QUICK REFERENCE SHEET ON SUB-ZERO PRODUCT CHANGES FROM 1976 TO 1985

Serial #	Description
196416	New gaskets & retainers. Gaskets prior to this serial number are no longer available
207047	New gasket seat hot gas loop on model 249FF and 244RFD
227972	Change to hot gas-heat transfer system
234227	New cabinet hinge support system began
253906	Channel kits installed at factory
254106	Air deflector kits installed at factory
321481	Change control from 3-01-234-0 to 3-01-234-1 for wider range
323831	Removed control well assembly - change back to old clamp (4-16-012-0)
326281	Change freezer fan blade from metal to plastic
332382	Add plastic sleeve to control (refrigerator) to get more range (except on the model 361RFD & 3211RFD after serial #M402308/P429835)
334334	Add polymer coating to drain pan tubing to prevent corrosion
338384	Add door closer kit to all model 201's (can be used on #234227-338384)
352047	Began using fixed switch depressor - no more adjustments
355297	New kickplate and drain pan assembly started
356747	Add door closer kit to all under counter models
366447	Change from metal to plastic drain pan on the models 201 & 215
391603	New door liner on the 244RFD - eliminates freezing conditions
393733	Change to new fan and light switch [two (2) S.P.S.T.]
M402308-P429835	Change in sizing of system on refrigerator side of model 3211RFD
403608	Add hook to shelf end caps to prevent breakage or falling out
431260	3211 Freezer using "0.1 oil cooled" compressor
509241	New updated system on the 22IM
551441	Started date coding on serial nameplate
551625	Delete hot melt adhesive from crisper glass assembly. Using silicone sealing
604591	Changed drain pan radius, less chance of cracking
655116	Energy changes in undercounter units
665000	Started using modular icemaker
700166	Condenser fan motor kit released (4-20-074-0)
716622	Introduced rounded rocker switches
M741373	Added rear wire to interior shelf on 249RP
749823	Added gravity door closer to both doors of 801RFD

M-Madison Production **P-Phoenix Production**

22IM #272342 TO #509240

*Refer to next page for new style 22IM

The model 22IM, between serial #272342 to 509240 has the double evaporator system, with one evaporator under the icemaker assembly and the other located in the back of the compartment behind the duct cover. This unit makes ice at -10 degrees Fahrenheit and stores it at 20 degrees Fahrenheit.

Prior to serial #301252, this equipment used our control #3-01-238-0. After serial #301252, we utilize our control #3-01-244-0. At a #7 setting the cut-out temperature will be about -5 degrees Fahrenheit and the cut-in will be 5 degrees Fahrenheit. At the #1 setting, the cut-out will be 5 degrees Fahrenheit and the cut-in will be 15 degrees Fahrenheit.

Changes to be aware of relative to this equipment are listed as follows:

1. Charge - Use 6.5 oz. F-12 freon prior to serial #301252; 5.5 oz. F-12 between serial #301252 and #M423535, and 6.0 oz. F-12 starting with serial #M423535.
2. Run Time - 85% (while making ice).
3. Pressures - 4-5 PSIG cut-out; 34-35 PSIG cut-in.
4. Control Specifications - See paragraph above.
5. Compressor - Use #3-11-068-0.
6. Timer - Use #3-08-105-0 (twice daily defrost).
7. Time Delay Relay - Use #4-20-015-0 prior to serial #272342; use #3-06-012-0 after serial #272342.
8. Defrost Thermostat - Use #4-32-093-0.
9. Evaporator Fan Motor - Use #4-20-016-0 replacement kit.
10. Refrigerator Fan Blade - Use #3-15-021-0.

NOTE: The model 22IM, between serial #272342-509240, only produces ice on an off cycle on the control. During this time the compressor is off. When the icemaker starts its harvest cycle, the control bulb, which is clamped and is sensing the icemaker mold, detects the now elevating temperatures. When the cut-in temperature is reached, the control then closes. This is where the six minute delay comes in to make certain the icemaker has enough time to harvest and refill with water before energizing the relay and switching back to the compressor run. Please be advised that if the control is set to a higher, or colder, setting, less ice will be produced because of a longer run cycle. When turning the control lower, or warmer, more ice will be produced, but be aware this could offset the unit's temperatures.

