

# **ENGEL**

## **DC REFRIGERATOR**

MODELS

### **MD14F**

## **OWNER'S GUIDE**

SAWAFUJI ELECTRIC CO.,LTD.

## SPECIFICATION

MODEL MD14F

NET VOLUME 14L

OUTER DIMENSIONS

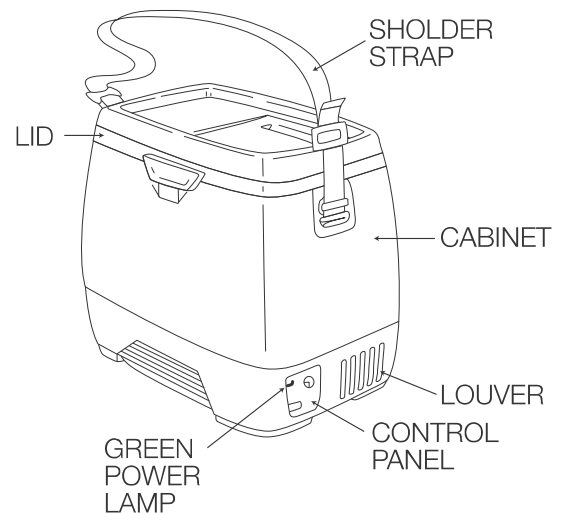
(W × D × H) 442 × 284 × 398

INPUT RATING DC12V 2.8A

REFRIGERANT HFC-134a

WEIGHT APPROX.11.5kg

## DESIGNATION OF PARTS



## 1 INSTALLATION

Your shockproof fridge should be installed on a level and solid surface although it will operate satisfactory for long period on angles of up to 30°. Be sure your fridge is not in direct sunlight, (Fig 1) near a gas stove, heater, or other heat-generating appliances.

In order to get good cooling performance and less current consumption, adequate ventilation for refrigerator is needed. Install refrigerator away from each wall at least 150mm or more. (Fig 2)

Avoid installing your fridge close to a kitchen sink or faucet. (water)

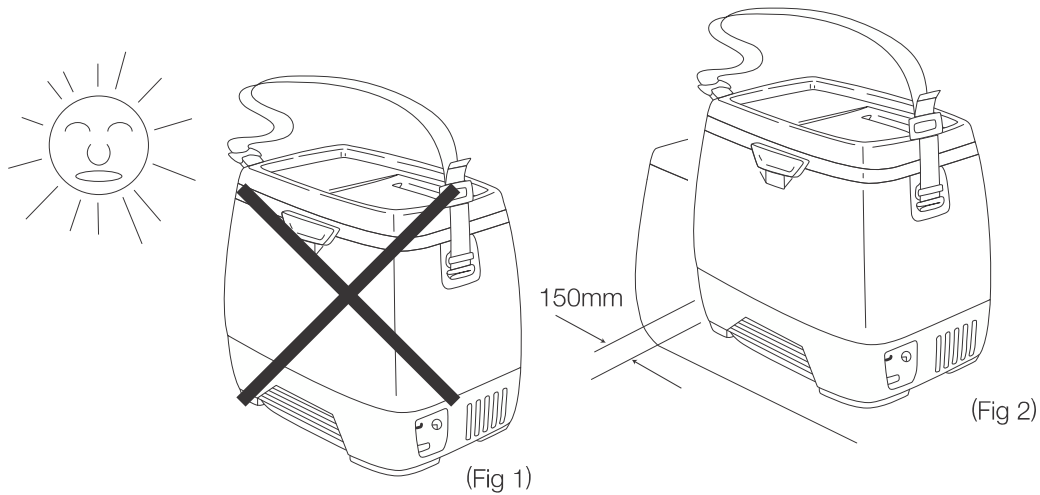
Your fridge has been thoroughly cleaned before shipment from the factory.

It is advisable, however, to clean the interior once more before use.

Clean the interior with a cloth moistened in warm water and wipe with a dry cloth.

