HEFEI SNOWKY ELECTRICO CO., LTD

GENERAL SERVICE MANUAL OF BASIC MODELS FOR SNOWKYE APPLIANCE

[Version: 05_1]

[2015.08.17]

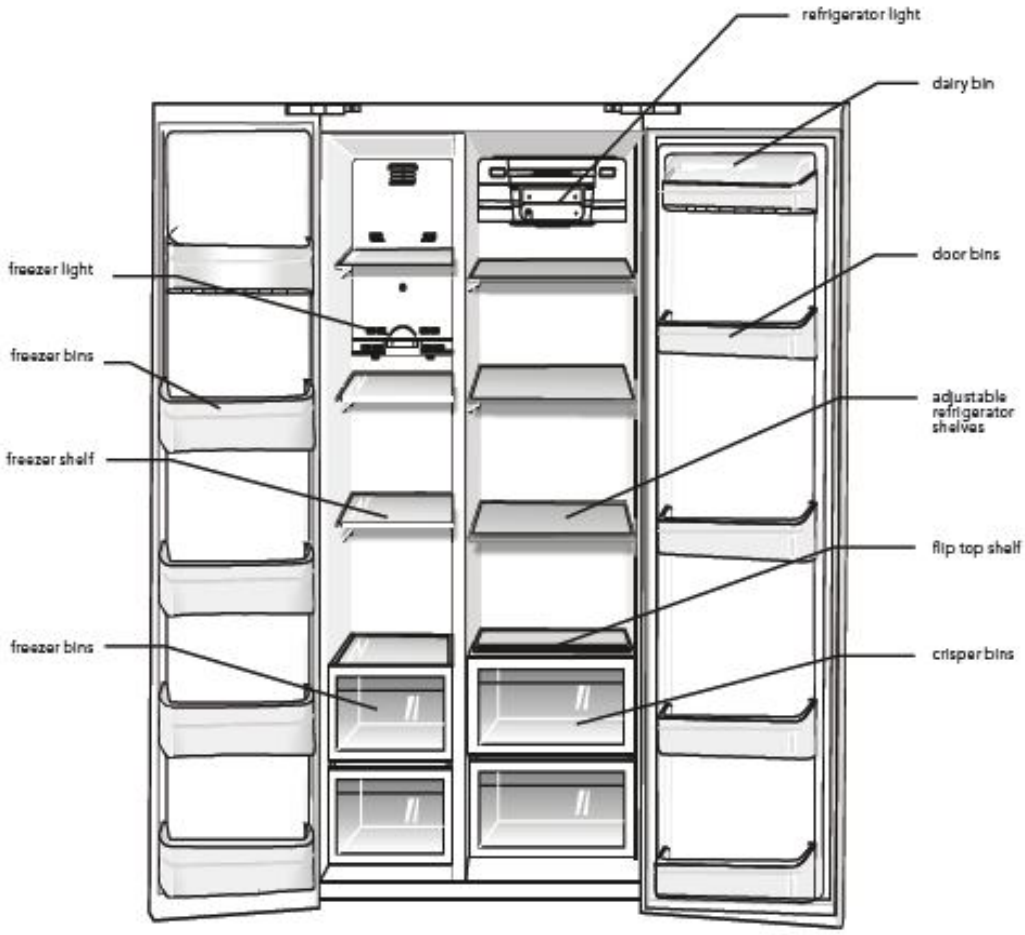
Contents

1. Introduction

The service manual is the same with refrigerator-freezer of basic models which is made by Snowkye corporation. rated voltage: 220V/50Hz (max. rated voltage: rate voltage±15%), Ambient temperature: 10℃~43℃

