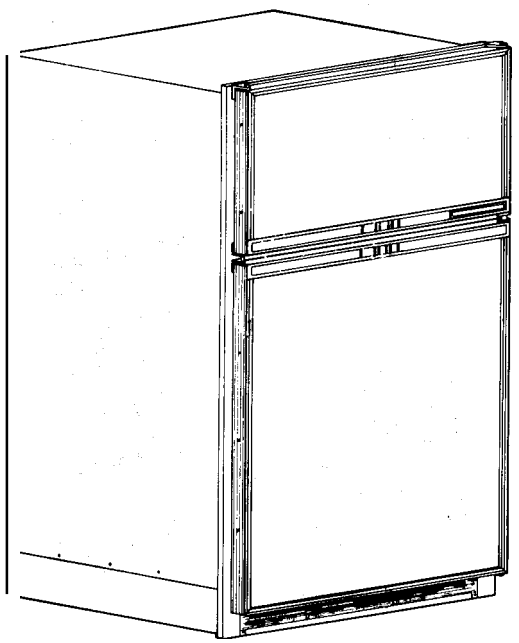
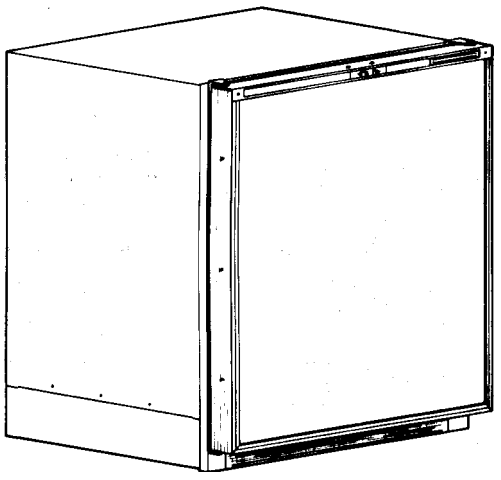
NORCOLD

OWNER'S MANUAL

MODELS DE-704
DE-828



DE-828



DE-704

Part No. 615506-A (September 1985)

MODEL NO. DE-828 SERIAL NO. 10373-F7

DATE OF PURCHASE _____

DEALER'S NAME _____

This appliance has been designed for refrigerating purposes and is operable on either 120 V.A.C. or 12 V.D.C. when installed as directed by this owner's manual.

The location of the model and serial number may be found attached to the front bottom trim rail or on the cabinet liner immediately adjacent to the trim rail.

Before installing your refrigerator, record and retain the model and serial number for future reference and warranty purposes.

IMPORTANT

THIS REFRIGERATOR IS DESIGNED TO OPERATE ON POWER SUPPLY LIMITS AS FOLLOWS:

120 VOLT AC OPERATION: 132 VOLTS MAX, 108 VOLTS MIN.
61 HERTZ MAX, 59 HERTZ MIN.
12 VOLT DC OPERATION: 15.4 VOLTS MAX, 10 VOLTS MIN.

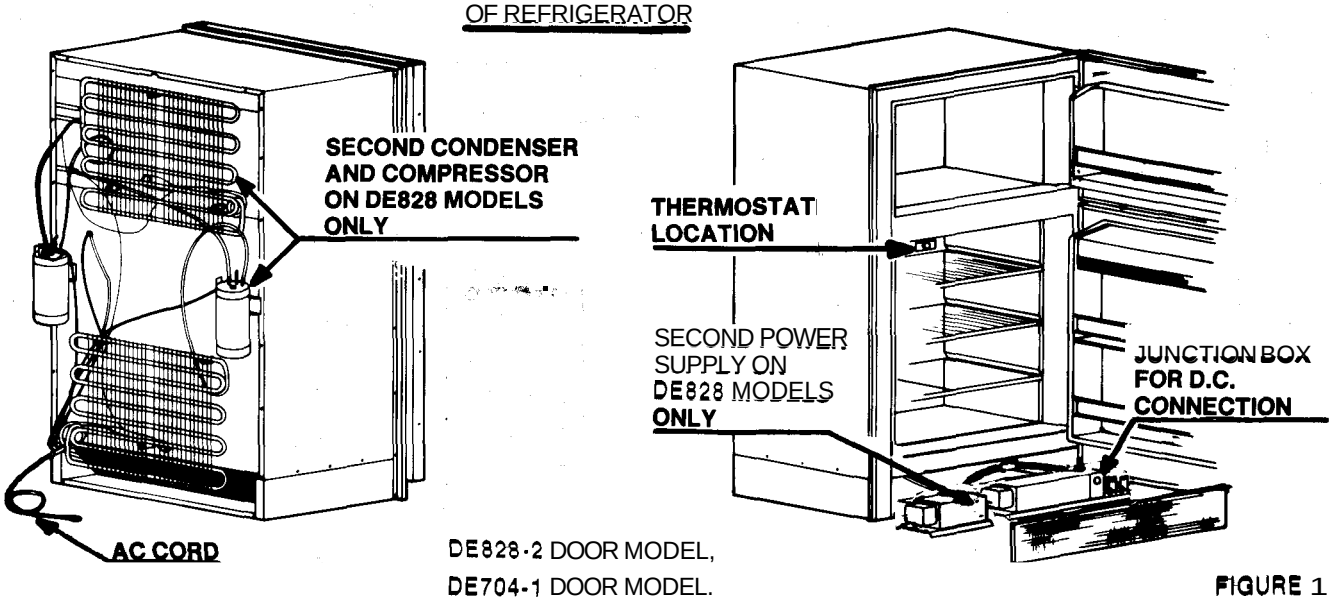
OPERATION ON POWER SUPPLIES EXCEEDING THESE LIMITS MAY CAUSE DAMAGE AND VOID THE WARRANTY.

