

GENERAL  ELECTRIC

PRODUCT SERVICE DIVISION

*presents*

THE  
F E A  
REFRIGERATING  
MACHINE

Refrigerator Film No. 3

GENERAL ELECTRIC COMPANY  
APPLIANCE AND MERCHANDISE DEPARTMENT  
BRIDGEPORT CONNECTICUT

GENERAL ELECTRIC

PRODUCT SERVICE DIVISION

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*Product Service Division*

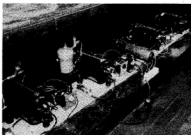
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THE  
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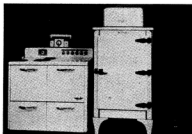
Refrigerator Film No. 3

(3) The FEA machine is the result of a GREAT NEW forward step in refrigerating mechanisms.

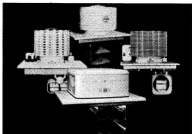
(4) Years of General Electric research and manufacturing experience are incorporated in its design.



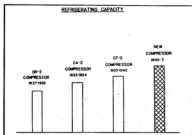
(5) Even before the war, sample mechanisms were being tested at the factory.



(6) Specially made up machines were later put into homes to secure experience under conditions of actual use.



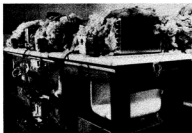
(7) These extensive tests brought out that the new compressor is even better than our outstanding pre-war designs.



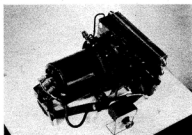
(8) This compressor has greater refrigerating capacity than any previous mechanism of comparable size.



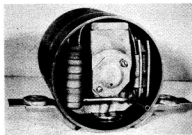
(9) And, despite the increase in capacity, current consumption is kept low and economical.



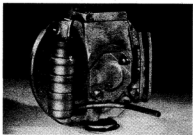
(10) Also, characteristic of General Electric sealed machines, trouble-free operation and long life are indicated by extended and accelerated life tests.



(11) To completely describe all parts of this mechanism would require more time than is allowed, but let us look at some of the important features.



(12) The compressor is located in one end of the small sealed case which is no more than the extended shell of the motor.



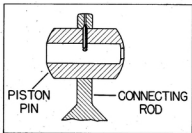
(13) It is a reciprocating type compressor--simple and dependable.



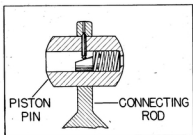
(14) In its design and construction, there are some new and advanced ideas which insure efficient operation and long life.



(15) One is the unique method of assembling the connecting rod, piston, and piston pin.



(16) A small key extends through the wall of the hollow piston pin and into the connecting rod, locking them together.



(17) The key is held in place by steady pressure of a wedge-shaped block backed by a spring.



(18) This out-away assembly shows the construction, which provides a constant thrust of the piston pin against the rod. Thus, piston pin wear and noise are eliminated.



(19) Also with this arrangement, note the narrow section of the connecting rod around the pin.



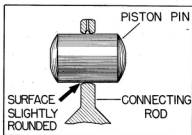
(20) See how this permits a large bearing surface for the pin inside the piston.



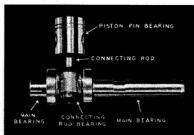
(21) With this large surface, resulting in a low bearing pressure, and with good lubrication, wear due to metal-to-metal contact is eliminated.

Another feature  
is self-alignment  
of the bearings.

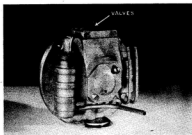
(22) Another feature is self-alignment of the bearings.



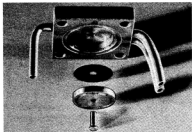
(23) Since the connecting rod is narrow and is keyed to the piston pin, the surface next to the pin is made slightly rounded as shown by this exaggerated drawing.



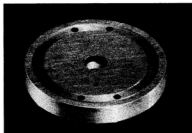
(24) This allows the rod to assume the proper position so that the bearings are perfectly free from any binding, even when the parts are first assembled.



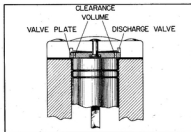
(25) The compressor valves also are of new and improved mechanical design.



(26) Inside the muffler box are the circular discharge valve and the small valve plate containing the discharge ports.



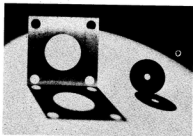
(27) The valve plate is quite thin, so that.....



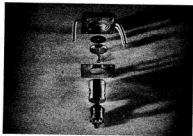
(28) The "clearance volume", that volume of gas trapped between the piston and the discharge valve at the end of each compressor stroke, is very small.

The smaller  
the 'Clearance Volume',  
the more efficient  
the pump.

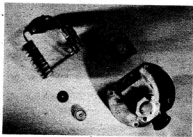
(29) The smaller the "Clearance Volume", the more efficient the compressor.



