LOSSNAY HAND BOOK

FOR DEALERS

Model:





Repair work should be performed by the manufacturer, its service agent or similarly qualified person in order to avoid hazards.



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1. Safety precautions

- Please be sure to read the following precautions thoroughly before commencing with the maintenance work, and conduct the inspection and repair of the product in a safe manner.
- The types and levels of danger that may arise if the product is handled incorrectly are described by using the warning symbols shown below.





Request for repair

- Inspect the grounding, and repair it if incomplete. Make sure that a power supply isolator or an overload protection device is being installed, if not, recommend the dealer to install one.
- Make sure that the product operates properly upon completion of repair. Clean the product as well as the surrounding area, and then notify the customer of the completion of repair.

2. Names of components



3. Specifications

Model			LGH-50RSDC-E										
Heat exchan	ge system		Air-to-air Total heat exchange (sensible heat + latent heat exchange)										
Heat exchange element material			Partition · spacing plate-special treated paper										
Cladding			Galva	nized s	teel sh	eet							
Heat insulati	ng material		Self-e	xtinguis	shing u	rethan	e foam						
Motor			DC br	ushless	s moto	r. Two u	units						
Blower			220 m	m dian	neter. C	Centrifu	igal far	۱					
Filter materia	al		Non-w	voven f	abrics	filter (G	iravitat	ional m	ethod	82%, E	U-G3)		
Applicable ai ronment	ir condition of setti	ng envi-	The se	etting a	ir cond	lition sh	nall be	betwee	en -10°	C to 40)°C, 80	%RH c	or less.
Applicable ai	ir condition range	of outdoor	OA ter	nperat	ure sha	all be -'	5°C to	0 40°C,	80%R	H or le	ss, with	n gener	ral air
and indoor			condit	ioning	room e	nviron	nent.						
Functions			Lossn	ay vent	tilation	five sp	eeds /	Bypass	s ventila	ation (fi	ve spe	eds + p	oower)
Weight			48 kg										
Frequency /	Power source		50 Hz / Single phase 220-240 V										
Ventilation m	node		Lossnay (Energy recovery) ventilation Bypass ventilation										
Fan speed (2	230 V)		1	2	3	4	5	Power	1	2	3	4	5
Current		[A]	1.17	0.67	0.35	0.20	0.13	1.80	1.20	0.70	0.35	0.20	0.13
Power Cons	umption	[W]	165	90	41	22	14	265	164	90	40	21	14
Airvolumo		[m³/h]	395	305	215	144	90	468	395	305	215	144	90
		[l/s]	110	85	60	40	25	130	110	85	60	40	25
		[mmH ₂ O]	10.2	6.1	3.1	1.5	0.7	13.8	10.2	6.1	3.1	1.5	0.7
	ic pressure	[Pa]	100	60	30	15	7	135	100	60	30	15	7
Temperature e	exchange efficiency	[%]	77.5	81.5	85.5	88	90	-	-	-	-	-	-
Enthalpy exc	change	Heating	71	75	79	82	84	-	-	-	-	-	-
efficiency [%] Cooling		68	72.5	77	80.5	83	-	-	-	-	-	-	
Noise [dB] Measured at 1.5 m under the center of panel in an anechoic chamber		31	26.5	21	18	18	35	31	26.5	21	18	18	
Starting current			2.5 A or less										
Insulation res	sistance		10 MΩ or more (500 V megger)										
Dielectric strength			AC 1500 V 1 minute										

4. Outside dimensions



Unit (mm)

5. Electrical wiring diagram



6. Basic circuit diagrams

Circuit board diagrams and check points
 (1) Large PCB (printed circuit board) (Left)



*1 Current waveform of the fan drive output (Current of each line)



Although the current cycle and value varies with the operational status, each current waveform is a sine wave with a phase difference by 120 degrees. Note) Noise is included in the actual waveform.

*2 Voltage waveform of the fan motor sensor signal (Voltage between the lead wires of the connectors 2, 3, 4 and GND)



The voltage cycle varies with the operational status (rotational frequency). Each signal has 50% duty cycle of H (5 V) and L (0 V), and there is a phase difference by 120 degrees. Note) Noise is included in the actual waveform.

CAUTION

Live parts of the large PCB is not insulated from the power supply. Even after turning off the power, the capacitors on the circuit boards are still charged. Wait more than 5 minutes before servicing.

(2) Small PCB (right)



7. Fundamentals of operation

Description of the PCB

(1) Air volume control

Fan around colocition		Air volume		
(TM2_TM2)	Operation	(Reference value under rated static pressure)		
		(m³/h)	(l/s)	
All contacts : OFF	Stop	0	0	
Speed 1 (Contact between 1 and COM) : ON		395	110	
Speed 2 (Contact between 2 and COM) : ON	- Running	305	85	
Speed 3 (Contact between 3 and COM) : ON		215	60	
Speed 4 (Contact between 4 and COM) : ON		144	40	
Speed 5 (Contact between 5 and COM) : ON		90	25	
Power bypass (Contact between PB and COM) : ON		468	130	

*1 Power bypass will be enabled when any of fan speed contacts (1 to 5) are ON. (The fan will not operate when only the power bypass contact is turned ON.)

