

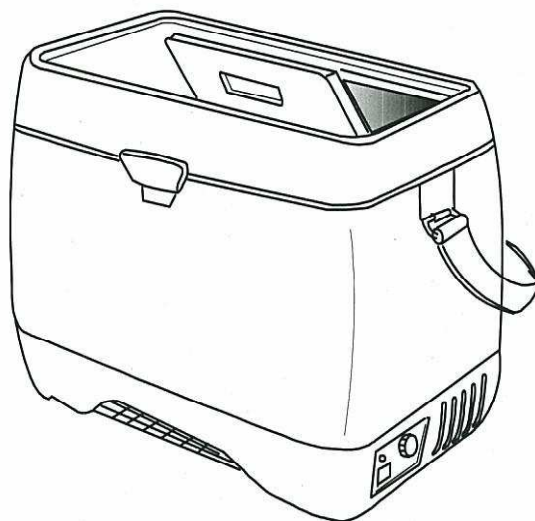


ENGEL

SERVICE MANUAL

MODEL

MD14F



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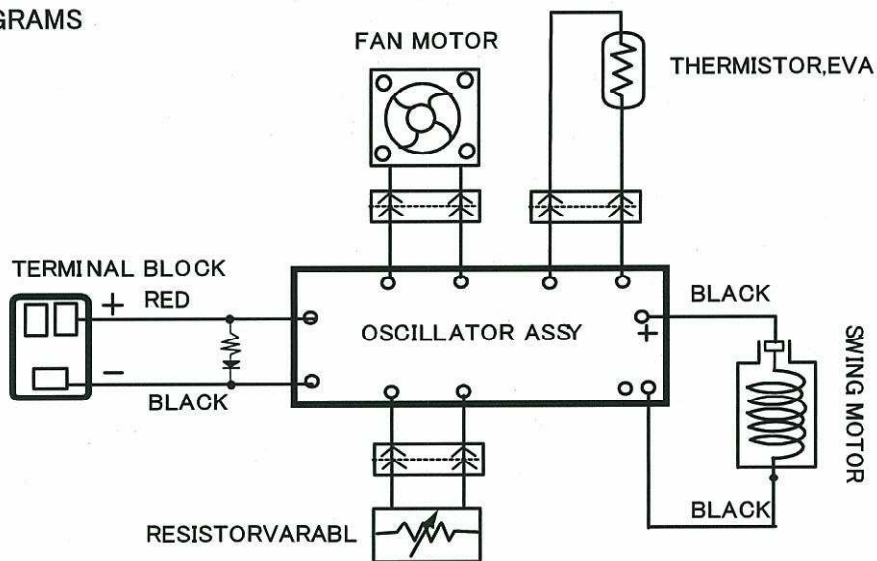
《Recapitulation》

It is an explanation in this manual and a Japanese version in ().

