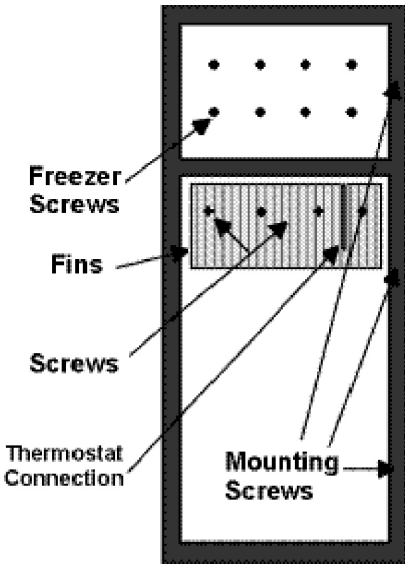
Changing a Cooling Unit (Norcold)

These instructions were designed to cover many different models of Norcold cooling units. Not everything will pertain to your Unit.

Pulling the Refrigerator. The first step in changing a cooling unit is to pull the refrigerator from its cabinet in the RV. Start by turning off the propane at the main bottle(s) and burning off any residual in the lines at a stove top burner. Next, from the outside access door for the refrigerator, disconnect the propane line to the refrigerator, unplug the 120 volt cord, and disconnect the 12 volt wiring to the refrigerator. Tape the ends of the 12 volt wires with electrical tape to prevent shorting out or sparking. While back there locate two screws that are usually at the bottom outside edges of the refrigerator, securing it to the cabinet floor, and remove them. Very few RV manufacturers have thin steel plates fastened to the refrigerator side, which are in turn bolted at the side to framing of the RV. These bolts (if present) can be seen and removed from the outside access door (you can discard if necessary).

Next remove (optional) the refrigerator doors. After that, most models have four to six mounting screws on the face of the refrigerator, usually covered with plastic plugs. See graphic below. These need to be removed. Look for any other fasteners that might prevent removal of the refrigerator. Next, inside the RV, underneath the refrigerator, there is usually a bead of silicone that needs to be cut with a razor knife. The refrigerator should then be free and slid into the RV. If it doesn't move, look around for something else holding the refrigerator in. Sometimes RV manufacturers create their own ways of securing the refrigerator. Not necessary, but you can take the refrigerator out of the RV to a larger work area.

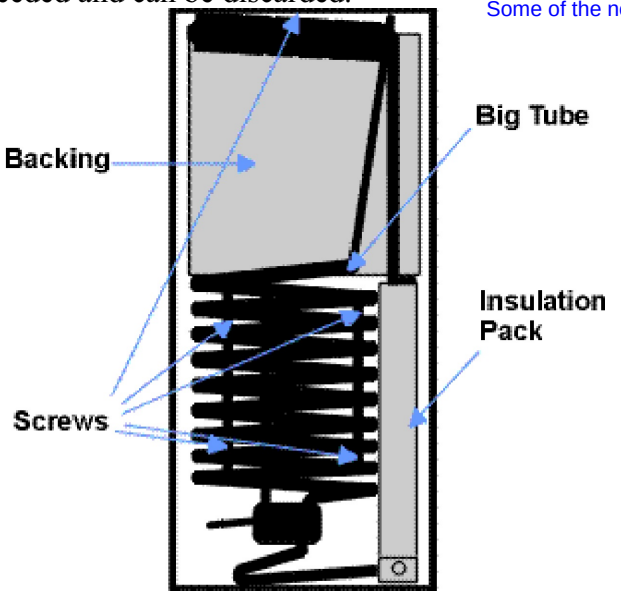


Remove all screws or bolts on the back wall of the freezer. In the lower box, on the aluminum fins, there will be a capillary tube (sensor) from a thermostat or a thermistor (a sensor with wires) attached. This needs to be removed. On older single door models (774 and 776), the capillary is hidden. It comes through the back of the box under the fins in the middle and immediately goes up into the hollow part of a fin. Locate the capillary and pull it down out of the fins. Remove all fasteners on the fins. The fins do not come off at this time. In fact, the fins could come out with the cooling unit, it is preferable that they

If the fins do come out, be sure they are replaced correct. Do not install up side down. It will fit both ways. The screw hole only match cooling unit only one way.