*2 It needs 5 seconds to change air volume (including OFF) after the fan speed is selected.

*3 When multiple fan speeds are selected simultaneously, the higher fan speed will be performed.

1 Fan speed fine-tuning

Fan speed can be fine-tuned by the dip switch SW 2 on the circuit board.



② Automatic air volume increasing during bypass setting

Fan speed will automatically increase 1 step higher than its present speed if both conditions are met:

• The dip switch SW 1-7 on the circuit board is ON.

• Operation mode is switched to bypass ventilation from energy recovery ventilation (with a summer criteria) in automatic ventilation mode.

Example 1 : Speed 3 operation \rightarrow Speed 2 operation

Example 2 : Speed 1 operation → Power bypass operation

(If the operation mode is switched to energy recovery ventilation from bypass ventilation, fan speed will return to its original speed.)

③ Cold region operation mode

When using the unit in cold region, set the air supply (SA) fan in the SA intermittent operation mode to prevent the energy recovery core from freezing. The fan operation is based on the measured outside air (OA) temperature as below.

Operation mode	OA temperature	SA fan	EA fan
Normal	-10°C < OA temperature	Continuous running	Continuous running
		*1 *2	
SA intermittent	$-15^{\circ}C < OA$ temperature $\leq -10^{\circ}C$	Repeat 10 min. stop / 60 min. running	Continuous running
		*1 *2	
SA stopped	OA temperature \leq -15°C	Repeat 55 min. stop / 5 min. running	Continuous running
		*1 *2	*3

*1 The operation mode will be decided 5 minutes after the normal operation during startup.

- *2 The running condition does not change while the SA fan stops or 1 minute after startup. (OA temperature is voided.)
- *3 When the switch SW 1-3 is on, the EA fan operates at fan speed 5 during 55-minute stop of the SA fan.

(2) Damper motor control

① Automatic ventilation mode

Automatic ventilation algorithm patterns are switched by the OA • RA (return air) thermistor and function setting switch SW 1-6.

Function setting switch SW1-6	OA temperature criteria in the summer season	Automatic ventilation algorithm		
OFF (factory setting)	17°C or higher	Automatic ventilation pattern 1 (chart 1)		
ON	28°C or higher	Automatic ventilation pattern 2 (chart 2)		

2 Power bypass mode

When turning on the TM3 PB contact with any fan speed contacts (1 to 5) on, operation mode will be switched to bypass ventilation. Then, fan speed will be also increased to Power bypass speed.

③ Ventilation priority mode

When turning on the TM3 V contact with any fan speed contacts (1 to 5) on, operation mode (energy recovery or bypass) can be fixed by the function setting switch SW 1-4. (Fan speed will not be changed in the bypass ventilation mode.)

Function setting switch SW1-4	Ventilation priority mode
OFF (factory setting)	Bypass ventilation fixed
ON	Energy recovery ventilation fixed

④ Prohibition of the bypass ventilation

In case of the situations below, bypass ventilation will be disabled, and energy recovery ventilation setting will be activated.

a. OA temperature ${\leq}~8^{\circ}C$ (for dew condensation prevention)

b. OA • RA thermistor failure.

(5) Automatic ventilation algorithm temperature chart

<Pattern 1>

Chart 1. Automatic ventilation algorithm temperature chart during the switch SW 1-6 OFF setting.



<Pattern 2>

Chart 2. Automatic ventilation algorithm temperature chart during the switch SW 1-6 ON setting.



* Undetermined area

When operation starts under this condition, energy recovery ventilation will be activated. When this condition is reached after operation starts, the current ventilation mode is maintained.

(3) Operation monitor output

When the function setting switch SW 1-2 (for operation monitor output with delay function) is set to OFF, and the switch SW 1-5 (for operation monitor output) is set to ON, the operation monitor signal can be output from the monitor terminal block (8) and (9) (TM4) on the circuit board.

SW 1-2	OFF)FF			
SW 1-5	N				
Signal type	Uncharged a-contact	ncharged a-contact			
	Maximum load	220-240 V AC 2 A			
Contact specifications		24 V DC 2 A			
	Minimum load	5 V DC 100 mA			
Operation	Stopping	Monitor output : Off (contact : open)			
	Running	Monitor output : On (contact : close)			

(4) Operation monitor output with delay function

When the function setting switch SW 1-2 (for operation monitor output with delay function) is set to ON, the operation monitor signal from the monitor terminal block (8) and (9) (TM4) on the circuit board is shown as below.

SW 1-2	ON			
Signal type	Uncharged a-contact			
	Maximum load	220-240 V AC 2 A		
Contact specifications		24 V DC 2 A		
	Minimum load	5 V DC 100 mA		
		Monitor output : On (contact : close) 10 seconds after air		
	OA temperature \geq -5 C	supply fan operates		
Operation	OA temperature $\geq 15^{\circ}C$	Monitor output : Off (contact : open)		
	The fan continues to operate for 3 minutes, after operation monitor output has been			
	OFF by the Lossnay stopping control.			