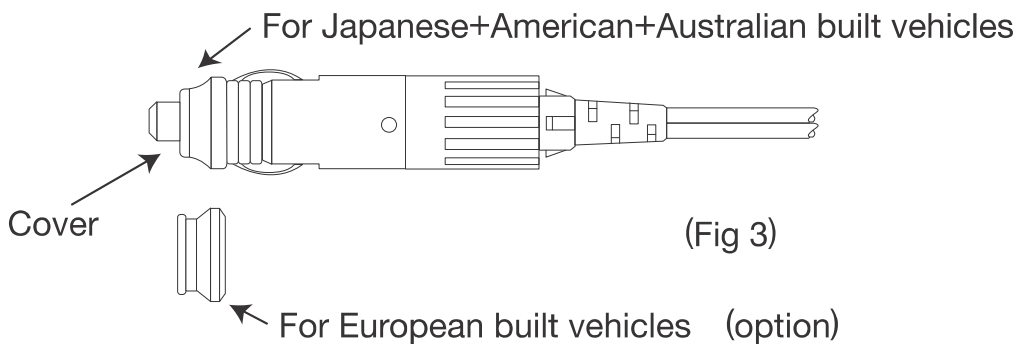
=CAUTION=

- \* Never use your ENGEL fridge to store gasoline or other inflammable vapors and liquids as these may cause explosion.
- \* Do not touch evaporator and other metal parts of cabinet inside with a wet hand, as this may cause frostbite.
- \* Do not remove or modify any of the electrical parts as this may cause electric shock or damage your fridge.



\* TO ENSURE THE EFFICIENT OPERATION OF YOUR FRIDGE PLEASE TAKE THE FOLLOWING STEPS:

- 1) Ensure lighter socket is clean and free of dust or foreign material.
- 2) Adjust plug setting as follows. (Fig 3)



- 3) Insert plug securely into lighter/accessory socket to avoid it shaking loose. A loose DC connection may result in overheating and damage to your vehicles lighter socket.

\*Never use the ENGEL refrigerator inside a freezer container car or refrigerator container car. Condensation can easily occur in the interior of the refrigerator container car and freezer container car, causing water drops to fall in the refrigerator and damage the equipment.

## 2 ELECTRIC POWER SOURCES

Your fridge needs a 12 volt battery.

Ensure that the battery voltage corresponds with the voltage stated on the fridge label.

If the source voltage is too high it will damage the inverter. If it is too low the cooling efficiency will be reduced the running time will increase and thus the battery will be subjected to an increased loading.

Insert the cigarette lighter plug of the DC cord to the lighter socket of your car. Then, the refrigerator will start to operate.

To stop the refrigerator, remove the cigarette lighter plug from the lighter socket.

=IMPORTANT=

- \*Green power light indicates that power is supplied. If the light is not lighten, there is a possibility either power is not supplied, or the special thermal fuse in cigarette lighter plug burns out. Please check accordingly. (Refer to Fig 6). Whether polarity is correct or not, as immediate burning out fuse is designed for safety, in case of reversed polarity.
- \*When not using the fridge, remove the plug from the cigarette lighter socket to prevent unnecessary discharge of your car battery.
- \*Pay due attention to correct polarity, the inner contact of cigarette lighter socket adapter must be connected to the positive supply, while the outer (negative) contact is connected to earth. (Nearly all modern vehicles are wire on the negative earth system, but there may still be older vehicles and imported ones where the positive earth system is employed.)

### DIRECT WIRING FOR PERMANENT VEHICLE INSTALLATION(OPTIONAL)

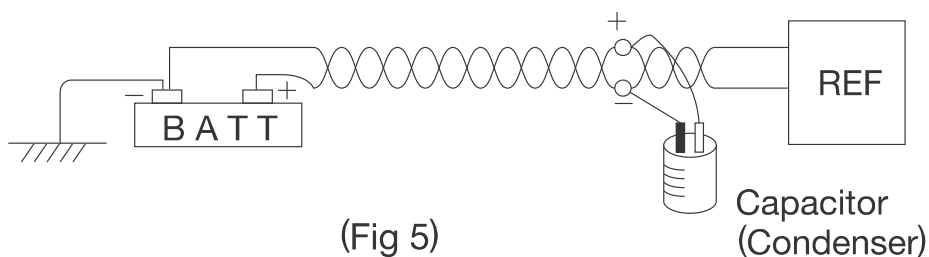
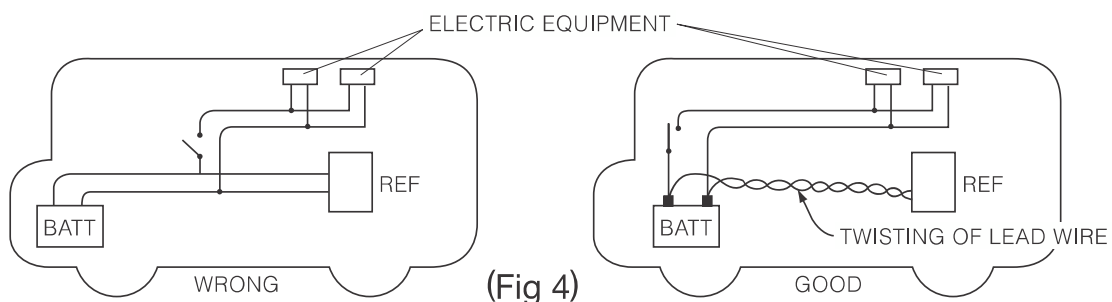
#### ① TWIST THE LEAD WIRE

