	7,800	2,964	0.38	3.39	7,500	2,850	0.38	3.63	7,050	2,679	0.38	3.90
22	16	6,675	4,673	0.70	3.23	6,375	4,463	0.70	3.46	6,075	4,253	0.70	3.75
22	18	7,200	4,176	0.58	3.31	6,975	4,046	0.58	3.56	6,525	3,785	0.58	3.83
22	20	7,800	3,588	0.46	3.39	7,500	3,450	0.46	3.63	7,050	3,243	0.46	3.90
24	16	6,675	5,207	0.78	3.23	6,375	4,973	0.78	3.46	6,075	4,739	0.78	3.75
24	18	7,200	4,752	0.66	3.31	6,975	4,604	0.66	3.56	6,525	4,307	0.66	3.83
24	20	7,800	4,212	0.54	3.39	7,500	4,050	0.54	3.63	7,050	3,807	0.54	3.90
26	16	6,675	5,741	0.86	3.23	6,375	5,483	0.86	3.46	6,075	5,225	0.86	3.75
26	18	7,200	5,328	0.74	3.31	6,975	5,162	0.74	3.56	6,525	4,829	0.74	3.83
26	20	7,800	4,836	0.62	3.39	7,500	4,650	0.62	3.63	7,050	4,371	0.62	3.90
28	16	6,675	6,275	0.94	3.23	6,375	5,993	0.94	3.46	6,075	5,711	0.94	3.75
28	18	7,200	5,904	0.82	3.31	6,975	5,720	0.82	3.56	6,525	5,351	0.82	3.83
28	20	7,800	5,460	0.70	3.39	7,500	5,250	0.70	3.63	7,050	4,935	0.70	3.90
30	16	6,675	6,675	1.00	3.23	6,375	6,375	1.00	3.46	6,075	6,075	1.00	3.75
30	18	7,200	6,480	0.90	3.31	6,975	6,278	0.90	3.56	6,525	5,873	0.90	3.83
30	20	7,800	6,084	0.78	3.39	7,500	5,850	0.78	3.63	7,050	5,499	0.78	3.90
32	16	6,675	6,675	1.00	3.23	6,375	6,375	1.00	3.46	6,075	6,075	1.00	3.75
32	18	7,200	7,056	0.98	3.31	6,975	6,836	0.98	3.56	6,525	6,395	0.98	3.83
32	20	7,800	6,708	0.86	3.39	7,500	6,450	0.86	3.63	7,050	6,063	0.86	3.90
34	16	6,675	6,675	1.00	3.23	6,375	6,375	1.00	3.46	6,075	6,075	1.00	3.75
34	18	7,200	7,200	1.00	3.31	6,975	6,975	1.00	3.56	6,525	6,525	1.00	3.83
34	20	7,800	7,332	0.94	3.39	7,500	7,050	0.94	3.63	7,050	6,627	0.94	3.90

Notes CA : Capacity (W) SHC(W) : Sensible heat capacity
P.C. : Power consumption (kW) SHF : Sensible heat factor

COOLING CAPACITY<3>
PCA-P5HA

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		20				25				30			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	12,870	8,366	0.65	3.92	12,480	8,112	0.65	4.14	12,090	7,859	0.65	4.39
20	18	13,780	7,303	0.53	3.99	13,390	7,097	0.53	4.21	12,935	6,856	0.53	4.51
20	20	14,820	6,076	0.41	4.12	14,495	5,943	0.41	4.31	14,105	5,783	0.41	4.61
22	16	12,870	9,395	0.73	3.92	12,480	9,110	0.73	4.14	12,090	8,826	0.73	4.39
22	18	13,780	8,406	0.61	3.99	13,390	8,168	0.61	4.21	12,935	7,890	0.61	4.51
22	20	14,820	7,262	0.49	4.12	14,495	7,103	0.49	4.31	14,105	6,911	0.49	4.61
24	16	12,870	10,425	0.81	3.92	12,480	10,109	0.81	4.14	12,090	9,793	0.81	4.39
24	18	13,780	9,508	0.69	3.99	13,390	9,239	0.69	4.21	12,935	8,925	0.69	4.51
24	20	14,820	8,447	0.57	4.12	14,495	8,262	0.57	4.31	14,105	8,040	0.57	4.61
26	16	12,870	11,454	0.89	3.92	12,480	11,107	0.89	4.14	12,090	10,760	0.89	4.39
26	18	13,780	10,611	0.77	3.99	13,390	10,310	0.77	4.21	12,935	9,960	0.77	4.51
26	20	14,820	9,633	0.65	4.12	14,495	9,422	0.65	4.31	14,105	9,168	0.65	4.61
28	16	12,870	12,484	0.97	3.92	12,480	12,106	0.97	4.14	12,090	11,727	0.97	4.39
28	18	13,780	11,713	0.85	3.99	13,390	11,382	0.85	4.21	12,935	10,995	0.85	4.51
28	20	14,820	10,819	0.73	4.12	14,495	10,581	0.73	4.31	14,105	10,297	0.73	4.61
30	16	12,870	12,870	1.00	3.92	12,480	12,480	1.00	4.14	12,090	12,090	1.00	4.39
30	18	13,780	12,815	0.93	3.99	13,390	12,453	0.93	4.21	12,935	12,030	0.93	4.51
30	20	14,820	12,004	0.81	4.12	14,495	11,741	0.81	4.31	14,105	11,425	0.81	4.61
32	16	12,870	12,870	1.00	3.92	12,480	12,480	1.00	4.14	12,090	12,090	1.00	4.39
32	18	13,780	13,780	1.00	3.99	13,390	13,390	1.00	4.21	12,935	12,935	1.00	4.51
32	20	14,820	13,190	0.89	4.12	14,495	12,901	0.89	4.31	14,105	12,553	0.89	4.61
34	16	12,870	12,870	1.00	3.92	12,480	12,480	1.00	4.14	12,090	12,090	1.00	4.39
34	18	13,780	13,780	1.00	3.99	13,390	13,390	1.00	4.21	12,935	12,935	1.00	4.51
34	20	14,820	14,375	0.97	4.12	14,495	14,060	0.97	4.31	14,105	13,682	0.97	4.61

Notes CA : Capacity (W) SHC(W) : Sensible heat capacity
P.C. : Power consumption (kW) SHF : Sensible heat factor

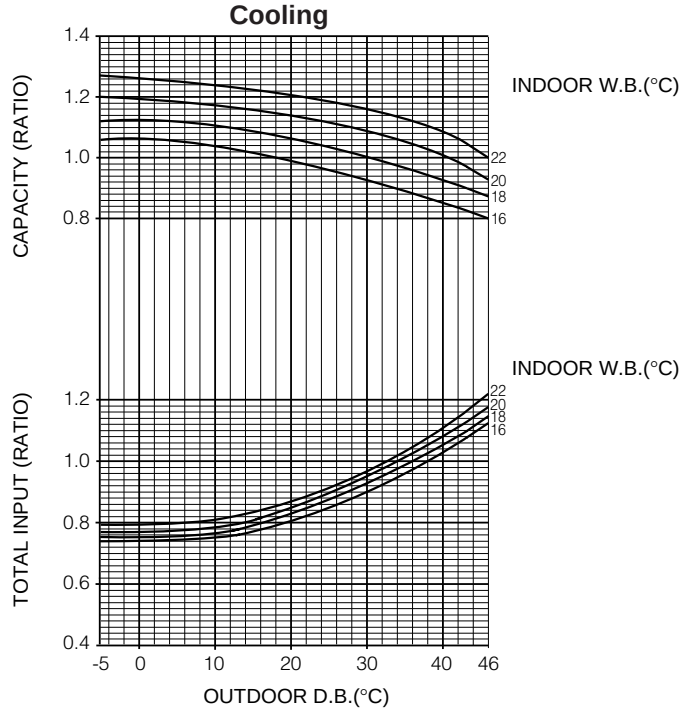
COOLING CAPACITY<4>
PCA-P5HA

Indoor Intake air D.B.(°C)	Indoor Intake air W.B.(°C)	Outdoor intake air D.B.(°C)											
		35				40				45			
		CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.	CA	SHC(W)	SHF	P.C.
20	16	11,570	7,521	0.65	4.70	11,050	7,183	0.65	5.05	10,530	6,845	0.65	5.46
20	18	12,480	6,614	0.53	4.83	12,090	6,408	0.53	5.19	11,310	5,994	0.53	5.59
20	20	13,520	5,543	0.41	4.95	13,000	5,330	0.41	5.29	12,220	5,010	0.41	5.68
22	16	11,570	8,446	0.73	4.70	11,050	8,067	0.73	5.05	10,530	7,687	0.73	5.46
22	18	12,480	7,613	0.61	4.83	12,090	7,375	0.61	5.19	11,310	6,899	0.61	5.59
22	20	13,520	6,625	0.49	4.95	13,000	6,370	0.49	5.29	12,220	5,988	0.49	5.68
24	16	11,570	9,372	0.81	4.70	11,050	8,951	0.81	5.05	10,530	8,529	0.81	5.46
24	18	12,480	8,611	0.69	4.83	12,090	8,342	0.69	5.19	11,310	7,804	0.69	5.59
24	20	13,520	7,706	0.57	4.95	13,000	7,410	0.57	5.29	12,220	6,965	0.57	5.68
26	16	11,570	10,297	0.89	4.70	11,050	9,835	0.89	5.05	10,530	9,372	0.89	5.46
26	18	12,480	9,610	0.77	4.83	12,090	9,309	0.77	5.19	11,310	8,709	0.77	5.59
26	20	13,520	8,788	0.65	4.95	13,000	8,450	0.65	5.29	12,220	7,943	0.65	5.68
28	16	11,570	11,223	0.97	4.70	11,050	10,719	0.97	5.05	10,530	10,214	0.97	5.46
28	18	12,480	10,608	0.85	4.83	12,090	10,277	0.85	5.19	11,310	9,614	0.85	5.59
28	20	13,520	9,870	0.73	4.95	13,000	9,490	0.73	5.29	12,220	8,921	0.73	5.68
30	16	11,570	11,570	1.00	4.70	11,050	11,050	1.00	5.05	10,530	10,530	1.00	5.46
30	18	12,480	11,606	0.93	4.83	12,090	11,244	0.93	5.19	11,310	10,518	0.93	5.59
30	20	13,520	10,951	0.81	4.95	13,000	10,530	0.81	5.29	12,220	9,898	0.81	5.68
32	16	11,570	11,570	1.00	4.70	11,050	11,050	1.00	5.05	10,530	10,530	1.00	5.46
32	18	12,480	12,480	1.00	4.83	12,090	12,090	1.00	5.19	11,310	11,310	1.00	5.59
32	20	13,520	12,033	0.89	4.95	13,000	11,570	0.89	5.29	12,220	10,876	0.89	5.68
34	16	11,570	11,570	1.00	4.70	11,050	11,050	1.00	5.05	10,530	10,530	1.00	5.46
34	18	12,480	12,480	1.00	4.83	12,090	12,090	1.00	5.19	11,310	11,310	1.00	5.59
34	20	13,520	13,114	0.97	4.95	13,000	12,610	0.97	5.29	12,220	11,853	0.97	5.68

