

Installation & Maintenance Data

IM 376-2

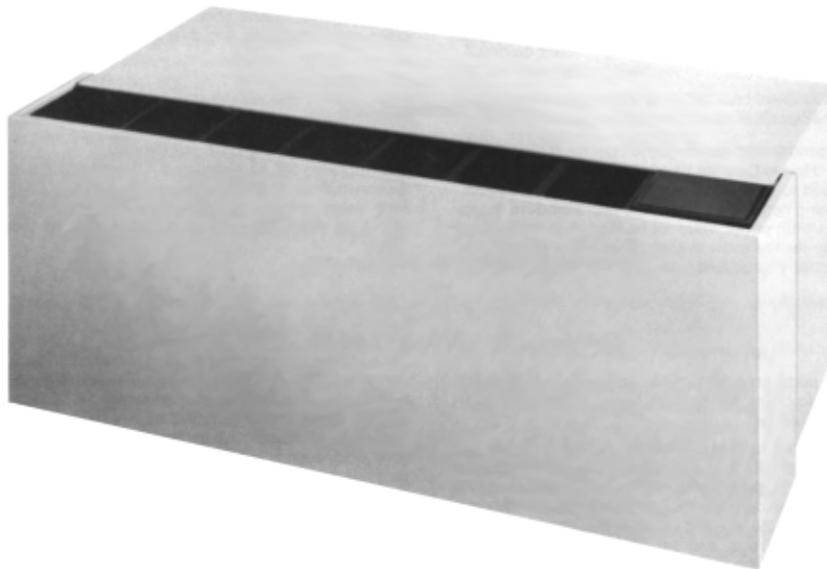
Group: **PTAC**

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Incremental® System

Information For Owners & Operators



Introduction

The Incremental system is a perimeter system of complete four-season air conditioning. As such, it conditions the exterior spaces of multi-room, multi-story buildings-spaces usually within 25 to 35 feet of an outside wall.

The Incremental system is compatible with any core or interior system, as sometimes required to supplement the perimeter system.

Each Incremental system consists of two or more of the following basic elements:

1. A conventional central steam or hot water heating installation, but with radiators omitted or removed from the spaces to be air conditioned. (Not required for all-electric systems.)
2. An adequate electrical wiring system of conventional design. In the case of existing buildings, this usually requires rewiring.
3. A unique, noiseless type of personal four-season air conditioner called the Incremental conditioner. This usually occupies less floor space than the radiator it replaces.
4. Optionally, a unique system of control that prevents wasteful operation of the equipment, yet provides air conditioning to each occupant whenever desired.

Designer's Concept

The Incremental system is intended for both existing and new structures. The smallest installation has but one Incremental conditioner. The largest may have well over 1000. The system is called "incremental" because:

1. In providing health, comfort and personal efficiency to building occupants, it treats them not in groups, but rather in **increments** consisting of each person, as an individual.
2. It may conveniently be installed over a period of years, as occupants desire or money permits, in **increments** of one suite, one floor, or one wing at a time-at no higher total cost than doing the entire building at one time. This is not so with other systems.
3. It may initially be installed for all functions of air conditioning, except summer cooling, at a saving in first cost. When wanted, the cooling increment may be added, in a few minutes, by a regular building employee.

Since there is no such thing as regimented personal comfort, it is contemplated that the principal occupant of each room or office space should exercise control over his Incremental conditioner, and thus over his indoor environment.

User Instructions

Incremental conditioners are simple to operate. Nevertheless, instructions, "How to Operate Your Incremental Air Conditioning," are taped to each room cabinet at time of shipment.

The foregoing items are for systems with **standard** equipment, using steam or hot water for heating. Instructions are also available for the even simpler all-electric systems. On request, special instructions will be prepared for users of custom-built, nonstandard equipment.

Complaints will be eliminated if the equipment is actually demonstrated to users who are unfamiliar with it. In any case, new users should be encouraged to read the detailed operating instructions, or, at the very least, the instructions sticker.

Owner and Operator Instructions

In addition to normal operation of the equipment as described in the user instructions, the building owner or operator is normally responsible for:

1. **Filter Cleaning or Replacement**—Air filters must be cleaned or replaced (depending on the type) at regular intervals. Twice a year is adequate in some locations. Once a month or even twice a month is essential in others. It all depends on the amount of dirt in the atmosphere, lint from linens and rugs, and the usage of the equipment. Malfunctioning of the equipment will result if filters are not kept clean.
2. **Operation of the Central Heating Plant**—This requires no further explanation than to say that, as against other systems, the Incremental system normally saves from 10% to 25% of the heat required for comfort. That is because it has "a thermostat in every room." And, because this is true, it is recommended: (a) that the central heat be turned on **earlier** in the fall than are other systems, and (b) that the central heat be turned off **later** in the spring than are other systems.

Following this recommendation pleases those occupants who may be classified as the "too colds." And, because this system uses only as much heat as needed to keep these few people comfortable, it gives them this added luxury at very little extra cost.

3. **The Concealed Ventilation Switch**—Most Incremental equipment has an electrically actuated damper to control the introduction of outdoor ventilating air, under positive pressure. Normally this damper functions automatically, being open when the equipment is operating and closed when it is stopped. A control switch is, however, provided in the damper circuit. It is in a **concealed** location and **not** mentioned in the user instructions.

The concealed damper control has been incorporated in Incremental equipment at the request of experienced building owners and operators. Its purpose is to save fuel during the heating season. By moving the damper switch to **closed** in the fall and returning it to **automatic operation** in spring, fuel will be saved, because less cold outside air will enter the conditioned space.