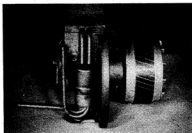
(30) These are the discharge and intake valves. Note that they are large and substantial; there are no narrow sections where failure might occur.



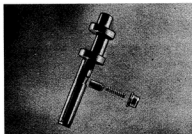
(31) Both open and close small holes or ports through the valve plate and muffler box. Actual movement is only a few thousandths of an inch.



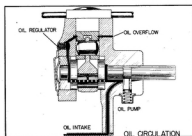
(32) Because of their limited movement and simple design, the valves are durable and operate quietly, as well as being extremely efficient.



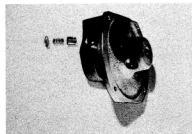
(33) The complete compressor assembly is lubricated by the best known system--oil under pressure.



(34) The rotary type oil pump consists of a small spring-backed plunger riding on an eccentric groove in the main shaft.



(35) Oil is pumped from the bottom of the case through drilled passages in the crank-shaft and main frame to bearings and all moving parts.



(36) There is an oil regulator too, which assures the proper pressure in the oil passages at all times.



(37) The newly designed and extremely efficient motor, upon which so much depends, is built to give long life.



(38) Direct contact of the external case to the motor laminations assures rapid air cooling of the motor.



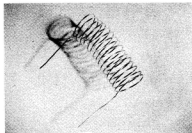
(39) The windings are insulated with "Formex" which contains no moisture and which is practically indestructible under conditions existing in the sealed system.



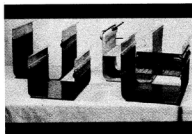
(40) Famous General Electric metal-glass leads, now better than ever due to processing in a nitrogen atmosphere, bring the motor connections through the compressor case.



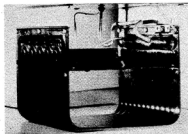
(41) A very small charge of safe, odorless Freon-12 is the refrigerant.



(42) Its flow into the evaporator is regulated by a capillary or restrictor tube.



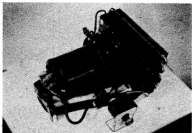
(43) Evaporators of different materials and varied design can be used.



(44) A blue porcelain evaporator is on the FEA the first model manufactured with the new compressor.



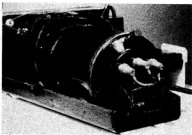
(45) As a replacement, the FEA machine provides the best in refrigeration performance to users of older General Electric refrigerators.



(46) It is compactly designed with the sealed compressor, finned tube condenser, fan and fan motor assembled to fit on top of the cabinet.



(47) It is equipped with the newest type of temperature control and the Type R starting relay which has proven so dependable on machines made during the past few years.



(48) When installing an FEA machine, be sure to release the locking arrangement which holds down the compressor during shipment.



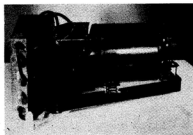
(49) This is most easily done just after the shipping crate is opened or before setting the machine on the cabinet.



(50) The locking latch should first be pried up from the end compressor foot.



(51) Then, facing the metal glass leads, push the compressor case down and forward until the compressor feet slip out of the slots in the frame.



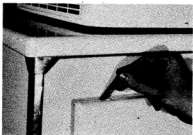
(52) When properly released from the locking arrangement, the motor-compressor assembly is balanced on external springs and operates with a minimum of noise.



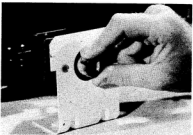
(53) The FEA machine is designed to maintain those temperatures most desirable for the preservation of food and to provide a good ice freezing rate.



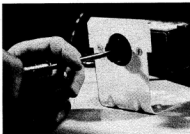
(54) For fastest freezing, the control should be turned to the coldest position. The control also can be reset colder or warmer if the cabinet temperature or freezing speed is not suited to the customer's particular needs.



(55) However, first make sure that the cabinet has good door and top seals. It may need new gaskets.



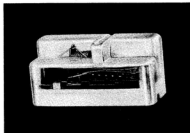
(56) If you want to reset colder, turn the control three or four positions clockwise from the mid-position.



(57) Remove the screw and knob....and then reinstall the knob at the mid-position.

When servicing the FEA machine, remember that after it shuts off, about two minutes are usually required for 'unloading'. The high and low pressures equalize through the capillary tube.

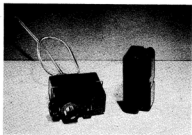
(58) When servicing the FEA machine, remember that after it shuts off, about two minutes are usually required for "unloading". The high and low pressures equalize through the capillary tube.



(59) If restarting is attempted immediately, the automatic reset overload in the relay will trip and keep the machine from running until the pressures are balanced.



(60) Carefully inspect any FEA machine that does not run or refrigerate properly; it probably can be adjusted to operate normally.