WHEN OPERATING ON 12 VOLTS D.C., A BATTERY SOURCE MUST BE USED. OPERATING THE REFRIGERATOR ON A CONVERTOR OR BATTERY CHARGER ALONE (WITHOUT A BATTERY IN THE CIRCUIT) IS NOT RECOMMENDED SINCE THESE DEVICES DO NOT NORMALLY SUPPLY A FILTERED D.C. SOURCE. UNSATISFACTORY OPERATION WILL RESULT.

The Norcold dual voltage refrigerator is designed for the recreational vehicle, Marine industry, as well as under counter installations. A typical R.V. installation, for instance, requires the refrigerator to operate on 12 VDC while in transit and 120 VAC while parked. The Norcold refrigerator easily converts from one power source to the other.

Unlike the absorption-type refrigerator which requires a constant heat source for efficient operation, your dual-voltage refrigerator operates on the same principle as the standard domestic refrigerator — that is, it has an electrically-operated compressor and uses freon as its refrigerating medium.

GENERAL VIEWS OF REFRIGERATOR



DE828-2 DOOR MODEL,
DE704-1 DOOR MODEL.

FIGURE 1

INSTALLATION

Unit Location — Be sure the refrigerator is not installed in direct sunlight, or near a gas stove, heater or other heat generating sources. A flanged mounting frame is provided around the front of the refrigerator cabinet to allow build-in installation.

You refrigerator should be located and secured on a solid surface within the vehicle.

Before installing the cabinet into the opening, check to see if the A.C. power supply cord of the unit is properly connected to the A.C. wall outlet and if the D.C. supply should be connected. In many cases, the D.C. supply can be connected from outside the vehicle by means **of** the vent or access door.

Measure the opening and determine if you have the proper clearances for installation. There is no need for allowing an area around the cabinet for additional insulation as the Norcold refrigerator is well insulated and requires no additional insulation.

Place the refrigerator into the wall opening and secure it in place by fastening the mounting flange to the wall through the holes provided

Venting — Unlike the absorber refrigerator, venting is not as critical for efficient operation because the heat produced by the condenser at the rear of the refrigerator is minimal.

Please note the perforated access panel or kick plate at the front base of the refrigerator. This panel allows air movement to flow under the cabinet and over the inverter for cooling.

A small louver-type vent of approximately 4" x 16" area may be installed at the top and at the bottom of the exterior wall of the vehicle for outside venting purposes.

A combination of a roof jack and lower vent or two side vents offers adequate venting for high outside ambient temperatures. If operation at low outside ambient temperatures is necessary (Below 23° F/5° C) all exterior venting must be covered to prevent possible compressor damage.

NOTE:

The more air circulating over the condenser (Located at rear), the more efficient the refrigerator will operate. Failure to provide the necessary ventilation will result in poor refrigeration.

Power **Supply** — Provisions are made for connection of either 12 volts D.C. or 120 volts A.C. to the refrigerator. If both 12 VDC and 120 VAC are simultaneously supplied, a special relay in the refrigerator control panel allows the unit to run on 120 VAC. To convert to D.C. power, the AC supply is simply disconnected.

