

ENGEL

MODEL	INPUT
SB47F	DC12/24V
SR48F	
SR90F	AC220V-240V,DC12/24V
ST90F	
ST68F	
SR70F	

CAUTIONS:

1. Never store gasoline or other flammable vapors and liquids as these sometimes cause explosion.
2. Do not touch evaporator and metal parts of cabinet inside by wet hand. Sometimes, it cause frostbite to your hand.
3. Do not remove or modify all the electrical live parts to avoid electric shock and trouble of your refrigerator.
4. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

※ Suitable for camping use ;

※ The appliance shall not be exposed to rain.

MODEL ST90F-G4-GL

SERIAL NO. JPT 0066

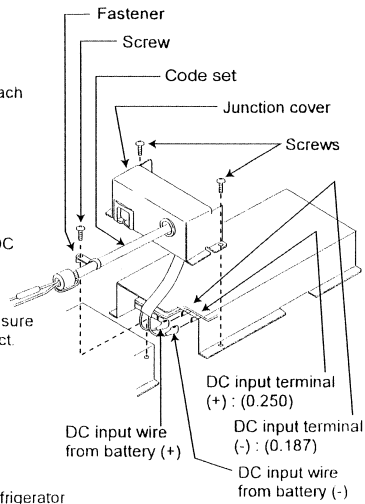
SAWAFUJI ELECTRIC CO.,LTD.

(Cat. No. 5490 349 1000)

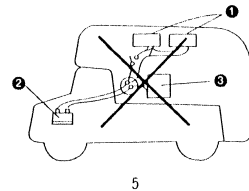
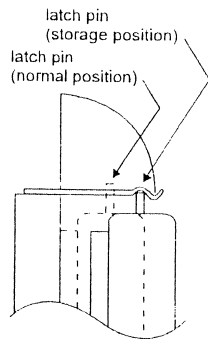
Printed in Japan

Connect the DC power supply

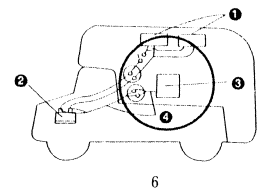
- Remove the two (2) screws that attach the junction cover.
- Remove the junction cover.
- Put the code set through the bushing of the junction cover.
- Push the DC input wires onto the DC input terminals.
 - Refer to the positive (+) and negative (-) markings to make sure that the connections are correct.
- Attach the junction cover with the two (2) screws.
- Put the code set through the wire strain relief.
- Attach the wire strain relief to the refrigerator cabinet with the self-tapping screw.



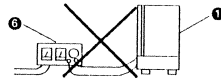
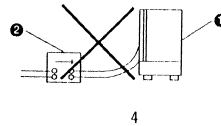
- Empty the drip tray.
- Remove the wet towels (etc.) and dry the inside of the refrigerator
- Turn the thermostat to the desired setting.
- Put the drip tray and all food in the refrigerator.



5
 ❶ Electrical equipment
 ❷ Battery
 ❸ Refrigerator
 ❹ Cables twisted together
 ❺ INCORRECT



6
 ❶ Electrical equipment
 ❷ Battery
 ❸ Refrigerator
 ❹ Cables twisted together
 ❺ INCORRECT
 ❻ CORRECT



4
 ❶ Refrigerator
 ❷ Battery charger, converter etc.
 ❸ Battery
 ❹ INCORRECT
 ❺ CORRECT
 ❻ Transistor-rectifier
 ❼ Capacitor 5,000 μ F (MINIMUM)

Fig. 2

Fig. 1

INSTRUCTIONS FOR USE

1 Current Sources.

1.1. Connection to 220v-240v,50Hz AC Mains.(Except MODEL SB47F)

Your Engel refrigerator may be connected to a standard domestic mains power source, using the three-core mains lead provided. Set the thermostat control knob to "0" (OFF) until the current has been turned on. Then, set the thermostat control knob to "1-5" and the green lamp will light up. Turn the thermostat control knob to the required setting.

1.2. Connection to 12/24V DC Batteries.

Ensure that the battery voltage corresponds with the voltage stated on the refrigerator label. If the voltage applied 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.

Set the thermostat control knob to "0" (OFF). Remove the protective shield from the DC input compartment and connect the two-core cable from the battery, being careful to ensure polarity is correct (i.e. positive to positive, negative to negative). Then return the protective shield to the original place.