(5) Malfunction monitor output

The malfunction monitor signal can be output from the monitor terminal block 1 and 1 (TM4) on the circuit board.

Signal type	Uncharged a-contact			
	Maximum load	220-240 V AC 2 A		
Contact specifications		24 V DC 2 A		
	Minimum load	5 V DC 100 mA		
Operation	Normal	Monitor output : Off (contact : open)		
Operation	During an error	Monitor output : On (contact : close)		

(6) Trial operation function

This is a function for operating the Lossnay without external signals (contact signals). With this function, connecting condition of the AC power supply line and the wirings can be confirmed. Also, the Lossnay can be forced to operate in case of system down.

How to set	Turn on the trial operation switch SW 1-1.			
SA fan operation	Speed 1			
EA fan operation	Speed 1			
Operation mode	Energy recovery ventilation, after 1 minute bypass ventilation			
LED 11	Lit			
Operation monitor output	When SW 1-2 (Operation monitor output with delay function) is ON, or			
(TM4 ⑧ and ⑨)	SW 1-5 (Operation monitor output) is ON,			
	Monitor output : On (contact : close)			

(7) LED display

	Small PCB (right)			Large PCB (left)			
LED	Display	Condition	LED	Display	Condition		
	Unlit *1	No power supplied		Unlit	SA fan stopping		
LED 1 (red)	Lit	Power supplied	LED 2 (red)	Lit	SA fan running		
	Blinking	Error		Blinking	Error		
	Unlit *1	Normal		Unlit	EA fan stopping		
LED 11 (green)	Lit	In trial operation	LED 3 (green)	Lit	EA fan running		
	Blinking	Error		Blinking	Error		

*1 When one of LED 1 and LED 11 is blinking, the other one will be unlit.

*2 In case multiple errors have occurred at the same time, each LED will blink simultaneously.

(8) Function setting switches

SW1

ON

2 Trial operation

Operation monitor output with delay function Setting for exhaust fan in cold region operation mode Ventilation priority mode during ventilation setting input on

- Operation monitor output
- Bypass auto ventilation priority setting

Automatic air volume increasing during bypass setting Not to used

SW2

4		I
m		
5		
-		I
	NO	

- Decreasing exhaust fan power Increasing exhaust fan power
- Decreasing supply fan power
- Increasing supply fan power
- All switches are OFF at factory setting.
- 1 Trial operation (Refer to (6) (page 14).)

	OFF ON C		Operation
SW1	1		Normal operation
	1		Trial operation

2 Operation monitor output with delay function (TM4 (8) (9))

	OFF ON	Operation
SW1	2	Not available
	2	Available (Refer to (4) (page 13).)

3 Exhaust fan speed setting in cold region operation mode (Refer to (1) ③ (page 11).)

	OFF ON Oper		Operation
SW1	3		Not fixed
	3		Exhaust fan : speed 5 fixed

4 Ventilation priority mode during ventilation setting input on (Refer to (2) ③ (page 11).)

	OFF C	ΟN	Operation
SW1	1 4 Bypass ventilation mode fixed		Bypass ventilation mode fixed
	4		Lossnay (Energy recovery) ventilation mode fixed

* Below 8°C, even SW1-4 is fixed any setting, ventilation mode should be Lossnay (Energy recovery) ventilation.

5 Operation monitor output (TM4 (8 (9))

	OFF	ON	Operation		
SW1	5		Not available		
	5		Available (Refer to (3) (page 13).)		

* During SW1-2 on, operation monitor output is prior to " 2 operation monitor output with delay function".

6 Bypass automatic ventilation priority setting (Refer to (2) (5) (page 12).)

	OFF	ON	Operation
SW1	6		When outdoor temperature is 17°C or higher within 24 hours, then bypass ventilation starts by comparison OA and RA.
	6		When outdoor temperature is 28°C or higher within 24 hours, then bypass ventilation starts by comparison OA and RA.

7 Automatic air volume increasing during bypass setting

SW1	OFF	ON	Operation
	7		Not increasing.
	7		When unit is in bypass operation except power bypass mode, the unit fan speed is automatically increased 1 step.

8 Fan speed fine-tuning

	ON OFF	Operation
SW2	2 1 or 2 1	All supply air fan speeds are default settings.
	2	Each of the supply air fan speed settings except power bypass mode is increased.
	2	Each of the supply air fan speed settings is decreased.
	4 3 or 4 3	All exhaust fan speeds are default settings.
	4 3	Each of the exhaust fan speed settings except power bypass mode is increased.
	4 3	Each of the exhaust fan speed settings is decreased.