22IM SYSTEM REDESIGN

Sub-Zero has redesigned the model #22IM undercounter automatic icemaker. These units are now in production and will be introduced to the field in the near future. The new design became effective as of Serial #509241.

We have incorporated a larger back wall evaporator while eliminating the secondary evaporator pass under the icemaker. This new coil is designed to run at a -20 degrees Fahrenheit coil temperature versus the old coil, which ran a -10 degrees Fahrenheit.

The refrigerant flow starts at the compressor to the condenser, around the hot gas gasket loop through the cap tube to the evaporator coil and returning to the compressor by way of the heat exchanger.

The air flow is consistent with our previous design. The inside air is pulled in from the bottom behind the evaporator cover and over the evaporator coil. The chilled air is then discharged over the top of the icemaker and is returned to cool the ice storage bucket to a 0 degrees Fahrenheit storage temperature.

The thermostat sensing is taking place at the top edge of the icemaker mold this senses a combination of cold temperature and air temperature. At a normal #4 control setting, the thermostat cuts out at -9 degrees Fahrenheit and cuts in at +6 degrees Fahrenheit with a cut-out pressure of 0# PSIG and a cut-in pressure of 12# PSIG.

We have changed the electrical system; the wiring diagram (see page) shows the addition of a drain tube and drain trough heater with both heaters remaining on for the duration of the defrost cycle. This diagram will also show the removal of the time delay relay. The relay split our wiring system between the compressor (run) and the icemaker (harvest). This allowed the icemaker to harvest only during the off cycle of the compressor with a six minute delay built into the relay so as to complete the harvest before the compressor could restart. With this new design, we have wired the icemaker direct. This allows the icemaker to harvest when the mold is satisfied.

CHANGES TO BE AWARE OF:

1. Drain Tube Heater - #3-01-332-0
2. Drain Trough Heater Assembly - #4-32-205-0
3. Defrost Heater Assembly - #4-32-195-0
4. Thermostat - #3-01-252-1 (cut-out -9 degrees F; cut-in +6 degrees F)
5. Pressures - 0# PSIG cut-out; 12# PSIG cut-in
6. Freezer Fan Motor - #4-20-016-0
7. Wire Basket Support (front) - #3-60-074-0
8. Door Assembly - #4-13-066-0
9. Door Liner - #0-88050-0
10. Freon Charge - 8.5oz (after serial #509241)
11. Heat Exchanger - #4-25-094-0
12. Accumulator - #3-01-112-0
13. Evaporator Coil - #3-13-019-0

NOTE: All parts not listed above will remain consistent with the previous design of the model 22IM.

DOOR STOP KIT

In certain applications, starting with serial #190441, it may be necessary to install one of our door stop kits, listed below, to prevent the doors from hitting fixtures in the home due to excessive door swing. The door stop kits are designed to rest the door at either 90 or 100 degrees from it's closed position. PLEASE NOTE: this doesn't correct a poor installation condition.

Top Mount	Bottom Mount
model 201R,F & 2011ICE	model 361RFD & 3211RFD
over & under refrig doors	over & under freezer doors
4-20-033-1 right hand	4-20-033-3 right hand
4-20-033-2 left hand	4-20-033-4 left hand

DOOR CLOSER FOR THE MODEL 201 SERIES

A gravity cam type door closing mechanism has been incorporated into all model 201R, 201FD, 201RIM and 2011ICE. We feel this closer will alleviate most of the problems associated with the bouncing of these large doors.

If you service a unit with the specific cam assembly broken or cracked you DO NOT have to order the complete door closer kit. The bottom door hinge cam (right or left swing) is identified by part #3-42-069-0. The bottom cabinet hinge is identified by part #3-42-068-1 for right hand swing and #3-42-068-2 for left hand swing. Please be aware that if the screw holding the cam assembly becomes loose, it may be necessary to use some loctite #371 (part #6-19-023-0) to assure a tight fit.