1.3 Automatic battery/mains Switching.(Except MODEL SB47F)

All Engel refrigerators are built with voltage selection based in favour of 220V-240V. AC. If mains current is applied whilst the refrigerator is operating from a DC battery source, a relay immediately switches to mains operation. When the mains current supply is terminated the refrigerator will automatically revert to battery operation.

2 Safety Devices.

2.1. Polarity Guard for DC Battery Operation.

In order to protect the inverter from damage caused by incorrect polarity the refrigerator is fitted with an automatic polarity guard. Should incorrect polarity be applied, the green power lamp will not light and the refrigerator will not operate. Check the fuse and following correction of the current supply, the green power lamp will light up and normal operation will be resumed. However, if the green power lamp does not light, this indicates a possible inverter defect, and users are advised to contact their Engel dealer for service. (See Fig 1)

3 Installation and Operation.

The refrigerator should be mounted in a convenient dry location, where it is not subjected to splashing from water or other liquids or to radiant or conducted heat from hot pipes, warm air outlets, cookers etc. Also ensure that it is not exposed to direct sunshine. Although care is taken to ensure that Engel refrigerators leave the factory in a clean condition, users are recommended to wipe out the interior with a clean damp cloth, followed by drying with a clean dry cloth, before using a refrigerator for the first time.

The thermostat control knob serves the dual purpose of governing AC and DC operation. (Except MODEL SB47F)

The thermostat control knob serves the purpose of governing DC operation.(MODEL SB47F only)

When turned as far as possible in an anticlockwise direction the setting is "1" (REF). When turned as far as possible in a clockwise direction, the setting is "5", or (MAX) This corresponds to a very low temperature, 0C or less. Depending upon the prevailing ambient temperature, the refrigerator should initially be allowed to run for from 30 to 45 minutes at the maximum thermostat setting (fully clockwise), and the control should then in an anticlockwise direction to select the desired refrigeration temperature. For example, the ideal refrigeration temperature for storing those foodstuffs normally kept in refrigerators is in the range from +4C to +9C

4 Defrosting

Due to the humidity of the air inside the refrigerator storage space, frost will form on the surface of the evaporator when this has been working for some time. A layer of frost in excess of about 6mm ($\frac{1}{4}$ in.) has an adverse effect upon cooling efficiency; therefore the evaporator must be defrosted at regular intervals. For this purpose, set the thermostat control knob to "0" (OFF). After defrosting the cabinet interior must be cleaned and dried before the refrigerator is set the thermostat control knob to "1-5" again.

6 Cleaning.

ALWAYS DISCONNECT THE ELECTRIC CURRENT SUPPLY BEFORE CLEANING. SWITCHING OFF IS NOT ENOUGH-PULL OUT THE PLUG! Remove from the cabinet all water resulting from defrosting, because this otherwise will become the cause of unpleasant odor and tainting affecting the refrigerator contents. Wipe the cabinet interior clean with a damp cloth wrung out in warm water containing a mild, non-abrasive household detergent. Dry thoroughly with a soft, dry cloth. Never use brushes, scrapers, soap powders, petrol, benzine or thinners, which will damage the cabinet lining. Door or lid linings must not be allowed to become too wet, or water may be absorbed by the insulation material, and insulating efficiency will be adversely affected until the insulation has dried out. Wash all removable shelves and fittings in warm soapy water, then rinse and dry with a soft clean cloth.

6 Laying-up.

When the refrigerator is to be left unused for any appreciable period of time, the mains plug must be removed from the supply socket. Battery supplies may remain connected, provided that the thermostat control knob is turned to "O"(OFF). It is advisable that the cabinet should be cleaned and the lid or door left open for a few hours to prevent odour formation.

7 Technical Advice for DC Operation.

- 7.1. Direct connection between battery and refrigerator. Avoid the use of unnecessary plugs, switches, distribution sockets etc. between the battery and the refrigerator, as these will contribute to voltage drop at the input terminals and momentary peak voltages caused by other electrical equipment in the same circuit can damage the refrigerator inverter. Always connect the refrigerator directly to the battery. (See Fig.2)
- 7.2. The electric current supply to the refrigerator must be protected by a line fuse inserted in the positive lead, as close to the battery as possible.
12V DC fuse rating 15A.
24V DC fuse rating 10A.
- 7.3. DC current supply cable must have a cross sectional area of at least 2.5 mm² to prevent voltage drop. Cable runs should be as short and direct as possible, for the same reason.
- 7.4. Engel refrigerators are protected against radio interference to the requirements of EN 50081-1.

