NORCOLD®
THE NEW AGE OF COLD
TEK II

DUAL VOLTAGE
ICE BOX
CONVERSION SYSTEM
120 VOLTS A.C. & 12/24 VOLTS D.C.
MODELS
SCQT-4407 (40W)

OWNER'S GUIDE

SERVICE INFORMATION
IF SERVICE OR PARTS ARE REQUIRED, CONTACT THE NEAREST NORCOLD SERVICE CENTER. A NORCOLD SERVICE CENTER BOOKLET HAS BEEN INCLUDED WITH THE REFRIGERATOR INFORMATION PACKET.

B. Required Tools:
1. 4" Drill and Assorted Bits
2. 1/4" Hole Saw
3. 7/8" and 5/16" Wrenches or 2 Adjustable Wrenches
4. Phillips and Straight Screwdrivers
5. Vise Cutters and/or Vise Strippers
6. Electrician Tape and Wire Connectors
7. Tube of Silicone

C. Location of Components:
Before the installation work is begun, the layout of the entire system should be considered, with particular attention to the following points:

a. Location and position of the cooling plate.
b. Point of tubing unit from ice box.
c. Thermostat mounting position.
d. Route of refrigerant tubing.
e. Location of compressor condenser unit.

There are two basic positions which are acceptable for the cooling plate as in Fig. 3(a) or 3(b). Positions shown in Figs. 3(c), 3(d), 3(e) or 3(f) will result in adequate cooling performance. For top opening boxes, the position as shown 3(a) is the most common. It is preferable to install the cooling plate at as high a box as possible to obtain good circulation of cold air and improve uniform temperature. Placement of the compressor condenser is very important, since ventilation is a consideration. The unit depends upon the convection air around it to remain hot.

DO NOT PLACE THE COMPRESSOR/CONDENSER IN A CONFINED SPACE WHICH REQUIRES NO VENTILATION.

Availability of space for the compressor condenser is usually found beneath or in the engine compartment, but could be a drawback. A proper sized condenser with adequate ventilation is necessary.

At times, the engine compartment may be considered but only if there is no other space available. Because of the engine heat produced by the engine, it is important that the condenser is placed so as not to be directly exposed to the engine heat.

The cut openings in panels and, if necessary, provide louvred panels (available as an option supply). The air flow into the engine compartment will be sufficient to keep the unit cool.

The best venting arrangement in a confined space is to provide an opening below the unit, and an opening at the top, or high on the side. It is recommended that the lower and upper openings be placed at the same level as the cooling plate as it is necessary to have sufficient ventilation for the unit to operate effectively.

See Fig 4. Allow several inches on each side and top of the unit for accessibility ventilation.

Before the condenser is installed, check that the air flow is adequate for the condenser unit to operate effectively.

Also, the top of the condenser unit must not be placed higher than the cooling plate. The unit will not be able to circulate the refrigerant due to gravity.

The electrical wiring to the unit must be accessible to the user and should be properly secured. The unit must remain cool while the engine is running.

D. Installation

For the purpose of keeping a sufficient circulation of refrigerant oil,

1. Place the compressor at an appropriate location for the evaporator.

2. The evaporator should be placed in a well-ventilated area with a good air circulation system. The evaporator should be installed at a height of approximately 1.5 meters above the ground level.

3. The evaporator should be placed in a well-ventilated area with a good air circulation system. The evaporator should be installed at a height of approximately 1.5 meters above the ground level.

IMPORTANT DIRECTIONS FOR TUBE BENDING

1. ORIGINAL SIZE (AS RECEIVED)
   a. The copper suction tube is clamped at the nearest point to the evaporator.
   (Refer to Figure 1, Point A.)
   b. The tube is bent in a tight U-shape at Point "B".
   (Refer to Figure 1, Point B.)
   c. The remaining part of the tube to the connecting coupler is rolled in a large diameter "L".
   (Refer to Figure 1, "L")

2. DIRECTIONS FOR UNCOILING SUCTION TUBE
   a. Carefully straighten the coiled tube indicated by "L" so that the tube is positioned in the correct orientation as shown in Figure 2.
b. When the evaporator is installed into the cabinet, retain the tight U-shape bend indicated at point “B.” The tube section at “C” must not be moved or altered so as to protect the connector to the evaporator as indicated by point “D.”

In case the installation requires the tube to be run in Direction “E,” then use Figure 2 as a guide.

On the other hand, if the tube is to be run in another direction (G, F, H, I), carefully bend the tube at point “K.”

For reference, the type of bend for various directions (G, F, H, I) is shown where “K” is the point of bending.

In case of “G” direction.

In case of “F” direction.

In case of “H” direction.

In case of “I” direction.

