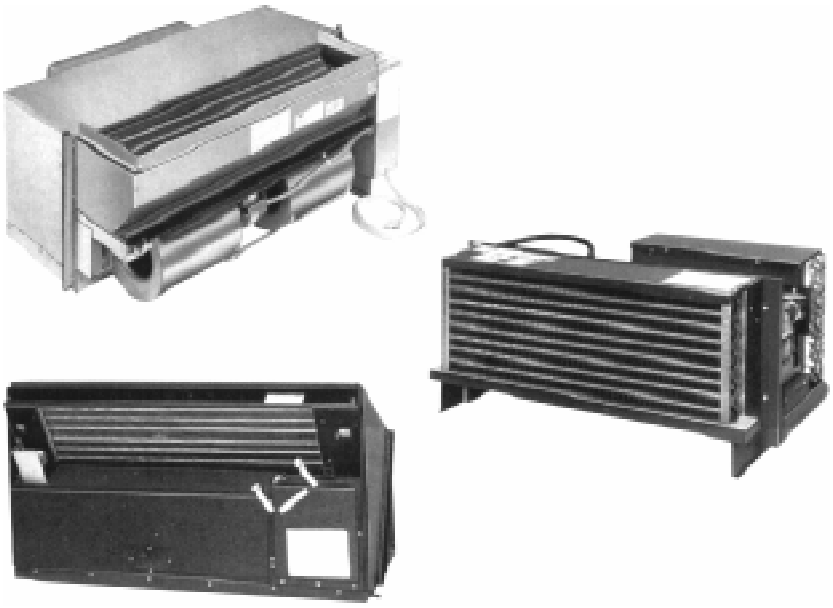
Catalog

C: 1375

Packaged Terminal Replacement Chassis

For Remington, Singer, American Standard, ClimateControl® McQuay



ISO 9002 CERTIFIED

McQuay® Air Conditioning

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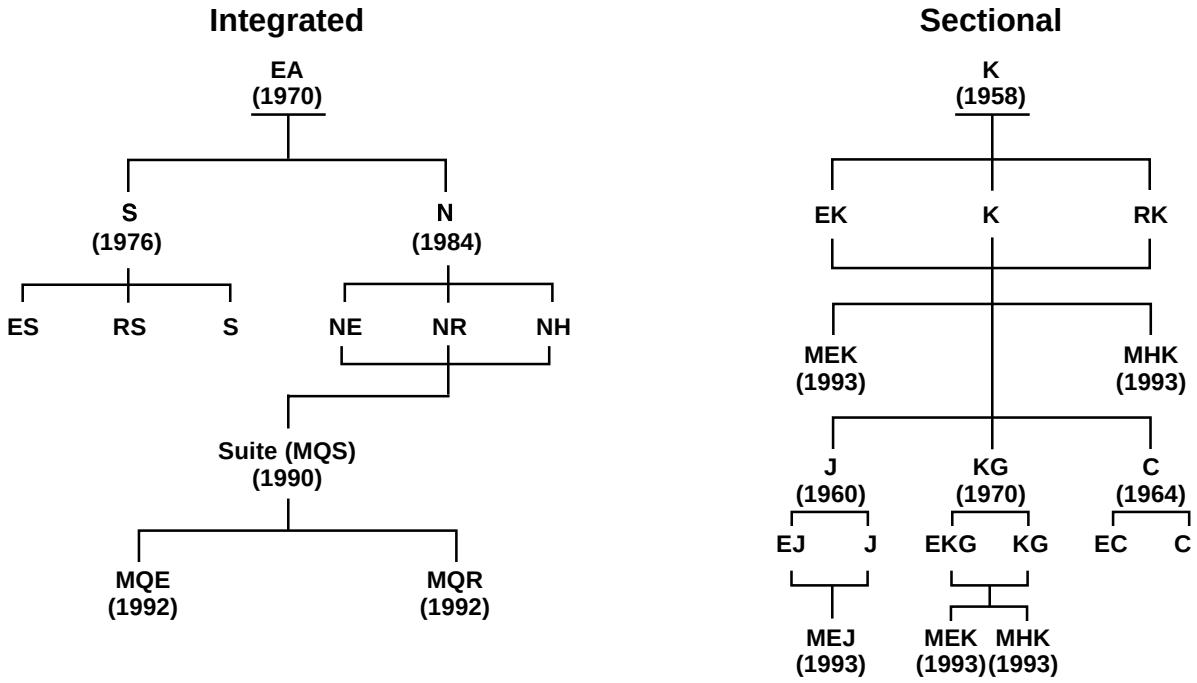
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Evolution of the Incremental Product Line

McQuay has a policy of continuous product research and improvements. Consequently, the corporation has many design modifications that were developed to meet the changing needs of the marketplace. The majority of these design variations are still in production today.

1958 — The first Incremental unit developed was the Type K Series unit. This unit was so well designed and built that it still exists today with relatively few changes. The Type K was recently redesigned to incorporate the latest technological improvements in efficiencies and features. The dimensions of the Type K have never changed, contributing to today's active replacement business.

Figure 2.



1960 — The Type J Series units followed on the heels of the Type K units. The Type J was developed for a specific application with its through-the-wall opening at the top of the unit.

1964 — The school market continued to grow and demand even larger capacity units. The Type C Series unit was developed for very large capacity requirements. Type C Series units incorporate very heavy gauge steel and tamper proof devices to withstand the mistreatment by school children.

1970 — The Type KG Series units were developed to also answer a call by the school market for a larger capacity unit. Like the Type K, the features and efficiencies were improved in 1993, taking advantage of state-of-the-art components.

1970 — Integrated (cartridge) units were developed to incorporate the heat section and the cooling section into the chassis for quick installation.

The McQuay Type EA Series unit was introduced to meet this new demand for faster installation. The Type EA quickly caught on and became the biggest seller in the product line with over 350,000 Type EA Series units installed around the world.

1976 — In the midst of the nation's worst energy crisis, we introduced the first air-to-air heat pump ever developed in the packaged terminal industry. The McQuay Type RS unit was developed to replace the Type EA and offered unprecedented energy savings.

1985 — The McQuay Type N unit was developed with state-of-the-art energy efficiencies. The early 1980s saw major companies like Carrier, Trane and Amana entering the packaged terminal business. The market continued to demand lower prices, more efficient operation, and simpler designs. The Type N was developed to answer these needs.