Please use separate positive and negative cables, twisted together in a spiral form, between your battery and the DC outlet socket to avoid further radio interference during DC. operation. (see Fig 4)

#### ② CONNECT FRIDGE DIRECT TO BATTERY

Any switches and leadwires for other electrical equipment should not be shared with wiring between your fridge and battery. (Other equipment can generate high voltage pulses which may cause transistor damage to the fridge power supply.)

#### ③ To avoid radio noise and absorb surge pulse case of radio noise and large surge pulse insert of the capacitor. (10000 $\mu$ F) (see Fig 5)



④ WIRE GAUGE IS IMPORTANT TO AVOID "VOLTAGE DROP"

Connect your fridge to battery by use of the following wire:

Distance Between Refrigerator And Battery	Wire Gauge
	DC 12 VOLT SERIES
Less than 6m	SWG#16(AWG#14)
From 6m to 10m	SWG#14(AWG#12)
More than 10m	Please contact your Engel

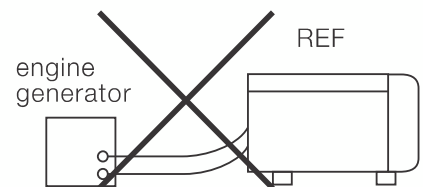
⑤ INSTALL A FUSE IN WIRING CIRCUIT

To avoid burn out of wiring from battery to the fridge in the event of a short circuit, install 15A fuse in the wiring circuit, near by the battery.

⑥ Never use an engine generator for ENGEL

Because the inverter of ENGEL refrigerator is destroyed by high voltage and high pulse of DC power source.

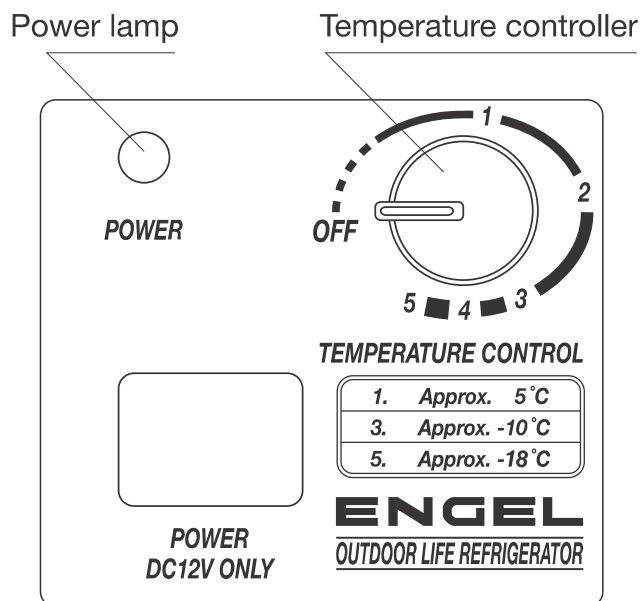
If you want to use such equipment, you are advised to contact your ENGEL dealer.



**3** Temperature setting

Your ENGEL can be used both as refrigerator and freezer.

Set the cabinet inside air temperature range by means of the Temperature controller.



Set the Temperature controller to OFF.

Insert the square moulded plug into the "POWER DC 12V ONLY" on the refrigerator.

The other end of the DC cable has an adapter for automobile cigarette lighter socket.

Then, light up the power lamp.