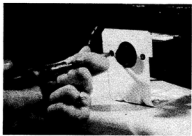
(61) An inoperative temperature control or starting relay may be causing the difficulty and may require replacement.



(62) To remove the control, first loosen the bellows tube clamp with a  $3/8$  inch socket or open-end wrench.



(63) Then straighten the bellows tube.



(64) Take out the control mounting screws.....



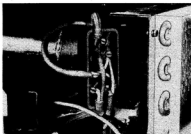
(65) And pull the bellows tube up through the box top. Be careful not to pull out the rubber bushings.



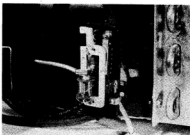
(66) When installing a control, make sure the bellows tube comes just to the end of the clamp. The upper part of the clamp should be tight against the evaporator leg.



(67) The relay is mounted with a clip which can be easily pried off, if necessary.



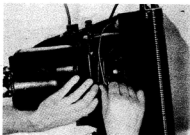
(68) All the leads should be tight and insulated from each other.



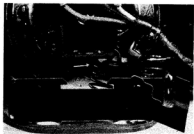
(69) When a relay is correctly wired but doesn't operate properly, install a new one.

Don't try to adjust a relay because it requires careful calibration with sensitive instruments.

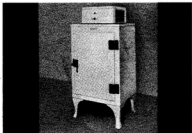
(70) Don't try to adjust a relay because it requires careful calibration with sensitive instruments.



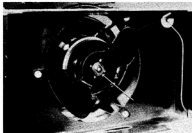
(71) To eliminate a rattling noise, it may be necessary to bend the tubing slightly.



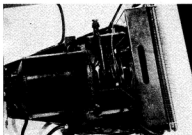
(72) Other possible causes of noise or vibration are--Mounting spring out of position,



(73) Cabinet not level, loose leg bolts on the cabinet, or weak flooring.



(74) A loose fan can cause noise too. Tighten the speed nut that holds it in position.



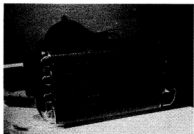
(75) The external motor-driven fan provides forced draft to cool the filmed tube condenser on the FEA machine.



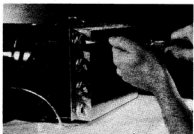
(76) The fan motor is supplied with oil at the factory and should run indefinitely without requiring oiling.



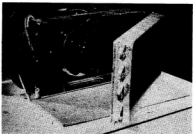
(77) However, if it stalls or becomes noisy, SAE 10 wax-free automobile oil can be used. Do not use an ordinary household oil.



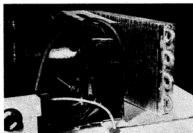
(78) If a fan motor should require adjustment or replacement, the condenser can be moved.



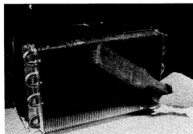
(79) First, take out the condenser mounting screws.



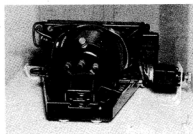
(80) Then, swing the condenser around about forty-five degrees but be careful not to kink the tubes.



(81) If there is a rubber bushing around the oil tube, remove it before taking out the motor so the oil plug is not pulled out and oil spilled.



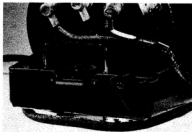
(82) Whenever a service call is made, brush off any accumulation of dust or dirt on the condenser.



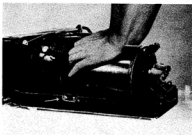
(83) If internal difficulty should develop and cannot be corrected, the compressor should be locked down and shipped back to the factory.



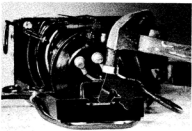
(84) Facing the metal glass leads, push the compressor case down and forward.....



(85) Until the end foot slips into the slot in the frame.



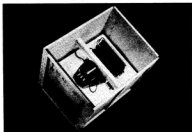
(86) The opposite end of the case should then be pushed down until the other two feet slide into the slots.



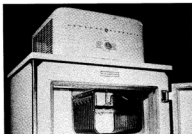
(87) When the feet are forced into the slots as far as possible, drive the locking latch arm into the end foot.



(88) The machine housing, in a regular shipping carton, should be returned in the bottom of the crate.



(89) When the machine is in the crate, wedge it in tightly with a cross-bar on top of the compressor case.



(90) While an occasional machine may require the attention of a service man, and, on rare occasion, return to the factory, the great majority of FEA installations should result in immediate customer satisfaction.

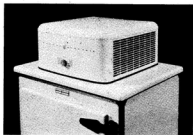


(91) Customer letters have especially praised these features:

Low Current Consumption  
Modern Appearance  
Ease of Cleaning  
Quiet Operation



(92) These and many other advantages are made possible by the new compressor.



(93) Although it was first seen on a machine for Monitor Top replacement,



(94) This compressor will be used on a new advanced line of machines for all types of refrigerators and home freezers.