1990 — The 90s ushered in a new look that is cleaner, sportier, and has a more dramatic appearance. The McQuay Suite was developed to meet these demands. Its sloped top and slimline appearance accentuates the modern decor of the 90s.

Unlike other manufacturers, McQuay does not create orphans. Nearly every Incremental unit ever manufactured has a current replacement chassis available. Many of the original units are still in operation today, running as well as the day they were first installed. McQuay's philosophy is to continue research and development, constantly building better and more efficient equipment, while maintaining replacement products for those customers who have come to rely on the McQuay brand name.

McQuay has a reputation of producing quality equipment where life expectancies are measured in decades. Because McQuay has been manufacturing packaged terminal equipment for over thirty years, there are a substantial number of units that have outlived their life expectancies and are only now in need of replacement for the first time.

Why Replace the Chassis?

There are many reasons to consider for unit or chassis replacement. Among them are energy considerations, architectural design enhancements, the availability of new technology, or simply because the unit has worn out. Due to the unique design of the McQuay Incremental conditioner, equipment replacement can be accomplished without disruption of the air conditioning system for the rest of the building. Often, replacement can be done in as little as five minutes.

The most frequent component to be replaced is the cooling chassis. The cooling chassis has the largest number of moving parts and is the part of the unit that has the greatest weather exposure. All Incremental chassis are slide-in, plug-in types designed to facilitate quick and easy replacement. Chassis are maintained for nearly all the original equipment. There is no need for expensive wall modifications since the new chassis simply slides into the existing wall sleeve.

Chassis replacement is usually delayed until it outlives its normal life expectancy and is no longer practical to repair. However, replacing the chassis because it is worn out is not the only reason for replacement. With the advancements in technology, packaged terminal units have become increasingly more efficient. Many building owners are replacing old, outdated units that have lower efficiencies with newer, high efficiency models. Better efficiencies results in lower operating costs which provide the owner with additional capital for other building improvements or maintenance.

Another important reason for chassis replacement is due to the advent of the air-to-air heat pumps. In 1976, we introduced the first air-to-air heat pump to the packaged terminal industry. Today, over half of all new shipments of packaged terminal units contain a heat pump chassis. For those regions that require wintertime heating, replacing an outdated, inefficient, electric heating chassis with a higher efficiency heat pump chassis can dramatically reduce operating costs.

A chassis is also replaced due to the effects of the environment where the unit operates. Certain environments such as seacoast and pool side applications are especially damaging to packaged terminal units. Because the unit requires outside air to circulate through the condenser section, abnormal deterioration occurs even on the best protected parts. A badly deteriorated chassis will become very inefficient, or possibly nonfunctional, and require immediate replacement. When replacing components operating in this environment, it is imperative that the new unit receive special treatment to prolong its life expectancy. This includes special coil treatment, special compressor coating, special motors and special treatment to all steel parts that come in contact with corrosive air. Corrosion resistant packages are offered for all McQuay Incremental packaged terminal equipment. This protection ranges from special corrosion resistant packages to Admiralty construction, the highest corrosion protection available in the industry.

Accurately predicting the life expectancy of equipment in this environment is impossible. The most aggressive approaches to prevent corrosion for “seacoast” type applications may only provide life expectancies of half what a normal environment will allow.

What is Replaced?

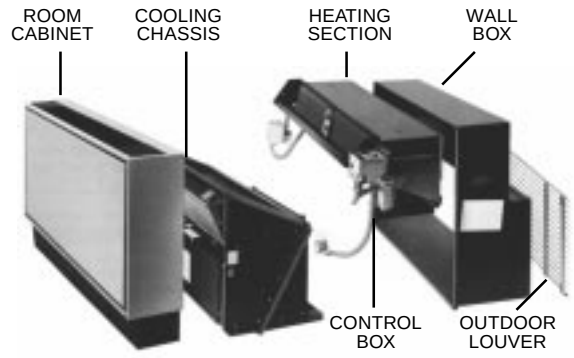
The most frequent component to be replaced in a packaged terminal unit is the component with the highest amount of moving parts; most frequently this is the cooling chassis.

When the cooling chassis is replaced, it is important to inspect the other unit parts to determine if replacement is necessary. This would include the louver, wall sleeve, heat section, control box and room cabinet. This is especially important when the unit is operating in a corrosive environment as described earlier.

McQuay Incremental conditioners can be categorized into two major groups: (1) Sectional Designs (Types K, KG, C, J and Type 41), and (2) Integrated Designs (Types N, S, EA and Type 45).

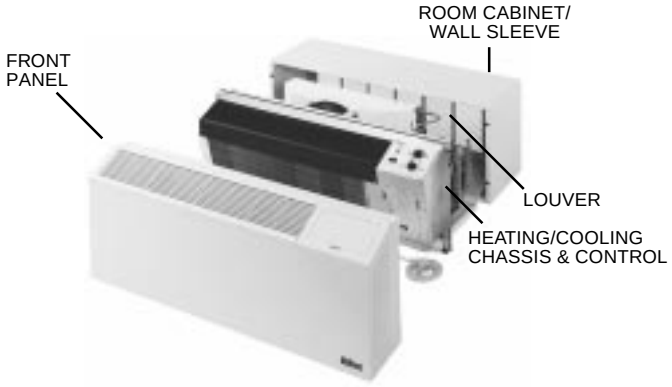
The terms “sectional” and “integrated” refer to the unit configuration. Sectional units usually consist of six pieces: the cooling chassis, heat section, controls, wall sleeve, louver and room cabinet. With sectional units, it is possible to replace the cooling chassis and leave the existing heat section and controls intact. It is also possible to replace a damaged room cabinet without involving major construction.

Figure 3. Typical Sectional Unit



Integrated units usually consist of four pieces: the cooling/heating chassis and controls, the room cabinet/wall sleeve, the front panel, and the louver.

Figure 4. Typical Integrated Unit



Integrated designs have a one-piece cooling/heating chassis with integral controls. They are often referred to as “cartridge” units because the chassis contains all necessary components in one piece that simply slides into the wall sleeve. Integrated designs aren’t as flexible as sectional units. When the cooling chassis is in need of replacement, the heat section and controls are also replaced. With integrated equipment, the wall sleeve also performs the function of the room cabinet. Replacing a damaged room cabinet requires the wall sleeve to be removed from the opening, which can be very costly and disruptive.