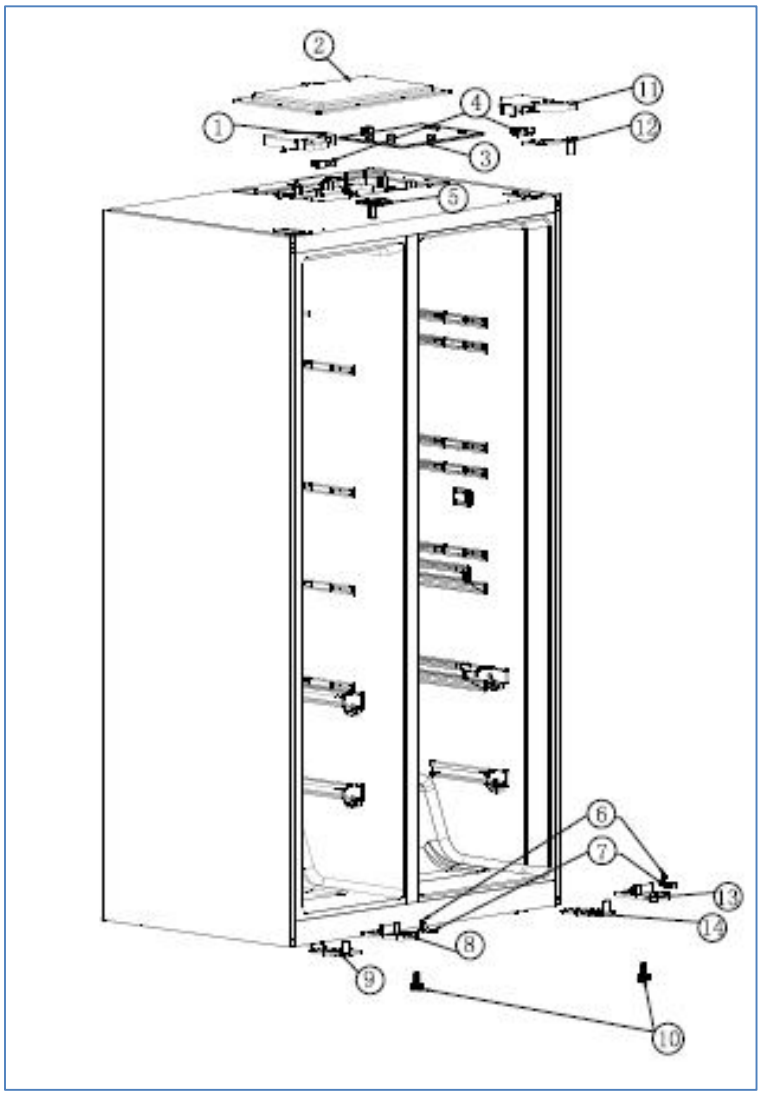
2. Refrigerator structure and Part list

2.1. Refrigerator structure



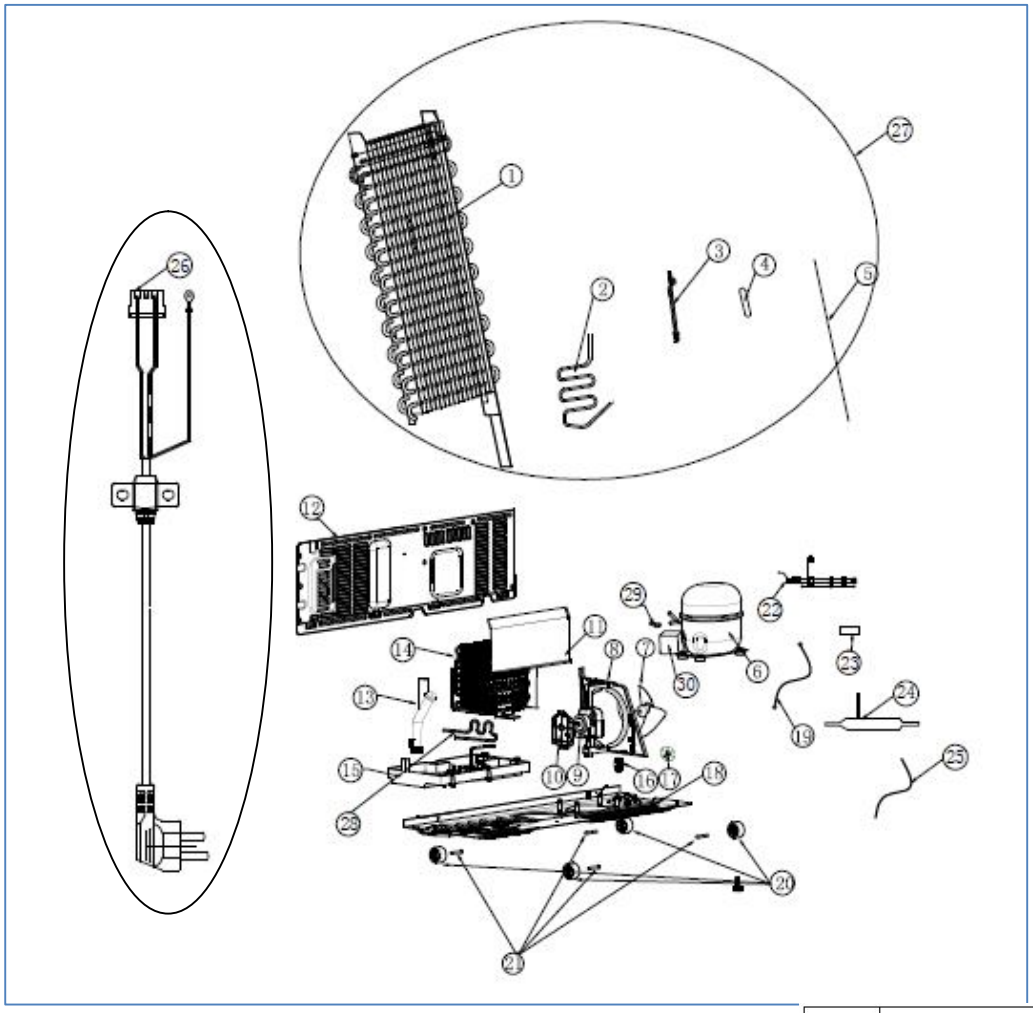
2.2. Explosive view and Part list

2.2.1. Cabinet complete



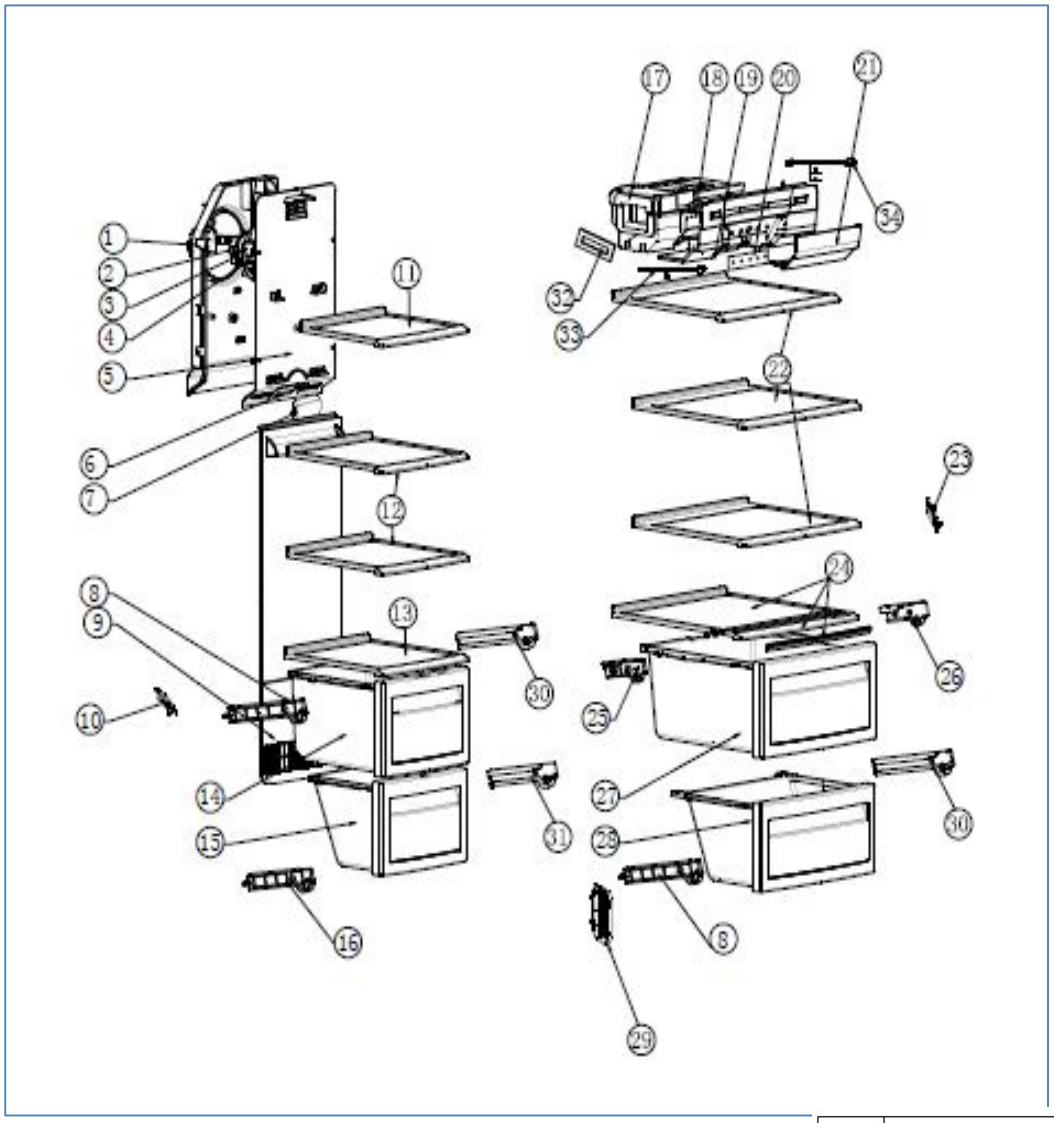
No.	Name	Code	Quantity
1	cover for top hinger (L)	GS0202081L2	1
2	cover for power/control module	GS010110502	1
3	power/control module	DA0102020	1
4	light switch	DA0200205	2
5	top hinger complete (L)	GA0100206L2	1
6	door stopper	GJ0200215	2
7	door closer (base)	GS0200214	2
8	cover of lower hinge (L)	GS0200220L2	1
9	lower hinge completely (L)	GA0000211L2	1
10	adjust foot	GA0200217	2
11	cover for top hinger (R)	GS0202081R2	1
12	top hinger complete (R)	GA0100206R2	1
13	cover of lower hinge (R)	GS0200220R2	1
14	lower hinge completely (R)	GA0000211R2	1

2.2.2. Mechanical room complete, Evaporator complete and Power wire complete



No.	Name	Code	Quantity
1	assy Evap.	LA020026502	1
2	defrost heater(220v, 280w)	DA030207701	1
2	defrost heater(220v, 280w)	DA030207701	1
3	defrost fuse	DA0300278	1
4	defrost senor	DA0302715	1
5	ground wire	DA0101945	1
6	compressor	DA0100256	1
7	fan blade for condenser	DS0200242	1
8	condenser fan bracket	GS0200239	1
9	condenser fan motor	DA0200240	1
10	cover for condenser fan motor	DS0200241	1
11	sealing part for condenser	GS0200238	1
12	cove for compressor room	GK0200260	1
13	dew-water fube complete	GA0100055	1
14	condenser complete	LA0200243	1
15	dew-water box	GS0200237	1
16	Rubber ring for fan motor fixing II (condenser)	DS020008302	1
17	Rubber ring for fan motor fixing I (condenser)	DS020008202	1
18	compressor support plate complete	GA0200234	1
19	compressor ground wire	DA0100256	1
20	wheel	GS9900035	4
21	wheel axes	GJ9900036	4
22	Wire harness of compressor	DA0100256	1
23	Protector (516)	LA010155204	1
24	dryer fillter	LA0100257	1
25	pipe suction connect	LG0101538	1
26	Wire harness(Thailand Standard)	DA0102599	1
26	Wire harness(Europe Standard)	DA0100444	1
26	Wire harness(British Standard)	DA0100504	1
27	Evaporator heater assembly	LA010026214	1
28	condenser pipe complete	LA0300442	1
29	service pipe	LG0100258	1

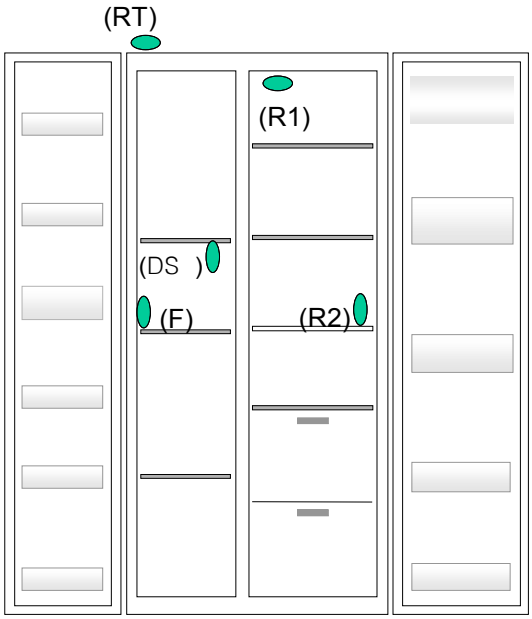
2.2.3. Inside parts and Accessories complete