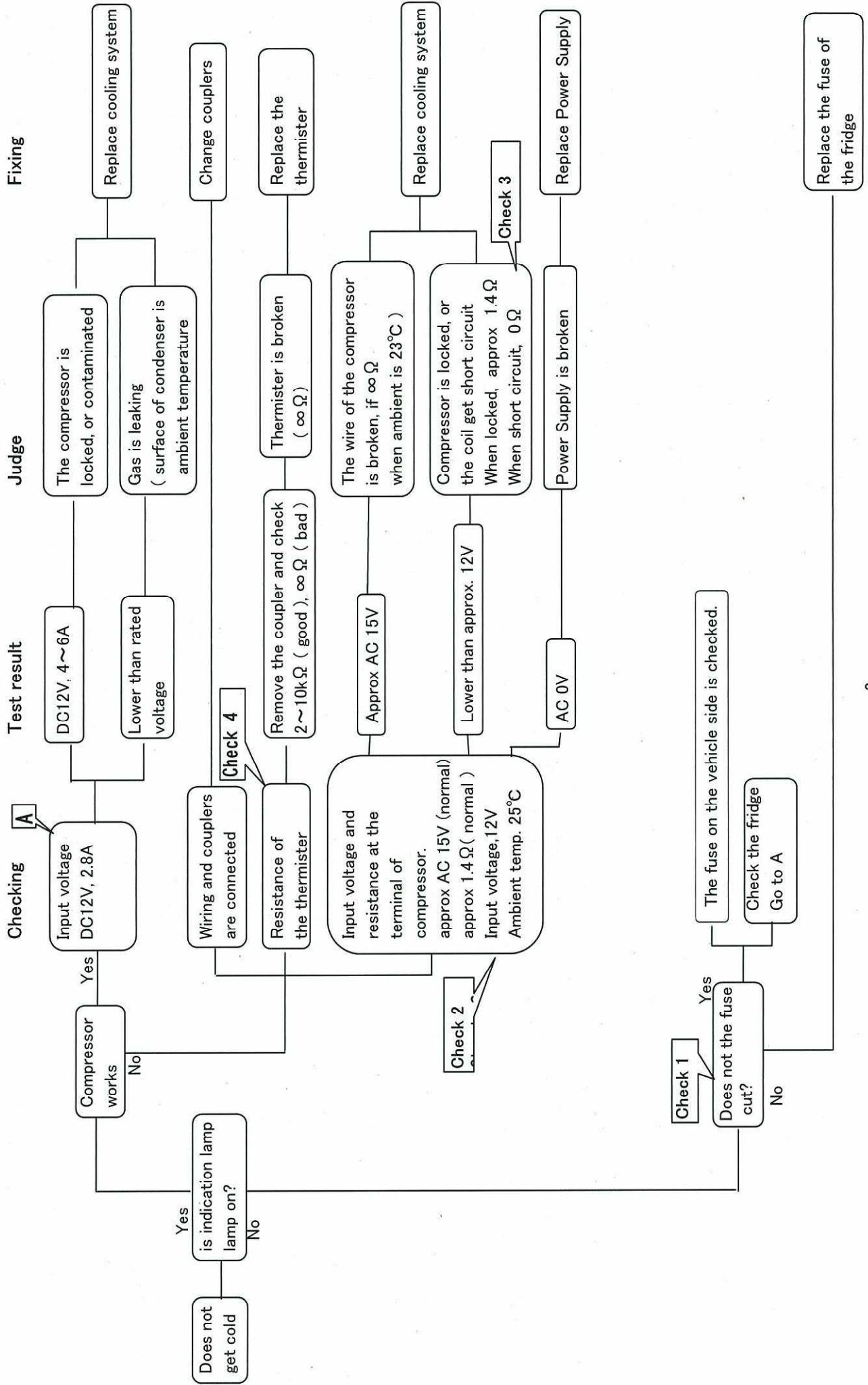
1.SPECIFICATIONS

F SERIES MODEL		MD14F
STORAGE VOLUME	ℓ (liter)	14
EXTERIOR DIMENSIONS W×D×H	mm	442±3 × 284±3 × 398±3
INTERIOR DIMENSIONS W×D×H	mm	348±2 × 190±2 × 213±3
EXTERIOR FINISH	DOOR	Polypropylene
	CABINET	
INTERIOR FINISH	DOOR	Polypropylene
	CABINET	Aluminum Rollbond Evaporator
INPUT VOLTAGE	V	DC 12V
RATED AMPERAGE	A	DC 2.8A (Input voltage DC 12.8 V, Ambient temperature 30°C)
COMPRESSOR RATING		AC 15V, 27W
REFRIGERANT		Dichlorodifluoromethane (R-134a)
TEMPERATURE CONTROL NOTCH 5 OR FREEZE		Under -18 °C (at Ambient temperature 30°C)
TEMPERATURE CONTROL		Electronic thermostat temperature control
WEIGHT	LBS.	25.3
	Kg	11.5±0.5

2.WIRING DIAGRAMS



3-1 TROUBLE SHOOTING



3-2 TYPICAL PROBLEM

Symptoms	Cause	Test Result	Treatment
Lamp of Temperature Control Assembly is lit	Inside of the fridge does not get cold	Resistance of motor coil is $\infty \Omega$ (Normal: Approx. 1.4Ω)	Replace the cooling unit
	Compressor does not work	Output voltage of Inverter is AC 0V (Normal: Approx. AC12~15V)	Replace Inverter
Cooling is weak	Wire thermistor is open	Resistance of thermistor $\infty \Omega$ (Normal: $2k\Omega \sim 10k\Omega$)	Replace thermister
	* Gas is leaking from Cooling Unit		Replace of cooling unit
	* Fan motor is broken		Replace fan motor
	* Input voltage is lower than 10V		Charge the battery
	* Ambient temperature is higher than 30°C		Make at leaset 10 cm room between unit and wall
	* Ventilation at mechanical part is not enough		Make some room for cool air
Lamp of Temperature Control Assembly is not lit	* Too many things are put inside		
	* Fuse in the vehicle is open		Replace the fuse
	* Socket or other DC power line in the vehicle is bad		Check the vehicle