Whether the unit is a sectional design or an integrated design, careful inspection of the entire unit must be made to determine if repair or replacement of other components is required.

Since 1958, thousands of McQuay units, with various designs and styles, have been installed throughout the world. The majority of these McQuay units are supplied on a build-to-order basis. Consequently, many conditioners have special control packages, special wall sleeves, special room cabinets, etc.

It is not possible to make a blanket statement about replacements for the old units. Before making any replacements, be prepared to make a physical inspection of the equipment to be replaced. Inspection should begin with the room cabinet.

Room Cabinets

Figure 5. Typical Room Cabinet For Types K, KG & C



Figure 6. Typical Room Cabinet For Type J



Figure 7. Typical Room Cabinet For Suite & Type N



Over the years the room cabinet has been altered in numerous ways to meet customer requirements. Careful inspection of the room cabinet should be made to determine if replacement is necessary. If a decision is made to replace the cabinet, it is important to make visual and physical measurements of the cabinet depth, cabinet width, and cabinet height. Custom cabinets were often furnished to accommodate piping or space problems. Some had special height kickplates, yet others had special colors. Exact replacements can be provided for most of these custom cabinets provided adequate visual and physical information is given.

Room cabinets are replaced for a variety of reasons. As room decors change, designers often want to give the units a "face lift" to present a more contemporary appearance. This may entail a simple color change or possibly an upgrade to a current cabinet design.

Depending on the length of time a unit has been installed, some of these modifications may have already been completed. It is beneficial to pay close attention to details when contemplating room cabinet replacement. Check for:

1. **Special Paint Color.** It may be important to match a particular decor of the room. We have the capability to closely match special color paint requirements. Depending on the size of the job, the cabinets will be custom painted to meet the specifications of the customers. However, in most instances, the standard color paint will blend well with any room decor.

2. **Tamper proof Devices.** This could be as simple as a keylock on the control panel, or as complex as tamper proof screws throughout. Many special use buildings such as mental health care facilities, schools, nursing homes and hospitals use tamper proof mechanisms on the air conditioning devices. These tamper proof features are probably still necessary and normally must be factory supplied. Careful inspection will reveal these options.

3. **Special Discharge Grilles.** A very common option for room cabinets are 4-position indoor discharge grilles. Many were supplied in extruded aluminum for aesthetic reasons. Other grilles may be continuous bar stock or they may be specially painted.

Variations in the room cabinet are very common. Whatever the cabinet requirement, exact replacement can usually be supplied. If an exact replacement cannot be made, one can often be provided that will meet the specifications without causing unit or structural modifications.

Heat Sections

Heat sections for McQuay Incremental conditioners come in a wide variety of sizes, styles and locations. Like the room cabinet, the heat section has gone through various design changes to meet market demands. Generally speaking, exact replacements can be provided for most existing heat sections that were manufactured over the past 30 years.

The first thing to do when considering a heat section replacement is to identify the unit type. Sectional units have a heat section that is separate from the cooling chassis as shown in Figure 3. Integrated units, with electric resistance heat, have a concealed heating unit that is integral to the cooling chassis. The integrated units with hydronic heat, have separable heating coils that are either mounted on top or in a hydronic subbase like that shown in Figure 12.

Figure 8. Type K Electric Heat



Sectional Unit Heat Sections

Look carefully at the heat section to determine if it is electric resistance heat or hydronic heat. With the sectional equipment, both heater types are removable and replaceable without major unit disassembly.

With most units, the electric resistance heaters are open wire type, as shown in Figure 11, and are sized for the room requirements.

Our standard practice is to attach or enclose a wiring diagram for the heat section somewhere on the heat section. Locate this diagram to obtain detailed information about the heat section. There are a large number of nonstandard, special design heaters operating today. The wiring diagram usually contains an 8-digit part number that will identify any special features for the factory. This number is essential to insure an exact replacement.

Hydronic heaters are copper tubed, aluminum finned coils, also shown in Figure 11. Inspect the heater and determine if the heating medium is steam or hot water. The wiring diagram will usually indicate whether the unit has a normally closed valve (NCV) for steam or a normally open valve (NOV) for hot water. In the absence of the wiring diagram, there are certain visual clues that will identify the heating medium .

Figure 9. Type K Hydronic Heat



1. Locate the valve. If it has a bypass lever, it is a normally closed valve which would indicate steam heating.
2. The valve is always placed on the supply side of the coil. If the supply is at the top of the coil, it is usually steam. If the supply is at the bottom of the coil, it is usually hot water.

Figure 10. Type C Electric Heat



It is also important to observe the “hand” of the coil. From a position in front of the unit, if the coil connections extend to the right, the coil is considered to have “right-hand” connections. The same holds true for connections extending to the left. Coils with connections coming out of both ends are considered to have opposite end connections. Correctly identifying the “hand” of the coil will eliminate extensive field work that results if the coil is ordered incorrectly.

There are a large number of installations with high capacity hydronic coils. Count the number of fins per inch (FPI) of coil surface. Replacing the high capacity coils with standard capacity coils will cause complaints.

Figure 11. Type N Heat (Electric & Hydronic)



Integrated Unit Heat Sections

Integrated heat sections refer to units with electric resistance heat, not with hydronic heat. The electric resistance heater is concealed behind the evaporator coil. If replacement of the electric heater is required, an entire heating/cooling chassis must be supplied. The alternative is to repair the damaged electric heating element. This will require extensive unit disassembly.

Hydronic heater replacement is done as described for sectional unit heater replacement.