No.	Name	Code	Quantity
1	bracket for freezer fan	FS0200075	1
2	freezer fan motor	DA0200078	1
3	cover for freezer fan motor	DS0200081	1
4	freezer fan blade	DS0200079	1
5	air channel(up) for freezer	FS0200065	1
6	freezer LED light	DA0200068	1
7	cover for freezer light	GS0200069	1
8	normal rail for drawer (L)	GA0100107L1	2
9	air channel (base) for freezer	FS0200072	1
10	Cover of sensor (freezer)	GS0100126D1	1
11	freezer glass shelf I	GA0100109	1
12	freezer glass shelf II	GA0100112	2
13	freezer glass shelf III	GA0100115	1
14	freezer drawer (up)	GA0100118	1
15	freezer drawer (base)	GA0100123	1
16	rail for freezer drawer (base)L	GA0100121L1	1
17	EPS air channel cooler	FA0200143	1
18	E-Flap	DA0300144	1
19	air channel cover cooler	FS0300136	1
20	cooler LED light	DA0300138	1
21	cooler LED light cover	GS0300139	1
22	516cooler glass shelf	GS0201084	3
23	cover of sensor (cooler)	GS0100126C1	1
24	cooler glass shelf completely	GA010069800	1
25	drawer guide-rail completely in cooler(L)	GA0100099L1	1
26	drawer guide-rail completely in cooler(R)	GA0100099L1	1
27	cooler drawer I	GA0100096	1
28	cooler drawer II	GA0100104	1
29	suction cover	FS0200128	1
30	normal rail for drawer (R)	GA0100107R1	2
31	rail for freezer drawer (base)R	GA0100121R1	1
32	sealing part for EPS air channel cooler	FP0301936	1
33	cooler sensor wire harness	DA030013702	1
34	cooler LED light wire connected	DA030013701	1

3. **Electronic control**

3.1. Distribution map of sensors location



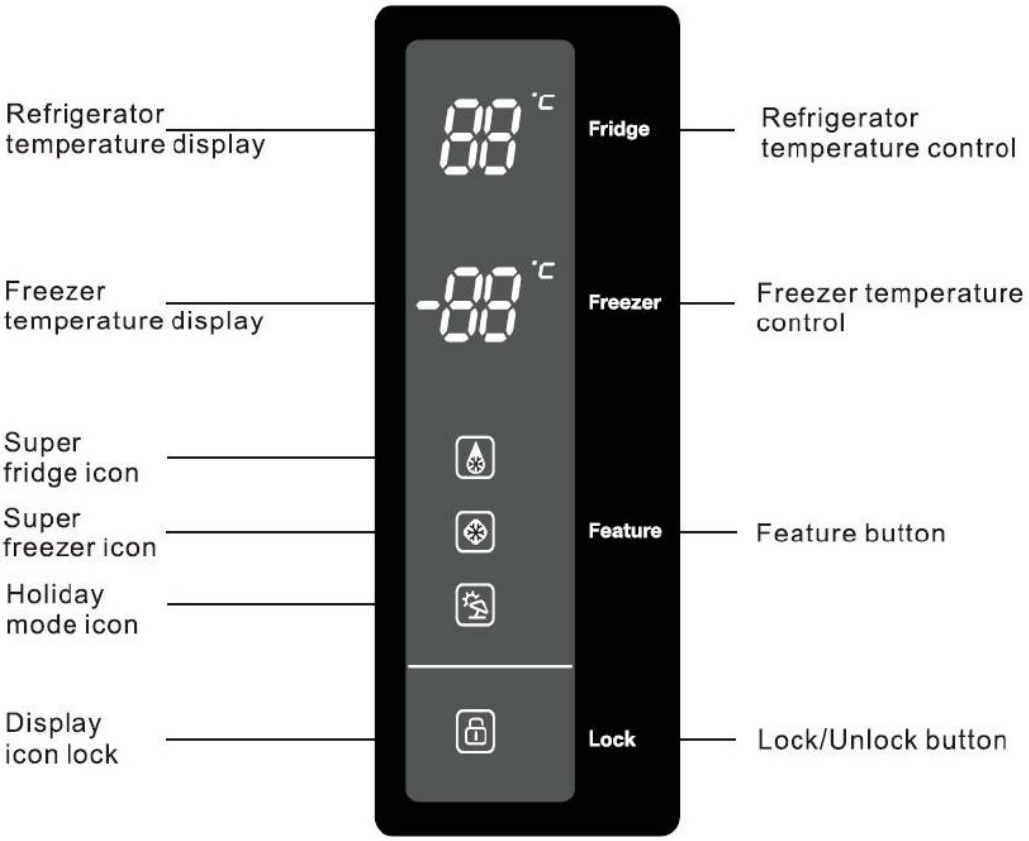
No	Name	Location	Functions
1	F-sensor	Left-middle side of F-compartment	To control temperature of freezer by compressor run/stop according to setting temperature on UI
2	R-sensor 1	Left side of air-input rim in R compartment	To control temperature of fridge by damper open/close according to setting temperature on UI
3	R-sensor 2	Right-middle side of R compartment	To control fridge boost activate and exit automatically base on temperature changing of fridge compartment. even if fridge boost is activated by manual on UI, to exit the function is controlled by the sensor's temperature
4	Defrost sensor	Upper-right corner of evaporator	To control defrost end base on definitional temperature of the sensor
5	Ambient sensor RT	Front-top of cabinet	To revise the offset of setting temperature on UI automatically base on different ambient temperature

3.2. PCB (Power Control Brand) functions

No	Parts	Controlling mode
1	Compressor	Run/stop
2	Condenser fan	Run/stop
3	F-compartment fan	2 shifts speed
4	R-compartment LED lamp	Run/stop
5	F-compartment LED lamp	Run/stop
6	Defrost heater	Run/stop
7	Damper	Run/stop
8	Damper heater	Run/stop
9	DOM and Buzzer	

3.3. Contents of DOM (Display Of Module) and rule

3.3.1. Interface of DOM



3.3.2. Temperature setting function for F-comp. and R-comp.

The setting temperature changing can be carried out by pressing buttons, the corresponding relation between pressing times and setting temperature is as below: (it is a cyclic run according to below the list） unit: ℃

Compartment	Defaulted T display when switch on	Press 1 time	Press 2 times	Press 3 times	Press 4 times	Press 5 times	Press 6 times	Press 7 times	Press 8 times
F-comp. temperature	-18	-19	-20	-21	-22	-23	-15	-16	-17
R-comp. temperature	5	4	3	2	1	0	6	-	-

※ a) Setting of temperatures value will be kept after 10s.

b) The LED lamps of button switch off after 15s once the setting finish; they can be illuminated again if some button is touched. *pay attention to: the setting function of button hasn't been activated yet*

c) Press the button again which is chosen for activation, at the same time, others lamp will close up.

3.3.3. Lock

3.3.3.1. The Lock button is in unlocking state when the appliance is switched on at first，the icon

isn't displayed on DOM.

3.3.3.2. Others button on DOM can't be operated once the lock button is activated, this moment, the icon of lock button illuminates.

3.3.3.3. Activating method: press the lock button for 3s, the icon of lock button illuminate on DOM. same method for unlock.

3.3.4. Super freezer + Super fridge + Holiday mode

These function can be activated by pressing the "**Feature**" button and related LED lamp illuminates at the same time. Super freezer and Super fridge function can withdraw automatically when precast conditions are achieved.
they can be closed also by pressing the "**Feature**" button again.

3.3.5. Display rule of DOM

3.3.5.1. Controlling rule of default mode

a) LED lamps of DOM illuminate when they are operated, and then , the LED lamp will close after 30s once the operation finishes.

b) LED lamp illuminate when doors are opened, and then, they close over 30s；

※ *All of LEDs will be illuminated when buttons of "**Freezer**" +"**Feature**" are pressed at the same time. release them, renew to default mode*

4. Others program

4.1. Fault checking program (Self diagnostics mode)

4.1.1. the Fault checking program are run automatically during appliance run;

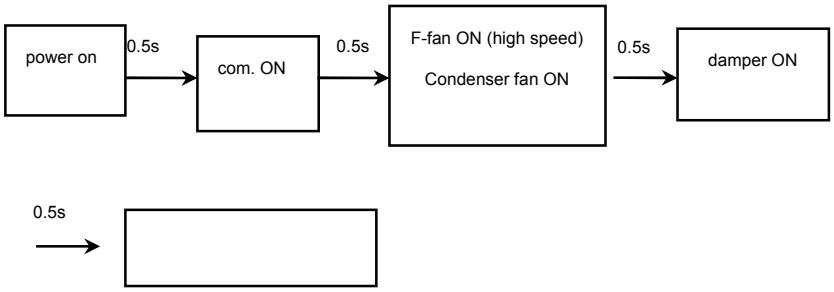
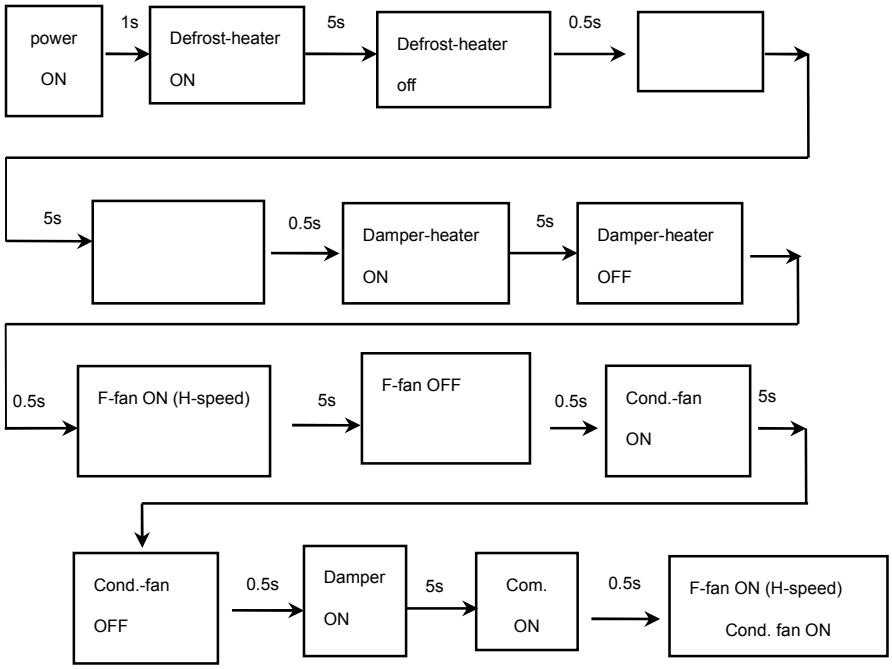
4.1.2. Important fault codes can be displayed automatically on DOM if there is a real fault after 3 hours. they can be checked also by press" Feature" +"Freezer" buttons at the same time