Important: In making the tube bend at point “K,” a tube bending tool should be used. If not available, the tube can be bent using a wooden or metal cylindrical shape of approximately 2" to 2-1/2" (50-65mm) diameter.

Caution: Use extreme care in hand bending so as not to kindle, flatten or damage the copper tube.

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1. Insert the evaporator in storage compartment and secure it with screws provided on the vertical side wall of the compartment using the evaporator standoff. (Fig. 2). Do not link or excessively bend tubing since this can not only cause damage but can restrict free flow of refrigerant.

Cover the suction tube with insulation material such as neoprene sponge, tube or fiberglass tape, outside of the refrigerating box. Caution: The refrigerant quick connect couplings must be kept clean and dry. Do not remove dust caps and plugs until ready to make the connections.

2. The compressor condenser case can be easily mounted to the floor mounting brackets and by use of supplied screws or bolts, collars, collars, plate washers and spring lock washers. (Fig. 1). Place unit to insure accessibility and good circulation (see paragraph on location).

3. Set the thermostat box on side wall of the refrigerating box, within reach, referring to Fig. 7. Turn the thermostat control knob to the “off” position.

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E. With the power supplies off, make the electrical connections. (Refer to Fig. 3). Refer to WIRE SIZE table for recommended D.C. wire sizes.

Important: The D.C. wire connection should be made to a dedicated D.C. 24 volt supply with a circuit breaker. This 12/24 volts must be a battery or converter or battery charger. See Fig. 10.

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F. Connection of Refrigerant Couplings

1. Remove dust caps and plugs if used, making sure that components synthetic seals are intact. It is best to complete connection to the lower coupling before making the next connection.

2. Wipe off coupling seals and threaded surfaces with a clean cloth to prevent the inclusion of dirt or any foreign material in the system.

3. Lubricate rubber seal in male hub with a thin coat of oil. Thread coupling halves together by hand to ensure proper mating of threads. Note: One set of couplings connects to the mating set on the compressor condenser unit. The threads are such that the two lines cannot be reversed.

At this point make sure two proper sized wrenches are available, since the tightening should be done rapidly (to minimize any refrigerant loss (you may hear a brief “hisss” as the joint is tightened).

**CAUTION:** Always turn the female coupling and hold the male coupling with a second wrench.

Use proper size wrenches (on coupling body hex and union nut) and tighten coupling bodies “bottom” or definite resistance is felt. Using a marker or ink pen, mark a line lengthwise from the coupling hex bulkhead. Then tighten an additional 1/6 to 1/4 turn. The misalignment of the line will show the degree of tightening. The tool is necessary to ensure that the knife edge metal seat blades in brass seat of the coupling halves, forming the leakproof joint. If torque is used, the following torque values are recommended:


After all couplings are tight, test check the joint with a soap solution.

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G. Connecting to Power Source:

Your refrigerator may be operated on A.C. (120 volt-60 Hertz) or D.C. (12/24 volt) supplied by a battery. The D.C. operation is from your car battery, T. Cannon, Inc.

The car battery voltage varies with the type of car you own. Most cars and buses use a 12 volt system. Your refrigerator needs a 12/24 volt battery. See if the battery voltage is too high for example 32 volt, your refrigerator or cooler. If the battery voltage is too low for example 12 volt, the cooling power will decrease if the voltage is lower than 12 volts.

Set the thermostat control knob to “OFF”. Connect two (2) wires from 12 volt battery, referring to PLUS MINUS (+ -) INDICATIONS.

**CAUTION:** CONNECT REFRIGERATOR DIRECT TO BATTERY

The battery must have a charging means available, such as a generator, converter or the alternator. If not, the battery will discharge in a short period of time. Any switches, leads wires or electrical equipment should not be connected with wiring between your refrigerator and battery, because this equipment generates high voltage pulses and causes transistor trouble in the power—see Fig. 10.

On D.C. operation, connecting the D.C. supply properly to the refrigerator is important. You will note that one lead wire is marked (+) positive and the other (-) negative.

If the polarity be reversed, the unit does not operate and does not light their lamp, check the fuse located in D.C. lead and the polarity of the D.C. power supply.

If it still does not operate, this is an indication that other problem exist in the inverter, and the unit should be checked by an authorized Norcold Service Co. To reduce the radio interference and induction of a high surge voltage from outside, twisting of the lead wire is important. See Fig. 11.

H. Operation Check:

After completing the final installation details, an operational check can be made to make sure the thermostat control knob to “ON” and turning the temperature control dial from 1 to 5 until the compressor starts. After a few minutes, the condenser plates should feel cool indicating circulation of refrigerant. Check on both A.C. and D.C. operation.