Figure 12. Suite Subbase Heat



Controls

Figure 13. Type K Short Control Box



Figure 14. Type K Long Control Box



Figure 15. Type C Control Box

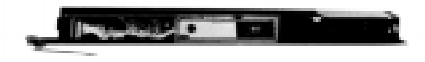


Figure 16. Type J Control Box

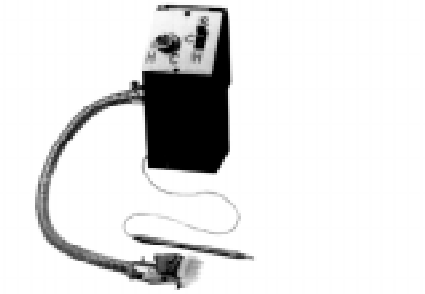
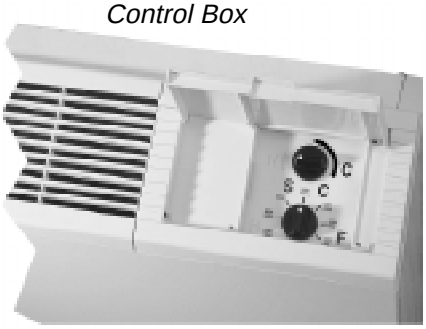


Figure 17. Typical Integrated Control Box



Control variations for McQuay Incremental conditioners are as numerous as the stars. Control modifications have enormous impact on unit operations. Exact replacements can be made only if complete information about the existing control is supplied.

The sectional equipment has a separate control box while the integrated units have an integral control. Frequently, wiring diagrams are attached to the control box which detail the control arrangement that was furnished. Wiring diagrams for the standard control were often drawn as part of the wiring diagram for the heat section. Locating the wiring diagram is important because the part number can be cross referenced at the factory. This provides a detailed description of the unit's control features and modifications. Knowing this information will allow the factory to duplicate the existing control. Table 5 on page 30 outlines the wiring diagram locations for all components of every Incremental unit.

Observe the control box and determine:

1. If a long control box or a short control box was employed. The long box measures 13" in length whereas the short control box measures only 5" in length.
2. If the control function is unit mounted or if it is controlled by a remote wall thermostat.
3. If there is a unit mounted disconnect or fused disconnect switch.

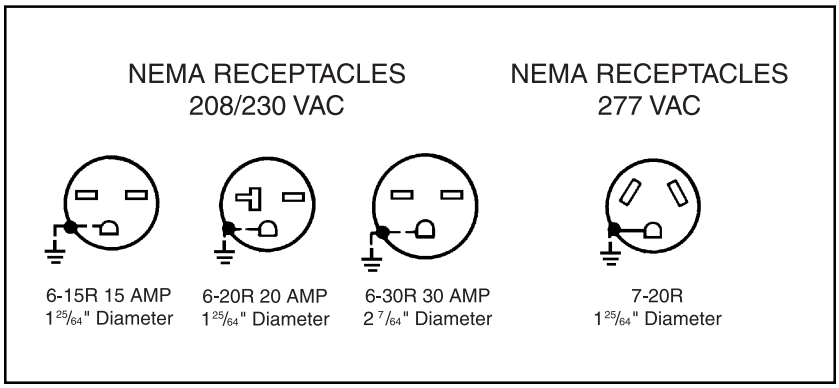
All of these options can be duplicated with a new control box. However, ordering a control box without these options may cause unit malfunction, unnecessary customer complaints, or possibly be in violation of local or national electric codes.

Voltage

Most of the McQuay Incremental equipment have discrete voltages. Always check the voltage of the unit that is being replaced. The voltage designation is always printed on the serial and data plate. If the unit is cord connected, voltage identification can be determined by observing the plug. See Figure 18 for proper identification of plug configurations. Applying an incorrect voltage to a unit may result in extensive damage to the unit or may cause severe bodily injury.

The voltage sensitive parts of the unit have tolerances that are designed to protect the equipment from irregularities in the power supply. The compressor and motors are designed to operate safely from 90% to 110% of the rated voltage. Operating outside of these ranges can cause damage to both the compressor and the motor. For units equipped with electric heaters, the amount of heat generated and the life expectancy of the element will be affected by changes in voltage.

Figure 18.



Wall Sleeves

Heavy-duty wall sleeves are employed for McQuay Incremental conditioners. The wall sleeves are constructed of heavy-gauge steel and then coated with a corrosion resistant finish. All wall sleeves are then oven baked to insure a lasting finish.

It is rare that a wall sleeve ever needs replacing because of corrosion deterioration. Under normal conditions, a wall sleeve will out last any other component of the unit. However, when wall sleeves are exposed to a corrosive atmosphere such as seacoast or pool side atmospheres, periodic and careful inspection is necessary.

If corrosion is present on a wall sleeve, it is usually minor surface rust. However, if this condition is left untreated, the rust will destroy the wall sleeve and necessitate removal. Removal of the surface rust and reapplication of paint will greatly extend the life of the wall sleeve.

Premature wall sleeve corrosion may be caused by an unusually hazardous atmosphere. Applications with wall sleeves in a corrosive environment require special treatment. A special powder paint process is used to coat our wall sleeves installed in this type of environment. When replacing a wall sleeve that is prematurely corroded, order a new sleeve that is specially treated for “seacoast” type environments. This coating can be supplied in a variety of colors to match the existing installation.

If replacement of the wall sleeve is required, be certain to pay close attention to details. Wall sleeves are available in a wide range of sizes and many wall sleeves were built with special dimensions to meet certain customer requirements. It is very important to take specific measurements of the sleeve in order to insure an exact replacement. These measurements should include:

1. Total depth of the wall sleeve.
2. Depth of the projection that extends into the wall (if any).
3. Height and width of the wall sleeve.

It is important to measure each individual wall sleeve that is to be replaced. It is common to have several different wall sleeve depths along the same wall due to variations within the wall or to accommodate piping and structural supports.

Wall sleeve variations are not as common with integrated equipment as with sectional units. Deeper than standard wall sleeves for integrated equipment is usually accomplished by adding a wall sleeve extension to the exterior side of the standard wall sleeve.

Wall Sleeve Extensions

Wall sleeve variations are not as common with integrated equipment as with sectional units. A deeper than standard wall sleeve for integrated equipment is usually accomplished by adding a wall sleeve extension to the exterior side of the standard wall sleeve. Wall sleeve extensions are primarily used when the wall depth exceeds the limits of the standard wall sleeve. These extensions are designed to match exactly the dimensions and mounting configurations of the wall sleeve. When these wall sleeve extensions are field fabricated, care must be taken to include splitters that prevent re-circulation of condenser air. Wall sleeve extensions must be made from noncorrosive materials or be treated with a corrosion resistant finish.