4.1.1 Fault codes and definition

NO	Item	Fault display		Fault definition	Trouble shooting
		Freezer setting temp.	cooler setting temp.		
1	Normal	setting temp. display		-	Normal display
2	F-sensor abnormal	Er	FS	F-sensor break or short circuit	Check wire of sensors
3	AT-sensor abnormal	Er	rH	AT-sensor break or short circuit	Check wire of sensors
4	C-sensor 1 abnormal	Er	rS	C-sensor 1 break or short circuit	Check wire of sensors
5	C-sensor 2 abnormal	Er	r2	C-sensor 2 break or short circuit	Check wire of sensors
6	Defrosting sensor abnormal	Er	dS	Defrost sensor break or short circuit	Check wire of sensors
7	Defrosting abnormal	Er	dH	Temperature rising of D-sensor is less than 5℃ for 80 min from defrost starting	1.Check T-fuse breaking 2.Check heater breaking 3.Check drain tube block, 4.Check connection between terminals and cabinet or cabinet and PCB 5. Change PCB
8	Condenser fan abnormal	Er	CF	Condenser fan block or break	1.Check fan block 2.Check fan motor 3.Check terminal connection between fan motor and cabinet 4. Change PCB
9	Communication abnormal	Er	CO	Communication between PCB and DOM	1.Check connection terminals in DOM and POM 2.Change DOM or POM.

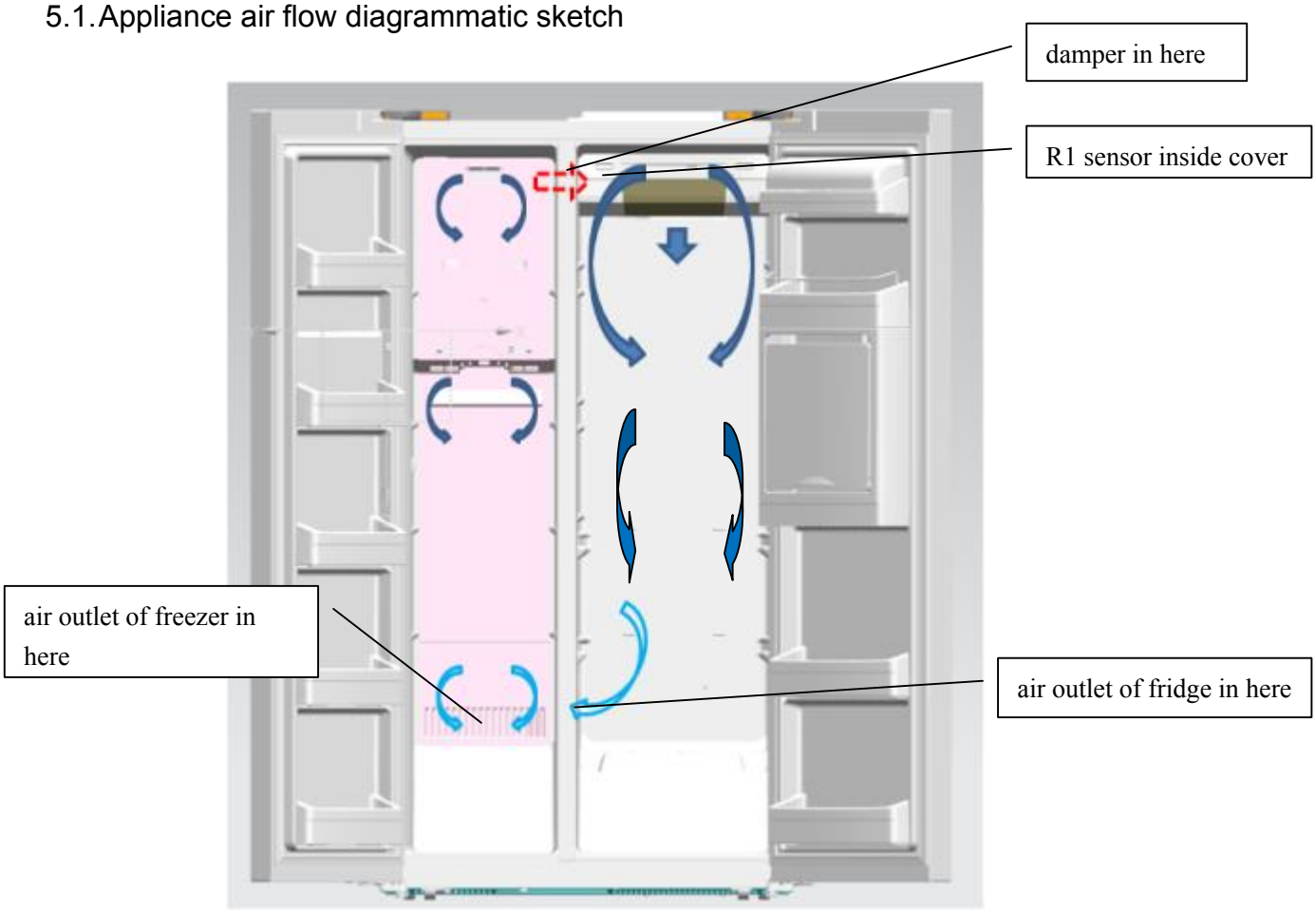
4.2. Starting sequence list of Loads

The program can be run automatically when the appliance is powered on at first, all of parts will be checked by the program, once there is a fault in appliance, a fault code will be displayed and the appliance will be run base on fault mode controlling.

<table>
<tr><th colspan="2">Function</th><th>Starting sequence of loads</th><th>Remark</th></tr>
<tr><td rowspan="2">First power on</td><td>Defrost sensor temperature is more than 45℃</td><td> 
</td><td rowspan="2">The self-checking program will be broken off if faults exist</td></tr>
<tr><td>Defrost sensor temperature is less than 45℃</td><td> 
</td></tr>
</table>