8. Troubleshooting

Work precautions

- When removing or touching a transformer, printed circuit board or other parts, make sure to turn off the power supply isolator. Even after disconnecting the power supply isolator, the voltage is still high in the capacitors on the printed circuit boards. Wait more than 5 minutes, and make sure a voltage is low by using a tester, before servicing.
- When removing the circuit board, always hold it at both ends and remove carefully so as not to apply force to the surface mounted parts.
- When removing the circuit board, be careful of the metal edges on the board.
- When removing or inserting the connectors for the circuit board, hold the entire housing section. Never pull on the lead wires.
- When servicing, be sure to recreate the malfunction two or three times before starting repairs.
- When reconnecting the power supply, wait more than 5 minutes after power-off, and then turn it on again.
- If it is thought that there is a printed circuit board malfunction, check for disconnected wires in the print pattern, burnt parts or discoloration.
- If the printed circuit board is replaced, make sure that the switch settings on the new board are the same as the old board.
- * Part names used in the following text correspond to those listed in the parts catalog.

(1) Checkpoints for installation condition

No.	Checkpoints
1	Do the wiring diameters and capacity of the motor breaker and the ground-fault interrupter meet specifi-
	cations?
2	Is the specified power (220-240 V AC 50 Hz) supplied to the power terminal (TM1)?
3	Do the wirings for the fan speed and bypass condition selections meet specifications?
	Contact: 12 V DC 10 mA
	 Diameter of cables : 0.5 mm² to 1.0 mm²
	Maximum length : 20 m from terminal block
	Wire peeling length : 9-10 mm
4	Are the wirings for fan speed and bypass condition selections correct?
5	Are the wires for fan speed and bypass condition selections more than 10 cm away from the power sup-
	ply cable?
6	Are the connected terminal blocks of the wires for fan speed and bypass condition selections correct?
	(TM2 1-4 and TM3 5 are for fan speed selection. TM3 PB and V are for bypass condition selection.)
7	Is each wire securely connected to the terminal blocks?
8	Are external signals correctly input to TM2 and TM3 on the circuit board?
9	Is the output capacity of the operation and malfunction monitors within rated range?
	Operation monitor output : Maximum 220-240 V AC/ 24 V DC 2 A, minimum 5 V DC 100 mA
	Malfunction monitor output : Maximum 220-240 V AC/ 24 V DC 2 A, minimum 5 V DC 100 mA

(2) Troubleshooting and repair method

1 When any LEDs on the circuit boards are blinking

The type of failure is shown by the number of blinking times of LED 1 (red), LED 11 (green), LED 2 (red) and LED 3 (green) on the circuit boards. The LED blink interval is 0.25 seconds for both lit and unlit. The display duration is approximately 5 seconds.



Failure display example (2 blinks)

Checklist of LED failure displays

LED 1	LED 11	LED 2	LED 3	0	0	
(red)	(green)	(red)	(green)	Symptom	Cause	Corrective action
				SA fan over-	Overcurrent occurred	Turn off the power supply, wait more than 5
				current failure	at the SA fan motor.	minutes, and then turn it on again.
2		1			SA fan motor malfunc-	Check the coil resistance of the fan motor.
blinks	-	blink	-		tion	If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				EA fan over-	Overcurrent occurred	Turn off the power supply, wait more than 5
				current failure	at the EA fan motor.	minutes, and then turn it on again.
	2		1		EA fan motor malfunc-	Check the coil resistance of the fan motor.
-	blinks	-	blink		tion	If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				Fan drive	The power supply	Check the power supply voltage.
2		3		voltage failure	voltage is low (150 V	(220-240 V AC 50 Hz)
2 blinks	-	blinks		(Undervoltage)	AC or lower).	
DIIIKS		DIIIIKS			Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				Fan drive	The power supply	Check the power supply voltage.
2		4		voltage error	voltage is high (320 V	(220-240 V AC 50 Hz)
blinks	-	hlinks	-	(Overvoltage)	AC or higher).	
		Dimited			Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				SA fan opera-	The SA fan does not	Check whether the fan turns by hand.
				tion failure	rotate properly.	
					SA fan motor wire	Check the wiring of the connector (CN6) on
					connection error	the circuit board and the fan motor.
2	2	5	_		SA fan motor malfunc-	Check the coil resistance of the fan motor.
blinks	blinks			tion	If it has a defect, replace the fan motor.	
					SA fan motor sensor	Check the signal voltage of the fan motor sen-
					malfunction	sor. If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.

* In case multiple errors have occurred at the same time, each LED will blink simultaneously.

* When reconnecting the power supply, wait more than 5 minutes after power-off, and then turn it on again.