3-3 TECHNICAL DATA

Checking items	Checking Points	Normal data
Input voltage at compressor	Between terminals of motor	Approx. AC12~15V
Output voltage of Inverter	Between outgoing cords from Inverter (by detaching from terminal of motor)	Approx. AC12~15V
Resistance of the motor	Between incoming cords to motor (by detaching from terminal of motor)	Approx. 1.4Ω
Resistance of thermister	Between 2 pin of the coupler	Approx. $2K \Omega \sim 10K \Omega$
Fuse	Fuse at DC plug	0Ω

4. CHECK POINT & CHECK METHOD

【Check 1】Fuse (Fig.1)

◇ Check the resistance of fuse by tester.

Test result	Judge
0 Ω	Normal
∞ Ω	Broken

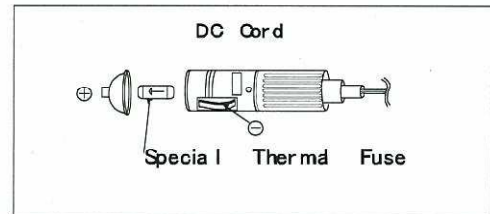


Fig.1

【Check 2】Input voltage of the compressor.

◇Checking point

Check at 2 pin coupler of Power Supply (Fig.2)
or at input terminals of the compressor.

or, it measures it between terminals of the compressor

Test result	Judge
Approx. AC15V	Normal
AC 0 V	Power Supply is broken
Approx. AC15V or lower	Compressor is locked

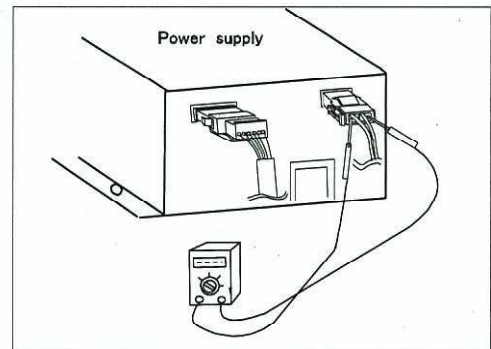


Fig. 2

【Check 3】Check the resistance at the coil if (Fig3)

◇Checking points

Remove 2p couplers at motor cord, and check.

Test result	Judge
Approx. 1.4 Ω	Normal
∞ Ω	Broken
0 Ω	Coil of compressor is short circuit

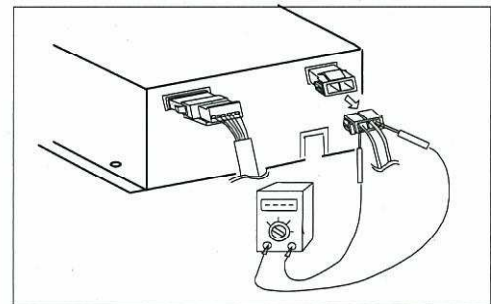


Fig. 3

【Check 4】Resistance of thermistor (Fig.4)

Remove the 2 pin couplers from thermistor, and test

Test result	Judge
Approx. 2 k Ω ~ 10 k Ω	Normal
∞ Ω	BrokenJ
0 Ω	Short Circuit

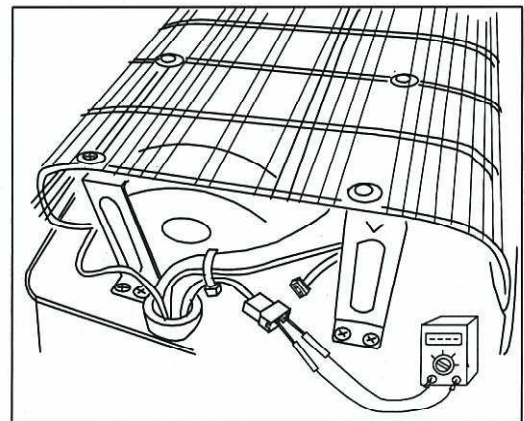


Fig. 4

Note) When short circuit, motor runs continuously.