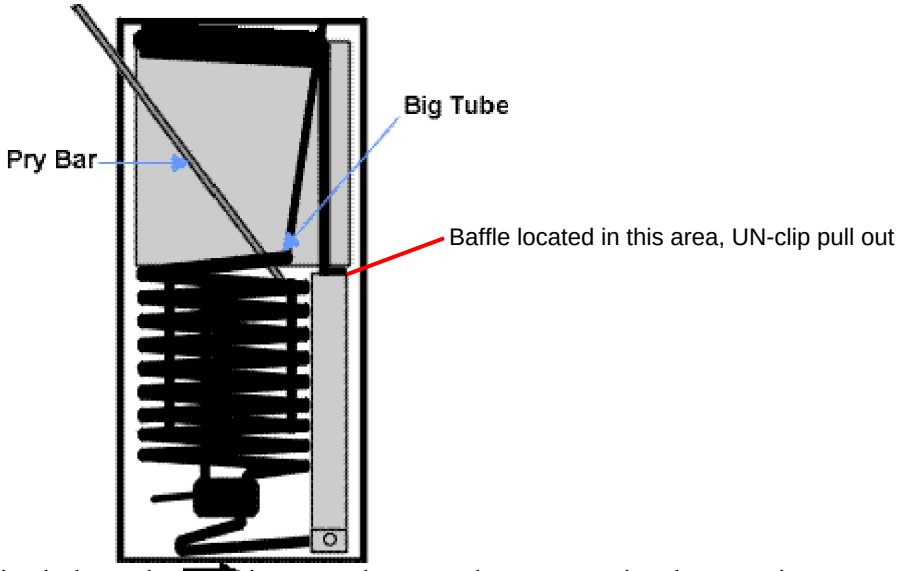
remain in the refrigerator after the cooling unit has been removed. If they come out with the cooling unit, they need to be removed from the unit and placed back in the box.
Once the work inside the refrigerator is done, lay the refrigerator on its face. Depending on the circumstance, it may be necessary to lay an old blanket down to protect the face of the refrigerator. The cooling unit is the set of coils on the back of the refrigerator, extending from the top to the bottom. This is what we're after. Obvious parts such as burner assemblies, heat elements, baffle, etc. need to be removed from the unit. Anything in the way of pulling the cooling unit needs to be removed. There are a handful of screws holding the cooling unit to the refrigerator that need to be removed. See graphic below.
On older models with plastic backing there are also numerous small screws securing the backing that also need to be removed. After this plastic backer screw are removed the backer is no longer needed and can be discarded.

Some of the newer Norcold's have 2 screws in condenser fins.