LED 1	LED 11	LED 2	LED 3	_	-	
(red)	(green)	(red)	(green)	Symptom	Cause	Corrective action
				EA fan opera-	The EA fan does not	Check whether the fan turns by hand.
				tion failure	rotate properly.	
					EA fan motor wire	Check the wiring of the connector (CN7) on
					connection error	the circuit board and the fan motor.
	2		5		EA fan motor malfunc-	Check the coil resistance of the fan motor.
-	blinks	-	blinks		tion	If it has a defect, replace the fan motor.
					EA fan motor sensor	Check the signal voltage of the fan motor sen-
					malfunction	sor. If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				SA fan motor	Wire connection error	Check the wiring of the connector (CN8) on
				sensor failure	of SA fan motor sensor	the circuit board and the fan motor sensor.
2		6 or 7			SA fan motor sensor	Check the signal voltage of the fan motor sen-
blinks	-	blinks	-		malfunction	sor. If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				EA fan motor	Wire connection error	Check the wiring of the connector (CN9) on
				sensor failure	of EA fan motor sensor	the circuit board and the fan motor sensor.
	2		6 or 7		EA fan motor sensor	Check the signal voltage of the fan motor sen-
-	blinks	-	blinks		malfunction	sor. If it has a defect, replace the fan motor.
					Large circuit board	Replace the circuit board if none of above
					malfunction	related actions works.
				Communication	Connection error	Check the connections of the connectors
				failure between	between the circuit	(CN10, CN15) on the circuit boards.
				the circuit	boards	
				boards *1	The external signal	Keep the wires for fan speed and bypass
					wires and power sup-	condition selections more than 10 cm away
					ply cable are too close.	from the power supply cable.
					Connection error of	Check the connection of the connectors
9	9	9	9		transformer	(CN2, CN14) on the circuit boards.
blinks	blinks	blinks	blinks		Transformer malfunc-	Check the output of the transformer. If it has
					tion	a defect, replace the transformer.
					Connection error of	Check the connection of the connectors
					reactor	(CN4, CN5) on the circuit board.
					Reactor malfunction	Check the resistance of the reactor. If it is
						open, replace the reactor.
					Circuit boards mal-	Replace both circuit boards if none of above
					function	related actions works.

*1 Each LED does not blink simultaneously in some cases.

* In case multiple errors have occurred at the same time, each LED will blink simultaneously.

* When reconnecting the power supply, wait more than 5 minutes after power-off, and then turn it on again.

LED 1	LED 11	LED 2	LED 3			
(red)	(green)	(red)	(green)	Symptom	Cause	Corrective action
				Damper failure	Damper plate opera- tion error	Remove the rod, and then check whether the damper plate moves by hand. For removing the rod, open the maintenance cover and remove the guards from the unit.
3 blinks	-	-	-		Wire connection error of the damper unit	Check the wiring of the connectors (CN3, CN17) on the circuit boards and the damper unit.
					Connection error between the circuit boards	Check the connection of the connectors (CN10, CN15) on the circuit boards.
4 blinks	-	-	-	OA thermistor failure	Connector connection error of thermistor Thermistor malfunc-	Check the wiring of the connector (CN16) on the circuit board and the thermistor. Check the resistance of the thermistor.
					tion	If it has a defect, replace the thermistor.
5 blinks	-	-	-	RA thermistor failure	Connector connection error of thermistor Thermistor malfunc- tion	Check the wiring of the connector (CN16) on the circuit board and the thermistor. Check the resistance of the thermistor. If it has a defect, replace the thermistor.
8 blinks	-	-	-	External de- vice error (when the switch SW 1-2 is ON)	 The following conditions developed. OA temperature is still -10°C or lower, 60 minutes after the TM4 8,9 output started. OA temperature is 15 °C or higher within 15 minutes after the TM4 8,9 output started. 	When external devices are connected, check the external devices. When external devices are not connected, check the switch SW 1-2.

* In case multiple errors have occurred at the same time, each LED will blink simultaneously.

* When reconnecting the power supply, wait more than 5 minutes after power-off, and then turn it on again.

LED displays (Normal)

LED 1 (red)	LED 11 (green)	LED 2 (red)	LED 3 (green)	Contents	Descriptions
Lit * 2	-	-	-	Power supplying to the circuit board	Lit when the power is supplying to the circuit board.
-	Lit * 2	-	-	Trial operation	Lit during trial operation (SW 1-1 ON).
-	-	Lit	-	SA fan operation	Lit during the SA fan operation.
-	-	-	Lit	EA fan operation	Lit during the EA fan operation.

* 2 When one of LED 1 and LED 11 is blinking (during an error), the other one will be unlit.

* All LEDs are temporarily lit just after power-on.