A. DC Power Connection — the D.C. supply connection is located behind the perforated access panel at the bottom front of the unit. Remove the screw from the top center of the access panel and remove the panel. The D.C. terminal box is located in the control (Inverter) assembly. The positive and negative D.C. supply connections are located in this terminal box.

The size of the wire from your 12 volt D.C. battery is dependent upon the distance between the refrigerator and the battery. Refer to table 1 for wire size.

This recommended wire size is to prevent a voltage drop at the refrigerator which is critical to D.C performance.

Use of wire sizes smaller than those listed may cause excessive D.C. running time and shorter battery life.

It is important that the 12 volt, D.C. supply be connected directly to the positive and negative posts of the battery and that the wires are twisted or intertwined.

To the leads located in the terminal box, connect the positive battery lead to the red wire and the negative battery lead to the black wire. These splices should be soldered or connected by means of an approved splice connector. Tape the splice connections generously before replacing the terminal cover box. The twisting of the lead wire nullifies the induction created by high voltage surges which contribute to radio and T.V. interference.

A 15 amp fuse should be installed as close to the battery as possible in the positive wire leading to the refrigerator. This fuse will protect the wiring from the battery to the refrigerator in the event of a short circuit.

CAUTION:

DO NOT OPERATE REFRIGERATOR ON BATTERY ALONE. THE BATTERY MUST HAVE A CHARGING MEANS SUCH AS THE VEHICLE'S ALTERNATOR; IF NOT, THE BATTERY WILL DISCHARGE IN A SHORT PERIOD OF TIME.

Further information on D.C. supplies can be found later in this manual.

B. AC Power Connection — The 120 volt A.C. power connection is made by connecting the refrigerator's **A.C.** cord to a standard 120 volt ground receptacle. See Fig. 1.

The 120 volt A.C. supply outlet, to which the refrigerator is connected should be routed through the fuse panel or circuit breaker that protects the vehicle when an outside power source is used. This connection should be permanently wired in accordance with existing governing codes. The use of an extension cord is not recommended.

CAUTION:

IF AC POWER **IS** SUPPLIED BY AN ON-BOARD GENERATOR, IT IS VERY IMPORTANT TO HOLD BOTH VOLTAGE AND FREQUENCY WITHIN THE TOLERANCES STATED IN THE FRONT OF THIS MANUAL.

WIRE SIZE tables
for field supplied D.C. cord (to battery)

Length of Field Supplied Wire	WIRE SIZE DE-704	WIRE SIZE DE-828
Less than 6 FT.	AWG #14	AWG #14
6 FT. to 12 FT.	AWG #14	AWG #12
12 FT. to 20 FT.	AWG #12	AWG #10

TABLE **1.**

OPERATION

Power Source — As previously noted, the Norcold refrigerator can be operated on either 12 volts D.C. or 120 volts A.C. If both power sources are connected simultaneously, the refrigerator will operate on 120 volts A.C. A special relay disconnects the D.C. power. To operate on D.C. power, the A.C. source must be disconnected, allowing the relay to switch to 12 volts D.C.

To protect the solid state components of the inverter necessitates the use of a circuit breaker in the D.C. circuit.

On A.C. operation, the transformer is protected from overload conditions by a bi-metallic current limiting device. (Located in Transformer Primary Winding) the device resets automatically when the overload is removed.

Temperature Control — A single thermostat controls the operation of the refrigerator on A.C. or D.C. The control knob is located at the upper right and to the rear of the food compartment.

The knob is marked "off, 1, 3, 5, 7." The nearer the dial is set to "7", the colder the temperature becomes in the cabinet.

There is no need to readjust the setting of the thermostat for dual operation. Once the desired temperature is reached, the thermostat will control the cabinet temperature equally well on either voltage supply.

INITIAL START-UP — Before operating the refrigerator for the first time, check to see that the A.C. and D.C. supply connections are correct and that the thermostat is turned to the "Off" position.

Connect the vehicle to the external power supply of 120 volts.

The circuit breaker is located behind the kickplate or access cover at the bottom front of the refrigerator. This circuit breaker will protect the inverter components when excessive current is drawn due to improper D.C. power supply or overload conditions. This circuit breaker is inactive when the refrigerator is operated on 120 volts, A.C.