If wall sleeve extensions are present, they are often salvageable. If they are not salvageable, they must be replaced. Units that are installed with wall sleeve extensions will not function properly without them.

Sectional units rarely use wall sleeve extensions. With these units, it has been the practice to custom build the wall sleeve for a deeper than standard wall sleeve projection. However, wall sleeves that are deeper than standard often have special air splitters to prevent recirculating of condenser air. If new wall sleeves are installed with no consideration for these baffles, the unit will not operate properly. Choosing an incorrect wall sleeve depth can cause problems with chassis and/or room cabinet replacements.

Wall sleeve extensions are available for every McQuay Incremental unit from Reliable Metal Products in Alabama. Field fabricated extensions are also acceptable as long as they are noncorrosive and include all necessary splitters and baffles to prevent condenser air re-circulating.

Figure 19. Type K/KG/C Wall Sleeve

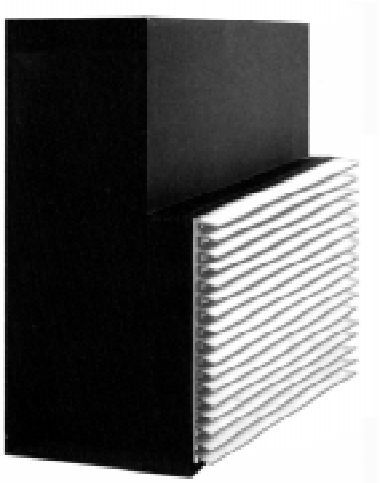


Figure 20. Type J Wall Sleeve

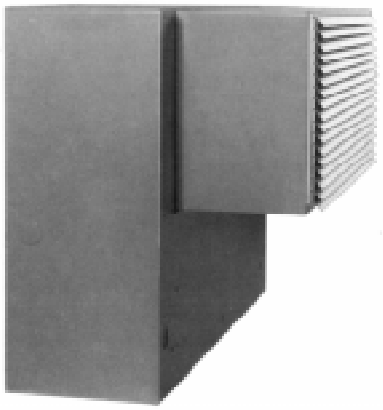


Figure 21. Type EA, NR, Suite, RS Wall Sleeve



Individual Unit Considerations

Due to the wide variety of McQuay Incremental conditioners a general overview cannot provide all the necessary information to select the correct replacement. The following section outlines replacement requirements for specific Incremental model types. The vast majority of these units have a current replacement available. If exact replacements are no longer offered, potential substitutes can be supplied that will circumvent building modifications. Replacements are offered for all units that display the label of Remington, American Standard, Singer, ClimateControl, and McQuay. There are many variations of units within these manufacturers. The following sections outline the specific requirements for unit or component replacement.

Sectional Units

Type K Series

The Type K Series conditioner is one of the oldest of the Incremental designs. The Type K units have been manufactured since 1958. During this time, many variations in design have been made. The most recent change has been an efficiency and features upgrade to take advantage of the latest technological advances. This change was made without any alteration to existing unit dimensions to provide "drop-in" replacement of old, inefficient Type K units.

When replacing a component of an existing unit, it is important to identify the unit type, size and vintage. This information can be found on the serial and data plate once the front panel or room cabinet is removed. This data plate should resemble the nomenclature shown below.

E K 11 L 5 M

UNIT TYPE
E = Electric; R = Heat Pump; * = Hydronic
2K or 2EK = Automatic Changeover Control
3K or 3EK = Manual Changeover Control
SK = Hydronic or ACO Control

PRODUCT LINE

UNIT SIZE
07 =6,500 Btuh Cooling
09 =9,000 Btuh Cooling
12 =11,700 Btuh Cooling
15 =14,100 Btuh Cooling
} "A" Thru "F" Vintage

Replace above with the following:
06=6,200 Btuh Cooling
09=8,000 Btuh Cooling
11=10,000 Btuh Cooling
14=13,400 Btuh Cooling
} "H" Vintage To Present

*No letter designation for hydronic. Hydronic heat unit is labeled "Type K."

HEATER
S = Small Electric Heater
M= Medium Electric Heater
L = Large Electric Heater
W= Hot Water Heat
G = Steam Heat

VOLTAGE CODE
3 = 230/60/1; 5 = 208/60/1; 7 = 265/60/1

VINTAGE DESIGNATION
A= 1958 To 1961
B= 1961 To 1963
D= 1963 To 1965
F= 1965 To 1976
H= 1976 To 1982
L = 1982 To 1993

The new model nomenclature below replaces the above listed nomenclature:

Cooling Chassis:

MEK 009 A 03

MCQUAY TYPE K SERIES
COOLING CHASSIS (NO HEAT PUMP AVAILABLE)

UNIT SIZE
007=7,000 Btuh Nominal
009=9,000 Btuh Nominal
012=12,000 Btuh Nominal
014=14,000 Btuh Nominal

VOLTAGE
11 = 115/60/1
03 = 208/60/1
01 = 230/60/1
47 = 265/60/1

DESIGN VINTAGE
1993 To Present

Heat Section:

MHK 007 A 03 34

MCQUAY TYPE K SERIES HEAT SECTION

UNIT SIZE
007 = Size 007
009 = Size 009
012 = Size 012
014 = Size 014

DESIGN VINTAGE
1993 To Present

HEATER SIZE TYPE
26 = Size 2.6 kw Electric Heat
34 = Size 3.4 kw Electric Heat
42 = Size 4.2 kw Electric Heat
HW= Hot Water Heat
ST = Steam water

VOLTAGE
11 = 115/60/1
03 = 208/60/1
01 = 230/60/1
47 = 265/60/1

The early versions have model numbers that resemble those shown in Table 1. When replacing a unit with a model like the ones shown in Table 1, be aware that the size designation has changed. Refer to the model nomenclature above to identify which size is the correct replacement. All unit sizes fit one size wall sleeve. It is possible that the original unit was oversized or undersized for the room where it operates. Before simply replacing the old unit, check with the building owner to determine if a larger or smaller capacity unit is desired. When using a larger cooling chassis, the heat section must be increased to deliver the proper amount of air.