Notes CA : Capacity (W) SHC(W) : Sensible heat capacity
P.C. : Power consumption (kW) SHF : Sensible heat factor

Cooling capacity correction factors

Service Ref.	Refrigerant piping length (one way)									
	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
PCA-P3HA	1.00	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PCA-P5HA	1.00	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874



2) HEATING CAPACITY

Service Ref.	Indoor Intake air D.B.(°C)	Outdoor intake air W.B.(°C)											
		-10		-5		0		5		10		15	
		CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.	CA	P.C.
PCA-P3HA	15	5,842	2.01	6,348	2.22	7,084	2.56	9,292	3.07	10,488	3.41	11,684	3.68
	20	5,612	2.18	6,072	2.39	6,716	2.76	8,970	3.31	10,120	3.68	11,270	3.96
	25	5,428	2.32	5,888	2.59	6,440	3.00	8,464	3.51	9,752	3.94	10,856	4.25
PCA-P5HA	15	10,160	2.94	11,040	3.24	12,320	3.74	16,160	4.48	18,240	4.98	20,320	5.38
	20	9,760	3.19	10,560	3.49	11,680	4.03	15,600	4.83	17,600	5.38	19,600	5.78
	25	9,440	3.39	10,240	3.78	11,200	4.38	14,720	5.13	16,960	5.75	18,880	6.20

Notes CA : Capacity (W)
P.C. : Power consumption (kW)

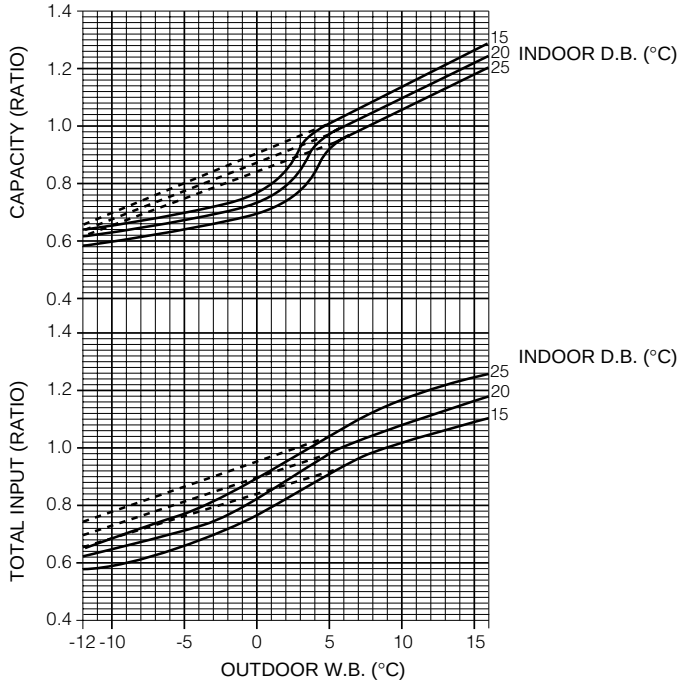
Heating capacity correction factors

Service Ref.	Refrigerant piping length (one way)									
	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
PCA-P3HA	1.00	0.998	0.995	0.993	0.990	0.988	0.985	0.983	0.980	0.978
PCA-P5HA	1.00	0.998	0.995	0.993	0.990	0.988	0.985	0.983	0.980	0.978

Heating

—— Correcting the capacity line influenced by frosting.

– – – Not correcting the capacity line influenced by frosting.



2. ELECTRICAL DATA

2.1. Heat pump type

Rating Conditions (ISO T1)

Indoor·····220V 50Hz Single phase
Outdoor····220V 50Hz Singel phase / 380V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA				PCA-P5HA	
	Outdoor unit	PUH-P3VGAA1.UK		PUH-P3YGAA1.UK		PUH-P5YGAA1.UK	
Mode		Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity (W)		7,500	9,200	7,500	9,200	13,000	16,000
Total Input (kW) (In + Out)		3.36	3.41	3.36	3.41	4.90	4.98
Indoor	Input (kW)	0.09	0.09	0.09	0.09	0.26	0.26
Indoor	Current (A)	0.44	0.44	0.44	0.44	1.24	1.24
Outdoor	Current (A)	15.31	15.54	5.23	5.32	7.22	7.46
Outdoor	Starting current (A)	85	85	43	43	65.5	65.5

Indoor·····230V 50Hz Single phase
Outdoor····230V 50Hz Singel phase / 400V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA				PCA-P5HA	
	Outdoor unit	PUH-P3VGAA1.UK		PUH-P3YGAA1.UK		PUH-P5YGAA1.UK	
Mode		Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity (W)		7,500	9,200	7,500	9,200	13,000	16,000
Total Input (kW) (In + Out)		3.36	3.41	3.36	3.41	4.90	4.98
Indoor	Input (kW)	0.09	0.09	0.09	0.09	0.26	0.26
Indoor	Current (A)	0.43	0.43	0.43	0.43	1.19	1.19
Outdoor	Current (A)	14.63	14.85	4.96	5.04	6.85	7.07
Outdoor	Starting current (A)	89	89	45	45	65.5	65.5

Indoor·····240V 50Hz Single phase
Outdoor····240V 50Hz Singel phase / 415V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA				PCA-P5HA	
	Outdoor unit	PUH-P3VGAA1.UK		PUH-P3YGAA1.UK		PUH-P5YGAA1.UK	
Mode		Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity (W)		7,500	9,200	7,500	9,200	13,000	16,000
Total Input (kW) (In + Out)		3.36	3.41	3.36	3.41	4.90	4.98
Indoor	Input (kW)	0.09	0.09	0.09	0.09	0.27	0.27
Indoor	Current (A)	0.41	0.41	0.41	0.41	1.14	1.14
Outdoor	Current (A)	14.02	14.24	4.78	4.86	6.61	6.82
Outdoor	Starting current (A)	93	93	47	47	65.5	65.5

2.2. Cooling only type
Rating Conditions (ISO T1)

Indoor·····220V 50Hz Single phase
Outdoor····220V 50Hz Singel phase / 380V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA		PCA-P5HA
	Outdoor unit	PU-P3VGAA1.UK	PU-P3YGAA1.UK	PU-P5YGAA1.UK
Mode		Cooling	Cooling	Cooling
Capacity (W)		7,500	7,500	13,000
Total Input (kW) (In + Out)		3.36	3.36	4.90
Indoor	Input (kW)	0.09	0.09	0.26
Indoor	Current (A)	0.44	0.44	1.24
Outdoor	Current (A)	15.31	5.23	7.22
Outdoor	Starting current (A)	85	43	65.5

Indoor·····230V 50Hz Single phase
Outdoor····230V 50Hz Singel phase / 400V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA		PCA-P5HA
	Outdoor unit	PU-P3VGAA1.UK	PU-P3YGAA1.UK	PU-P5YGAA1.UK
Mode		Cooling	Cooling	Cooling
Capacity (W)		7,500	7,500	13,000
Total Input (kW) (In + Out)		3.36	3.36	4.90
Indoor	Input (kW)	0.09	0.09	0.26
Indoor	Current (A)	0.43	0.43	1.19
Outdoor	Current (A)	14.63	4.96	6.85
Outdoor	Starting current (A)	89	45	65.5

Indoor·····240V 50Hz Single phase
Outdoor····240V 50Hz Singel phase / 415V 50Hz 3 phase

Service Ref.	Indoor unit	PCA-P3HA		PCA-P5HA
	Outdoor unit	PU-P3VGAA1.UK	PU-P3YGAA1.UK	PU-P5YGAA1.UK
Mode		Cooling	Cooling	Cooling
Capacity (W)		7,500	7,500	13,000
Total Input (kW) (In + Out)		3.36	3.36	4.90
Indoor	Input (kW)	0.09	0.09	0.26
Indoor	Current (A)	0.41	0.41	1.14
Outdoor	Current (A)	14.02	4.78	6.61
Outdoor	Starting current (A)	93	47	65.5

3. STANDARD OPERATION DATA

3.1 Heat pump type

Rating Conditions (ISO T1)

Service Ref.				PCA-P3HA		PCA-P5HA	
Mode				Cooling	Heating	Cooling	Heating
Total	Capacity		W	7,500	9,200	13,000	16,000
	Input		KW	3.36	3.41	4.90	4.98
Electrical circuit	**Indoor unit Service Ref.**			**PCA-P3HA**		**PCA-P5HA**	
	Phase, Hz			1, 50		1, 50	
	Volts		V	230		230	
	Amperes		A	0.43	0.43	1.19	1.19
	Outdoor unit Service Ref.			**PUH-P3VGAA1.UK /PUH-P3YGAA1.UK**		**PUH-P5YGAA1.UK**	
	Phase, Hz			1, 50/3, 50		3, 50	
	Volts		V	230/400		400	
	Amperes		A	14.63/4.96	14.85/5.04	6.85	7.07
Refrigerant circuit	Discharge pressure		MPa (kgf/cm²)	2.31 (23.5)	2.43 (24.8)	2.01 (20.5)	2.07 (21.1)
	Suction pressure		MPa (kgf/cm²)	0.45 (4.6)	0.39 (4.0)	0.46 (4.6)	0.38 (3.8)
	Discharge temperature		°C	84	89	73	73
	Condensing temperature		°C	59	62	54	55
	Suction temperature		°C	2.9	-0.7	4.8	-0.3
	Ref. pipe length		m	5	5	5	5
Indoor side	Intake air temperature	D.B.	°C	27	20	27	20
		W.B.	°C	19	15	19	15
	Discharge air temperature	D.B.	°C	13	47	15	43
Outdoor side	Intake air temperature	D.B.	°C	35	7	35	7
		W.B.	°C	24	6	24	6
SHF				0.72	—	0.72	—
BF				0.14	—	0.19	—

The unit of pressure has been changed to Mpa on the international system of unit (SI unit system).
The converted score against the traditional unit system can be gotten according to the formula below.
1(Mpa)=10.2(kgf/cm²)

3.2 Cooling only type
Rating Conditions (ISO T1)

Service Ref.				**PCA-P3HA**	**PCA-P5HA**
Mode				Cooling	Cooling
Total	Capacity		W	7,500	13,000
	Input		KW	3.36	4.90
Electrical circuit	**Indoor unit Service Ref.**			**PCA-P3HA**	**PCA-P5HA**
	Phase, Hz			1, 50	1, 50
	Volts		V	230	230
	Amperes		A	0.43	1.19
	Outdoor unit Service Ref.			**PU-P3VGAA1.UK /PU-P3YGAA1.UK**	**PU-P5YGAA1.UK**
	Phase, Hz			1, 50/3, 50	3, 50
	Volts		V	230/400	400
	Amperes		A	14.63/4.96	6.85
Refrigerant circuit	Discharge pressure		MPa (kgf/cm²)	2.31 (23.5)	2.01 (20.5)
	Suction pressure		MPa (kgf/cm²)	0.45 (4.6)	0.46 (4.6)
	Discharge temperature		°C	84	73
	Condensing temperature		°C	59	54
	Suction temperature		°C	2.9	4.8
	Ref. pipe length		m	5	5
Indoor side	Intake air temperature	D.B.	°C	27	27
		W.B.	°C	19	19
	Discharge air temperature	D.B.	°C	13	15
Outdoor side	Intake air temperature	D.B.	°C	35	35
		W.B.	°C	24	24
SHF				0.72	0.75
BF				0.14	0.19