Turn the thermostat knob to the number **"3"** setting. The unit should be operating. If the compressor motor cannot be heard, place your ear against the outside of the refrigerator door. This procedure will enable you to determine if the swing-motor is operating.

Allow approximately five minutes of operation and open the freezer compartment door. Place your hand at the upper left rear corner of the top evaporator plate. This is the area of the evaporator that will begin cooling first. If you notice a cooling effect at this point, then the unit ***is*** functioning properly.

Close the refrigerator door and allow the refrigerator to operate on A.C. until it cycles or shuts itself off. This indicates the thermostat is operating and that the refrigerator is cooling on A.C. operation.

Now, disconnect the A.C. supply and open the refrigerator door **so** that the cabinet interior will warm up and allow the thermostat to demand cooling.

As soon as the unit compressor begins to operate, close the refrigerator door allowing the unit to run. It should shut off or cycle within 10 to 20 minutes indicating the D.C. operation is correct.

MAINTENANCE OF YOUR REFRIGERATOR

(1) Cleaning Box and Door — Wipe with a **soft,** dry cloth. To remove dirt, use a cloth moistened by a warm neutral detergent solution. Never use hot water. After cleaning, wipe with a dry cloth.

(2) Gasket (door cushion) — Wipe away dirt with a soft cloth moistened by a neutral detergent. Do not soak the cloth excessively. If water gets inside, the insulating effect may become temporarily impaired.

(3) Attachments — Wash all attachments in soapsuds. Rinse and wipe clean with a dry cloth.

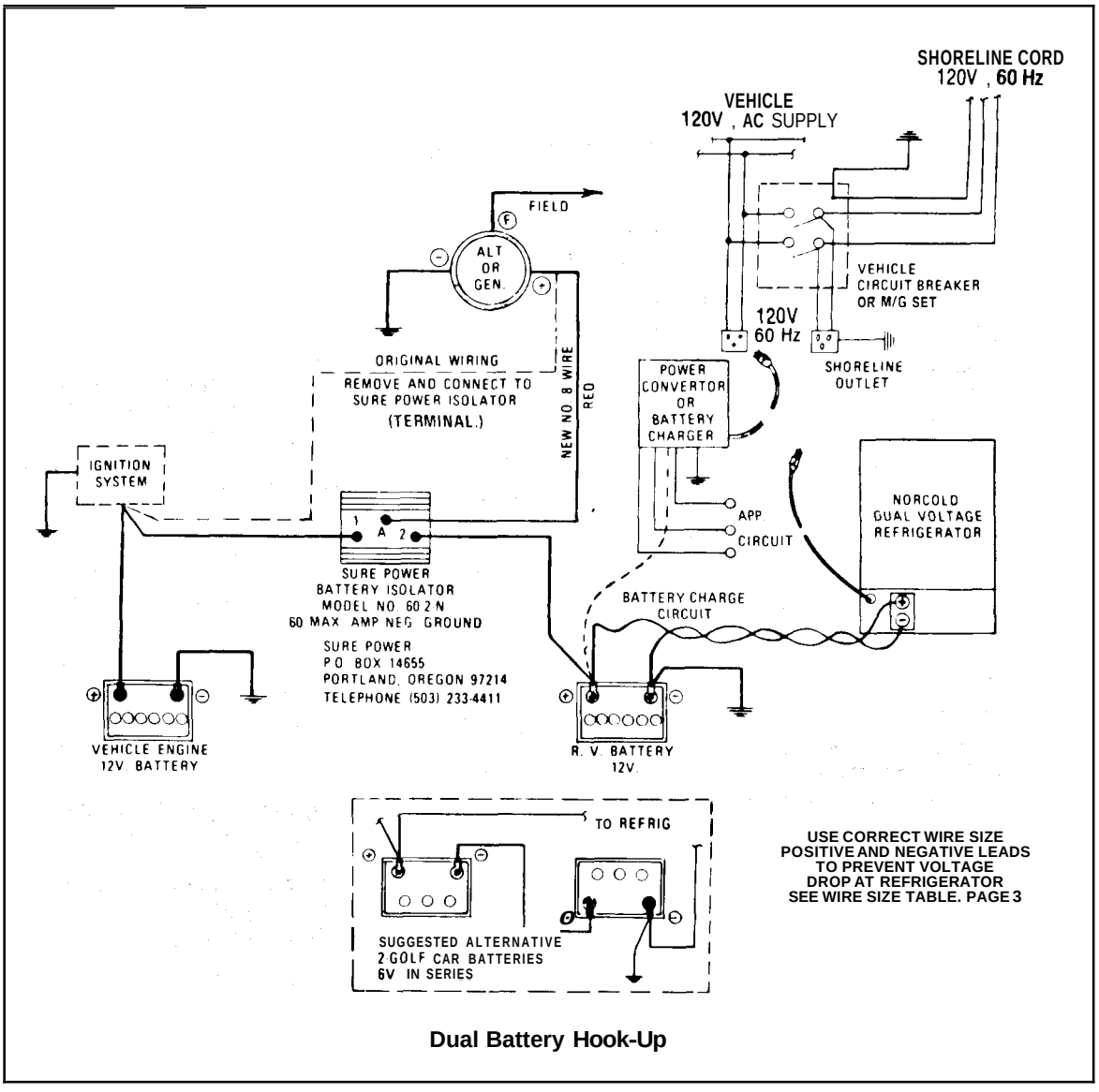
CAUTION:

Never use a brush, powder soap, **cleanser, acid, benzine, gasoline, or thinner. These tend to leave scratches on the coating.**

(4) To Turn Off The Refrigerator — If you will not be using your refrigerator for a day or two, turn the thermostat knob to "1". For a longer period, set the thermostat knob to "OFF" and disconnect power by removing the AC plug from its' socket. Also, disconnect the DC power from its' source.

When not in use the refrigerator should be emptied, cleaned and dried, and the door left ajar.

Defrosting — Set the thermostat dial on "Off". When frost is melted, wipe the compartment plates with a soft, dry cloth. The best suggestion is to set the dial to "1" before you retire for the night. The frost will be gone the next morning.



Dual Battery Hook-Up

INFORMATION ON BATTERY POWER

The battery power required for the operation of your refrigerator is dependent upon the number of D.C. appliances being used and the type of operation desired — whether remote from any power source for an extended period or overnight operaton only.

A battery must also be sufficiently charged to prevent overdraw.

A battery is rated in ampere hours — that is, it is capable of sustaining its rated ampere capacity for a period of one hour.

If the total amperage load of the vehicle is high (25 amperes), then the installation of a 72-ampere-hour battery will not provide the required power for any length of time unless it is aided by a recharging source such as an alternator or generator.

Various load requirements of the vehicle D.C. system dictate the ampere-hour capacity that should be installed.

Please refer to the diagram for the suggested dual-battery wiring diagram. You will note that in this diagram there are two separate battery sources. One source is the vehicle or car battery used exclusively for the operation of the engine and accessory equipment such as head lights. The other source is for the operation of the D.C. appliances within the recreational vehicle. This battery source is referred to as the accessory or house battery and is used solely for that purpose.

Both of these battery sources are charged by one alternator or generator which is powered by the vehicle engine. This charging device should be of adequate amperage rating so that a short engine run will bring the batteries up to full charge. The standard alternator has a minimum rating of **60** amperes.

Check your voltage regulator or cut-out for correct charging level. Voltage should be 13 to **14.5** volts to the battery.

Important Points Regarding Battery Powered Sources

The dual battery switch or battery isolator is an important component as it permits the alternator or generator to charge both the accessory battery and the vehicle battery during operation of the vehicle engine, but limits the current draw of the D.C. appliances to the accessory battery source when the engine of the vehicle is idle or stopped, thus assuring that the vehicle battery is fully charged for starting the engine. The batteries referred to in the diagram are two 6-volt golf cart batteries connected in series to provide 12 volts. Golf cart batteries are suggested for the following reasons:

(1) Larger plate construction
(2) Deep draw characteristics
(3) High ampere hour rating

The standard golf cart battery has a rating of approximately 185-205 ampere hours. When two of these batteries are connected in series, the result is 12 volt, D.C. at 185 or 205 ampere hour capacity.

The D.C. supply to the refrigerator is connected to the negative post of one battery and to the positive post of the other battery.