(2) When the unit does not operate or operates irregularly

No.	Symptom	Cause	Corrective action
1	The fans do not	Power is not supplied to the unit.	Check the power supply.
	operate.		(200-240 V AC 50 Hz)
		Power supply voltage is out of rated	Check the power supply.
		range.	(220-240 V AC 50 Hz)
		Improper connection or wiring of the	Check the connections of the external signal
		external signals.	wires and the terminal blocks (TM2, TM3).
		 The type of external signals does not 	/TM2 1-4 and TM3 5 are for fan speed selection.
		match the connected terminal block.	TM3 PB is for bypass condition selection.
			\TM3 V is for ventilation priority mode.
		The type of external signals is incorrect.	Check the type of external signals.
		(Uncharged a-contact)	
		The external device signals are not input.	Check the external devices.
		The signal cables from the external de-	Check the wiring length of the signal
		vices are longer than specified.	cables. (Make sure the wiring length from
			the external devices is within 20 m.)
		The external signal wires and the power	Keep the wires for fan speed and bypass
		supply cable are too close.	condition selections more than 10 cm
			away from the power supply cable.
		Malfunction of the circuit board, or the fan	See the "Checklist of LED failure displays"
		motor	(page 17).
2	 The fans do not 	The trial operation switch SW 1-1 is ON.	Check the trial operation switch SW 1-1.
	stop.	The external device signals are input.	Check the external devices.
	• The fan speed	The external signal wires and the power	Keep the wires for fan speed and bypass
	does not change.	supply cable are too close.	condition selections more than 10 cm
			away from the power supply cable.
		The signal cables from the external de-	Check the wiring length of the signal
		vices are longer than specified.	cables. (Make sure the wiring length from
			the external devices is within 20 m.)
3	Air volume chang-	The function setting switch SW 1-7	If energy recovery ventilation mode is au-
	es by itself.	(Automatic air volume increasing during	tomatically switched to bypass ventilation
		bypass setting) is ON.	with the switch SW 1-7 is ON, fan speed
			will increase 1 step nigher than its present
			speed (with a summer chiefia).
			If the operation mode is switched to en-
			return to its original speed
			Refer to 7 (1) 2 (page 10)
			(This is not a failure)
4	The SA fan ne-	•When -15° C < OA temperature < -10° C	Refer to 7 (1) (3) (page 11)
	riodically stops	the SA fan regularly stops for 10 minutes	(This is not a failure.)
	operating.	to prevent the Lossnav core from freez-	
	5	ing.	
		• When OA temperature is -15°C or lower,	
		The SA fan stops to prevent the Lossnay	
		core from freezing.	

No.	Symptom	Cause	Corrective action
5	The SA fan pe-	When OA temperature is -15°C or lower,	Refer to 7. (1) ③ (page 11).
	riodically stops	the SA fan stops operating to prevent the	(This is not a failure.)
	operating, and the	Lossnay core from freezing.	
	EA fan air volume	Then, the EA fan runs at speed 5 if the	
	decreases.	switch SW 1-3 is ON.	
6	After operation	The function setting switch SW 1-2	When the switch SW 1-2 is ON, the fan
	has been stopped,	(Operation monitor output with delay func-	continues to operate for 3 minutes after
	the fan continues	tion) is ON.	Lossnay operation has been stopped.
	to run for a while.		Refer to 7. (4) (page 13).
			(This is not a failure.)
7	The damper plate	When OA temperature is 8°C or lower, ener-	Check the OA temperature.
	does not operate.	gy recovery ventilation mode is turned on.	
		Trial operation switch SW 1-1 is ON.	Turn off the trial operation switch SW 1-1.
		Malfunction of the circuit board, or the	See the "Checklist of LED failure displays"
		damper motor	(page 17).
	When the bypass	The type of external signals does not	Check the connections of the external sig-
	condition selec-	match the connected terminal block.	nal wires and the terminal blocks (TM2,
	tion signal (TM3		TM3). (TM3 PB or V is for bypass condi-
	PB, V) is being		tion selection)
	used.	The type of external signals is incorrect.	Check the type of external signals.
		(Uncharged a-contact)	
		The external device signals are not input.	Check the external devices.
		The signal cables from the external devices	Check the wiring length of the signal
		are longer than specified.	cables. (Make sure the wiring length from
			the external devices is within 20 m.)
		The external signal wires and the power	Keep the wires for fan speed and bypass
		supply cable are too close.	condition selections more than 10 cm
			away from the power supply cable.
		The function setting switch SW 1-4	When the switch SW 1-4 and TM3 V input
		(Ventilation priority mode during ventila-	is ON, operation mode is fixed in energy
		tion setting input on) is ON.	recovery ventilation.
			Refer to 7. (2) ③ (page 11).
8	Operation moni-	• The connected terminal block is incorrect.	• Check the connections of the terminal
	tor or malfunction		blocks (TM4).
	monitor is not cor-	• Connection error	
	rectly output.	• The function setting switch SW 1-2 or	Gneck the switch Svv 1-2 (Operation
		SVV 1-3 IS NOT SET TO UN.	SW 1.5 (Operation manifes autout)
	IED 1 on the sir	Connection error of the newer events land	Chook the wiring of the connector (ON1)
9		wires	oneck the winning of the connector (CN1)
	cuit board is not in	wires	(TM1) on the circuit board
		Connection error of the transformer	Check the connection of the connectors
	supplying.		(CN2 and CN14) on the circuit board
		Transformer molfunction	Check the transformer output If it has a
			defect replace the transformer
		Disconnection of the fuse	Replace the circuit board.
		Malfunction of the small circuit board	Replace the circuit board if none of above
			related actions works.