201 FIELD DOOR CLOSER KIT

Over the years, we've received complaints on these large doors bouncing open due to the size and the weight of the doors. Because of this, we have established a gravity type door closer kit, which can be used to eliminate this problem. This kit, #4-20-023-0 (right hand) and #4-20-024-0 (left hand) can be used between serial #234227 and #338384. These kits are not covered as a warranty item, but are considered a field accessory and can be purchased through your Parts Distributor. Beginning with serial #338385, this closer is a factory standard.

UNDERCOUNTER DOOR CLOSER KIT

Beginning with serial #356747, undercounter models 244RFD and the entire 249 series will have door closers. This door closer is similar to those used on built-in units, except that it is mounted on the side of the base.

For units prior to serial #356747 an "add-on" door closer kit is available through your Parts Distributor. These door closers are the same type which is now incorporated on the undercounter 244 and 249 models. There are two different kits avilable; part #4-20-026-0 for right hinged units and part #4-20-027-0 for left hinged units. Please be aware that the "add-on" door closer kits ARE NOT a warranty item, but an accessory. All units built after serial #356747 will have the closer installed.

UNDERCOUNTER DOOR SWING CHANGE KIT

With an increasing demand for left and right handed hinged products we have made both products available. Therefore, beginning with shipments dated after 5-18-84 the following swing change kits are available at a charge to the customer. To change the swing from right to a left swing order part #4-20-025-0; left to right swing order part #4-20-025-1. Also, if after the kit has been installed, a door adjustment is necessary, it IS NOT covered by the factory warrranty.

2011 ICE DOOR ASSEMBLY

If the freezer door (part #4-18-073-0) needs replacement, it is NOT necessary to replace the complete icemaker sleeve assembly (part #4-20-038-0).

Please be aware that the rivits that connect the door hinge to the sleeve base are just for manufacturing purposes. If the rivits break loose, the door still remains intact and secured by the (2) two bottom screws (part #6-20-054-0) that hold the sleeve in place.

In the event that the door requires replacing (i.e. because of a cracked liner, warped door, etc), the defective door and hinge assembly must be removed by first removing the support screws and then pulling the rivits out. At that point, the new door and hinge assembly can be installed between the freezer sleeve and the interior base and secured by replacing the (2) two support screws.

ICE OR ICICLE FORMATION IN FREEZER DOORS

A situation could occur where air penetrates the seal between the foamed door slab and the back side of the gasket causing moisture to build up on the inside of the freezer door liner. The doors are manufactured in a way to prevent this by tightly securing the metal gasket retainers to the door with the gasket acting as the sealer.

If the door wasn't adequately sealed at the factory, the following is what to look for.

Situation: With freezer door open for an extended period of time water will drip from the bottom freezer door hinge.

Remedy: Remove door liner, gasket and retainers. Apply a bead of silicone approximately 3/16" diameter around the perimeter of the door shell. Also silicone around the bolts that secure the shelf ladders to the door liner. Reinstall gasket, liner and retainers making sure the seal is adequate between the back side of the gasket and the door shell (make sure you are sealed around the complete door).

SWEATING AROUND THE FREEZER DOORS

In the event there are periods of high humidity (exceeding 86% relative humidity), some moisture could appear. This condition will exist for short periods of time and will dissipate with a lower humidity. This particular occurrence is true with most types of refrigeration equipment. This condition can also be attributed to the door not sealing properly or some item in the unit propping the door open, keeping it from sealing properly. If the unit is installed in an area of continuous high humidity, please refer to page 7-8.

CRISPERS FALLING OFF TRACKS

If a situation occurs where the crispers have a tendency of falling off when removing them from the refrigerator section, a spacing or alignment problem may be prevalent. If this does occur, please note the amount of the crisper "flange" or edge that comes in contact with the crisper rollers on the slides. The flange should rest on the full width of the roller. If not, the crisper could fall off the slide roller when removing the crisper. A shim (part #3-21-001-0) can be put behind the slide roller to move the roller inward further. If this doesn't seem to be enough, shimming behind the slide and the tank wall can be done. Thin door spacers or washers can be used to accomplish this.