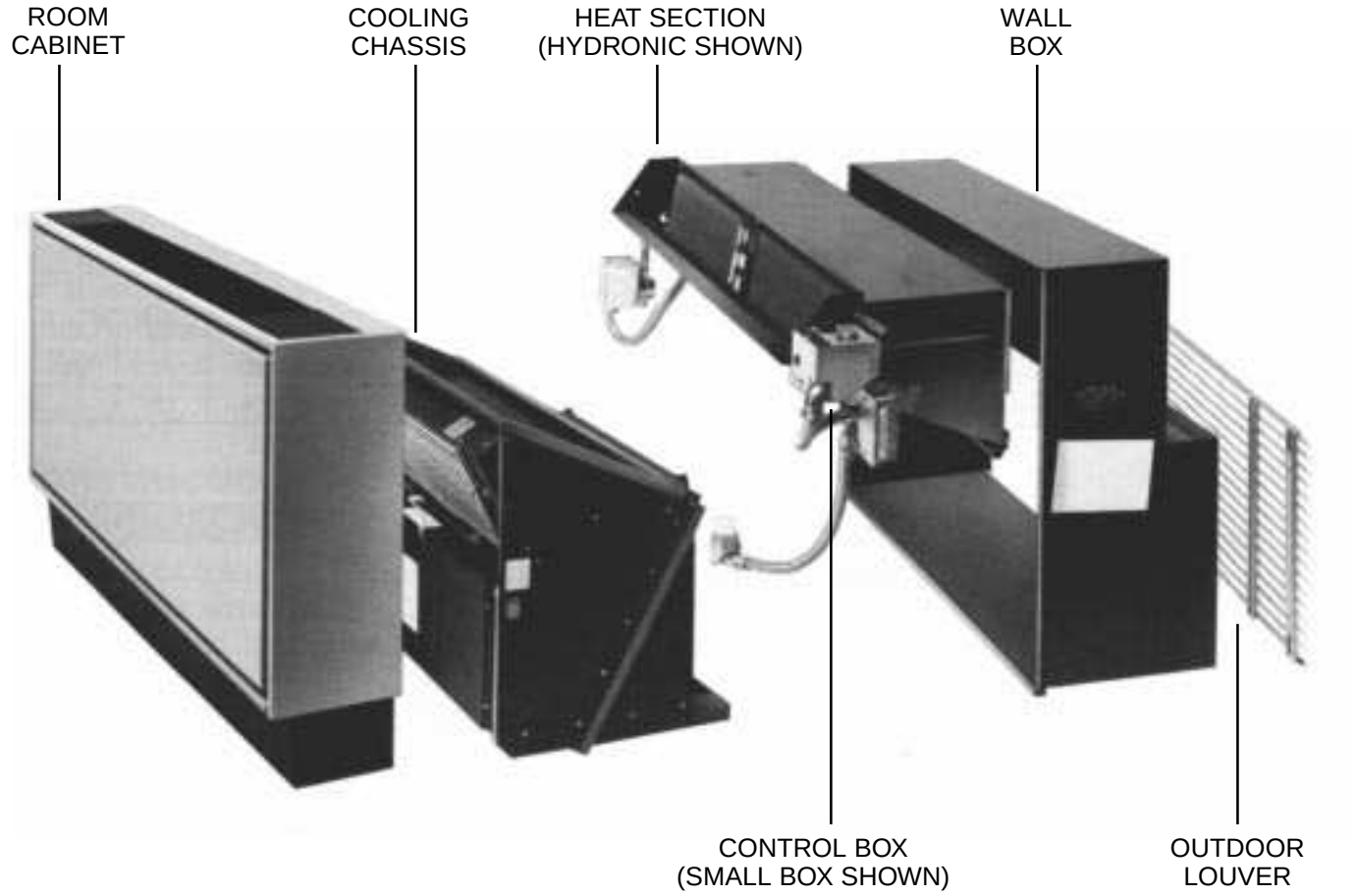
Figure 22 shows an exploded view of a current series Type K or EK unit. This illustration may vary slightly or it may vary greatly from the unit that is being replaced. The Type K Series unit has been altered several times since its inception to meet market requirements. To replace existing Type K Series units with a new model, it may be necessary to make several modifications. Some of these modifications can be done at the factory while others must be done in the field.

Table 1.

BASIC MODEL	STANDARD CHASSIS PART NUMBER			
	115V	208V	230V	277V
EK7F	—	52672	52671	86636
EK10F	19050	19052	19051	86630
EK12F	—	19054	19053	86631
EK15F	—	19057	19056	86632

The first step to replacing the equipment is to make a thorough visual inspection. Determine the condition of the room cabinet, cooling chassis, heat section, control box, wall sleeve and louver. If any of these components are damaged, they should be repaired or replaced. Electrical considerations are among the most critical to inspect. These include the electrical plug, the junction box, the mounting location of the junction box, and the voltage. Always check the existing voltage and amperage rating to be certain they match that of the new equipment.

Figure 22. Exploded View — Type K Series



Plugs

The electrical plugs employed by the older units vary greatly from the current series. In most cases, adapter plugs can be factory provided to match the existing unit's plug. However, the early designs may require a certain amount of field modification for use with a new chassis.

Determine the "vintage" or design series of the existing unit. (This can be done by matching the nomenclature on the serial and data plate with the example on page 10.) If the "vintage" or design series is A or B, then the unit has a round plug that requires field modification. The round plug must be cut off and a new square plug must be attached to match the connection of the new chassis. If the unit is a "D" vintage model, it will contain a square plug with the appearance of charcoal. If the existing unit has this plug type, pull the wires out of the "charcoal" plug and insert them into a new Molex plug which is available from Service Parts. This plug can then be matched to the adapter cord. Refer to Table 2 to determine which adapter plug to provide with the new replacement equipment. If the vintage has an "H" or an "L," or if it is MEK "A" vintage, the existing plug will match the replacement unit's plug and no adapter is needed.

Type K Series Adapter Cords

This information will enable you to obtain the correct adapter cord or cords that may be necessary when you order current production replacement K cooling chassis, controls, heating sections, etc., as replacement components in older equipment.

You will need to know the dimensions of the existing (field) Molex connector to which the adapter cord must mate. The model number, part number, or description of the existing equipment is of no value in identification because both halves of the Molex connector have been used in the past. The existing (field) Molex connector may be ***either*** of the connectors shown. Refer to Figure 23 and select the correct adapter cord part number from Table 2.