③ Temperature and thermistor resistance table

Temperature	Resistance value (kΩ)	Temperature	Resistance value (kΩ)
(°C)	(TYP)	(°C)	(TYP)
-30	53.9 - ∞	16	7.0
		17	6.7
-20	32.8	18	6.5
-19	31.3	19	6.2
-18	29.8	20	6.0
-17	28.4	21	5.8
-16	27.1	22	5.6
-15	25.9	23	5.4
-14	24.7	24	5.2
-13	23.5	25	5.0
-12	22.5	26	4.8
-11	21.5	27	4.7
-10	20.6	28	4.5
-9	19.6	29	4.3
-8	18.8	30	4.2
-7	18.0	31	4.0
-6	17.2	32	3.9
-5	16.4	33	3.8
-4	15.7	34	3.6
-3	15.1	35	3.5
-2	14.4	36	3.4
-1	13.9	37	3.3
0	13.3	38	3.2
1	12.8	39	3.1
2	12.2	40	3.0
3	11.7	41	2.9
4	11.2	42	2.8
5	10.8	43	2.7
6	10.4	44	2.6
7	9.9	45	2.5
8	9.5	46	2.4
9	9.2	47	2.4
10	8.8	48	2.3
11	8.5	49	2.2
12	8.1	50	2.1
13	7.8	:	
14	7.5	90	0-0.7
15	7.3		

9. Overhaul procedure

Work precautions

- When touching the electric components such as circuit boards and fan motors, do not touch the components for more than 5 minutes after power-off, and then start servicing.
- Before replacing parts, repair troubled sections according to the instructions described in the troubleshooting.
- When servicing, always keep proper footing.
- When servicing, make sure that the cord is pulled out of the outlet, or the power supply isolator is off if no mains connector is built in the product, so as no electrical shock or injury to occur. Pay sufficient attention when working on the product.
- Always connect the power wire properly.
- After completing repairs, confirm that the main unit operates normally.
- Always wear gloves when servicing.
- * Part names used in the following text correspond to those listed in the parts catalog.

(1) Turning power off

- ① Shutdown the unit.
- (2) Turn off the power supply isolator on the distribution board.

Precaution

All supply circuit must be disconnected, and do not touch the components for more than 5 minutes, before obtaining access to the terminal devices.

(2) Fan parts

① Open the maintenance cover.



Maintenance cover

- ② Unscrew the fixing screws (25 PTT screws 4 x 8, indicated by 〇) for the casing (upper).
- (3) Unscrew the fixing screws (four screws indicated by imes, and two special screws indicated by imes) for the guards.





EA fan SA fan



These parts are drawn translucently to show inner parts.

Air Exhaust (EA) fan

⑤ Unscrew the screws (two PTT screws 4 x 8, indicated by ○) for the connector cover next to the EA fan.



EA fan

Connectors for the EA fan and SA fan



Power supply wiring Signal wiring

- 6 Disconnect all the connectors for the fans.
- O Unscrew the screws (six PTT screws 5 x 10, indicated by \bigcirc).

Air Supply (SA) fan

⑧ Unscrew the screws (six PTT screws 5 x 10, indicated by ○).



(3) Circuit board parts

(1) Unscrew the screws (four screws, indicated by \bigcirc) for the control cover.



② When replacing the lead wires or damper parts, unscrew the fixing screws (two PTT screws 4 x 8, indicated by ○) for the fix plate.





Circuit board Terminal block

(4) Lossnay core

1 Unscrew the screws (two screws, indicated by \bigcirc) for the core holder.



② Draw the Lossnay core from the unit by holding the handles.



Handles



(5) Damper parts and Damper motor

- 1 Remove the fix plate for the lead wires and disconnect the wires from the circuit board. (Refer to (3) (page 25)).
- (2) Unscrew the screws (two screws, indicated by \bigcirc) for the damper, and draw the damper from the unit.



- (3) Unscrew the screws (three screws, indicated by \bigcirc) for the GM cover.
- 4 Remove the GM cover.

(5) Unscrew the screws (two screws, indicated by \bigcirc) for the damper motor.





Damper motor (GM)

* When assembling

- Assemble the unit in the reverse order of disassembly.
- Always make sure that the unit works properly when reassembled.

10. Parts catalog

Please note the following when using the parts catalog.

- 1. When ordering parts, always indicate the part number, part name, and the number of parts required.
- 2. Parts are not always available, and it may take time for you to receive them.
- 3. There may be specification improvements.
- 4. Specifications are correct as of June 2009.
- 5. Parts marked <u>A</u> are critical for safety. To maintain safety and performance, always replace these parts with the parts prescribed.
- 6. The numbers that are circled in the exploded view are the same as the reference number for the part being indicated.