In order to avoid interference on the DC supply line, please use separate positive and negative cables, which are twisted together in a spiral form. (See Fig.1)

- 7.5. Should the voltage at the refrigerator input terminals fall below the rated requirement, the cooling efficiency will immediately be reduced. Please pay due attention to the maintenance of your battery in a good state of charge.
- 7.6. Quick chargers supply the battery with excess voltage in performing their intended function. Should the refrigerator remain switched on whilst a quick charger is connected to the battery, the inverter can suffer damage.
- 7.7. Never use a battery charger, transformer/rectifier, battery eliminator or AC/DC converter to supply your Engel refrigerator. Such equipment can, under certain circumstances, deliver current at a voltage which may damage the inverter. It is in order to use these items always provided that the battery is connected in parallel between the charging equipment and the refrigerator. (See Fig.2)

8 APPLICATION of ENGINE GENERATOR

To use an engine generator as power source for ENGEL refrigerator, users are advised to contact their ENGEL dealer for its application method in order to protect the refrigerator from damage caused by high voltage and frequency fluctuation.

9 Acoustic Noise Information 3. GSGV

The sound pressure level is 70dB(A) or less according to ISO 7779.

SB47F / SR48F / SR70F

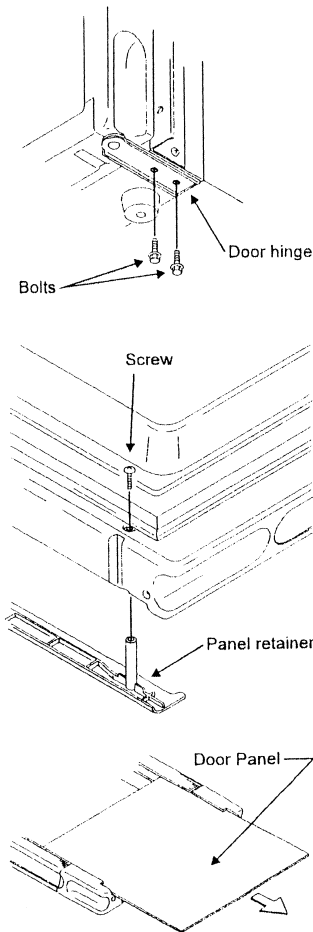
How to replace door panel

NOTE: The decorative door panel must be 4 mm or less in thickness.

1. Remove the door from the refrigerator by removing the two (2) bolts that attach the door hinge to the bottom of the refrigerator.
2. Remove the panel retainer by removing the two (2) screws that attach the panel retainer.
3. Gently pull the door panel out of the door.
4. Push a new door panel into the door slot.

CAUTION: Do not overtighten the screws and bolts.

5. Put the panel retainer in the original location and attach with two (2) screws.
6. Put the door in the original location and tighten the two (2) bolts.



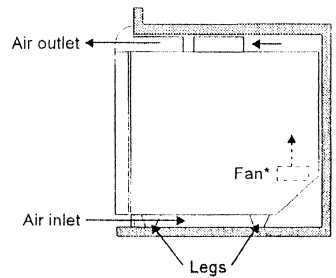
VENTING

Sufficient ventilation (airflow) over the rear mounted condenser of the refrigerator is necessary for the refrigerator to operate correctly.

* NOTE: The fan will operate only when the ambient temperature is higher than approximately 95° F.

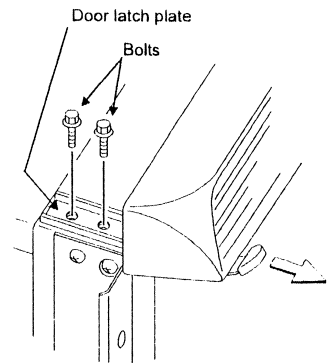
CAUTION: Do not remove the bottom legs from the refrigerator cabinet. The legs supply space under the refrigerator that is necessary for correct ventilation.