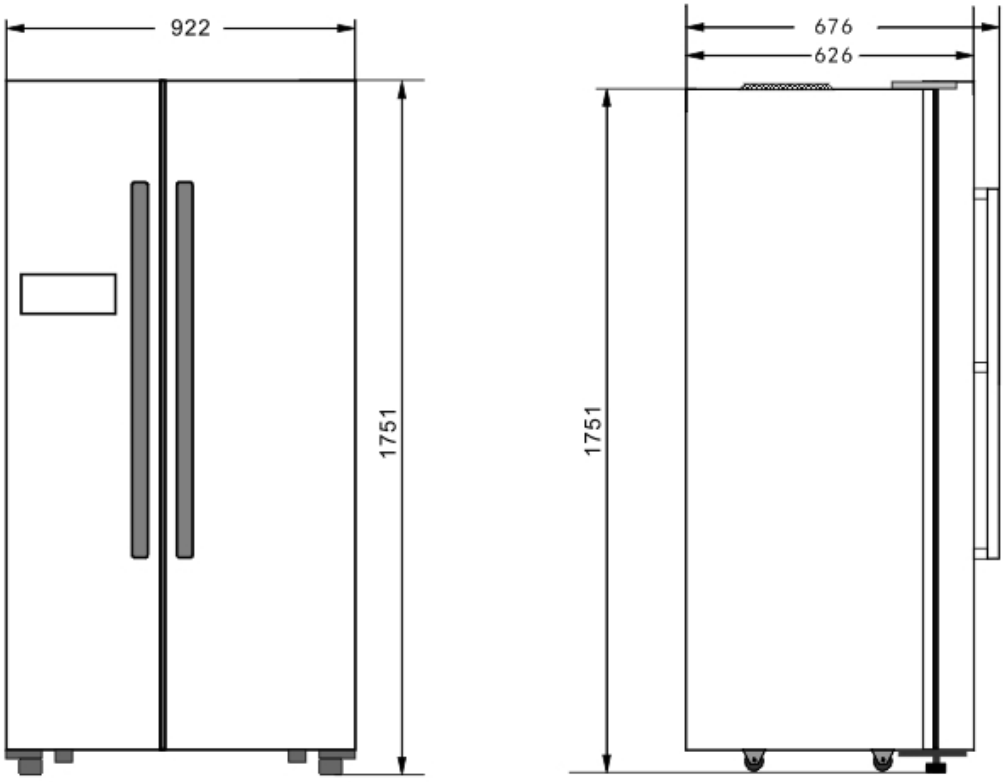
5. Attachments

5.1. Appliance air flow diagrammatic sketch

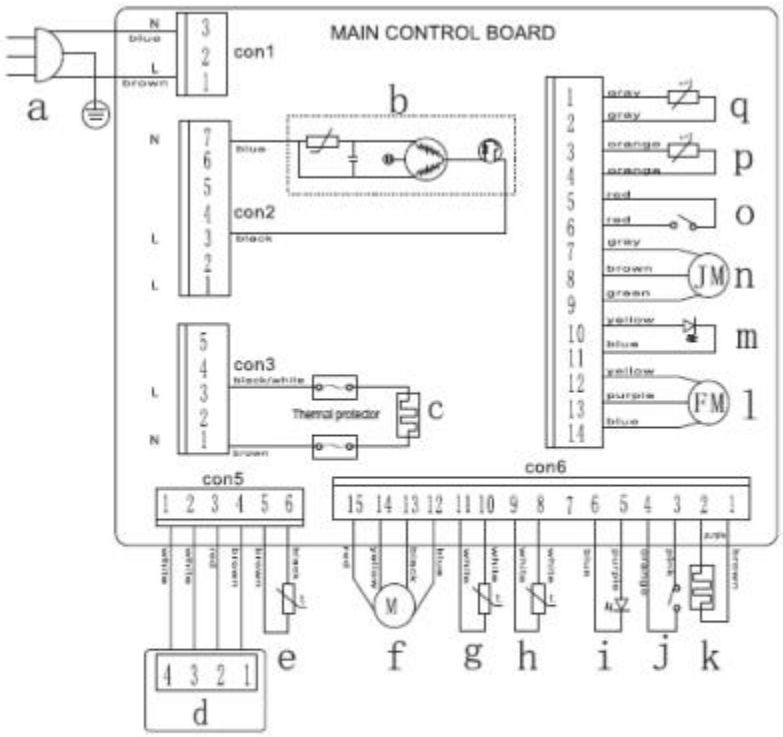


5.2. Unit dimension example

516 platform

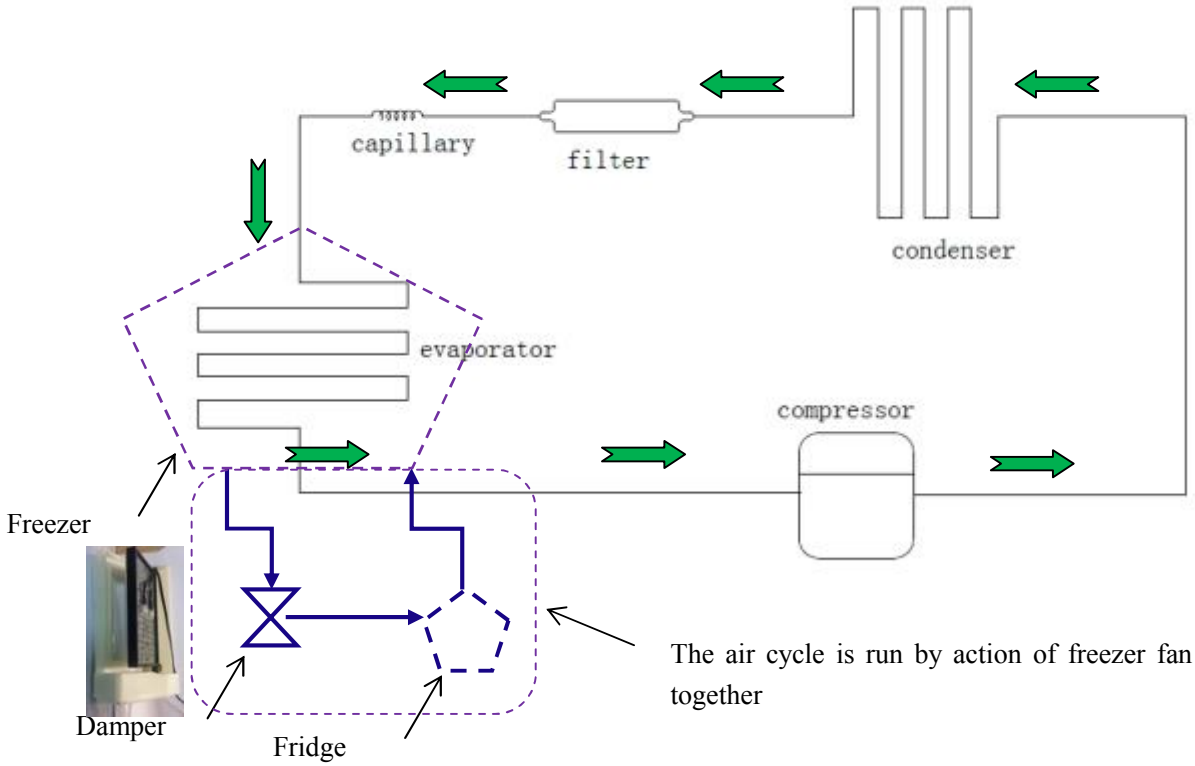


5.3. Wiring diagram



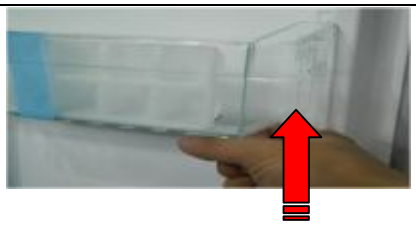
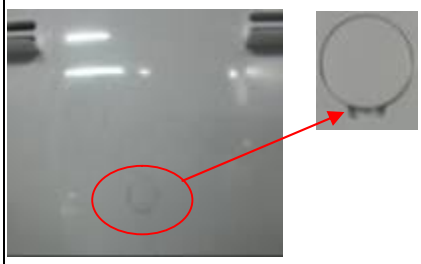
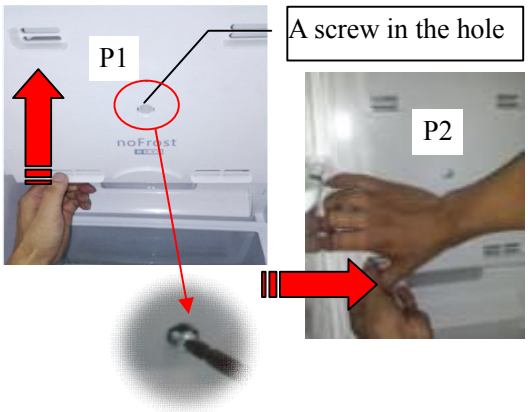
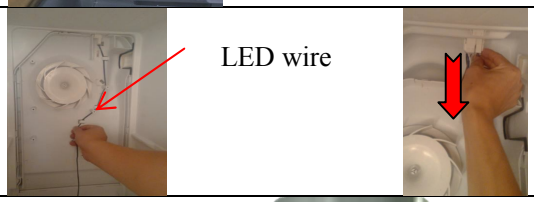
a:POWER	b:COMP	c:DEF-HEATER	d:DISPLAY BOARD
e:RT.SNR	f:STEPPING MOTOR	g:R.SNR2	h:R.SNR1
i:R.LAMP	j:R.DOOR SWITCH	k:DAM.HEATER	l:F.FAN
m:F.LAMP	n:C.FAN	o:F.DOOR SWITCH	p:DEF.SNR
q:F.SNR			

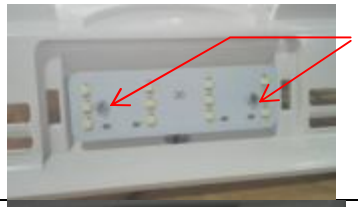
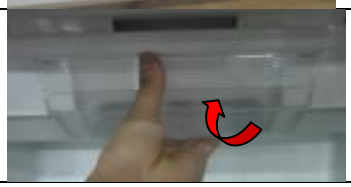
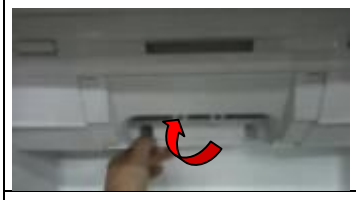
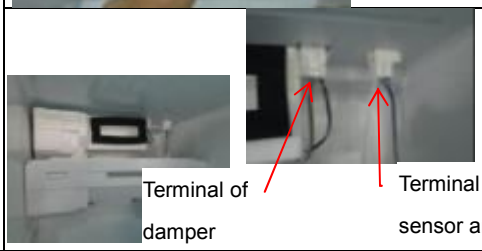
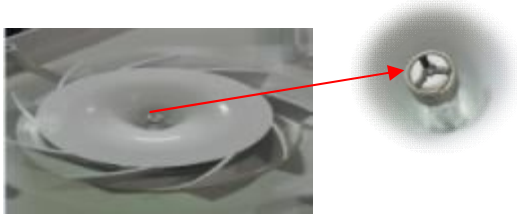
5.4. Cool System Diagram