$\underline{4} \times \underline{16}$					
Screw diameter Length					
Description					
Cross recess flat head machine screw					
Cross recess oval head machine screw					
Cross recess pan head machine screw					
Cross recess pan head screw with spring washer					
Cross recess tapping screw					
Cross recess flat head tapping screw					
Cross recess truss head tapping screw					
Cross recess truss head machine screw					
Slotted head stop screw					
Square head stop screw					
Pan head stop screw					
Primer truss head screw					
Hexagon head stop screw					
Cross recess round wood screw					
Cross recess flat head wood screw					
Cross recess round and flat wood screw					
Slotted round wood screw					
Cross recess pan head screw with small washer					
Cross recess pan head machine screw with spring washer and flat washer					

Description of screw abbreviations

Model LGH-50RSDC-E

No.	Parts No.	Name of part	Q'ty pcs/unit	Critical for safety	Remarks	Price
1.	H00 000 487	PTT screw 4×8	99			
2.	R50 028 610	Flange	4			
3.	Y55 001 223	Cord clip	1			
4.	HOO 000 244	PT screw 6×12	4			
5.	R50 095 380	Hanger	2			
6.	Y50 123 369	Wiring diagram	1			
7.	R50 399 223	Cord clip	2			
8.	R50 399 224	Cord clip	8			
9.	K81 540 384	Fix plate	2			
10.	HOO 000 390	PT screw 5×10	4			
11.	K81 540 385	Fix plate	2			
12.	Y50 123 722	Fix piece	3			
13.	Y50 057 344	Wire	1			
14.	Y50 123 721	Maintenance cover	1			
15.	Y50 123 830	Casing(upper)	1			
16.	Y50 123 717	Core holder	1			
17.	Y50 123 723	Guard	2			
18.	HOO 000 332	PTT screw 4×10	4			
19.	A33 391 045	Special screw 4×12	2		Black	
20.	Y50 123 345	Fix piece	3			
21.	Y50 123 344	Hinge	3			
22.	Y50 123 724	Lossnay core	2			
23.	Y50 123 730	Filter	4			



Model LGH-50RSDC-E

No.	Parts No.	Name of part	Q'ty pcs/unit	Critical for safety	Remarks	Price
31.	R50 488 713	Motor fix plate	2			
32.	Y50 123 453	Motor	1			
33.	Y50 031 608	Flinger	2			
34.	K81 417 102	U ring	2			
35.	M45 649 226	Bush	5			
36.	$M35\ 164\ 224$	Cord clip	10			
37.	Y50 123 708	Fan base	1			
38.	HOO 056 075	Spring washer(4)	2			
39.	HOO 189 007	PTT screw 5×10	20			
40.	Y50 123 720	Connector cover	1			
41.	D41 123 223	Lead wire clip	2			
42.	Y50 123 710	Connector case	1			
43.	Y50 123 711	Fix plate(earth)	1			
44.	M34 706 465	Special washer	2		$\phi 10$	
45.	R50 542 480	Centrifugal fan	2		φ 220	
46.	M34 398 077	Tab washer	2			
47.	R50 331 067	Special nut(8)	2		Left-handed	
48.	Y50 123 718	Fan casing	1			
49.	Y50 123 709	Fix pieces	2			
50.	Y50 123 454	Motor	1			
51.	HOO 172 076	Lock washer	1			
52.	Y50 123 712	Motor fix plate	1			
53.	Y50 123 713	Separator	1			
54.	Y50 123 719	Fan casing	1			



Model LGH-50RSDC-E

No.	Parts No.	Name of part	Q'ty pcs/unit	Critical for safety	Remarks	Price
61.	¥50 123 732	Damper fix plate	1			
62.	Y50 123 727	Fix plate	1			
63.	R50 069 156	Pull spring	1			
64.	D40 072 225	Bush	1			
65.	Y50 123 729	Damper	1			
66.	Y50 123 716	Damper support	1			
67.	Y50 115 225	Bush	1			
68.	Y50 123 726	GM cover	1			
69.	Y50 061 260	Damper motor (GM)	1		AC220 • 240V	
70.	R50 054 225	Special bush	2			
71.	Y50 123 725	GM fix plate	1			
72.	Y50 123 728	Rod	1			
73.	M31 234 089	Special bush	2			
74.	H00 000 003	PP screw 4×8	2			
75.	Y50 123 715	Control cover	1			
76.	Y50 123 221	Lead wire	1			
77.	D41 006 363	Cord band	1			
78.	Y50 123 172	Circuit board	1		LG-08DC-E	
79.	Y50 123 714	Fix plate	1			
80.	K83 223 225	Bush	3			
81.	Y50 138 216	Transformer	1		AC230V	
82.	Y50 123 179	Reactor	1			
83.	HOO 000 349	PT screw 4×8	9			
84.	M13 100 242	Terminal block	1		3P	
85.	HOO 154 005	PPT screw 4×12	1			
86.	HOO 011 008	PT screw 4×8 (BS)	1			
87.	HOO 013 076	Lock washer(4)	2			
88.	D42 019 095	Spacer	3			
89.	X40 139 095	Spacer	10			
90.	Y50 123 733	Circuit fix plate	1			
91.	Y50 123 216	Lead wire(GM)	1			
92.	Y50 123 214	Lead wire(sigunal)	1			
93.	Y50 123 213	Lead wire(poewr)	1			
94.	Y50 123 731	Fix plate	1			



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