4. **Fan Motor Oiling**—More motors are ruined by over-oiling than by under-oiling. Incremental equipment is normally supplied with motors having "permanently" oiled bearings. All fan motors are permanently lubricated by the manufacturer. They do not require further oiling.
5. **Helpful Hints**—Every autumn inspect the heating section, clean if required and test-check all controls. Every spring inspect the cooling chassis, clean if required and test-check the controls. If the compressor seems noisy, it should quiet down after a few days of operating during which time refrigerant and oil in the circuit will separate properly.

In the case of cooperatively owned apartment buildings, it is recommended that the management group arrange for **one (1)** source for servicing the air conditioning equipment in all apartments. This is usually more satisfactory and less costly to the individual owners than if each goes his own way.

Recommended Spare Parts

An inherent advantage of the Incremental system is that failure of any one part affects only one Incremental conditioner and does not interrupt the operation of the rest of the system. A further advantage is that a failed part can be quickly and easily replaced, thus minimizing the inoperative time of the equipment. This is so, however, only if a replacement part is quickly available. In order to be able to replace a failed part quickly and thus keep all Incremental conditioners in good operating condition, it is recommended that at the time Incremental conditioners are purchased, owners arrange for a small stock of those replacement parts which might most likely be required.

Where an owner carries such a stock, **immediate** replacement of a defective part is possible. The defective part in turn may then be returned to McQuay International or one of its authorized service stations. So long as it is still in warranty, it is repaired or replaced and returned to the owner without cost for shop labor and material. Thus, his stock of replacement parts is constantly replenished. In the table below are listed the parts which are recommended be carried in stock, together with the quantity of parts recommended per 100 Incremental conditioners installed.

Part Name	Qty. Per 100 Units
Cooling Chassis	1
Compressor Overload Device	1
Compressor Running Capacitor	1
Conditioned Air Fan Motor	1
Condenser Fan Motor	1
Push-button Switch	2
Damper Switch	2
Thermostat	2
Knob for Thermostat	6
Control Relay (if used)	1
Damper Motor	2
Electric Resistance Heater	1
Touch-up Paint (1 pt. Spray can)	1

For the current spare parts list, and applicable prices, see your McQuay representative or write McQuay Service, P.O. Box 1551, Minneapolis, MN 55440.

Preventive Maintenance

It is important that the owner and operator be aware that a serious penalty may be imposed on them if regular, scheduled maintenance is not given their Incremental equipment. Incremental conditioners are built to last. However, like any other piece of equipment exposed to variations in temperature and the elements, their life expectancy depends to a large extent upon the care given the equipment in the form of proper maintenance. With proper care, a life expectancy of 20 to 25 years is reasonable. Careful inspection at scheduled intervals of equipment components subject to deterioration is the heart of the Preventive Maintenance Program.

The most economical time for executing a clean-up and Preventive Maintenance Program is usually in the winter, when air conditioning service companies have their slack season. We recommend that preventive maintenance, properly recorded, be given each air conditioner on a three-year cycle; that is, one-third of the equipment every year, starting with the second year of installation. The procedure suggested below is typical. It may not exactly fit all types of equipment.

Cabinet Front Assembly—Remove the front panel and proceed as follows:

1. Clean inside surfaces of the front panel or assembly with a vacuum cleaner.
2. Insulation and rubber seals—inspect and replace if necessary.
3. Check any wiring and electrical controls that may be part of the front.
4. Discharge Grilles—clean thoroughly.

Cooling Chassis—Remove chassis from the cabinet and deliver to a maintenance working area. In order that interruptions in occupied spaces and labor costs may be kept to a minimum, we suggest that a cleaned or spare chassis be inserted at the time the used chassis is removed for maintenance. If a spare chassis is not available, a weather plate may be used to seal the wall opening.

1. Clean all dirt and sediment from the basepan and other parts.
2. Cover fan motor with bag or “sock” made of pliofilm or other waterproof material. Warning: Residential and institutional cleaning compounds can cause permanent damage to the packaged terminal unit. To avoid damage to unit controls and heat transfer surfaces, do not spray cleaning compounds on the discharge grille, return air opening, or unit controls. Normal cleaning can be accomplished by wiping the unit surface with a damp cloth. When using cleaning compounds on carpets, floors, or walls, turn the unit off to avoid drawing potentially damaging vapors into the package terminal unit.
3. Clean condensate drain that leads from evaporator drip pan to chassis basepan.
4. Dry the equipment thoroughly, especially electrical parts and insulation.
5. Clean all rust spots with steel wool or emery cloth and paint with protective paint such as Rust-Oleum.
6. **Insulation**—clean with vacuum cleaner and replace if necessary.
7. Check the weep holes along the rear flange of the basepan, making sure they are open.
8. Check insulation on the suction tube and replace if necessary.
9. **Condenser Fan**—operate and adjust, if necessary.
10. Tighten loose fastenings. **Caution: Do not** tighten compressor hold-down nuts on externally spring mounted compressors.

11. **Damper Doors & Damper Linkage**—clean and oil lightly.
12. **Electrical Wiring**—inspect and replace if necessary.
13. Test run the chassis before reinstalling or returning to spare parts stock.

Cabinet and Heater Assembly

1. **Blower Assembly & Heating Coil**—clean thoroughly with vacuum cleaner.
2. Use steel wool or emery cloth on all rust spots and paint with a protective paint such as Rust-Oleum or aluminum paint.

3. **Insulation**—clean with vacuum cleaner.
4. **Electrical Wiring**—inspect and replace if necessary.
5. **Rubber Seals**—inspect and replace if necessary.

After completion of the Preventive Maintenance Program, the equipment should be checked to assure proper operation of all functions.

- * **Do not** use steel wool or steel brushes to clean stainless steel parts on equipment of special Admiralty or corrosion resistant construction. Use a stainless steel “sponge” instead.