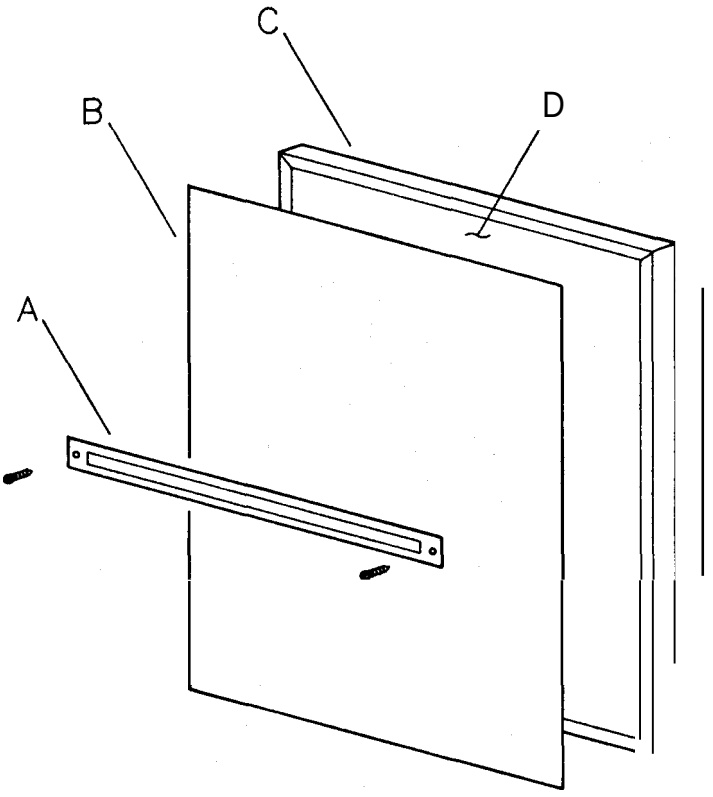
The power converter or solid state battery charger shown in the diagram are essential items for battery operated systems.

The converter is operated on 120 volt, A.C. and should have output rating of 12.6-14.5 volts D.C. at approximately 20-50 ampere capacity, dependent upon the manufacture. During 120 volt operation, the converter is used to charge the batteries and to operate the D.C. appliances, conserving battery power. It has the capacity to operate items such as lighting, water pumps, exhaust fans, and sanitary facilities while maintaining or charging the batteries. Charging rate varies from 5-20 amps/hour.

Your Norcold dual-voltage refrigerator automatically switches from A.C. to D.C. or from D.C. to A.C. When a power supply of 120 volts, A.C. is connected to the vehicle, the voltage selection relay is energized and disconnects the unit from D.C. operation. This unique feature assures 120-volt operation when available and permits the power converter to concentrate its charging facilities to the batteries and other D.C. appliances.

When the A.C. supply is disconnected, the refrigerator automatically reverts to D.C. operation. Turning the thermostat knob to the "off" position will prohibit operation on A.C. or D.C.

1. The thermostat dial is numbered from 1 through 7, with the number 7 setting the maximum coldest position. In order to conserve battery power, it is advisable to set the thermostat dial at the lowest setting that will provide adequate refrigeration. This practice will reduce the running time of, the refrigerator and draw less current from the battery. A setting of ''3-5'' is a normal position.
2. Always operate the refrigerator on 120 volt, A.C. when available, especially during initial start-up or pull-down cycle of the refrigerator. Depending upon the ambient temperature, the initial start-up may require 1-2 hours of continuous operation before refrigeration temperatures are attained and unit cycling begins.
3. Never employ "quick chargers" to the battery unless the thermostat is set to "off" or the 12-volt, D.C. leads to the refrigerator are disconnected. Inverter damage will occur if the high voltage of "quick chargers" is permitted to energize the D.C. circuitry of the inverter.
4. The use of a commercial 12-volt, D.C. to 120-volt, A.C. output solid state inverter, convertor, gasoline, or belt-driven generator with 120-volt, A.C. output is not recommended for operating the refrigerator unless the manufacturer of the aforementioned devices guarantee the output voltage to be 120-volts, A.C. plus or minus 10 percent and the frequency to be 60 hertz plus or minus 1 Hertz. Devices that cannot meet the specified tolerances do not hold the required frequency, provide poor performance of the refrigerator, and damage the resonance springs in the compressor.
5. When connecting the refrigerator to the D.C. supply, observe the correct polarity. If the polarity is reversed (positive connected to negative terminal), the in-line circuit breaker will open and the unit will fail to operate. An indicating lamp behind the access panel will energize should this occur. Reconnect leads and reset circuit breaker.



INSTRUCTIONS FOR INSTALLATION OF DECORATOR PANEL IN NORCOLD FRAME DOOR

Prepare the ponel by cutting to size as per illustration. Use dimensions given for your particular model. The maximum ponel thickness must not exceed 3/16" (4.76mm).