The unit of pressure has been changed to Mpa on the international system of unit (SI unit system).
The converted score against the traditional unit system can be gotten according to the formula below.
1(Mpa)=10.2(kgf/cm²)

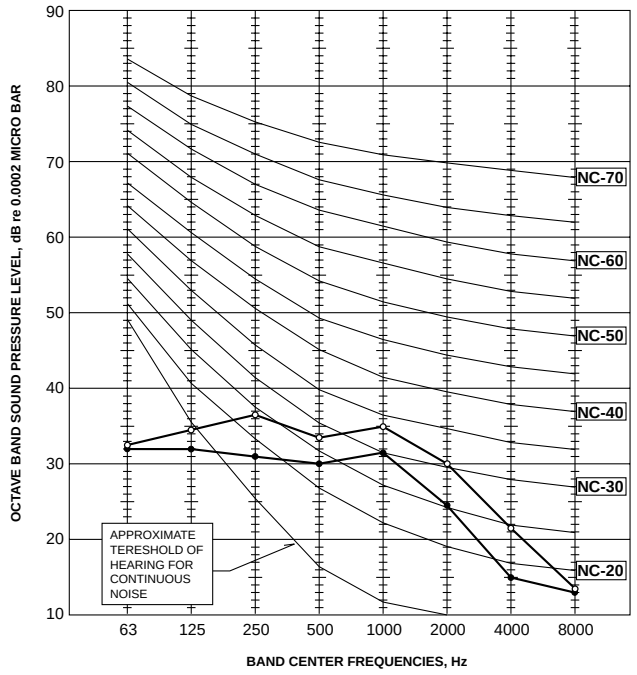
4. OUTLET AIR SPEED AND COVERAGE RANGE

		PCA-P3HA	**PCA-P5HA**
Air flow	m³/min	19	38
Air speed	m/sec	2.9	4.2
Coverage range	m	7.9	13.2

5. NOISE CRITERION CURVES

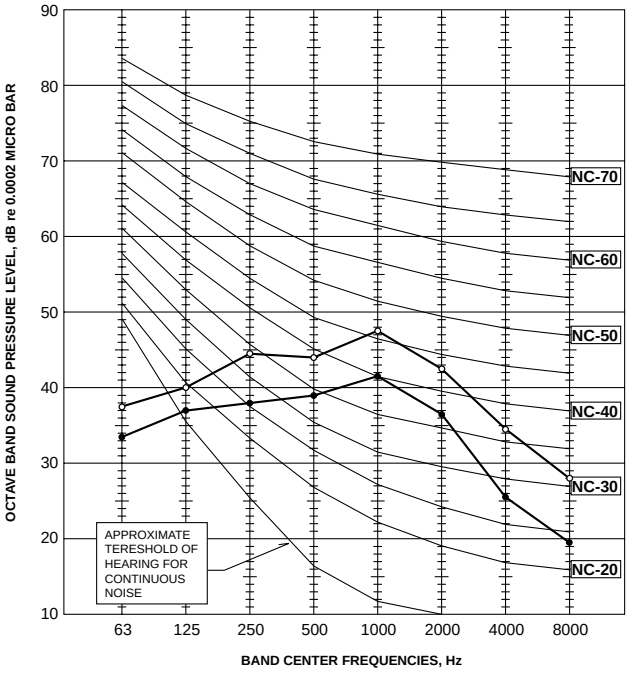
PCA-P3HA

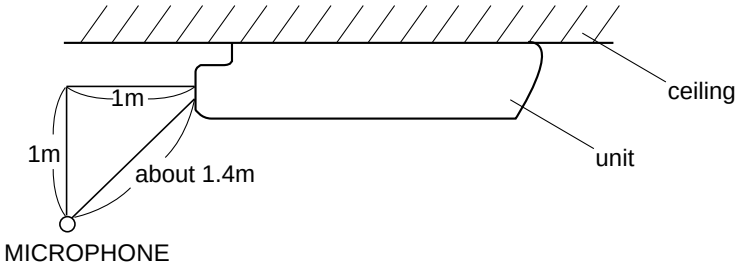
NOTCH	SPL(dB)	LINE
Hi	38	○——○
Lo	34	●——●