WATER IN BOTTOM OF REFRIGERATOR SECTION

If the presence of water occurs in the bottom of the refrigerator compartment, a careful examination of the drain trough assembly should be made. In some cases, the foam tape used to seal the drain trough to the refrigerator back wall may be ineffective and the defrost water will leak through the seal. If this occurs, we recommend that a small bead of silicone sealer be applied to the top edge of the drain trough, thereby eliminating any further chance of water leakage past this edge.

ICE FORMATION

On model 2711 and 2811 - if an icing condition occurs on the right hand side wall near the drain, possibly extending down the right hand side to the freezer slide assembly preventing the door from opening properly. Pull the cal rod heater down to make contact with the evaporator assembly and silicone around the evaporator cover at the drain end.

SHELF BAR CLIP KIT

4-20-036-0 (249R & 249RP prior to serial #M426734/P427635)

In the event a problem arises where the metal shelf bars on the door liners on the above listed units pulls off, you need to order part #4-20-036-0 to rectify the complaint.

WINE STORAGE CONTROL FOR MODEL 201R and 249RP

A wine storage control (part #3-01-229-0) is available for models 201R and 249RP. The control is a direct replacement for the existing control and will maintain a temperature of 55 degrees Farenheit. Please note that this is NOT a warranty procedure. This part can be ordered directly from your local Parts Distributor. (NOTE: this cannot be ordered with the equipment, it must be field installed)

STEP-DOWN TRANSFORMER

If there are requests for the application of our product with electrical requirements of 240V-100V - 50 cycle, we have available a GE step-down transformer. You will have to order part #3-06-009-0 for full size units or part #3-06-016-0 for undercounter units.

HARD START or LOW VOLTAGE CAPACITOR KIT

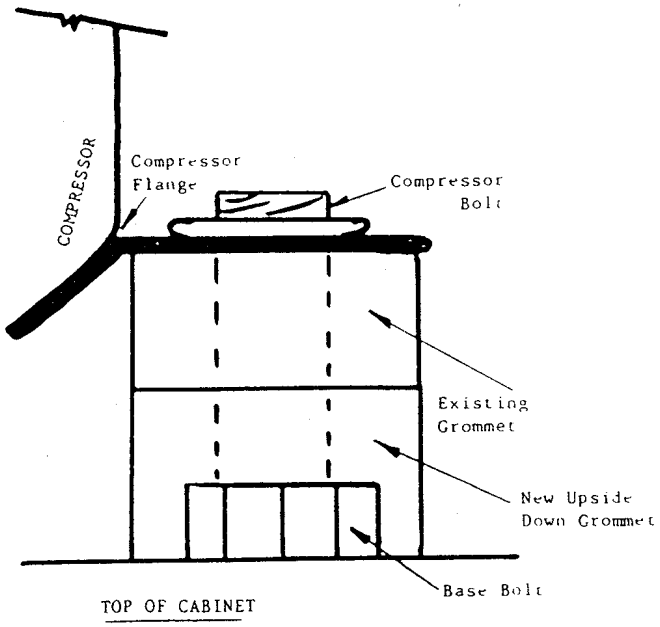
Because of many different locations and areas in which our equipment can be installed, the possibility of voltage variances can occur. In order to account for this variance, we have obtained a kit to aid in the starting of the compressor. This kit is available through your local Parts Distributor for use on 3-11-047-0 and 3-11-050-0 compressors **ONLY**. This kit should be used where the voltage is below 103.5V. The kit, 4-20-018-0, will consist of a start capacitor, capacitor cap, capacitor bracket and a start relay.

This kit IS NOT a warranty item and is not covered by our factory warranty. Please refer to your parts price book for the cost of this kit.

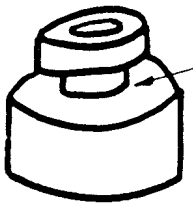
COMPRESSOR VIBRATION OR SHUDDERING AT SHUT-OFF

If a "shuddering or vibration" problem is evident during the time the compressor shuts off, we recommend the following:

1. Remove nut off clip from top of (4) compressor bolts.
2. Remove washer from compressor bolt.
3. Cut top "compressor neck" from the 3-15-017-0 grommet (*see note)
4. Lift compressor with existing grommet, off compressor bolt. Also, discard bolt sleeve.
5. Position grommet (with neck off) upside down over base bolt.
6. Replace existing grommet back onto base bolt with compressor flange inserted into "neck".
7. Do NOT replace nut or clip; do NOT replace washer; do NOT replace sleeve.
8. Install safety clip over threaded bolt; these can be put on by hand and pushed to the first or second thread (3-45-043-0).
9. Check all adjacent tubing to make sure there are no "rattles" or "vibrations".