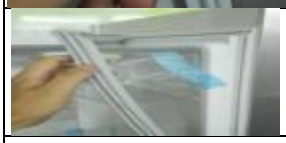
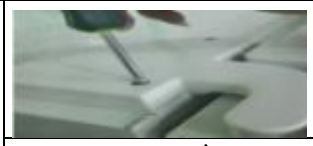
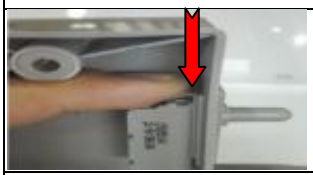


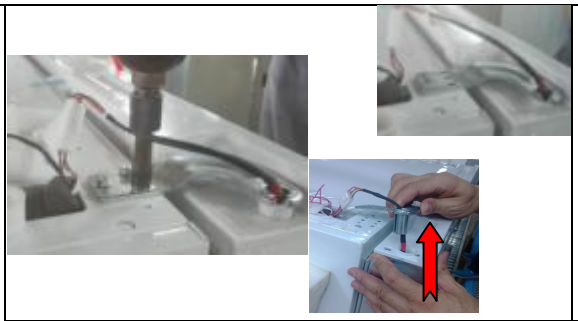
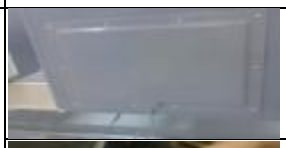
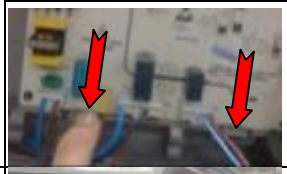
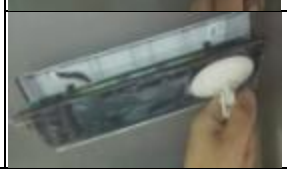
6. Sale service

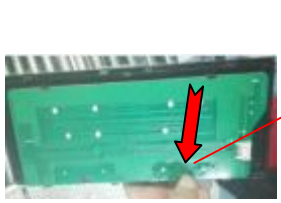
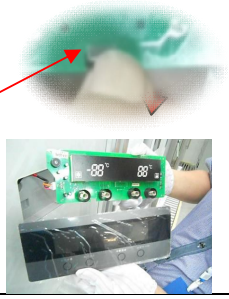
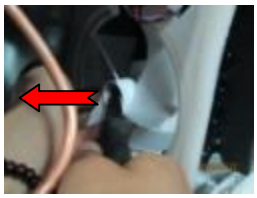
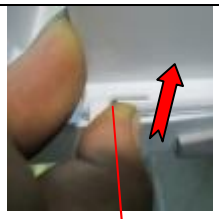
6.1. Components disassemble/assemble method

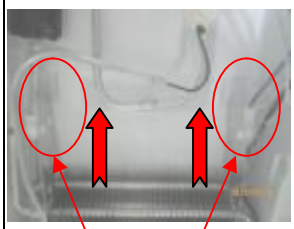
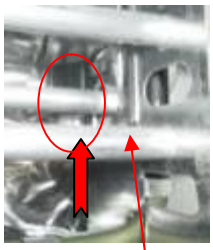
Parts name	Pictures/	Disassemble/assemble method
Door shelves		To disassemble the door shelves, knock them upward at both side of bottom lightly by hands; To assemble them, press them downward on bulges of door innerliner
Upper cover of air channel in freezer		Step 1:To remove the cover by the aid of straight screwdriver
		Step 2: To take the screw out in the hole by cross screwdriver; Step 3: To lift the cover upward a little by left hand (like as P1), at the same time, to pull the cover rightward by right hand so that the cover loose from the cabinet (like as P2)
		Step 4: To pull the cover outward, the cover will be opened;
		Step 5: To unlash the LED wire from fan bracket of freezer, pull out the terminal of the LED wire form cabinet. The cover will be taken out completely;
Lower cover of air channel in freezer		Step 1: To pull the cover upward about 10mm at first until the hooks of cover are at transverse outlet of innerliner, and then, To pull the cover outward for removing it; *Note: the structure of innerliner; To pull the cover inward at first and then downward when assemble it;*

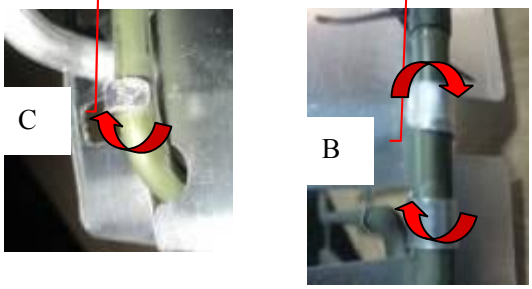
LED of Freezer		Step 1: To press the both side of LED cover inby at the same time , the hook of cover will separated from the upper cover of air channel;
		Step 2: To remove 2 pieces of fixed screw by cross screwdriver, and take out the LED completely;
Air channel complete of cooler		Step 1: To remove the cover of LED (like as arrow orientation in picture);
		Step 2: To remove 2 pieces of screw (like as picture);
		Step 3: To remove the component outward from cabinet;
		Step 4: To remove the component down ward from cabinet;
		Step 5: To remove the wire terminals of R1 sensor ,LED and damper form cabinet; To take out the cover and the component of damper;
		Step 6: To press the clip outward to remove the LED brand like as picture;
Fan complete of freezer		Step 1: To remove the spring outward by a pliers; and then, pull the leaf of fan outward;

		Step 2: To remove 2 pieces of screw by cross screwdriver; and then ,To take out the cover of fan motor;
		Step 3: To take out the fan motor from bracket of fan;
Gasket of doors		Step 1: To remove the gasket from 4 corners of door innerliner at first by hand
		Step 2: And then, to remove the gasket from the 4 sides of door innerliner by hand directly;
		Step 3: To press the gasket into the 4 corners of door at first when it is assembled, and then, to press the gasket into the 4 sides of groove of door innerliner by hand;
Doors disassemble		Step 1: To remove 2 pieces of fixed screw on cover of top hinge;
		Step 2: To dig the cover upward from the arrow side;
		Step 3: To pull the terminal of switch outward for disconnection of switch; *Note: if you want to disassemble doors only, the step 3,4 and 5 needn't to do; they are for disassemble the switch of door;*
		Step 4: To press the clip of switch downward for disconnection fastening of switch;
		Step 5: To push the switch outward for removing out the switch;

		Step 6: To remove 3 pieces of screw by Hex-socket; and then, To pull the hinge upward for taking out it;
		Step 7: To disconnect the terminal of DOM wire; and then, To lift the door upward from bottom hinge, like this, the door can be removed out;
PCB		Step 1: To remove the screws of PCB cover by cross screwdriver;
		Step 2: To wear ESD gloves for removing the PCB;
		Step 3: To pull out all of terminals on the PCB;
		Step 4: To break the clicks of PCB base outward by hand step by step for removing the PCB;
Power wire		Step 1: To pull out the terminal of power wire from PCB;
		Step 2: To remove 2 pieces of screw, and then, the power wire can be taken out;
DOM complete		Step 1: To take a sucker (like as picture) and press on the cover corner of DOM;
		Step 2: To pull the sucker outward for removing the DOM complete;

	 	Step 3: To press the clicks of cover outward for removing DOM;
Condenser fan motor	 	Step 1: To pull out the terminal of fan; Step 2: To remove out the fixed screw by a cross screwdriver;
	 	Step 3: To remove the fixed spring outward by a pliers; Step 4: To push the leaf of fan outward for removing it;
	 	Step 5: To press the 2 pieces of clip of dew-water-box to separate it with the bracket of fan by the aid of screwdriver;
	  	Step 6: To press the clip of sealing-part for condenser inward from its rear at first , and then ,to pull it outward for separating it with the bracket of fan ;
	 	Step 7: To tilt the component outward to take out it;

	 	Step 8：To remove 2 pieces of screw on rear of fan cover;
		Step 9: To take out the motor if it need to be changed; *Note: Please take care of those seal parts during disassemble ; as, rubber pads, sponge bar;*
	 A B	Step 1: To pull out the terminals of heater , fuse and sensor for defrosting; Step 2: To cut off these belts which fix wires of heater ,fuse and sensor;
	    Upper hooks Bottom hooks	Step 3: To lift the evaporator upward slowly ,so that to make the evaporator hooks and cabinet separate completely; *NOTE: THE STEP SHOULD OPERATE SLOWLY TO AVOID TUBES DAMAGE!*
	 	***Sub-step: To remove the sensor of defrost*** Step 4: To remove the sensor of defrost like as picture; Step 4.1:To remove the wire of sensor as arrow orientation; Step 4.2: To pull the wire of sensor upward to remove out the sensor from bracket inside;

		To this point, the fuse and sensor can be removed from evaporator component;
	  	Step 5: To open 3 pieces of hook by a pliers, so that to make the heater and evaporator separate completely; *To this point, the heater of defrost can be removed from evaporator component;* Step 6: if the evaporator need to be changed, the tubes of suction and capillary will be cut by a pipe cutter; see lokring repairing in detail