If you do not make sure that the ventilation is correct, a shortened refrigerator life expectancy, poor refrigeration, continuous operation, accelerated battery discharge and void warranty will result.



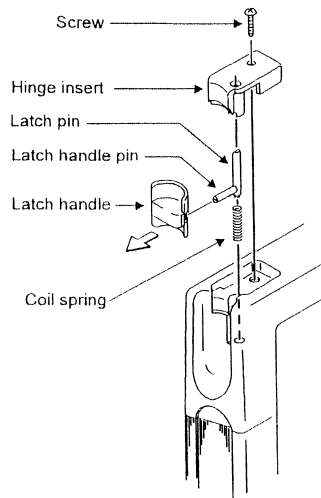
How to change opening direction

1. Remove the door from the refrigerator by removing the two (2) bolts that attach the door hinge to the bottom of the refrigerator.
2. Remove the two (2) bolts that attach the upper hinge.
3. Remove the bolt that attaches the door latch plate to the top of the refrigerator.
4. Remove the upper hinge and the door latch plate from the refrigerator.
5. Attach the upper hinge and the door latch plate to the opposite sides of the refrigerator.



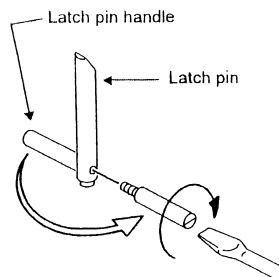
6. Move the latch to the opposite side of the door.

- Remove the screw that attaches the hinge insert to the door.
- Remove the hinge insert, the latch handle, and the coil spring from the door.
- Pull the latch handle pin out of the recess in the latch handle.
- Move the latch handle pin to opposite side of the latch pin.
- Turn the latch handle upside down and push the latch handle pin into the recess of the latch handle.
 - Make sure the angled top faces the door latch plate.
- Assemble the coil spring, the latch handle, and the hinge insert into the opposite side of the door.
- Install and tighten the screw that attaches the hinge insert to the door.



7. Put the door onto the refrigerator

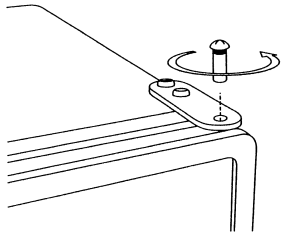
8. Install and tighten the two (2) screws that attach the door hinge to the bottom of the refrigerator.



Model	SB47F / SR48F	SR70F
ventilation opening	Dj 510.5 + 16 Br 423 H 530 (Dj) 451 (Br) 387 (H) 521	Dj 586 + 16 Br 506 H 530 (Dj) 533 (Br) 468 (H) 521
	Dj 877 Br 407	Dj 1032 Br 488.5

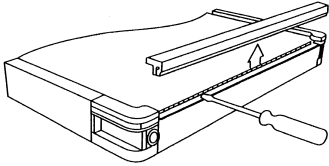
ST68F / ST90F / SR90F HOW TO REPLACE DOOR PANNEL

1. Remove door from refrigerator.
(Remove hinge pin by use of screw driver.)



Hinge pin

2. Remove lower panel frame.

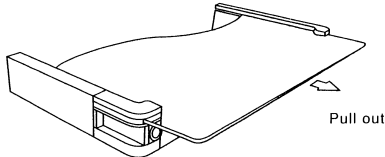


Lower panel frame

Lower door frame

Push in thin top minus screw driver between lower panel frame and lower door fram and detouch lower pannel frame to upper side.

3. Pull out door pannel gently.

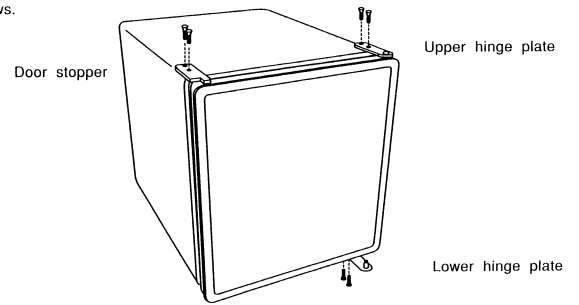


Pull out

4. Insert a new door pannel to the door slit.
Caution: Thickness of the door pannel should be 4mm or under.
5. Fix the lower panel frame and replace the door following with the reverse order of