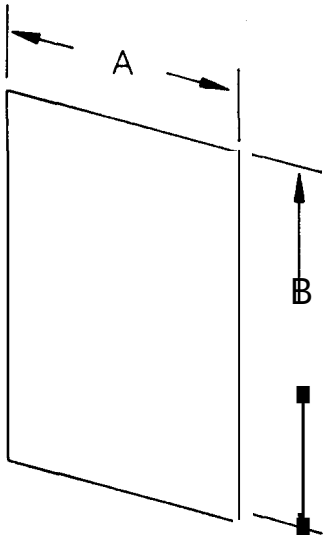
A. Single Door Or Lower Door Of 2–Door

1. Remove the door front decorative strip by removing the screws and pulling the decorative strip off.
2. Insert one of the vertical sides of the ponel (b) into the groove formed by the door frame outer flange(c) ond the door front.
3. Gently flex the panel(b) so thot the opposite side rnoy be slipped into the corresponding groove.
4. Slide the panel(b) downward so thot the lower horizontal edge fits into the bottom groove.
5. Install the door decorative strip(a) to cover the gop between the top edge of panel(b) ond door frame(c). Secure with screws.

B. Upper Door Of 2–Door

1. Remove the door front decorative strip by removing the screws and pulling the decorative strip off.
2. Insert one of the vertical sides of the pond (b) Into the groove formed by the door frorne outer flange(c) and the door front.
3. Gently flex the panel(b) so thot the opposite side rnoy be slipped into the corresponding groove.
4. Slide the panel(b) upward so thot the upper horizontal edge fits Into the upper groove.
5. install the door decorative strip(a) to cover the gop between the bottom edge of ponel (b) ond door frame(c). Secure with screws.

Caution: Do Not Over Tighten Screws

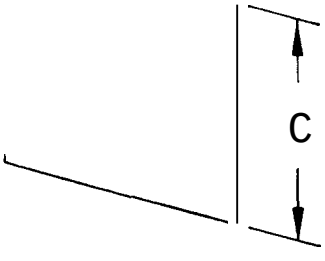


Model	A (in)
704/874	22 5/16 (567 mm)
875	22 5/16 (567 mm)

Model	B (in)
704/874	29 3/4 (756 mm)
875	36 5/8 (930 mm)

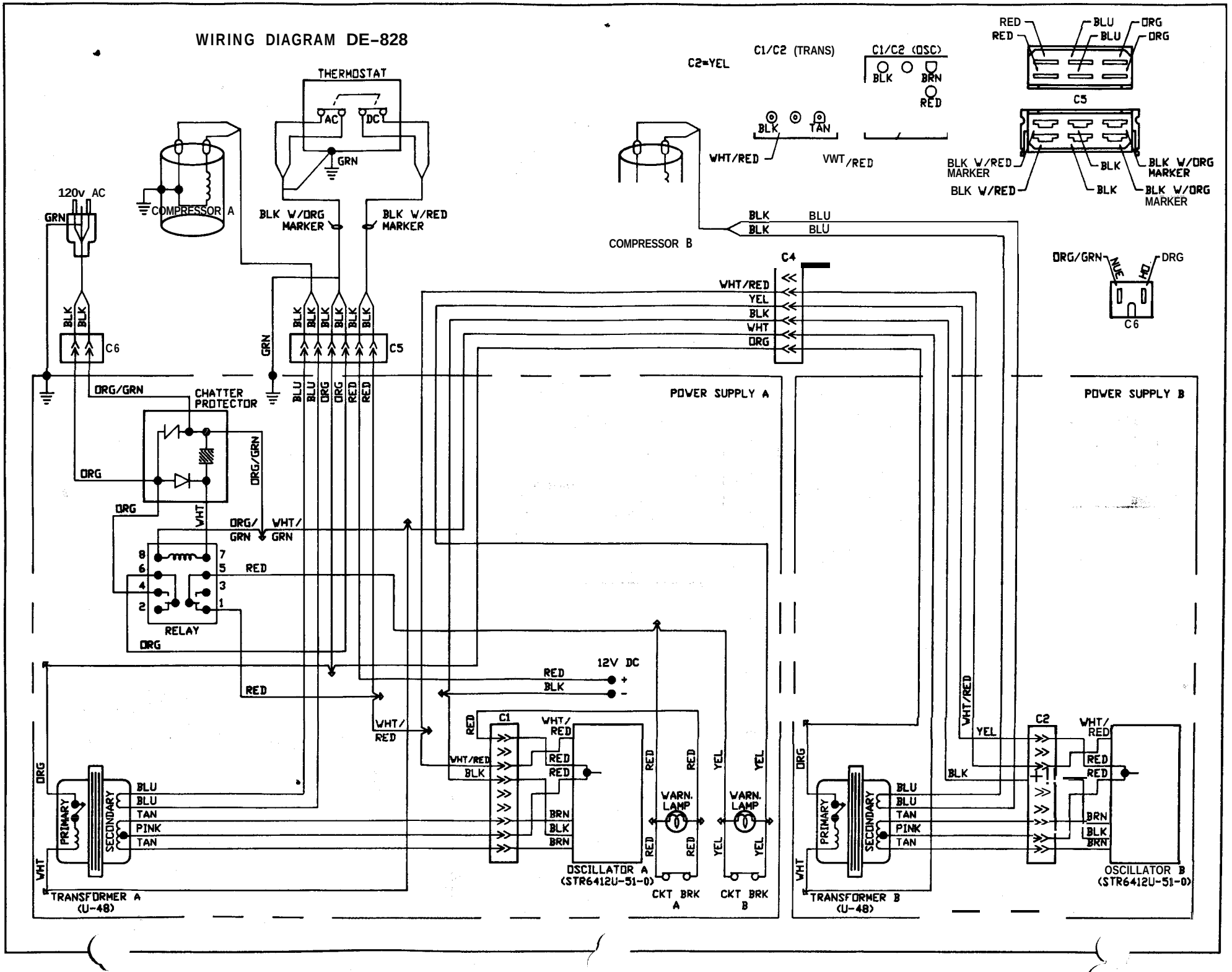
Model	A (in)
828/876	24 1/4 (616 mm)