PCA-P5HA

NOTCH	SPL(dB)	LINE
Hi	50	○——○
Lo	44	●——●

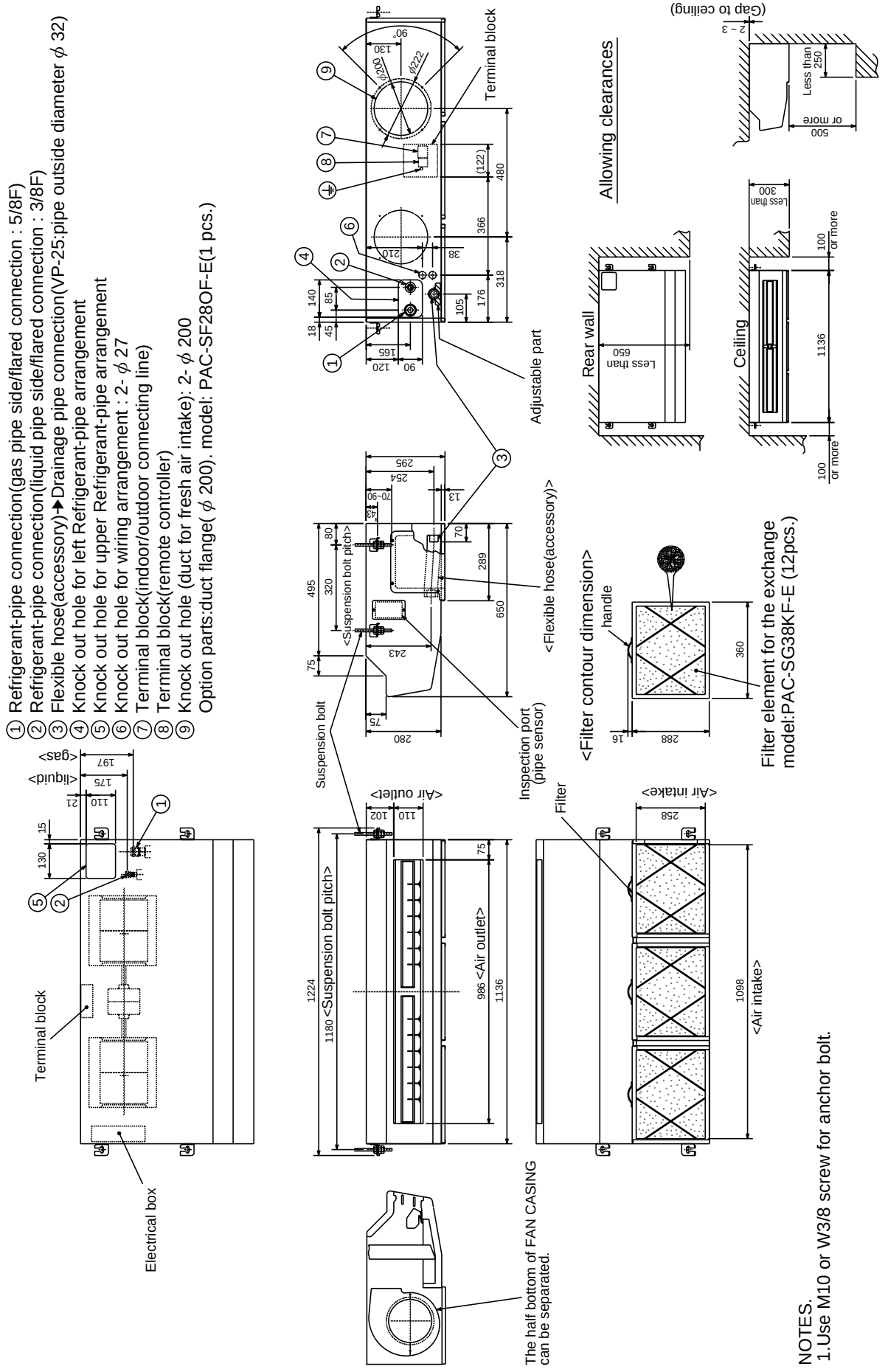




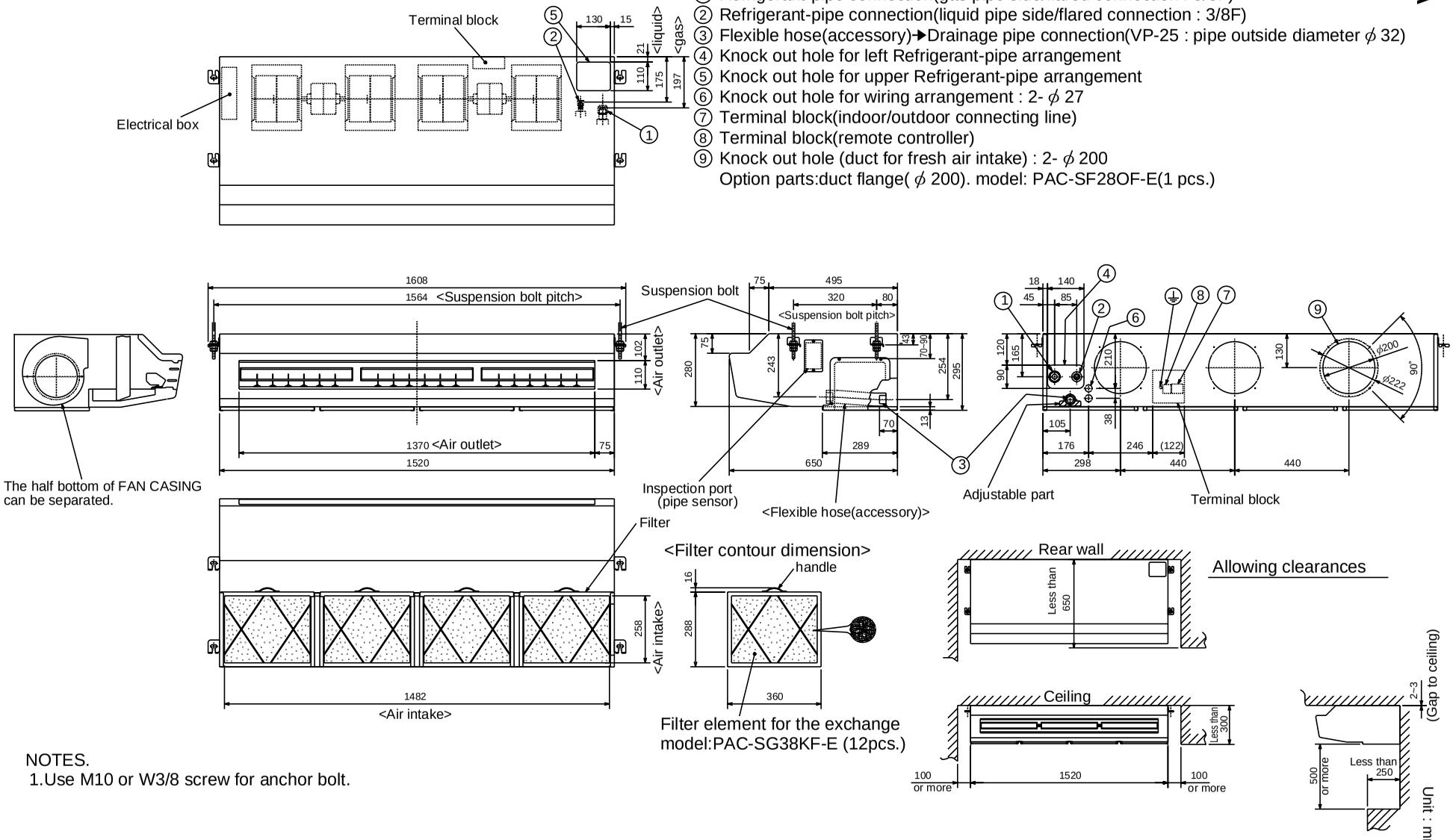
5 OUTLINES AND DIMENSIONS

PCA-P3HA

Unit : mm



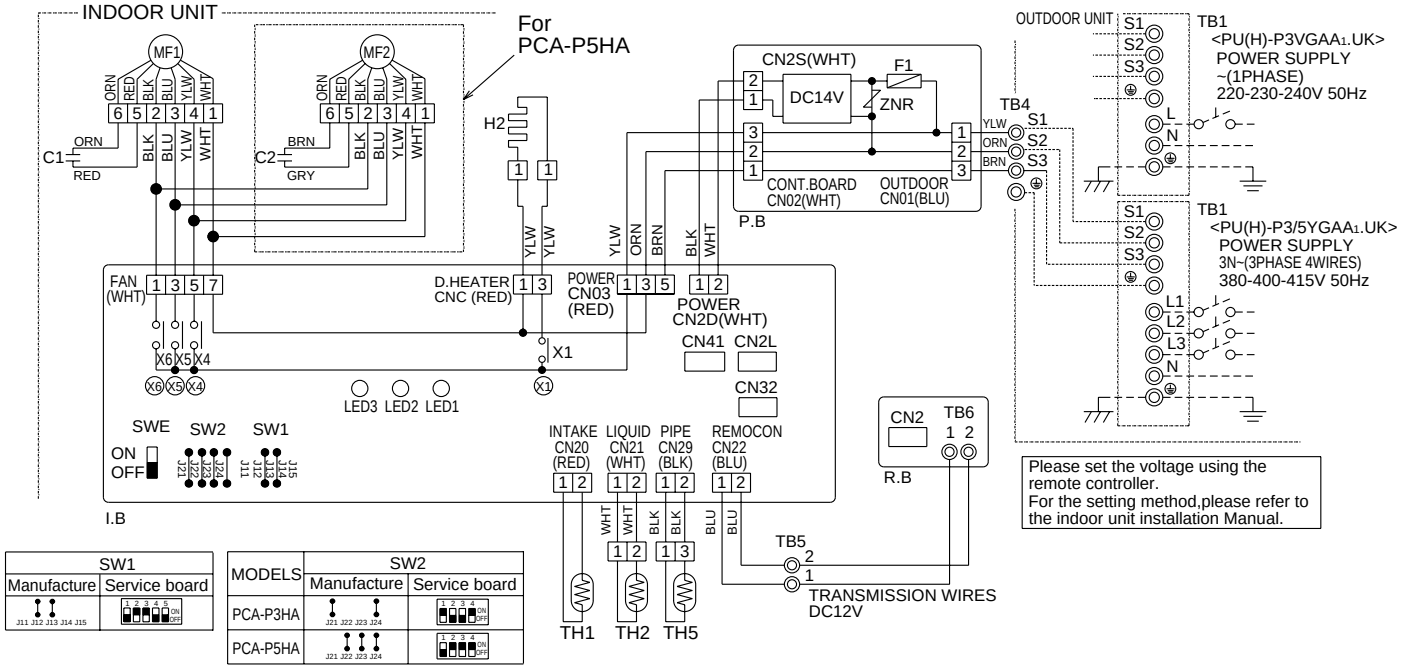
① Refrigerant-pipe connection(gas pipe side/flared connection : 5/8F)
② Refrigerant-pipe connection(liquid pipe side/flared connection : 3/8F)
③ Flexible hose(accessory)➔Drainage pipe connection(VP-25 : pipe outside diameter ϕ 32)
④ Knock out hole for left Refrigerant-pipe arrangement
⑤ Knock out hole for upper Refrigerant-pipe arrangement
⑥ Knock out hole for wiring arrangement : 2- ϕ 27
⑦ Terminal block(indoor/outdoor connecting line)
⑧ Terminal block(remote controller)
⑨ Knock out hole (duct for fresh air intake) : 2- ϕ 200
Option parts:duct flange(ϕ 200). model: PAC-SF28OF-E(1 pcs.)



NOTES.
1.Use M10 or W3/8 screw for anchor bolt.

6 WIRING DIAGRAM

PCA-P3HA
PCA-P5HA



SW1	
Manufacture	Service board

MODELS	SW2	
	Manufacture	Service board
PCA-P3HA		
PCA-P5HA		

LEGEND

SYMBOL		NAME	SYMBOL	NAME
P.B		INDOOR POWER BOARD	MF1,MF2	FAN MOTOR
	F1	FUSE(4A)	C1,C2	CAPACITOR(FAN MOTOR)
	ZNR	VARISTOR	H2	DEW PREVENTION HEATER
I.B		INDOOR CONTROLLER BOARD	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)
	CN2L	CONNECTOR(LOSSNAY)		
	CN32	CONNECTOR(REMOTE SWITCH)	TB5	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
	CN41	CONNECTOR(HA TERMINAL-A)		
	LED1	POWER SUPPLY(I.B)	TH1	ROOM TEMPERATUR THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	LED2	POWER SUPPLY(R.B)		
	LED3	TRANSMISSION(INDOOR-OUTDOOR)	TH2	PIPE TEMPERATUR THERMISTOR/LIQUID (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	X1	RELAY(DEW PREVENTION HEATER)		
	X4	RELAY(FAN MOTOR)	TH5	CONDENSER / EVAPORATOR TEMPERATUR THERMISTOR (0˚C/15kΩ, 25˚C/5.4kΩ DETECT)
	X5	RELAY(FAN MOTOR)		
	X6	RELAY(FAN MOTOR)	R.B	REMOTE CONTROLLER BOARD
	SW1	JUMPER WIRE(MODEL SELECTION)	CN2	CONNECTOR(PROGRAM TIMER)
	SW2	JUMPER WIRE(CAPACITY CODE)	TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
	SWE	SWITCH(EMERGENCY OPERATION)		

[Servicing]
Fasten terminal of the terminal board "TB4" equips lock system.
To remove the fastened terminal,pull it while pressing the protruding portion(locking lever)of the terminal.The fastened terminal protruding portion should face upward.

Check code	Symptom
P1	Abnormality of room temperature thermistor(TH1).
P2	Abnormality of pipe temperature thermistor/Liquid(TH2).
P6	Freezing /overheating protection is working.
P8	Abnormality of pipe temperature.
P9	Abnormality of pipe temperature thermistor/ Condenser/Evaporator(TH5).
E0—E5	Abnormality of the signal transmission between remote controller and indoor unit.
E6—EF	Abnormality of the signal transmission between indoor unit and outdoor unit("EE" indicates abnormality of combination).
U✶	Abnormality in outdoor unit. Refer to outdoor unit wiring diagram.
F✶	Abnormality in outdoor unit. Refer to outdoor unit wiring diagram.
----	No trouble generated in the past.
FFFF	No corresponding unit.

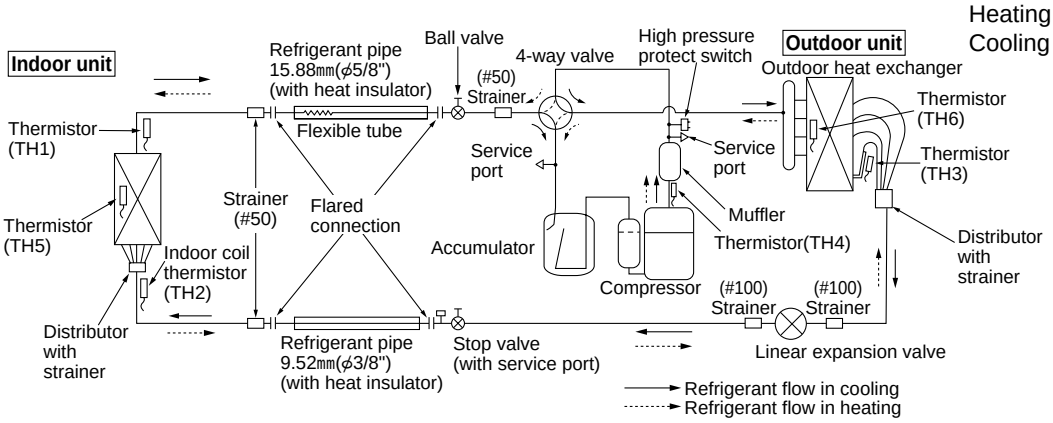
NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminal numbers(S1,S2,S3).
3.Symbols used in wiring diagram above are, ☐☐☐ :Connector, ⓞ:Terminal (block).