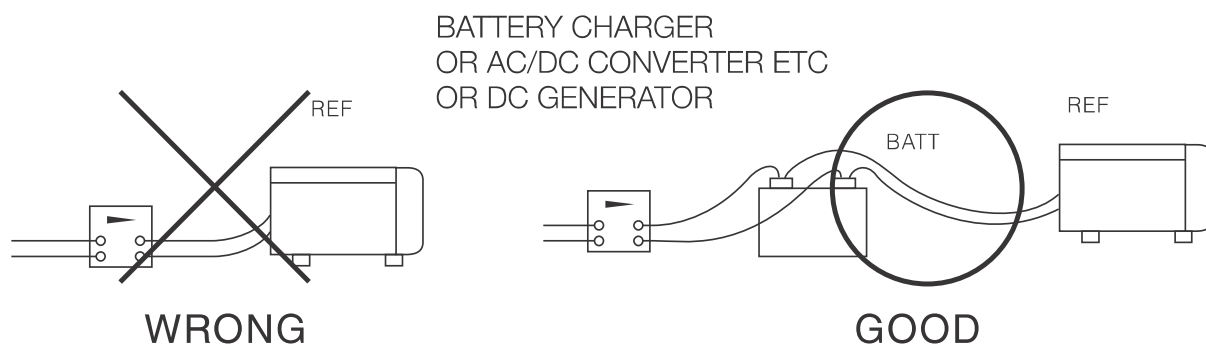
To stop the refrigerator, pull out the lighter DC plug.

Temperature controller position	Cabinet inside air Temperature range
OFF	Stop and defrosting
1	Approx. 5°C (41° F)
3	Approx. - 10°C (14° F)
5	Approx. - 18°C (0° F)

At ambient temperature 30°C under the refrigerator door in closed condition.

#### 4 Battery Maintenance and Cautions.

- ① Should the D.C. voltage at the fridge input terminals fall below the rated requirement, the cooling efficiency will immediately be reduced. Please pay due attention to the maintenance of your battery keeping it in a good state of charge.
- ② Quick chargers supply the battery with excess voltage in performing their intended function. Should the fridge remain switched-on while a quick charger is connected to the battery, the fridge may suffer damage.



(Fig 6)

- ③ Never use a battery charger, transformer/rectifier, battery eliminator or AC/DC converter to supply your ENGEL. Such equipment can, under certain circumstances, deliver current at a voltage which may damage the inverter. In order to use these devices always ensure that battery is connected in parallel between the charging equipment and the fridge.

## 5 Defrosting

Due to the humidity within the cabinet, frost will form on the evaporator surface when it has been running for sometime. A layer of frost in excess of about 6mm(1/4in), has an adverse effect upon cooling efficiency, therefore the evaporator must be defrosted at regular intervals. For this purpose, you may stop the fridge by pulling the cigarette lighter plug from the socket.

## 6 CAUTION AND HOW TO REPLACE THE SPECIAL THERMAL FUSE

This refrigerator has the DC cord plug incorporating the special thermal fuse, which cuts off current at an abnormal situation like abnormally over-heated plug.

### WARNING

- Do not use a glass tube fuse selling at a shop on market.
- This special thermal fuse has a polarity, and when replacing, please read how to replace the special thermal fuse as below-mentioned, and replace it after you check the polarity connection is correct.

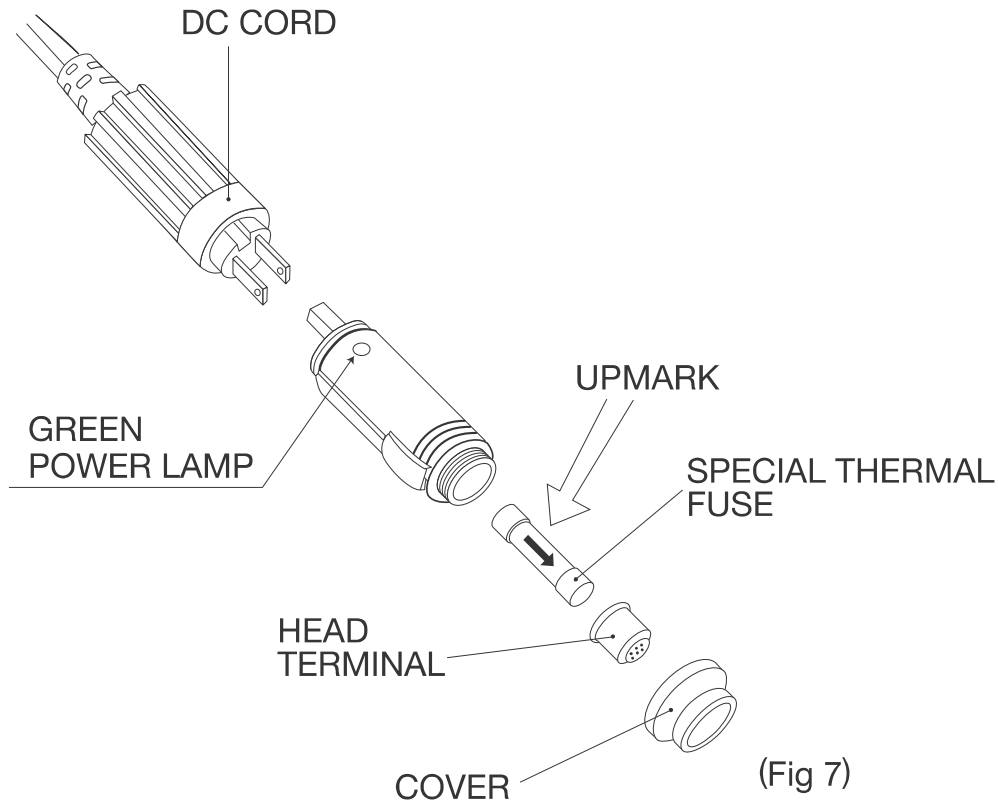
### HOW TO REPLACE (Fig 7)