Figure 23. Molex Connectors

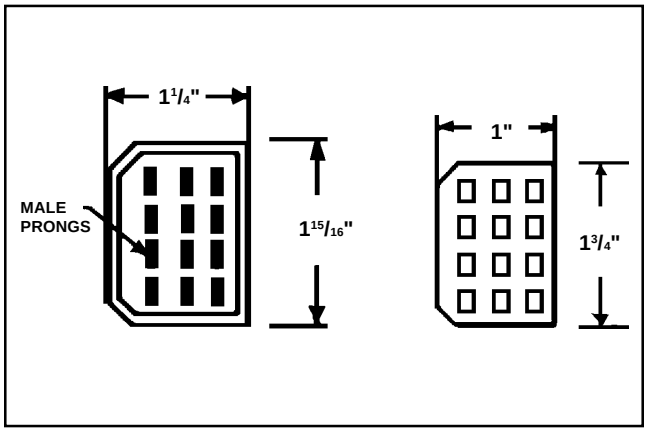


Table 2.

NEW REPLACEMENT COMPONENT	EXISTING MOLEX CONNECTOR TO WHICH ADAPTER CORD MUST MATE IN THE FIELD	ADAPTER CORD PART NUMBER
MHK HEATING SECTION (FOR LONG CONTROL BOX)	1" x 1 3/4"	0029007732
	1 1/4" x 1 15/16"	0029007714
MHK HYDRONIC HEAT SECTION (FOR SMALL CONTROL BOX)	1" x 1 3/4"	0029007733
	1 1/4" x 1 15/16"	0029007713
MHK OR RKL LONG CONTROL BOX (HEATING SECTION CONNECTION)	1" x 1 3/4"	0029007712
	1 1/4" x 1 15/16"	0029007734
MHK LONG CONTROL BOX (COOLING CHASSIS CONNECTION)	1" x 1 3/4"	0029007733
	1 1/4" x 1 15/16"	0029007713
MHK COOLING CHASSIS	1" x 1 3/4"	0029007731
	1 1/4" x 1 15/16"	0029007727

Note: No adapter cords are required when replacing a Type K "L" vintage with a new MEK or MHK component.

Electrical Junction Box

Take a position facing the unit from the indoor side. Observe the position of the control box. Current series units have the control box mounted on the right-hand side and the power supply located on the left-hand side. Many of the older units have the junction box for incoming power mounted on the right-hand side. If this is the case, field modification will be necessary. If the heat section is not being replaced, a cord must be extended from the existing location to the new power supply connection. (Similar to Figure 30 on page 14.)

The last thing to observe, with regard to electrical connections, is the length of the control box. Refer to Figures 13 and 14 on page 8. There are a large number of units installed that have long control boxes like that shown in Figure 14 on page 8. Occasionally, these long control boxes were hardwired to the power supply. If this is the case, disconnect the power source from the existing long control box and connect it to the new control box, if one is being furnished. If the existing long control box is ***not*** permanently located to the power source, then it is a current version and may only need an adapter cord.

Caution: *When making any changes to the electrical connections, make certain that they comply with all local and national electric codes. Check the voltage and amperage ratings to be assured they match that of the new equipment being furnished.*

Heat Sections

Electric Heat Sections — The physical dimensions of the heat section have not changed over the years. However, the location of the electrical connections varied widely. Many electric heat sections were supplied with the power source and the control box permanently connected to the right side. Replacing the heat section with this arrangement requires that a new control box be used. Current series electric heat sections have the power supply on the left-hand side with the control box connected to the right side. If the section being replaced has the power supply on the right, then a new junction box will need to be mounted and a flexible cord must be added to connect at the left side of the new section. (Similar to Figure 30D, page 14.)

Hydronic Heat Section — Observe the section and decide if the heating medium is steam or hot water. A correct determination is necessary to insure the proper valve is furnished. It is also important to note which side of the coil the connections are located. The power supply for the current hydronic series unit is located on the right-hand side. If the existing heat section's power supply differs from this, some field work will be necessary. The field work will be similar to that outlined for the electric heat sections. Make sure correct adjustable seal bracket is used to prevent internal recirculation of conditioned air.

Room Cabinets

The room cabinet is often a component that receives the most attention. To keep up with the changing architectural trends, the Type K Series room cabinets underwent cosmetic changes in the early 1970s. The change was from a sloped top style to a flat top style with a 1" black reveal around the perimeter of the front panel. While this change provides a very attractive appearance, the black reveal may cause some problems when replacing the cabinet on very old units.

The new flat top room cabinet can easily retrofit the sloped top styles. The 1" black reveal is recessed into the cabinet approximately 1". This presents a potential problem for units with old style cabinets that have hydronic heat with right-hand connections or opposite end connections. For units with this configuration, whether the original cabinet is sloped or flat, it is necessary to add 1" to the overall depth of the replacement room cabinet to accommodate the new black reveal. All other unit configurations can utilize the new room cabinet with no additional depth. Install the new cabinet according to the instructions of the installation and maintenance bulletin for the Type K Series units. Order new adjustable seal brackets from Service Parts department.

Figure 24. Cooling Chassis

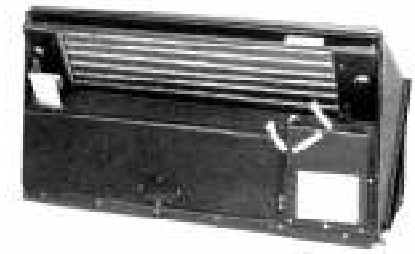


Figure 25. Electric Heat Section



Figure 26. Hydronic Heat Section



Figure 27. Controls



Figure 28. Wall Box



Figure 29. Room Cabinet

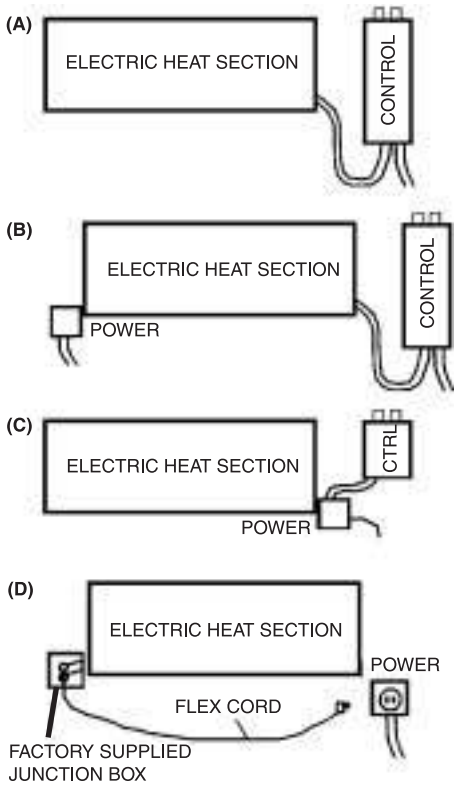


Electrical Connections

Connection of the new equipment to the existing power supply may require some minor field modifications. Figure 30 illustrates several configurations that may be encountered with an existing installation. Listed below is a quick reference table that explains the required changes for most retrofit situations.