7 REFRIGERANT SYSTEM DIAGRAM

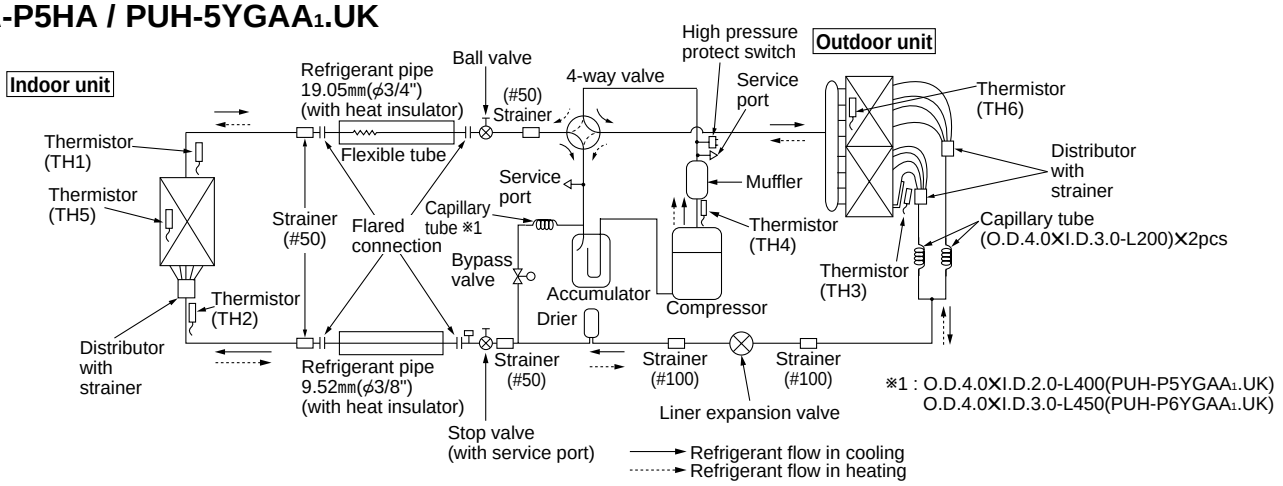
Unit : mm

<4-way valve solenoid coil>
Heating : ON
Cooling : OFF

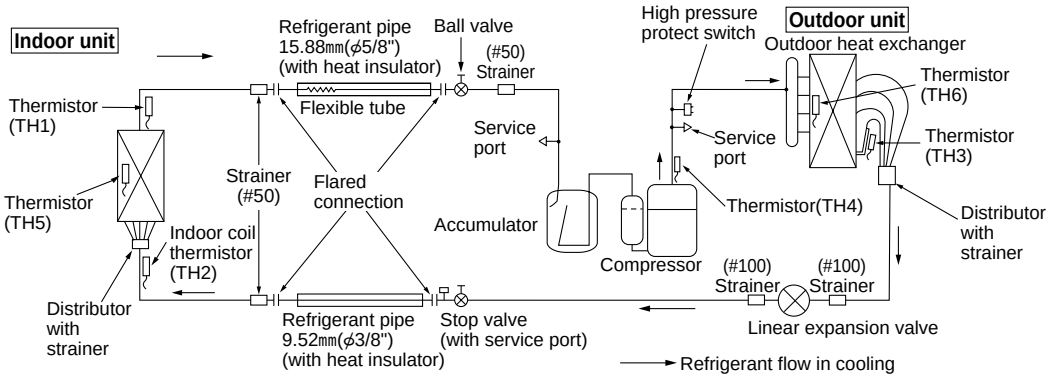
PCA-P3HA / PUH-3VGAA1.UK, PUH-3YGAA1.UK



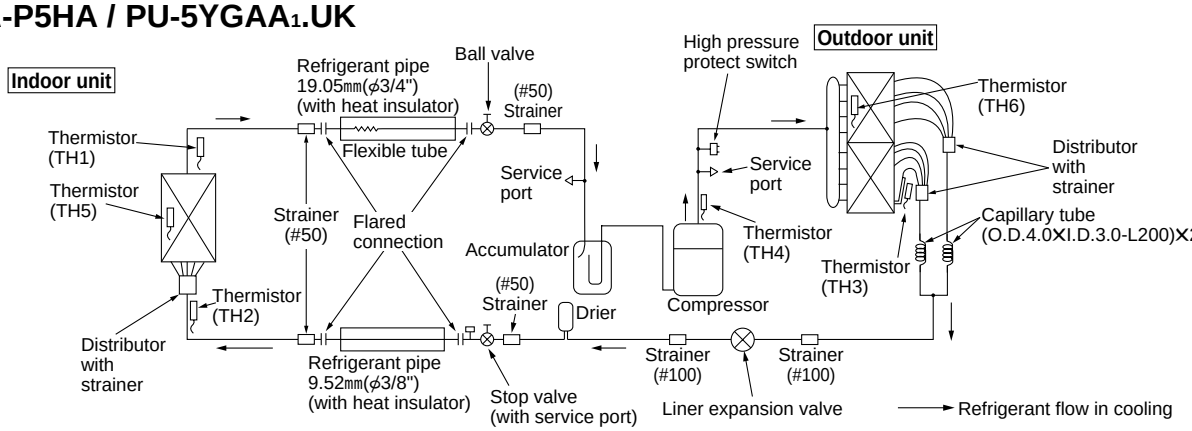
PCA-P5HA / PUH-5YGAA1.UK



PCA-P3HA / PU-3VGAA1.UK, PU-3YGAA1.UK

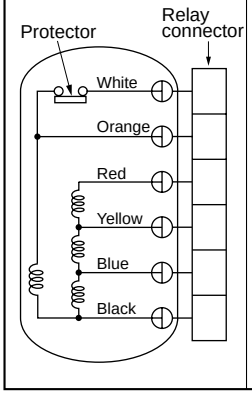


PCA-P5HA / PU-5YGAA1.UK



8 TROUBLESHOOTING

HOW TO CHECK THE PARTS
PCA-P3HA
PCA-P5HA

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH1)
Pipe temperature thermistor (TH2)
Condenser/Evaporator temperature thermistor (TH5)</td><td>Disconnect the connector then measure the resistance using a tester.
(Surrounding temperature 10℃~30℃)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>(Refer to the next pege for a detail.)</td></tr>
<tr><td>Fan motor
 
</td><td>Measure the resistance between the terminals using a tester.
(Winding temperature 20℃)
<table><tr><th rowspan="2">Connector</th><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr><tr><th>PCH-P3HA</th><th>PCH-P5HA</th></tr><tr><td>White–Black</td><td>140.5Ω</td><td>75.6Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Brown–Blue</td><td>15.4Ω</td><td>36.7Ω</td></tr><tr><td>Blue–Yellow</td><td>28.5Ω</td><td>23.6Ω</td></tr><tr><td>Yellow–Red</td><td>80.4Ω</td><td>47.8Ω</td></tr></table>Protector
OPEN : 135±5℃
CLOSE : 95±15℃</td></tr>
</table>

<Thermistor Characteristic graph>

Thermistor for lower temperature

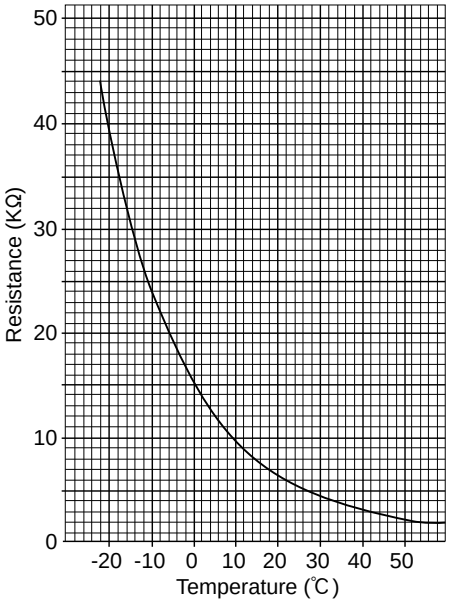
Room temperature thermistor(TH1)
Pipe temperature thermistor(TH2)
Condenser/evaporator temperature thermistor(TH5)

Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480kΩ ± 2%

$$Rt=15\exp\{3480(\frac{1}{273+t}-\frac{1}{273})\}$$

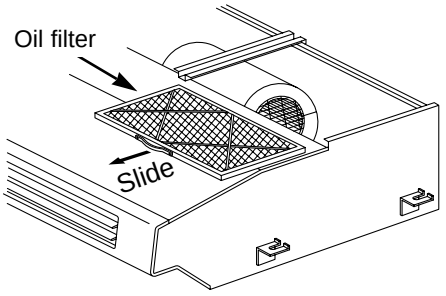
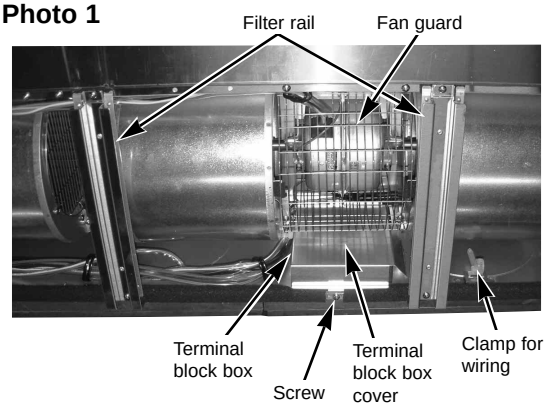
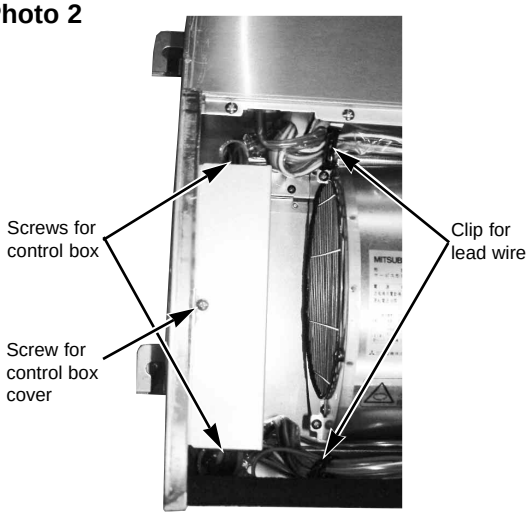
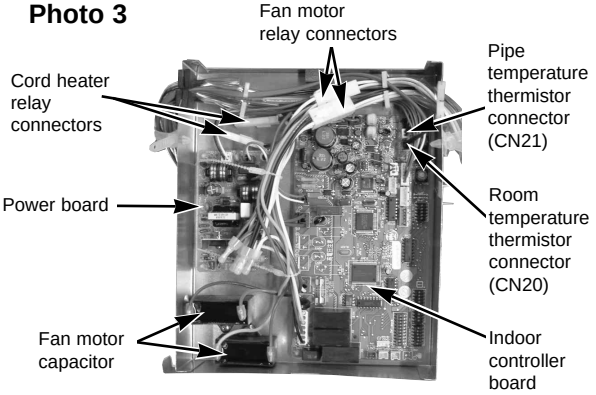
0℃	15kΩ
10℃	9.6kΩ
20℃	6.3kΩ
25℃	5.4kΩ
30℃	4.3kΩ
40℃	3.0kΩ