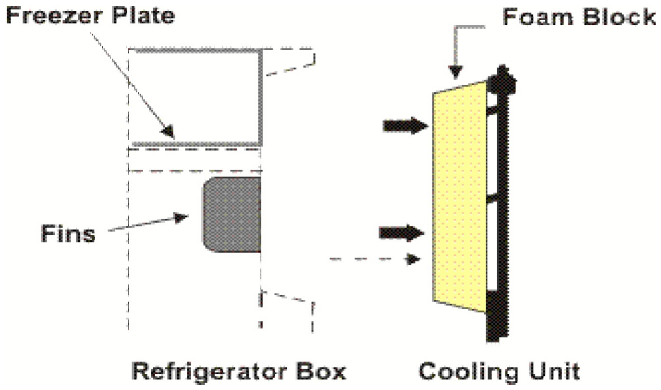


After all fasteners have been removed, the cooling unit is ready to pull. A pry bar under the "big tube", as in the graphic below, will usually do the job. The "big tube" is the only pipe that should be pried on. Since you will be prying against the refrigerator body, a board or some other protection is necessary between the pry bar and the refrigerator to prevent poking a hole in the box. Give the pry bar some quick upward jerks. This is usually enough to pull a cooling unit, but not always. If yours is stubborn, peel up the edges of the backing paper (or remove the plastic backing, depending on model) to expose a line between the foam block of the cooling unit head and the insulating foam of the refrigerator box. A large knife run around this line (about 4" deep) and then prying as before will remove the more difficult units. If you're still having problems, go back and be sure you have removed all fasteners. In some severe cases, it is all right to dig out some of the foam underneath the backing to break the unit free. Be careful not to damage the foam of the refrigerator box. The replacement cooling unit will have a new foam pack block with new backer material.
Once the cooling unit is out, pull the baffle from the cooling unit chimney; remove the heat element, the insulation pack and any other parts from the unit. On some older models the insulation pack needs to be removed to get to the heat element. On these models the socket that holds the electric heat element is located behind the front pipes. Sometimes the element is stuck in its pocket, use some penetrating lube, little tapping,

twisting, and out it comes. **Transfer the baffle** (the wire clipped to the top of the flue pipe, pull out this 2 foot long wire out having a flat twisted piece of metal at the end, that's the baffle.) from the old unit to the new cooling unit is a **must**, not transferring this is one of the most common mistake made by installers. Be sure you are familiar with what the baffle is. The picture below does not show this. You're now done with the removal. Normally, the only thing left on the old cooling unit after it has been changed, is the insulation pack.

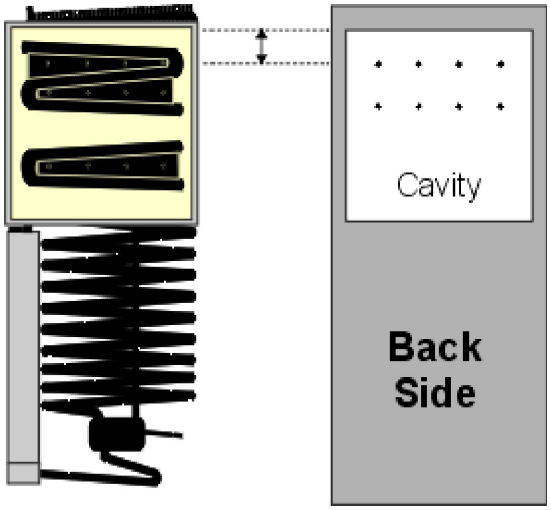


Installation In the graphics below, the ➡ is a metal to metal contact point that requires thermal mastic. In the blow-up graphic below the fins are shown being attached to the cooling unit. This is for explanation. The fins are usually left in the box and attached to cooling unit later.



The foam block on our re-manufactured cooling units are formed using precise fiberglass molds cast from factory refrigerator units. In most cases the foam block will fit very well in your box and requires no trimming, but it's a good idea when installing a cooling unit to first place it into the refrigerator to see how it fits before committing to the installation. The cooling unit needs to fit all the way into the refrigerator cavity and not be held back by any part of the foam block. If there is a part of the foam block not fitting, a rasp can be used to shave it down.

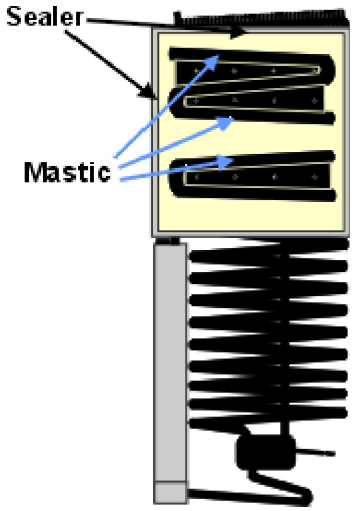
If you trim to much, do not make it a concern. We have furnish a can of Spray Foam to go around the refrigerator cavity so the cooling unit can be laid in place with the fresh sprayed foam giving an air tight seal. Plus if trim to much it will correct the error.



You can not use to much of the furnished Spray Foam around the cavity side walls before the cooling unit is laid back in place.