Model	B (in)
828/876	14 5/8 (372 mm)
878	13 1/16 (332 mm)



Model	C (in)
828/876	32 7/16 (824 mm)
878	40 3/4 (1035 mm)

WIRING DIAGRAM DE-828



LIMITED WARRANTY
NORCOLD

1501 Michigan St.
P.O. Box 180
Sidney, Ohio 45365

This Limited Warranty is given by NORCOLD, Div. of The Stolle Corporation, ("Company") to the original consumer-purchaser of any new refrigerating 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 warrants, provided that the Equipment shall at all times have been in possession of and used by the original consumer-purchaser, that:

A. The Company will provide free service and replacement of defective parts at no charge at all authorized Norcold Service Centers for a period of one year from the date of original purchase. This Limited Warranty does not cover labor costs incurred in removing and re-installing the refrigerator. The Company will pay inbound and outbound transportation costs of any defective part, for a 1-year period commencing with date of purchase. The original consumer-purchaser must pay all expenses 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. The refrigerator must be brought to any of the Norcold Service Centers and the original consumer-purchaser must present evidence (1) to identify the original consumer-purchaser; and (2) that the item claimed to be defective is still 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 warranty 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 solely 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 or accident.
   (2) Manufacturing defects found at the time of purchase which are not communicated to the Company within 30 days.
   (3) Defects in glassware and electric light bulbs.
   (4) Defects arising from improper installation or adjustment of the Equipment.
   (5) The need for normal maintenance of this refrigerator, including the cleaning of the flue dilution assembly and orifice, and the adjustment of the gas pressure regulator in the case of EG models.
   (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 the 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 of America and the Dominion of Canada. The Company reserves the right to make any improvements or changes in parts of models without notice to any original consumer-purchaser.

E. The Company shall not be liable or in any way responsible for any loss or 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 the exclusion or limitations of any incidental or consequential damages, so the above limitation or exclusion may not apply to you.

F. ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE:
   (1) APPLICABLE TO A PART OR PARTS OF THE REFRIGERATOR IS LIMITED TO A PERIOD OF ONE YEAR **FROM** DATE OF PURCHASE.
   (2) SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN 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.

SERVICE INFORMATION

IF SERVICE OR PARTS ARE REQUIRED, CONTACT THE NEAREST NORCOLD SERVICE CENTER. IF THE NEAREST LOCATION IS UNKNOWN, CALL THE FOLLOWING TOLL FREE NUMBER.

1-800-543-1219

(IN OHIO, CALL COLLECT 513-498-4034 OR 498-4035)