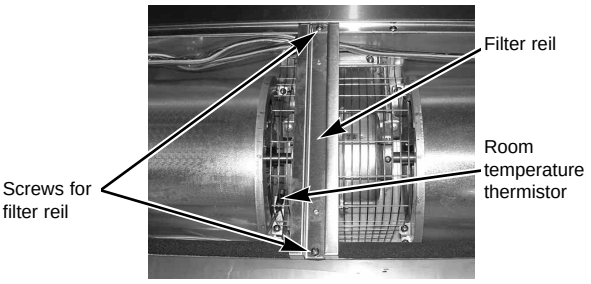
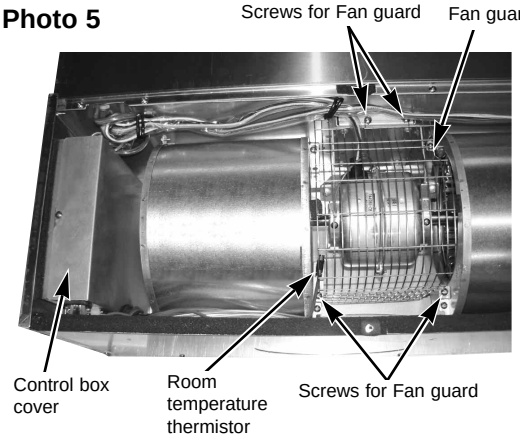
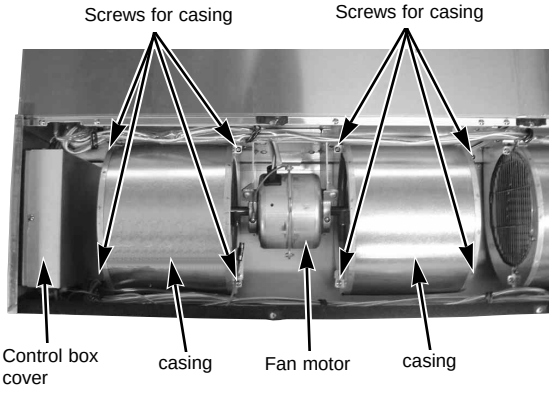
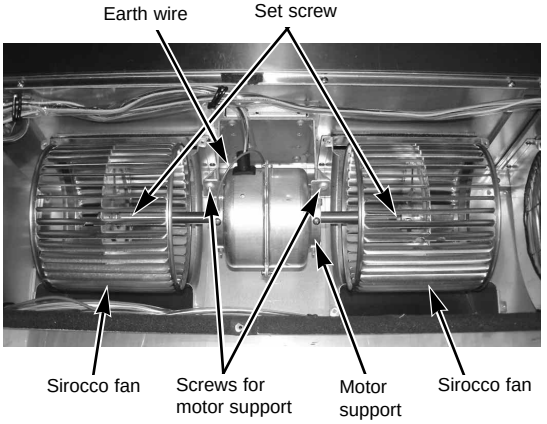
< Thermistor for lower temperature >

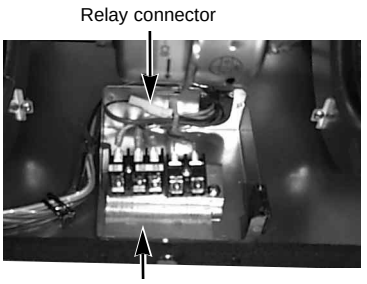
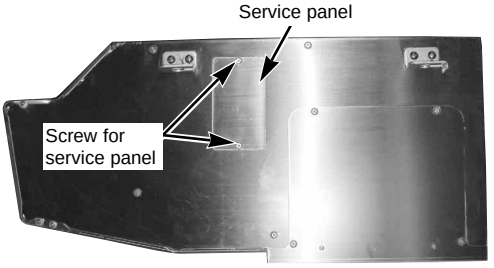
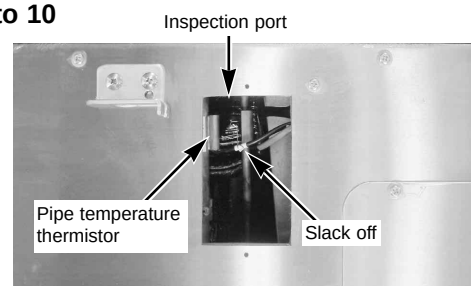
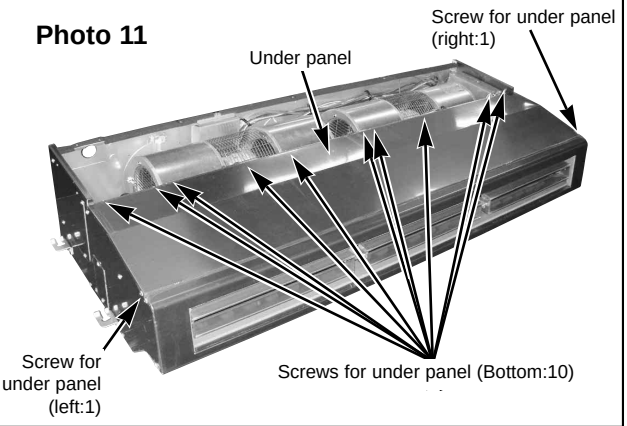
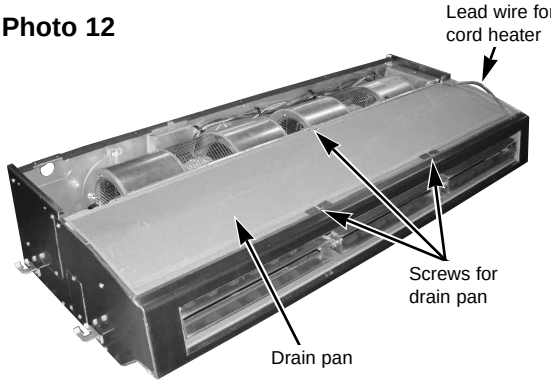


9 DISASSEMBLY PROCEDURE

PCA-P5HA

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
1. Removing the oil filter (1) Slide the oil filter towards you to remove. (See figure 1.)	**Figure 1** 
2. Removing the terminal block box cover (1) Remove the oil filter. (See figure 1.) (2) Remove a screw for terminal block box cover, and remove the terminal block box cover. (See photo 1.)	**Photo 1** 
3. Removing the control box (1) Remove the oil filter. (See figure 1.) (2) Loosen a screw for control box cover to remove the control box cover. (See photo 2.) (3) Remove the lead wire from the 2 clips. (4) Remove the 2 white cord heater relay connectors (1P×2) and 2 fan motor relay connectors (6P×2) in the control box. (5) Remove the 2 screws for control box to slide the control box downward. Electrical parts in the control box • Fan motor capacitor • Indoor controller board • Power board	**Photo 2**  **Photo 3** 

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
4. Removing the fan motor (1) Remove the oil filter. (See figure 1.) (2) Remove the control box cover. (See photo 2.) (3) Remove the room temperature thermistor connector (CN20) on the indoor controller board. (See photo 3.) (4) Remove a filter rail that is the nearest to the control box. (See photo 4.) (5) Remove the fan guard. (See photo 5.) (6) Remove the room temperature thermistor together with the holder at the right side of the casing.	**Photo 4**  **Photo 5** 
5. Removing the fan motor and the sirocco fan (1) Remove the oil filter. (See figure 1.) (2) Remove the control box cover. (See photo 2.) (3) Remove the fan motor relay connectors (6P) in the control box. (See photo 3.) (4) Remove the 3 filter rails. (See photo 1, 4.) (5) Remove the fan guard. (See photo 5.) (6) Remove the lower casing. (See photo 6.) (7) Remove the green earth wire from the motor support. (See photo 7.) (8) Remove the 2 screws (M5 × 12) for motor support, and remove the left and right motor supports. (9) Remove the fan motor together with the sirocco fan. (10) Remove the 2 set screws (M6) to separate the fan motor from the sirocco fan.	**Photo 6**  **Photo 7** 

OPERATING PROCEDURE	PHOTOS
6. Removing the pipe temperature thermistor (1) Remove the oil filter. (See figure 1.) (2) Remove the fan guard. (See photo 1.) (3) Remove the terminal block box cover. (4) Remove the white relay connector (2P) in the terminal block box. (See photo 8.) (5) Remove the service panel. (See photo 9.) (6) Remove the pipe temperature thermistor from the holder. (See photo 10.) **Caution for installation** When installing the pipe temperature thermistor, slack off its lead wire as shown in the photo. Otherwise, water trickled down the lead wire may splash on the connector and this could cause a short circuit of the connector.	**Photo 8**  **Photo 9**  **Photo 10** 
7. Removing the under panel (1) Remove the oil filter. (See figure 1.) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the 12 screws (left: 1, right: 1, Bottom: 10) for under panel, and remove the under panel. (See photo 11.)	**Photo 11** 
8. Removing the drain pan (1) Remove the oil filter. (See Figure 1) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the under panel. (See photo 11.) (4) Pull the blue lead wire for cord heater towards you to slack off. (See photo 12.) (5) Remove the 3 screws at the center of the drain pan, and remove the drain pan. (Note) Remove the drain pan carefully since the drain could remain in it.	**Photo 12** 

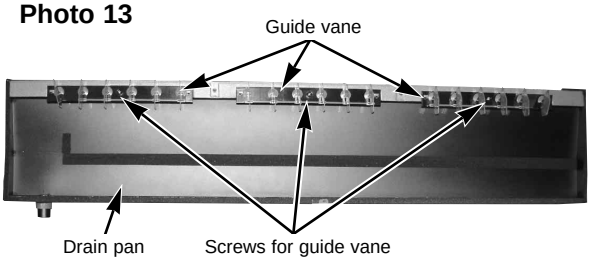
OPERATING PROCEDURE

9. Removing the guide vane

(1) Remove the oil filter. (See figure 1.)
(2) Remove the 3 filter rails. (See photo 1, 4.)
(3) Remove the under panel. (See photo 11.)
(4) Remove the drain pan. (See photo 12.)
(5) Remove the 3 screws (4 X 10) for guide vane, and remove the guide vane. (See photo 13.)

PHOTOS

Photo 13



10. Removing the vane

(1) Slide the vane to the center of the unit, and pull it towards you to remove. (See photo 14.)

Caution for installation

When installing the vane, check that its projection is on the left-rear side.

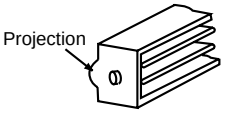
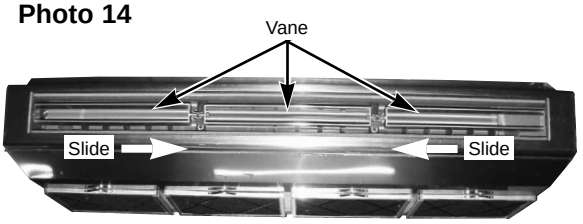


Photo 14



11. Removing the heat exchanger

(1) Remove the oil filter. (See figure 1.)
(2) Remove the 3 filter rails. (See photo 1, 4.)
(3) Remove the under panel. (See photo 11.)
(4) Remove the drain pan. (See photo 12.)
(5) Remove the 2 screws (4 X 10) for pipe cover, and remove the pipe cover. (See photo 15.)
(6) Remove the 3 screws (4 X 10, left: 2, right: 1) for heat exchanger. (See photo 15, 16.)
(7) Remove the 2 screws (4 X 10) for heat exchanger at the top of the unit, and remove the heat exchanger. (See photo 17.)