6.2. Lokring connection method

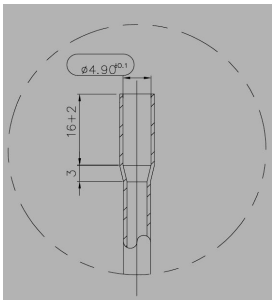
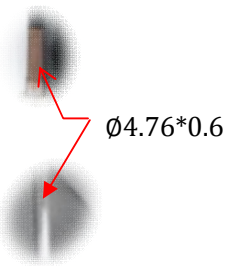
6.2.1 A schematic diagram of the lokring ring connection

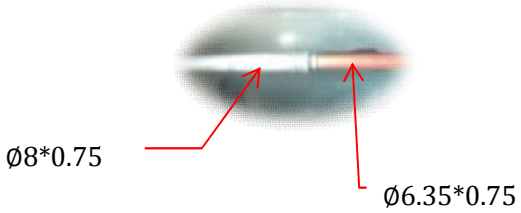
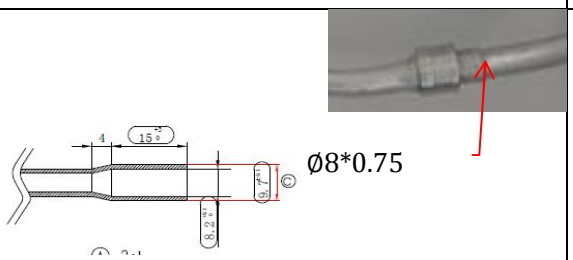
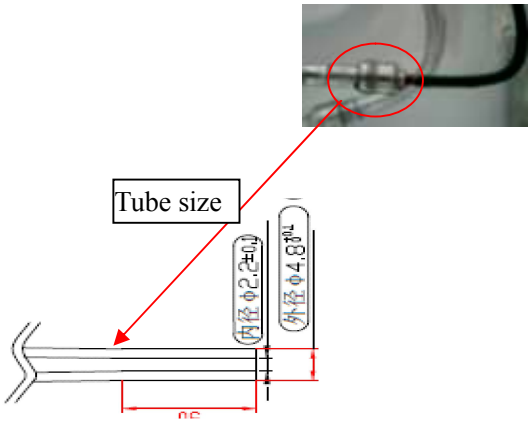
6.2.2

A schematic diagram of the lokring ring connection in the pipeline for Snowkye's appliance

A schematic diagram		enlarged view	Size
	1#		LOKRING 4 N St 18
	2#		
	3#		6,35x0,7Al6,35 LR6NAl59
	4#		8NAL54
	5#		1NAl10 4.8x1_25 Al_2.1

p
oints and repair

Lokring points No.	The port size of tube for lokring welding	Repair summary
1#+2#	 	If 1# or 2# points need to be repaired, Step 1:To cut off the lokring area by a tube cutter; Step 2: To expand the mouth size of connection tube or condenser to like as the size of drawing by a tube expander Step 3: To wipe off the paint of tube by cloth sandpaper , and then, to clean them completely; Step 4: To choose a lokring ring according to above 6.2.1 list to slipped it on the tube; Step 5: To drop in lokring liquid and press fit them;

3#		If 3# points need to be repaired, Step 1:To cut off the lokring area with a tube cutter; Step 2: to clean them completely; Step 3: To choose a lokring ring according to above 6.2.1 list to slipped it on the tube; Step 4: To drop in lokring liquid and press fit them;
4#		If 4# points need to be repaired, Step 1:To cut off the lokring area by a tube cutter; Step 2: To expand the mouth size of evaporator to like as the size of drawing by a tube expander Step 3: To clean them completely; Step 4: To choose a lokring ring according to above 6.2.1 list to slipped it on the tube; Step 5: To drop in lokring liquid and press fit them;
5#		If 5# points need to be repaired, Step 1:To cut off the lokring area by a tube cutter; Step 2: To cut off the shrinkage tube of capillary about 30mm ; Step 3: To clean them completely; Step 4: To choose a lokring ring according to above 6.2.1 list to slipped it on the tube; Step 5: To drop in lokring liquid and press fit them;

6.2.3 Repair technology of lokring points

6.2.3.1. **SINGLE LOKRING –what is it?**

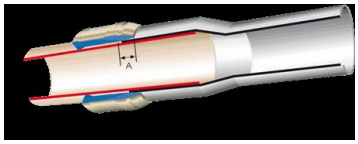
➜ Single Lokring is custom designed product for each application, taking into account the tube materials being joined, the tube materials and the wall thickness of the tubes.

6.2.3.2. **General features of the LOKRING –Single-Ring tube connection**

➜ Permanent hermetically metal -to -metal sealing
➜ Unproblematic connection of tubes consisting of different materials
➜ High reliability –a correctly done LOKRING connection has a zero leak rate.
➜ Connection failure rates as low than 8 ppm
➜ No special preparation of the tubes necessary
➜ Handy assembling tools
➜ Easy and fast assembling within 10 sec.
➜ Great tolerances in dimensions are allowed
➜ No notch effect in the assembling area
➜ No welding , soldering or screw cutting
➜ ecologically careful and harmless system

6.2.3.3. **The theory of the LOKRING tube connection technology**

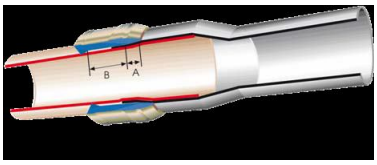
A LOKRING-joining is made in following manner:



➜ The tubes are first telescopically engaged with each other.

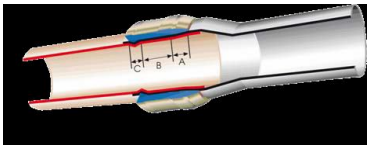
➜ The LOKRING is placed in its starting position, i.e. the largest internal diameter is placed on the flared tube.

➜ Section „A“of the LOKRING allows that the LOKRING is moved easily onto the outer tube.



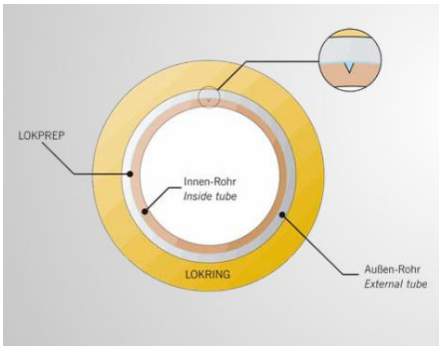
➜ The cylindrical part „B“accommodates a high flexible strength and is resistant against torsion forces of which the joint can be complaint

➜ As the LOKRING is further moved to is final assembling position,both tubes are steadily deformed by the LOKRING.



➜ Section „C“is the main sealing region.
➜ Radial forces of the tubes and of the LOKRING reach a state of equal.
➜ The tube assembling is finished if the LOKRING is assembled over the outside tube that the end of this tube is visible 1 to 3 mm.

6.2.3.4. **The function and use of LOKPREP**



➜ Despite the high metal/metal pressure in the tubejoint it is not alwayspossible to seal deep surface scratches and longitudinal grooves completely.

➜ In order to obtain additional safety the surfaces of the tube ends are moistened with LOKPREP

➜ LOKPREP is an anaerobic liquid. containing di-metharylic ester. penetrates into the hallow spaces and scratches. it is applied during the assembling and the hardens.

➜ The result is a perfect sealing even of damaged surface damage.

6.2.3.5. **Basics for the installation of a LOKRING Single Ring tube connection**

➜ Only metallic tubes could be joined.

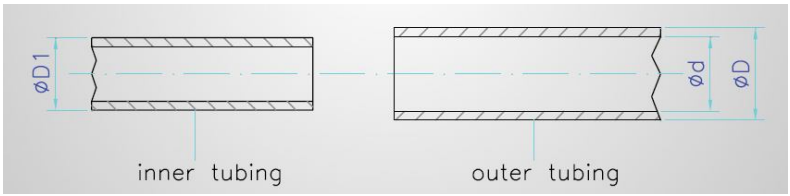
➜ Tubes must be 100% free of oil, grease or any other lubricant.

➜ If tubes are joined with different material the tube with the softer material must be the inner tube and the tube with the harder material must be the outer tube of the joining.

➜The recommended minimum wall thickness of the tubes will be 0,5 mm and the recommended maximum wall thickness will be 1,5 mm.

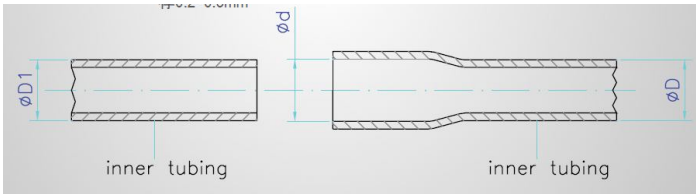
6.2.3.5.1.**Basics for the installation of a LOKRING Single Ring tube connection**

Following dimensions are requested for a joining between tubes with different external tube dimensions: A difference of maximum 0,4 mm is allowed between the external diameter D1 of the inner tube and the internal diameter d of the external tube.



