

requirements, in the air conditioning range of operation, is small for a change of evaporator temperature. On the other hand, the capacity and power of the centrifugal machine vary rapidly, and the capacity of the steam ejector also varies considerably. Thus, both these latter types tend to be more nearly self-regulating than the reciprocating and rotary compression type. On the other hand, the operating range of the latter near standard capacity is superior. Although the capacity of the reciprocating and rotary compressor is little affected by the condenser temperature, the power of the compressor is greatly affected, while the reverse is true

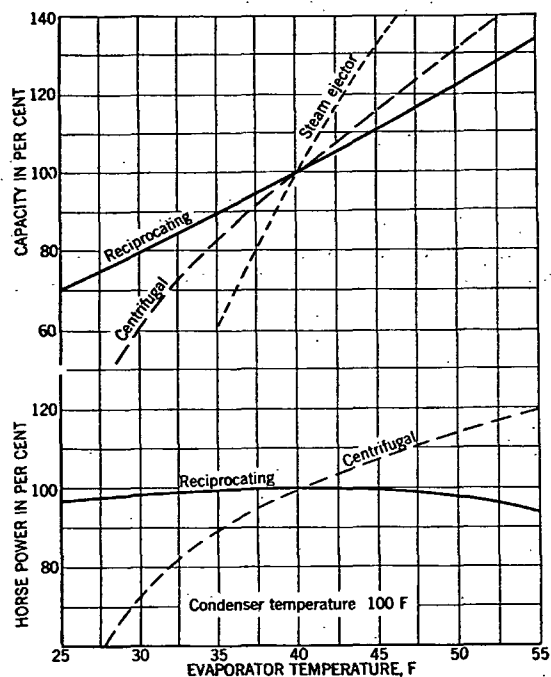


FIG. 6. PERFORMANCE CHARACTERISTICS OF COMPRESSION REFRIGERATION MACHINES AT CONSTANT SPEED

for the centrifugal compressor. As previously indicated, the condenser temperature has no effect on the capacity of the steam ejector type of compressor until a certain point is reached, beyond which the capacity is zero. The steam consumption for the performance characteristic curves shown in Figs. 6 and 7 remains constant for all evaporator and condenser temperatures.

Steam jet refrigeration requires from 3 to 10 times as much condenser water as other types of mechanical refrigeration, but its capacity is not effected by condensing water temperature as long as the water does not greatly exceed 100 F. Consequently, steam jet systems are well suited to those applications where condensing water is cheap, or where con-

densing water is rather high in temperature. From Fig. 6 it is evident that steam jet refrigeration is better suited for use with evaporator temperatures *above* rather than *below* 40 F.

CONDENSERS

Condensers used in connection with refrigerating equipment for absorbing the work of compression are of three general designs: (1) air, (2) water, and (3) evaporative.

Air Cooled

Air cooled condensers are seldom used for capacities above 3 tons of refrigeration, unless an adequate water supply is extremely difficult to

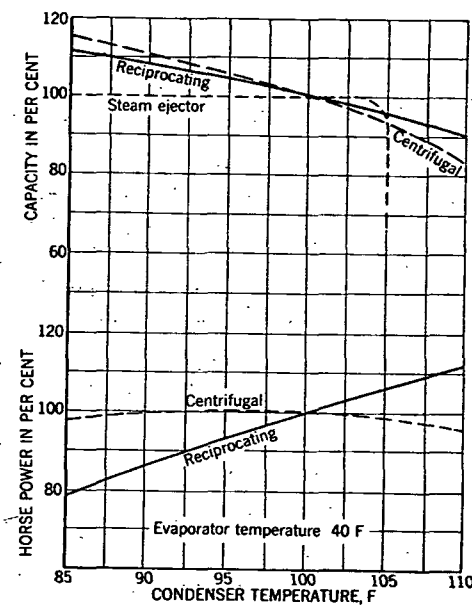


FIG. 7. PERFORMANCE CHARACTERISTICS OF COMPRESSION REFRIGERATION MACHINES AT CONSTANT SPEED

obtain, as for instance in railway air conditioning. Even on fractional tonnage installations, air is used as the condensing medium only where water is expensive or where simplicity of installation warrants the higher condensing pressure, and consequent higher power costs than can be obtained using water as the condensing medium.

The conventional air cooled condenser consists of an extended surface coil across which air is blown by a fan. The hot refrigerant gas enters the coil at the top and as it is condensed flows to a receiver located below the condenser. Air cooled condensers should always be located in a well ventilated space so that the heated air may escape and be replaced by cooler air.