#3-75-179-0 (4-2-85)



*NOTE: ONLY PARTS NECESSARY ARE (4) 3-15-017-0 GROMMETS & (4) #3-45-043-0 RETAINER CLIPS

REFRIGERATOR EVAPORATOR/HEAT EXCHANGER KIT (4-20-032-0)

On our Model 3211RFD, between serial #299658 and M402308/P429835, certain situations (i.e. warm ambient, high humidity, high useage etc) many exist where the sizing of the refrigerator section evaporator may become marginal. This condition which resulted in completely frosted coils and elevated temperatures can be corrected by ordering part #4-20-032-0.

CONDENSER FAN OPERATION

Prior to the hot gas design change, beginning with serial #227972, our units were designed to run the condenser fan 100% to keep both the compressor and condenser cooler, thereby, more efficient. However, associated with the hot gas system was a change in the compressor and condenser size allowing us to cycle the condenser fan with the compressor on our single compressor units- 201FD, 201R, 211, 241, 244, 245, 249R, 249RP, 249FF, 251, 361 and 801. The condenser fan still runs 100% of the time on our dual compressor models- 2011ICE, 2411, 2511, 2711, 2811 and 3211.

SUPPLEMENTAL HEATER KIT for units starting with serial #227972

Cold temperatures, or refrigeration, and high humidity have never been a good combination. When a refrigeration system is designed, expecially when great temperature differences are evident, heat must be applied to those surfaces to suppress any possible chance of sweating. Most refrigeration manufacturers in the past have used electric mullion heaters, door heaters or epoxy heaters to raise the surface temperatures of these areas.

Our design criteria was set at approximately 85% relative humidity and felt this would combat the possibility of sweating around the freezer doors. During periods of unusually high humidity, there were times the heat produced by the hot gas system would not handle the freezer doors and moisture would appear. This situation is very limited and only should appear when the humidity exceeds the 85% mark. This, of course, will happen on all refrigerators under these conditions.

For this reason, we are supplying a supplemental heater kit, which consists of an electric heat wire that lays <u>on top</u> of the existing hot gas tubing which spans the freezer perimeter. This should handle any moisture which could appear during this very extreme humidity period. Please be aware this will be in addition to the existing hot gas system and is being added to dry the freezer door edges. If this repair is needed please order by model and serial number one of the kits listed below.

Model #	Kit #
201FD	4-20-014-1
211RFD	4-20-014-2
241RFD	4-20-014-3
251RFD	4-20-014-4
2511RFD	4-20-014-4
361RFD	4-20-014-5
3211RFD	4-20-014-6

NOTE: Please refer below if the hot gas loop around the freezer frame needs to be by-passed.

200/300 SERIES FREEZER FRAME - DRAIN HEATER KITS starting with serial #227972

On occasion leaks can develope on the hot has loop (frame heater) around the freezer section. In certain situations it becomes necessary to by-pass the freezer frame heater and condensate loop over the drain pan area. If this repair is needed please order one of the following kits listed below.

Model #	Kit #
201FD	4-20-100-1
211RFD	4-20-100-2
241RFD	4-20-100-3
251,2511RFD	4-20-100-4
361RFD	4-20-100-5
3211RFD	4-20-100-6
2711RFD	4-20-103-0
2811RFD	4-20-104-0

NOTE: These kits are utilized **ONLY** if the hot gas loop is being by-passed.

LIGHT SWITCH KIT
(replaced 3-06-006-0 switch)

Starting with serial #M393733/P397233 on models 211RFD, 241RFD, 251RFD and 2511RFD refrigerators ONLY and 361RFD, 3211RFD refrigerators AND freezers, the double pole-double throw rocker switch (3-06-006-0) is replaced by the single pole-single throw rocker switch (3-06-014-0).