The sides of the foam block need to be sealed with remaining thermal mastic in the tube, only after the coils have first been applied with the bead of mastic. If more is needed for the side wall only, latex caulk or silicone can be used as a sealer to prevent air leaks. Other parts of the cooling unit give off heat and the slightest air gap around the foam block will allow this heat into the refrigerator box and diminish the cooling. Apply a 3/8" bead of thermal mastic to the coils of the cooling unit that contact the aluminum fins and freezer of the refrigerator. See graphic below. The foam block always has a backing of some sort. This backing should be secured to the refrigerator with tape. We're looking for a good, snug fit with the cooling unit all the way into the cavity of the refrigerator and no air leaks. The best way to get the cooling unit to seat all the way into the cavity is stand on the foam pack and bounce a little to sink the cooling unit foam pack deep into the refrig cavity.

Spray foam seal (spray the cavity not the cooling unit)



Though a little awkward, it's a good idea to set the refrigerator upright and make sure the screw holes in the freezer line up with the holes in the cooling unit. If they do, install a few screws to keep them in place. If they don't line up, you need to pull the cooling unit and find out why, and then correct the problem. Drilling new holes **is <u>not</u>** an alternative and could possibly puncture the cooling unit and discharge ammonia at 350 psi. Don't worry about the holes for the fins in the lower box lining up at this time. After taking care

when starting the screws in the freezer it may take a longer screw than the original to get the pack to pull up close enough for the original screws to start. Be sure all screws are tight.

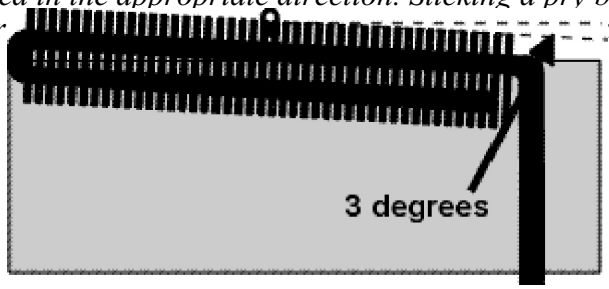
Never drill new holes!!!!

of the freezer screws, lay the refrigerator back on its face to install the mounting screws for the cooling unit.

NOTE!

Norcold cooling units have no framing and the screw holes don't line up as precisely as some other brands do. With a Norcold installation, the key is getting two angles set. The most critical angle is with the condenser at the top of the cooling unit, which should be about 3º off level for the older single tab and should level of the newer series with 2 tabs. This angle is not so precise that it needs to be measured, but should look like the graphic below showing older series. The highest point of the condenser should not stick up above the refrigerator itself. It may be necessary to start a new hole for the screw that holds the condenser.

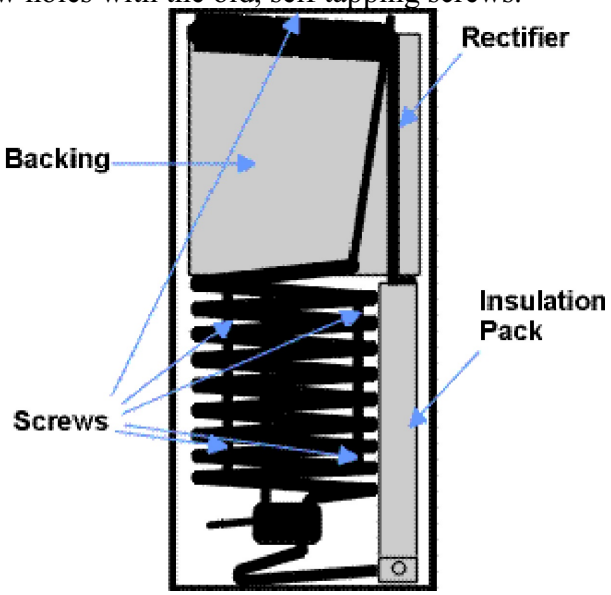
Note: *Although packaged well, the Norcold cooling units can sometimes get bent up a little in shipping. If the top condenser pipe seems to be too high for the box, it is also probable that the part of the cooling unit where the burner mounts at the bottom is higher than it should be. Sometimes the opposite is the case, the condenser pipe and burner mount are too low. In either case, the rectifier and boiler pipe (enclosed in the insulation pack) need to be pulled in the appropriate direction. Sticking a pry bar under a pipe of the cooling unit and over* [illegible] *rect the problem.*



Not only be sure the condenser fins are the 3 degrees as shown, but also level looking at it from the side. As it comes out from the box it should be level.