1. Take off the cover at the nose of the DC cord plug by turning the cover counterclockwise.
2. When taking off the cover, the head terminal and the special thermal fuse are also taken off at the same time.
3. Pull out the special thermal fuse from the head terminal.
4. When the special thermal fuse is blown, replace with a new one after you check whether the polarity connection is correct.

### CAUTION

- Use the special thermal fuse of SAWAFUJI made without fail.
  - The special thermal fuse should be placed in the plug in such that the direction of the arrow indicated on the special thermal fuse looks forward the head terminal. (Fig 7)
5. Assemble the DC cord plug following with the reverse order of disassembly and tighten the cover firmly.

6. Check whether the refrigerator is operated normally. If you have further trouble, please contact your Engel store where you bought.

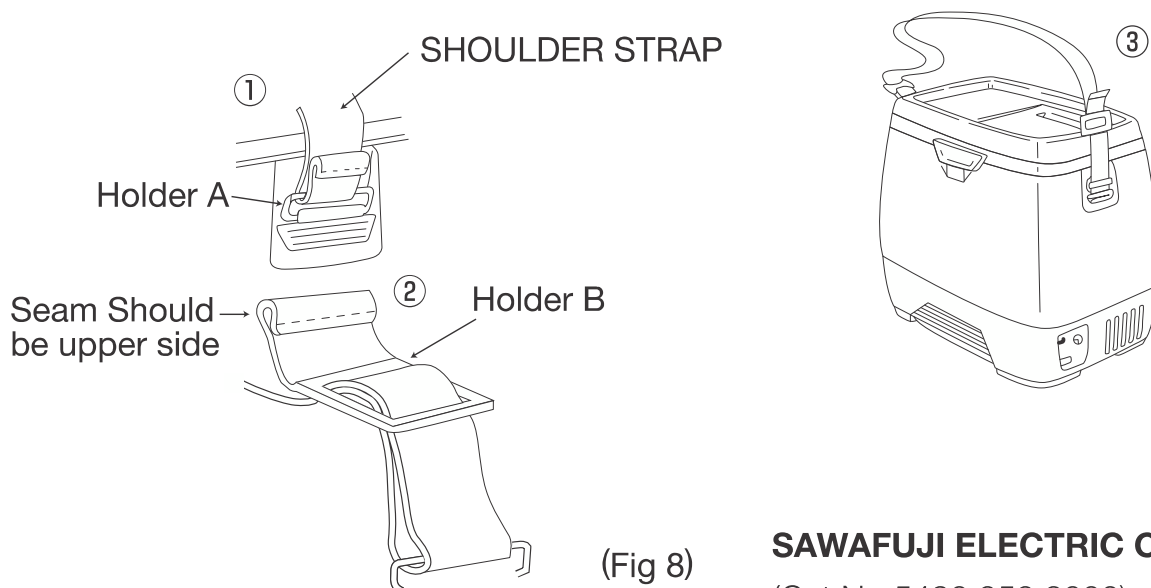


OPTION  
(For European built vehicles)

## 7 SHOULDER STRAP

Fit up SHOULDER STRAP to the refrigerator referring to Fig 8.

1. Thread the SHOULDER STRAP to the holder A on both side of your ENGEL.
2. Then, thread end of the SHOULDER STRAP to the holder B referring to ② in Fig8.



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