6.2.3.5.2.**Basics for the installation of a LOKRING Single Ring tube connection**

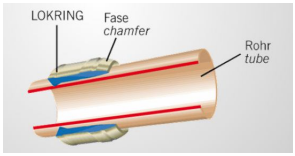
If tubes with similar external dimensions are joined following dimensions are requested for the flaring of a tube The internal diameter d at the flared external tube will be The external diameter D1 of the inner tube +0,2-0,3 mm。



6.2.3.6. **Installation of a LOKRING Single -Ring tube connection**

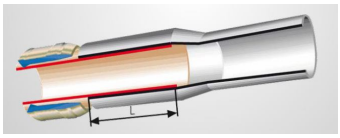
6.2.3.6.1. **Position of the LOKRING**

Slide the LOKRING over the inner tube so that the chamfer faced to the outer tube end to be joined.



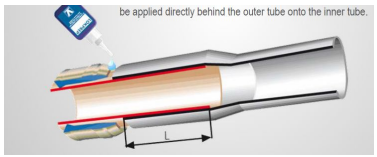
6.2.3.6.2. **Insertion of the tubes**

Move the inner tube into the outer tube to at least length of the LOKRING +3 mm or in case of a flared tube up to the stop.



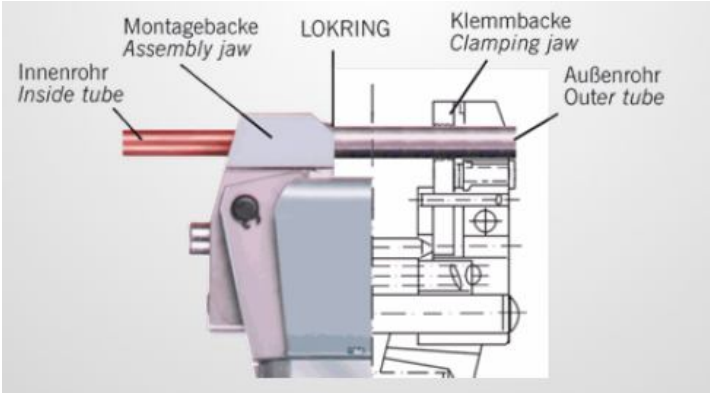
6.2.3.6.3. **Applying of the LOKPREP**

Before the assembling LOKPREP must be applied into the gap between the inner tube and the outer tube of the joining in the way that the LOKPREP will be applied directly behind the outer tube onto the inner tube.



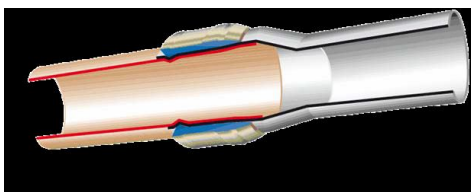
6.2.3.6.4. **Assembling of the tube joining**

Place the tube in such a way that the clamping jaws are positioned on the side of the outer tube and the LOKRING is pushed to the end of the outer tube.



6.2.3.6.5. **Assembling of the LOKRING**

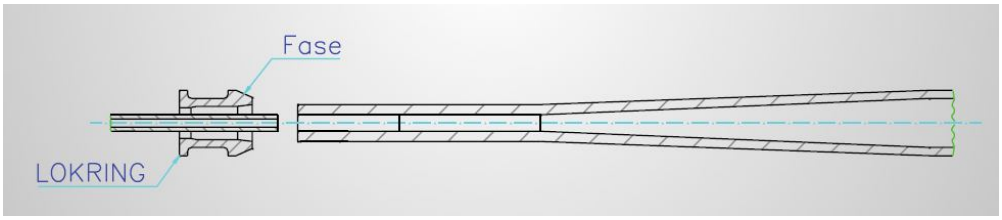
After the actuation of the push button the outer tube is clampedby the clamping jaws and the Lokring is pushed over the outer tube.



6.2.3.7. **Installation of a LOKRING Single –Ring at a joining with a capillary tube**

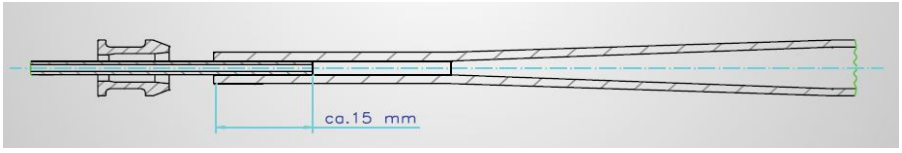
6.2.3.7.1.**Position of the LOKRING**

Slide the LOKRING over the capillary tube so that the chamfer faces to the outer tube end to be joined.



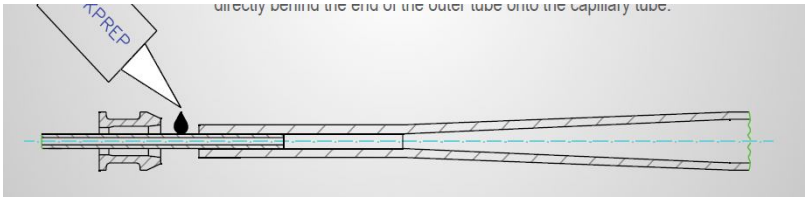
6.2.3.7.2.**Insertion of the tubes**

At first the capillary tube will be inserted approximately 15 mminto to outer tube only.



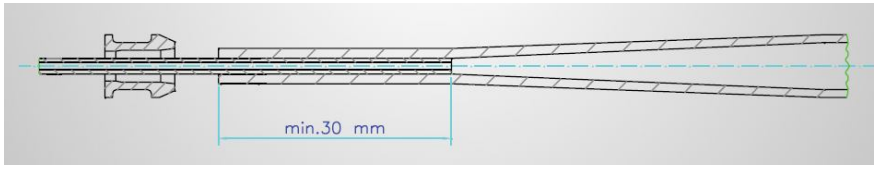
6.2.3.7.3.**Applying of the LOKPREP**

Before the assembling the LOKPREP must be applied into the gap between the inner tube and the outer tube in the way that the LOKPREP will be applied directly behind the end of the outer tube onto the capillary tube.

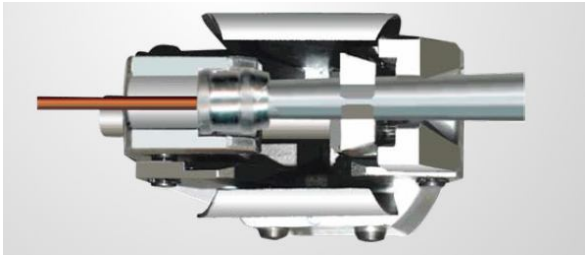


6.2.3.7.4.**Finishing of the insertion of the tubes**

The capillary tube must be inserted minimum 30 mm deep into the outer tube.

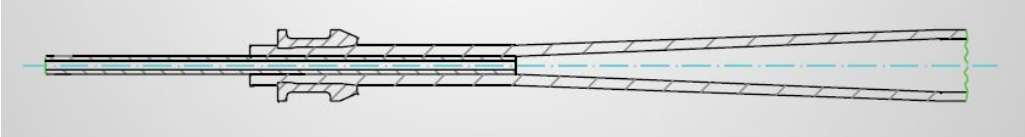


6.2.3.7.5.Place the assembling tool in such a way that the clamping jaws are positioned on the side of the outer tube and the LOKRING is pushed to the end of the outer tube.



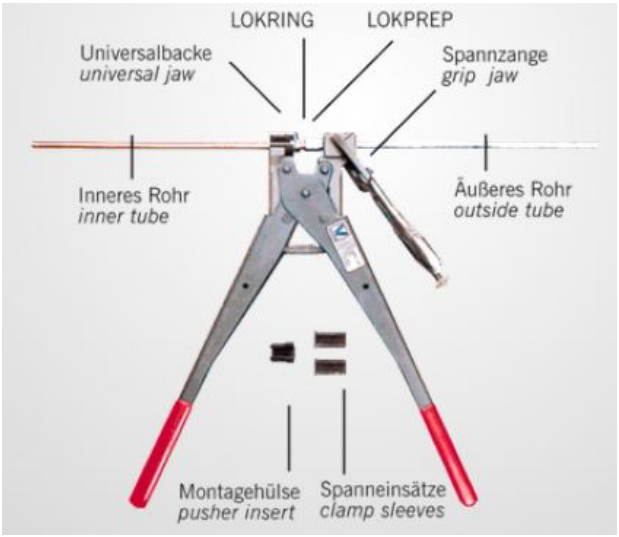
6.2.3.7.6.**LOKRING –assembling**

The assembling tool will push the Lokring over the outer tube ofthe joining. The assembling is finished now.



6.2.3.8. **Tools for the assembling of a LOKRING Single-Ring tube connection**

6.2.3.8.1. **Tools for the assembling of a LOKRING Single-Ring tube connection Manual hand tool HMER used for the connection;**



6.2.3.8.2. **Manual handtoolHMER used for the flaring of tubes**