Photo 15

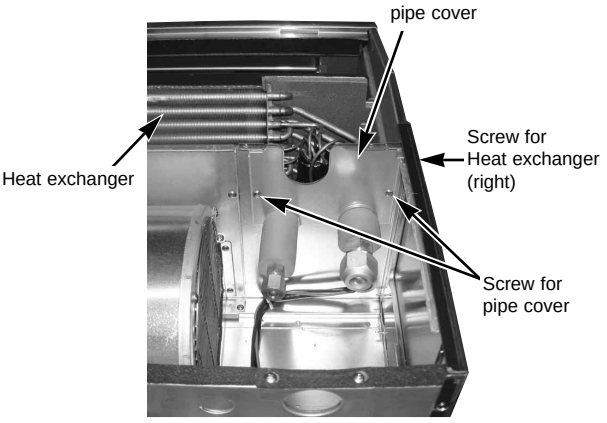


Photo 17

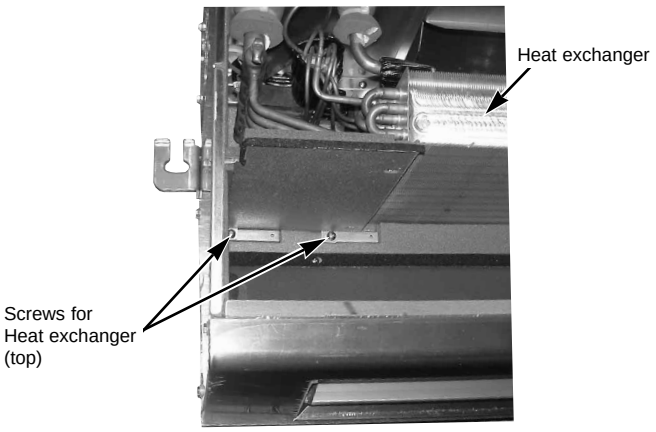
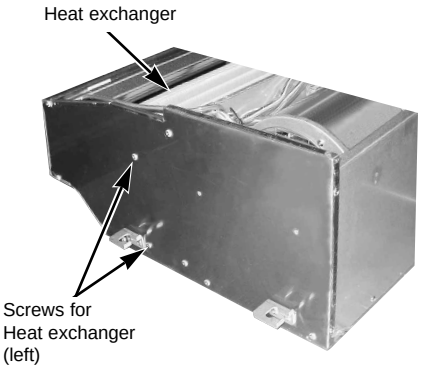
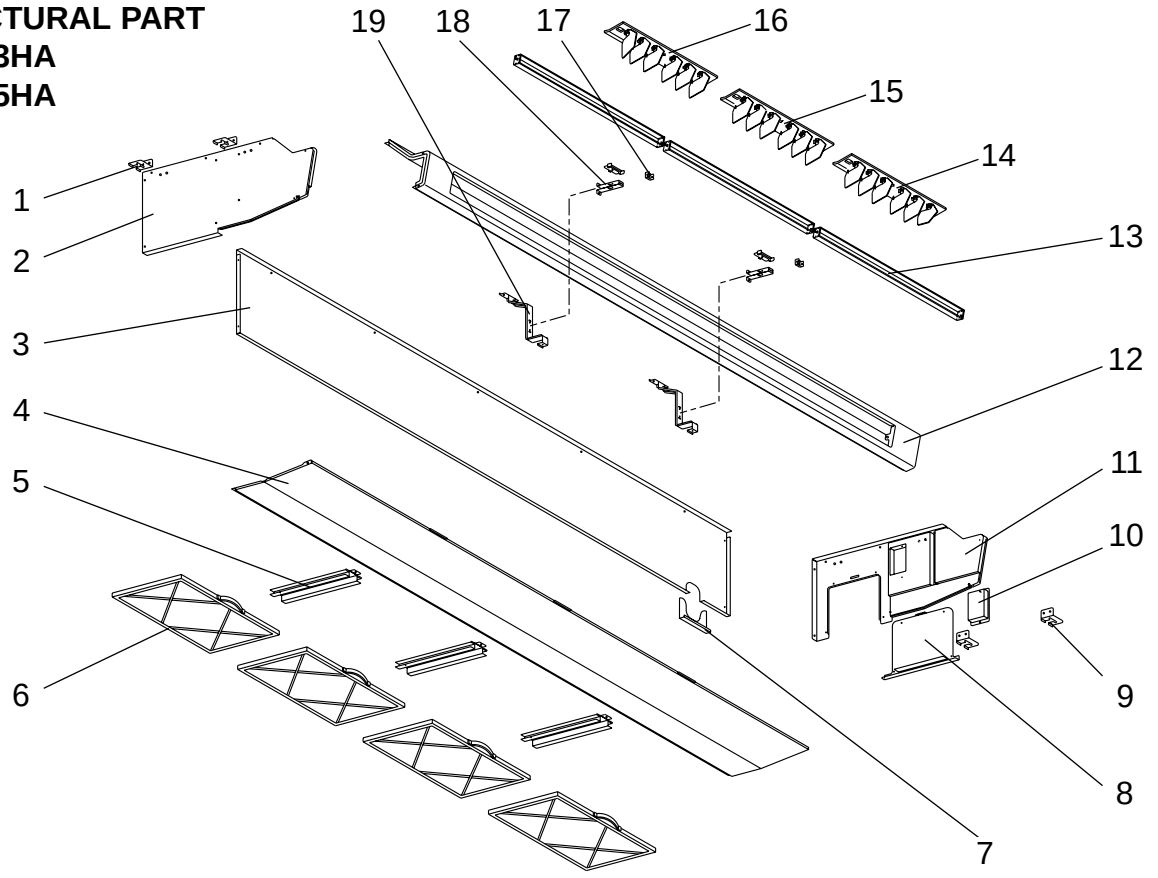


Photo 16



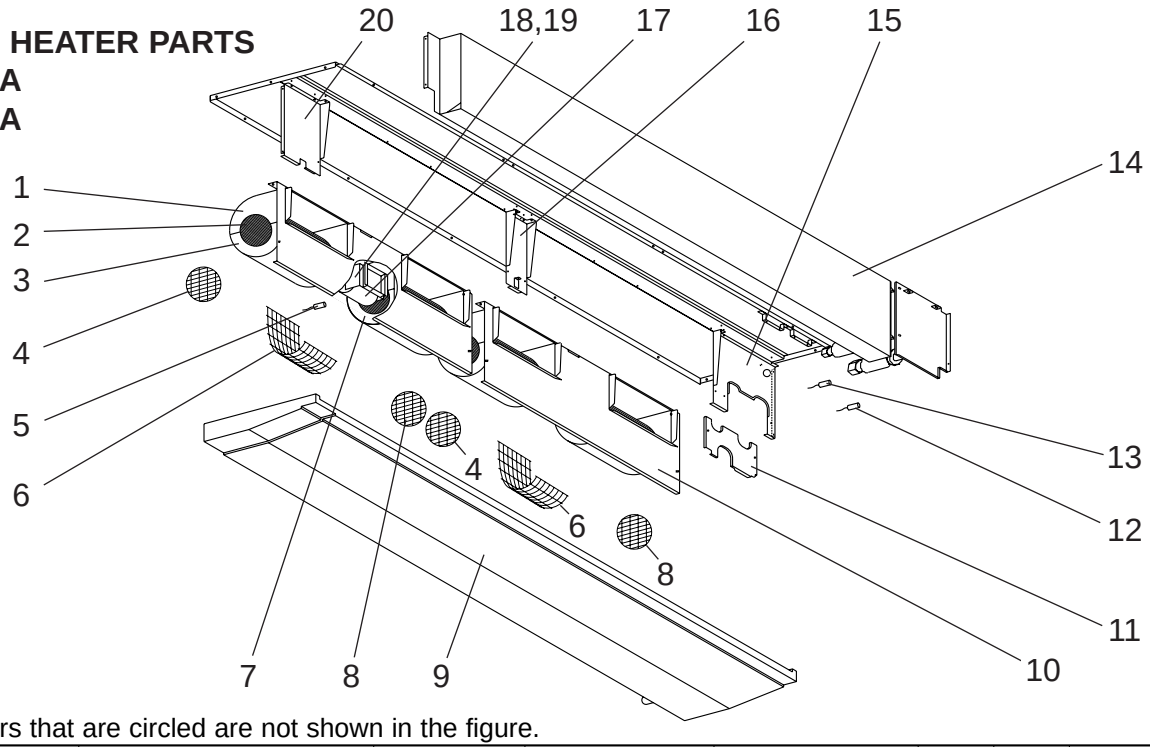
10 PARTS LIST

STRUCTURAL PART
PCA-P3HA
PCA-P5HA



No.	Parts No.	Parts Name	Specifications	Q'ty / set PCA-		Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty	Price	
				P3HA	P5HA				Unit	Amount
1	R01 13N 809	LEG-L		2	2					
2	R01 13N 662	SIDE PLATE-L		1	1					
3	T7W E02 676	REAR PANER		1						
	T7W E03 676	REAR PANER			1					
4	R01 12N 669	UNDER PANEL		1						
	R01 13N 669	UNDER PANEL			1					
5	R01 13N 503	FILTER RAIL		2	3					
6	R01 E05 500	OIL FILTER		3	4					
7	—	DRAIN HOSE SUPPORT		1	1	(BG00K145G02)				
8	R01 13N 667	SIDE COVER		1	1					
9	R01 13N 808	LEG-R		2	2					
10	R01 13N 668	SERVICE PANEL		1	1					
11	R01 13N 661	SIDE PLATE-R		1	1					
12	T7W E02 651	FRONT PANEL		1						
	T7W E03 651	FRONT PANEL			1					
13	R01 12N 002	VANE ASSY		2						
	R01 13N 002	VANE ASSY			3					
14	R01 13N 086	GUIDE VANE ASSY-6L		1	1					
15	R01 13N 087	GUIDE VANE ASSY-6C			1					
16	R01 13N 085	GUIDE VANE ASSY-6R		1	1					
17	R01 13N 533	VANE HOLDER		1	1					
18	—	VANE SUPPORT		1	2	(BG00K146G02)				
19	—	FRONT SUPPORT		1	2	(BG00T773G01)				