5.REPLACING PARTS

【How to replace Cooling System】

1) Remove the door (Fig1—①)

Remove four screws which hold hinges

2) Remove the latch (Fig1-②)

Remove the one screws

3) Pull out thermostat dial (Fig2—③)

4) Remove the bottom case (Fig2—④)

Remove the four screws

5) Remove four screws that stop the condensor (Fig3-⑤)

6) Remove two pin coupler of thermister. (Fig3-⑥)

7) Remove the holderassy (Fig4)

Remove the thee screws

8) Remove the power supply (Fig5—⑧)

Remove the thee screws

9) Pulls it out from the main body of the power supply (Fig5—⑨)

10) Disconnect input code for swing motor (Fig6)

Fig 1



Fig 2

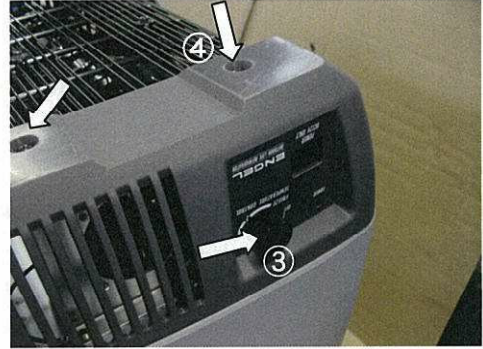


Fig 3

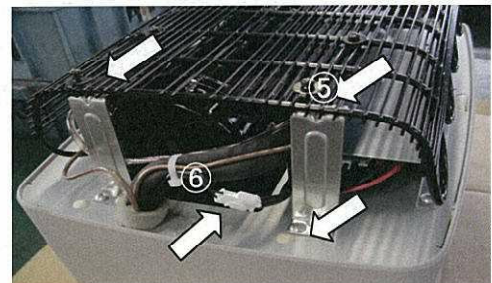


Fig4

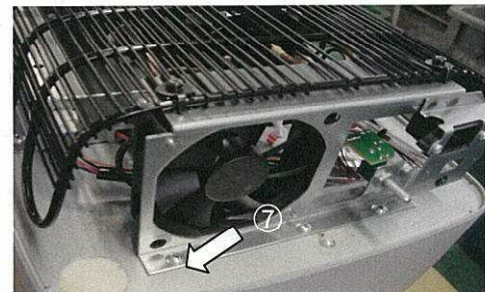


Fig 5

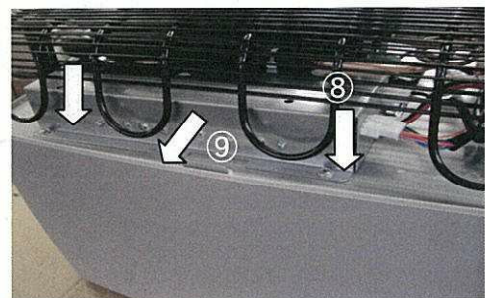


Fig 6



6.Replacing Parts (MODEL MD14F)

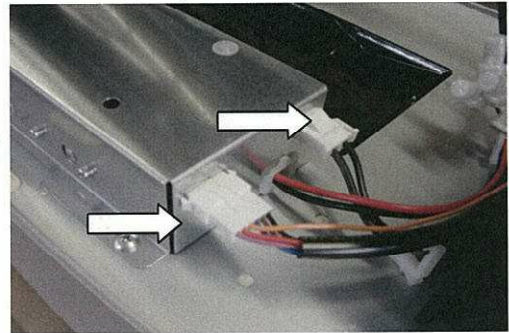
【How to replace powersupply】

- 1) Pull out thermostat dial (Fig2-③)
- 2) Remove the bottom case (Fig2-④)
- 3) Remove four screws that stop the condensor (Fig3-⑤)
- 4) Remove two pin coupler of thermister. (Fig3-⑥)
- 5) Remove the power supply (Fig5)
- 6) Pulls it out from the main body of the power supply (Fig5)
Remove the three screws

Please refer to the previous page for
the photograph of 2 ~ 5

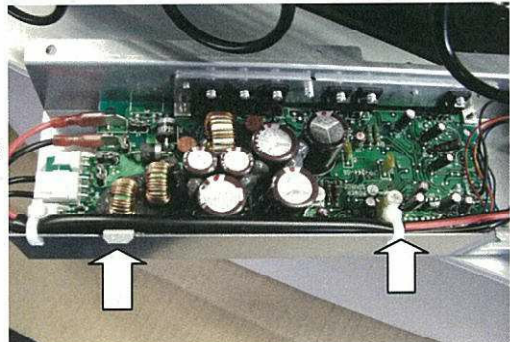
- 7) Remove two coupler of power supply. (Fig7)

Fig7



- 8) The fastener is cut by two places (Fig8)

Fig8



- 9) The power supply connector is removed from the substrate terminal of the power supply. (Fig9)

Fig.9

