

# Theater Engineering Conference

## *Ventilating and Air Conditioning*

# Service and Maintenance of Air-Conditioning Systems\*

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**Summary**—Because of shortages of raw material and parts in the air-conditioning and refrigeration field, it is necessary that theater owners maintain and place in operation and service the apparatus already installed.

**T**HE OLDER TYPE refrigeration cycle installed prior to the development of the Freon refrigerants and the more modern refrigeration cycle is designed by the manufacturer and engineered by the installer to operate under exacting conditions and must be kept in clean, lubricated, and effective operating condition for satisfactory operation.

The product of the manufacturer of air-conditioning apparatus, such as refrigeration compressors, condensers, water-saving devices, dehumidifiers, coils, heating elements, fans, motors, switches and starters, thermostats, and diffusers, is a result of painstaking research and diligent effort to produce a lower-cost product that can be marketed in a highly competitive business.

These products are assembled by an installer or contractor together with ducts, wiring, insulation, and piping, for a purchaser into an installed air-conditioning system. The reliable installer will design an air-conditioning system for low maintenance costs taking into consideration motor horsepower required, hours of operation, cost per kilowatt-hour, lubricants required, paint, accessibility of service valves and switches, worn parts replacement, and countless other factors. The final picture presented to the buyer by the reliable installer is the total cost in dollars out of pocket to the owner over a given period of time. Low first cost is not always the cheapest in the over-all picture.

Check the layout of your equipment room to see that a maintenance man will have sufficient room to check and lubricate apparatus.

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Lubrication points, valves, and gauge parts that are not accessible are seldom checked. The best of mechanical equipment breaks down occasionally or must be overhauled and ample room will result in a faster, better repair job with resultant low cost and the system placed in operation quicker.

An air-conditioning system in a theater represents a sizable investment to the purchaser and replacement of apparatus is high in equipment cost and delay involved in procuring parts together with qualified installation labor. The owner of an air-conditioning system must arrange service and maintenance of his plant to assist in preventing breakdowns that result from lack of attention to the entire air-conditioning system including a check of the system for Freon leaks, particularly at the compressor seal, inspection and cleaning of drains, the inspection and adjustment of all belts, safety controls and temperature-regulation devices, and the cleaning and adjusting of all water valves, sprays, pumps, starters, and gauges, the lubrication of motors and bearings, the cleaning or replacement of air filters, and the adjustment of dampers. Prompt replacement of worn parts is imperative in view of required operation of a plant and the annoyance attendant to a shutdown with loss of business. Periodic service and maintenance checks will enable you to keep a full charge of refrigerant in your plant and will locate leaks which may result in expensive repairs, loose fan belts or sheaves, and dirty filters that result in inefficient operation. Regular checks may reveal other defects prior to serious trouble.

Various engineering societies and trade associations and all manufacturers of this apparatus have drawn up service and maintenance-check charts with accompanying reports and varicolored or marked tags of plates to be attached to various check points to assist in checking and servicing apparatus. They have also prepared simple service and maintenance contracts for use in the trade. It is strongly urged that you contact the manufacturer, or his representative, of your refrigeration machinery and request his advice and recommendations regarding competent service and maintenance people and institute a periodic service and maintenance program. You will have many more hours of operation with less over-all expense in following the recommendations of the manufacturer and his accredited representative who can supply factory parts and lubricants and who receive manufacturers' bulletins on products.

Average costs of maintenance and service contracts, on a yearly basis, have been 19 to 27 cents per seat, dependent, of course, on the amount of equipment involved and the length of travel to the job.