Note: Built in relay switches automatically connect power supply.

a. Suppose refrigerator is operating on 120 volts A.C. (shore-power connection on boat dock, etc.) and then the power source is disconnected by a switch or by pulling the plug, the relay automatically switches the refrigerator over to 12 volt D.C. power source and continues to cycle the compressor, providing, of course, the leads are connected to the battery.

b. If the refrigerator is operating normally on a 12 volt battery, then, when volts A.C. power is switched on or by just plugging in the A.C. power cord, the relay switches the compressor over to A.C. operation. This will save power consumption and keep your battery in good condition. Refrigerator temperature can be controlled by means of the temperature control dial. The indoor temperature drops as the dial position is changed from “1” to “5.” In this way, interior temperatures can be regulated freely within the range 45° to 22° F. To switch off your refrigerator, move the thermostat control knob to “OFF.” The dial does not turn clockwise beyond “5” and “OFF.” For efficient operation, regulate the temperature according to the types of foods stored.

c. MAINTENANCE OF BATTERIES IS IMPORTANT

If the charge of your battery is not sufficient, a decline in the cooling performance of your refrigerator can be expected. If 120 V, 60 hertz, d.c. power supply is available, A.C. operation is recommended to keep your battery in good condition. A.C. power is automatically applied, if your voltage falls below 120 volts electric system is connected to the outside 120 V power supply.

d. NEVER EMPLOY A "QUIK CHARGER" TO YOUR BATTERY UNLESS THROUH POWER SWITCH HAS BEEN TURNED TO "OFF."
NEVER USE A COMMERCIAL 12/24 VOLTS D.C. TO 120 VOLTS A.C., 60 HERTZ INVERTER OR CONVERTER for operating your refrigerator on A.C., since these devices do not hold the required constant frequency.

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8
LIMITED WARRANTY
NORCOLD®

P.O. Box 4248
Sidney, Ohio 45365-4248

This Limited Warranty is given by NORCOLD, Inc. ("Company") to the original consumer-purchaser of any new refrigeration equipment ("Equipment") supplied by the Company, excluding glassware and electric light bulbs, and will be effective for a period of one year from date of original purchase. The Company reserves the right to alter, modify, or discontinue the Equipment at any time without notification. Provided that the Equipment shall at all times have been in possession and used by the original consumer-purchaser, that:

A. The Company will provide service and replacement of defective parts no charge at all authorized Norcold Service Centers for a period of one year from the date of original purchase. This Limited Warranty covers labor incurred in removing and re-installing the refrigerator only when necessary, and any replacement of defective part. The Company will pay inbound and outbound transportation costs of any defective parts, for a 1-year period commencing with date of purchase. The original consumer-purchaser must pay all taxes incurred in making the equipment available at one of the Norcold Service Centers.

B. The following procedure shall be followed by any original consumer-purchaser desiring to obtain performance under the terms of this Limited Warranty. Refrigerator must be brought to one of the Norcold Service Centers, and original consumer-purchaser must present evidence (1) to identify the original consumer-purchaser; and (2) that the item claimed to be defective is within the warranty coverage. If the original consumer-purchaser is unable to accomplish this task, written notice should be immediately directed to Norcold and advice will be promptly given concerning the manner in which warrant service may be obtained. Inability to physically bring the refrigerator to a Norcold Service Center will not void the warranty, but any additional costs thereby incurred are so for the account of the original consumer-purchaser.

C. The Company will not be liable under this Limited Warranty for any of the following:
1. Defects which arise by reason of transit damage, misuse, neglect, accident.
2. Manufacturing defects found at the time of purchase which were communicated to the Company within 30 days.
3. Defects in glassware and electric light bulbs.
4. Defects arising from improper installation or adjustment of Equipment.
5. The need for normal maintenance of this refrigerator.
6. Defects arising from the improper use of parts or parts not manufactured or supplied by the Company in the course of repairs or replacements to Equipment.

D. Employees and agents of the Company, and its authorized service representatives, have no authority to vary the terms of the Limited Warranty which applies only to Equipment purchased and installed in the United States, America and the Dominion of Canada. The Company reserves the right to make any improvements or changes in parts or models without notice to the original consumer-purchaser.

E. The Company shall not be liable in any way responsible for any loss damage to person or property, or lost profits or other similar loss or damage that may result or be claimed to have resulted from a defect in any part of the Equipment covered by this Limited Warranty. Some states do not allow all the exclusion or limitations of any incidental or consequential damages, so above limitation or exclusion may not apply to you.

F. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE:
1. APPLICABLE TO A PART OR PARTS OF THE REFRIGERATOR LIMITED TO A PERIOD OF ONE YEAR FROM DATE OF PURCHASE;
2. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG IMPLIED WARRANTY LASTS, THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

G. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.