ST68F HOW TO CHANGE DOOR OPENING DIRECTION

1. Remove 2 hinge plates (both upper and lower side) and door stopper by pulling out of 6 screws.

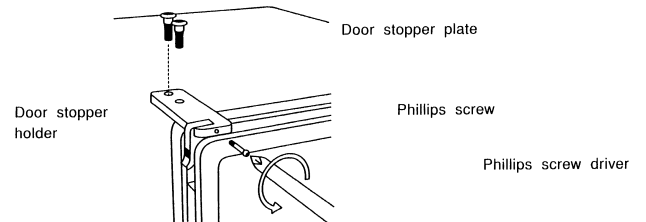


Door stopper

Upper hinge plate

Lower hinge plate

2. Fix the hinge plates at counter side of cabinet end.
3. Pullout screw of door stopper plate and remove door stopper holder.



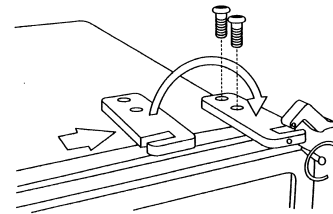
Door stopper plate

Door stopper holder




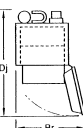
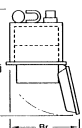
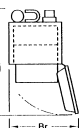
Phillips screw

Phillips screw driver

4. Turnover the door stopper plate and fix the door stopper holder so as to it can catch door at counter side of previous setting.



5. Fix the door stopper at counter side of cabinet end.

Model	ST68F	SR90F	ST90F
utrymmeför ventilation	Dj 548 Br 455 H 547	Dj 548 Br 525 H 750	Dj 548 Br 525 H 780
			
			
	Dj 905 Bf 700	Dj 895 Br 900	Dj 895 Br 900

III VENTING

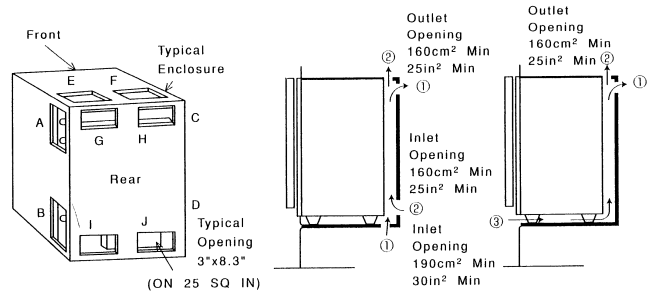
In order to assure efficient operation an adequate airflow over the rear mounted condenser of the refrigerator is required. Please refer to the illustration showing the various approved venting arrangements. Venting should be installed using any of the following combinations for truck use.

A-D, A-I, A-J, B-C, B-F, B-H, C-D, C-I, C-J, D-F, D-H, F-I, F-J, G-I, G-J, H-I, H-J,

Vent opening combinations should equal a minimum air flow of 50 square inches. These opening sizes are for minimum ventilation, however, we suggest providing as much ventilation as possible. The more air circulating over the condenser (located at rear) the more efficient the refrigerator will operate.

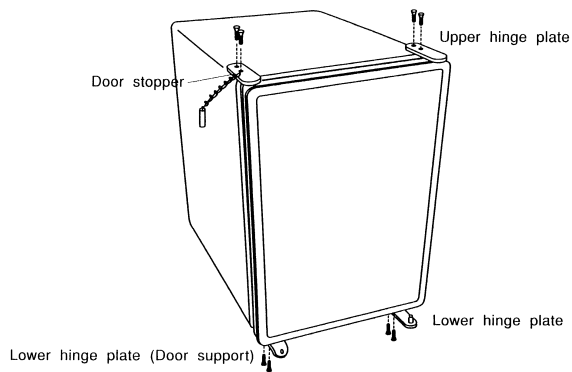
CAUTION

Failure to provide the necessary ventilation will result in shortened life expectancy of unit, poor refrigeration, continuous operation, accelerated battery discharge and void warranty.



ST90F / SR90F

1. Remove the 2 hinge plates (both upper and lower side) door stopper plate and stopper pin, and lower hinge plate (Door support) by loosen of 8 screws.



2. Fix the hinge plates, the door stopper and stopper pin and lower hinge plate (Door support) as counter side of cabinet end.