If switch replacement is necessary for the above listed models with a serial number prior to #M393733/P397233 you will need to order part #4-20-034-0.

SURROUNDING AMBIENT TEMPERATURES

Over the past year or so, we've noticed an ever increasing number of Sub-Zero's being installed in locations not normally associated with our products. As our sales have increased so have these types of installations. We're finding our equipment in residences that are not used on a full-time basis.

For different reasons, many people dial the thermostat down when the home isn't occupied. In some instances, we're finding that the temperatures are being set as low as 52-55 degrees Fahrenheit. These lower room ambients can be a problem with respect to the operation of certain Sub-Zero models.

Through our service records and testing by our Engineering Department, it was noted that the ambient room temperatures must be kept at a minimum of 57 degrees Fahrenheit for the equipment to operate properly. (This only concerns our models 211RFD, 241RFD, 251RFD and 361RFD) To elaborate on this, the four models listed have one compressor with two areas to cool (refrigerator and freezer). The complete unit is controlled through the refrigerator control, which is set at the factory at 38-40 degrees Fahrenheit. With the ambient room temperature at 57 degrees Fahrenheit, there isn't enough differential to activate the control on a regular basis. The outcome is a higher than the normal 0 degree Fahrenheit temperature in the freezer compartment with thawing occurring.

You can see how this can instigate a service call plus an irate customer, especially when no mechanical problem can be found. Of course, this <u>below</u> 57 degree Fahrenheit temperature would have to be for an <u>extended time</u>, such as three days or more. One night would not affect the equipment. In essence, we are, therefore, recommending that these four units (211RFD, 241RFD, 251RFD and 361RFD) not be used under these circumstances.

SHUTTING EQUIPMENT DOWN

Our product usage is becoming more versatile as our sales continue to grow. Some of our equipment is located in winter homes, summer homes, yachts and condo projects. Due to this wide array of usage, a potential problem could exist primarily when the equipment is used on a limited or short time basis.

Each time the equipment is started and the compressor runs, moisture collects in the inside of the refrigerator and freezer. When the equipment is turned off, moisture and water remain in the unit.

This is where the problems begin; the confined moisture has nowhere to go, so it attacks the shelves, the screws, the fan motor and even begins to discolor the aluminum parts. This process becomes worse when the equipment is located near salt water. The salt becomes airborne, gets inside the box and accelerates the corrosion process. This, of course, can and will occur on our units and, most likely, all other brands, if certain precautions are not taken.

The control(s) should be turned OFF so the compressor(s) cannot run. Wipe out the interior of the unit and keep the door(s) open.

REPAIRING AND TOUCHING UP PAINT SCRATCHES

There are times when the interior of the unit gets scratched due to a shelf coming loose, an installer not properly assembling the unit or the customer damaging the interior when in use. If this occurs, the proper method for repair is listed below. Please keep in mind that if the surface is dented, it will be necessary to fill that dent with an epoxy or body filler prior to this procedure. This can only be used when the surface paint has either pulled off, been scratched or bruised.

1. Sand the area needing the repair; rub only the damaged area. Sand ONLY to the paint where the scratch is removed. Deep sanding will remove the paintlok surface in the metal. Finish sanding operation with a fine sand paper to assure smoothness.
2. Clean sanded area using a clean rag; no cleaning materials are to be used.
3. Begin putting on VERY THIN layers of W28950 white spray paint #6-17-007-0*. NOTE: you can put up to (8) eight coats of paint depending on the original paint thickness already on the interior; remember, only a "fog" coat at a time. Wait approximately (4) four minutes between each coat.
4. After the painting is complete, wait (3) three hours before polishing. To speed the process, a hair dryer on LOW or a light bulb can be used to help cure the area and reduce the time to (2) two hours.
5. After the paint has cured, as mentioned in step #4, begin to polish with DuPont #7 polishing compound (available at a hardware store). Lightly apply compound to surface. Apply to complete area painted.
6. Lastly, apply a wax, such as Turtle Wax, to the area painted. This will aid in blending to surrounding surfaces.

*The paint is available in 4.5oz spray bombs from your parts distributor