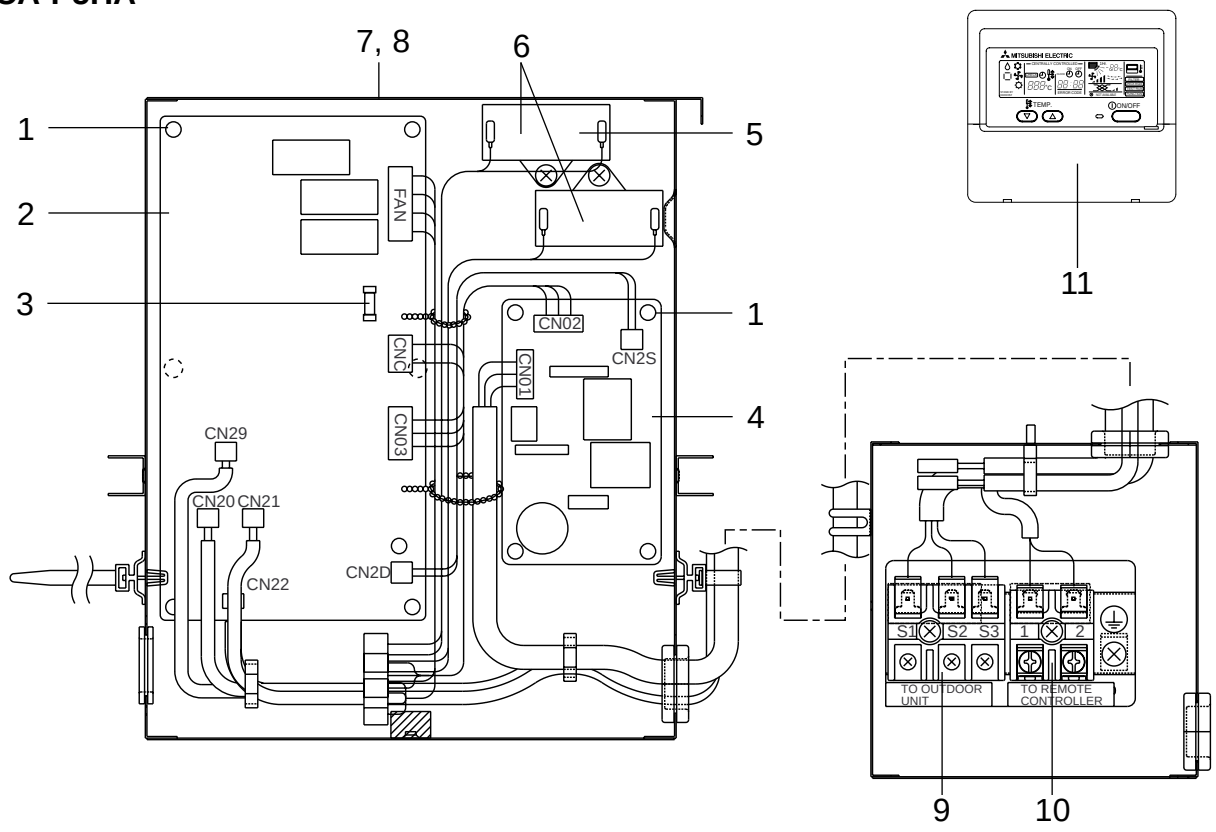
FAN AND HEATER PARTS
PCA-P3HA
PCA-P5HA



Part numbers that are circled are not shown in the figure.

No.	Parts No.	Parts Name	Specifications	Q'ty / set PCA- P3HA	Q'ty / set PCA- P5HA	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	R01 12N 110	T. CASING ASSY		2						
	R01 13N 110	T. CASING ASSY			4					
2	R01 12N 114	SIROCO FAN		2						
	R01 13N 114	SIROCO FAN			4					
3	T7W E02 111	UNDER CASING-L		1						
	T7W E03 111	UNDER CASING-L			2					
4	T7W E12 675	FAN GUARD-S		1	2					
5	R01 E51 202	ROOM TEMPERATUR TERMISTOR		1	1		TH1			
6	T7W E14 675	FAN GUARD-L		1						
	T7W E13 675	FAN GUARD-L			2					
7	T7W E00 111	UNDER CASING-R		1						
	T7W E01 111	UNDER CASING-R			2					
8	T7W E11 675	FAN GUARD-S		1	2					
9	R01 12N 529	DRAINPAN ASSY		1						
	R01 13N 529	DRAINPAN ASSY			1					
10	—	FAN PLATE		1		(BG00N756G15)				
	—	FAN PLATE			2	(BG00N756G14)				
11	—	PIPE SUPPORT		1	1	(BG02T500H04)				
12	R01 13N 202	PIPE TEMPERATURE TERMISTOR		1	1		TH2			
13	R01 E63 202	CONDENSER / EVAPORATOR TEMPERATURE TERMISTOR		1	1		TH5			
14	R01 H04 480	HEAT EXCHANGER		1						
	R01 E75 480	HEAT EXCHANGER			1					
15	—	FAN PLATE SUPPORT-R		1	1	(BG00N893G15)				
16	—	FAN PLATE SUPPORT-C		1	1	(BG00N893G14)				
17	T7W E20 762	FAN MOTOR	PA6V40-CB	1			MF1			
	T7W E21 762	FAN MOTOR	PA4V80-CA		2		MF1,2			
18	R01 45K 130	MOTOR LEG		1	2					
19	R01 83E 126	PIECE FOR MOTOR		1	2					
20	—	FAN PLATE SUPPORT-L		1	1	(BG00N893G13)				
(21)	R01 13N 521	PIPE COVER		1	1					
(22)	R01 13N 072	DRAIN HOSE COVER		1	1					
(23)	R01 811 105	RUBBER MOUNT		2	4					

ELECTRICAL PARTS
PCA-P3HA
PCA-P5HA



No.	Parts No.	Parts Name	Specifications	Q'ty / set PCA- P3HA	Q'ty / set PCA- P5HA	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	R01 18J 054	SUPPORT		9	9					
2	T7W E30 310	CONTROLLER BOARD		1	1		I.B			
3	R01 E00 239	FUSE	250V 4A	1	1					
4	T7W E01 313	P0WER BOARD		1	1		P.B			
5	R01 A00 255	RUN CAPACITOR		1			C1			
6	R01 576 255	RUN CAPACITOR			2		C1,C2			
7	—	CONTROL BOX COVER		1	1	(BG02N713H05)				
8	—	CONTROL BOX		1	1	(BG00T759G12)				
9	R01 17J 246	TERMINAL BLOCK	3P(S1, S2, S3)	1	1		TB4			
10	R01 556 246	TERMINAL BLOCK	2P(1, 2)	1	1		TB5			
11	—	REMOTE CONTROLLER		1	1		R.B			

11 OPTIONAL PARTS

1. TIMER

Part No.	PAC-SC32PTA (with set back function)
Model Name	Program timer

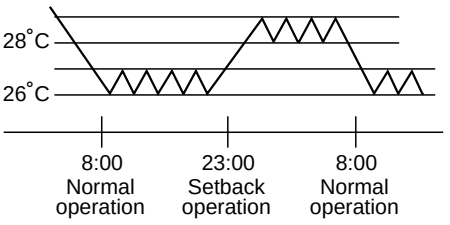
1-1. Program timer specifications

Part name	Program timer
Parts No.	PAC-SC32PTA
Exterior dimensions (inch)	5-4/32X4-23/32X23/32 (130X120X18mm)
Installation	Wall mount
Type of clock	Quartz
Clock accuracy	±50 second / month at 25℃
Display-Time	Liquid crystal display
-Week	Liquid crystal display
-Timer setting unit	Liquid crystal display
Program cycle	24 hours
Timer setting unit	30 minutes
No. of set points	48 / day
Power rating	5V DC ±5% (Supplied by Remote Controller)

1-2. Feature of program timer

(1) Daily timer function
Daily timer can be set in 30 minutes units for up to 24 hours.
Each unit can be set for unit ON, unit OFF, or setback operation.

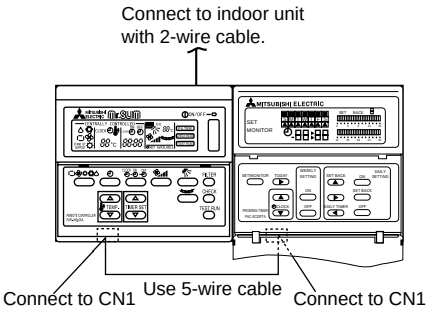
(2) Setback operation
Set back operation is useful for reducing running costs
e.g. At a hotel with a 24-hour system
8:00~23:00 Cooling operation with set temperature at 26°C
23:00~8:00 Setback operation with 2 degrees of setback
As shown in the chart on the right, the set temperature rises 2 degrees automatically during the setback operation. When the setback operation ends, normal operation will begin.



(3) Weekly timer function
Daily timer function can apply to each day of the week.

1-3. How to connect program timer

(1) Install the program timer next to the remote controller the same way as the remote controller is installed.
(2) Connect the program timer and the remote controller with a 5-wire cable as shown in the figure below



NOTE:While the program timer is connected to the remote controller, the 24hour ON/OFF timer on the remote controller will not operate.

1-4. Names and functions

<PAC-SC32PTA>

WEEKLY TIMER SETTING DISPLAY

Used for selection of if or not the day operation pattern set by PATTERN SETTING is to be applied in weekly day unit, setting.

CURRENT TIME DISPLAY

During MONITOR status,current time is display.
During Daily timer setting, a time desire for timer setting is displayed.

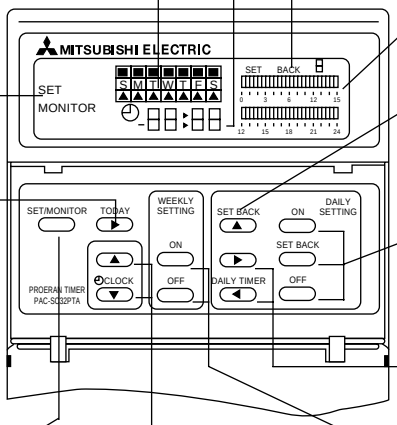
SET BACK DISPLAY

Indicates the setting set back range.

DAILY TIMER SETTING DISPLAY

24 hours is divided into 48 blocks and each block express 30 minutes.
The block display consists of 3 pattern.

Set back can be done in the range of 1,2,4,6 and 8°C.



SET BACK SETTING SW

Used for set back setting.

SET/MONITOR DISPLAY

During SET is display, clock adjustment, change of weekly day, daily and weekly timer setting can be performed.
During MONITOR is display, all switches except SET/MONITOR SW are invalidated. This is normal status.

ON/SET BACK/OFF SW

Used to specify the time setting pattern.

WEEK DAY SETTING SW

Used for week day setting.

DAILY TIMER SW

Used for timer setting in 30 minutes unit.

MODE SELECTOR SW

Using this switch select “MONITOR” or “SET” Mode.

“MONITOR” :Indicates the current timer setting. All switch expect MODE SELECTOR SW are invalidated then.This is the normal status.
“SET”: Set to “SET” mode for clock adjustment, charge of week day, daily and weekly timer setting.

CLOCK ADJUSTMENT SW

Used for adjustment of the current time.

Push ▲ SW to advance the time. Each time the button is pushed the time advance by 1 minute, pushing continuously advances by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication advances in 10 minutes unit.
▼ SW is used for reversing the time. Each time the button is pushed the time reverses by 1 minute, pushing continuously reverses the time by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication reverses in 10 minutes unit.

WEEKLY TIMER SW

Used for setting timer in day of week unit.

Pushing ▼ SW moves the week day light display in order of
S → M → T → W ···
enabling to set the week day.

2. Duct flange for frech air

Part No.	PAC-SF28OF-E
Applied Service Ref.	PCA-P3HA, PCA-P5HA

3. Filter element

Part No.	PAC-SG38KF-E
Applied Service Ref.	PCA-P3HA, PCA-P5HA

4. Decoration cover (Front + Susupending bracket cover)

Part No.	PAC-SF81KC-E	PAC-SF82KC-E
Applied Service Ref.	PCA-P3HA	PCA-P5HA

5. Remote sensor

Part No.	PAC-SE41TS-E
Applied Service Ref.	PCA-P3HA, PCA-P5HA

6. Remote operation adapter

Part No.	PAC-SF40RM-E
Applied Service Ref.	PCA-P3HA, PCA-P5HA

7. Remote ON/OFF adapter

Part No.	PAC-SF55RA-E
Applied Service Ref.	PCA-P3HA, PCA-P5HA

Mr.SLIM™

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : MITSUBISHI DENKI BLDG., 2-2-3, MARUNOUCHI, CHIYODA-KU TOKYO 100-8310, JAPAN

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