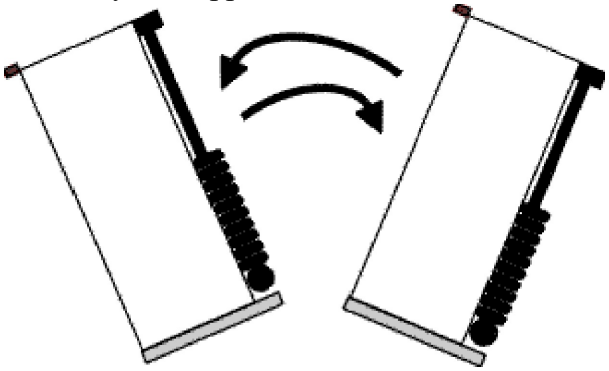
On the Amish built Brand-new coils the Condenser fin is designed to be level across the back.

The next angle of importance on a Norcold is the boiler. The boiler is inside the insulation pack. This tube needs to set parallel to the edge of the refrigerator. You accomplish this by moving the lower half of the cooling unit, side to side. Install the screws as in the graphic below. It is very unlikely that the screw holes in the replacement-cooling unit will line up with the holes in the box (if they do, great). You will have to make new holes with the old, self tapping screws.



Install all the peripherals that you had removed earlier (heat elements, baffle, burners etc.). Once everything on the back of the cooling unit has been installed, tape the edge of the backing with duct tape or better to prevent air from entering the refrigerator around the cooling unit. Set the refrigerator upright and replace the parts that were removed earlier inside the refrigerator. Finish installing the freezer screws. This is also the time to put the screws in the fins in the lower box. Don't be surprised if you don't see corresponding holes in the cooling unit behind the holes in the fins Norcold used several different fin styles and the fins tend to move a little while loose in the box. Place the end of an awl or similar tool in the fin holes and scout around the edges of the hole for the corresponding hole of the cooling unit. Once found, pry the fins over to the hole. Sometimes the fin tears a little. Do not drill new holes. If there is a big tear, put a washer on the screw before installing it. Sometimes when you are trying to install the screws in the freezer they seem to be to short. The best thing to do at that time is just use one longer screw to get started. Once the longer screw is started to pull the cooling unit up closer till one of the shorter original screws start, tighten little more till another gets started an so on. After you have several of the original screws pulling the cooling unit up remove the long screw, tight all screws snug.

Next, rock the refrigerator back and forth (front to back) several times to insure that the liquids inside get to where they are supposed to be.



Installing the Refrigerator Install the refrigerator back into the RV and make the necessary connections for the electrical and gas. Look back at the safety issues mentioned at the top of this page before continuing. Test for propane leaks at the connections you have made and all gas parts on the refrigerator. The refrigerator should set upright about 10 minutes before being put into operation. Always, test the refrigerator on 120 volt first, only because there are less variables on the electrical side than on propane. You should see signs of cooling in the freezer in an hour or hour and a half, and an empty box should come down to temperature in six to eight hours.

NOTE! On some Norcold models they made two style of cooling unit for the same model number. The 8662, 8663, 8682, 8683, 876, 878 are the ones with different style coils. To tell the difference look closely at the cooling unit you are going to replace. Is the unit with a standard LP burner (bent upward at a 45 degree) with a cigar size electric heating element or is it the newer style with a horizontal burner with the "L" shaped, pencil size heating element. We need to know this info to make sure you get the correct replacement. The units **do not** inter change with each other. The LP Burner is also different For the Polar series like the N8X, N7X, N10X, Not a big issue to mount.

if your model is listed above an you are not sure which older style you have, send me an email asking for the picture of the two styles of the 8662, 8663, 8682, 8683, 876 or 878 cooling unit.