If the Existing Installation Has:	Then the New Installation Needs:
• Long control box • Right-hand power supply (refer to Figure 30A)	• Use existing heat section • Use existing control box • Molex adapter to the new cooling chassis • Hardwire power supply into new control
• Long control box • Left-hand power supply (refer to Figure 30B)	• Use existing heat section • Use existing control box • Molex adapter to new cooling chassis • Reconnect left-hand power supply to new junction box
• Electric heat section • Small control box • Right-hand power supply (refer to Figures 30C and 30D)	• Use existing heat section • Use existing control box • Molex adapter to new cooling chassis • Flexible cord and plug
• Electric heat section • Long control box • Right-hand power supply (refer to Figures 30C and 30D)	• Use existing heat section • Use existing control box • Molex adapter to new cooling chassis • Flexible cord and plug
• RK cooling chassis • RK long control box • Electric heat section	• New cooling chassis • Existing control with field wiring modifications or new control box. Consult factory for field modifications required to existing control. • Existing heat section

Figure 30.



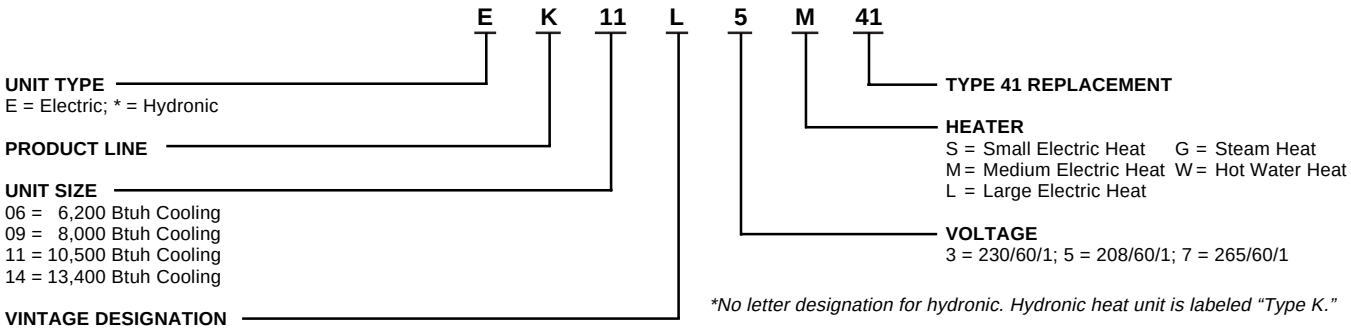
Type K/EK 41 Replacements

The Type MEK units are replacements for the American Standard Type 41 units.

Locate the existing serial/data plate and compare it to the nomenclature shown at right to select the correct size replacement.

Existing Unit	Replace With
TW 90	MEK009A**AS
TW 110	MEK012A**AS
TW 150	MEK014A**AS

If the existing unit has nomenclature like that shown below, replace it with the MEK unit as described on page 10.



**No letter designation for hydronic. Hydronic heat unit is labeled "Type K."*

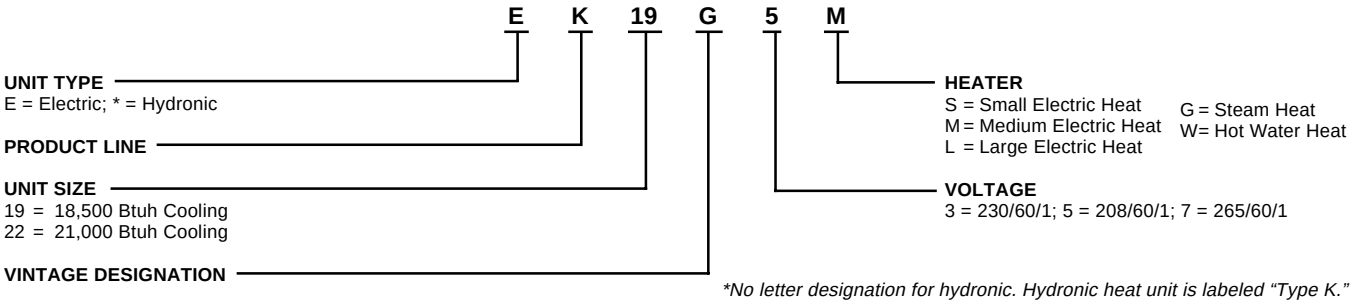
To replace an American Standard Type 41 unit, there is a certain amount of field modification required. The existing American Standard Type 41 unit has a seal along the bottom of the cooling chassis that is replaced with a kit for field installation. The new MEK 41 chassis, which has no such seal, will then seal tightly against the field installed seal. Inspect the existing wall sleeve and louver for rust or damage. These parts must be repaired if damaged because replacement parts are not available.

When replacing the American Standard Type 41 unit, all components except the wall sleeve and louver must be replaced. These include the heat section, cool chassis, control box, room cabinet and adapter kit. It is not possible to replace one or two components and leave the rest of the unit intact. If the existing unit is hydronic check the "hand" of the coil. If the coil has a left-hand supply and a left-hand return, it will match the new replacement unit. If the existing unit has any piping on the right-hand side, it will require some field modification, It is possible on large jobs for the replacement unit to be specially modified to accommodate piping on the right-hand side. Contact Applications Engineering for assistance with this operation.

Specific installation instructions are beyond the scope of this document. An installation bulletin is available to help retrofit the old American Standard Type 41 with a new McQuay MEK Type 41 replacement.

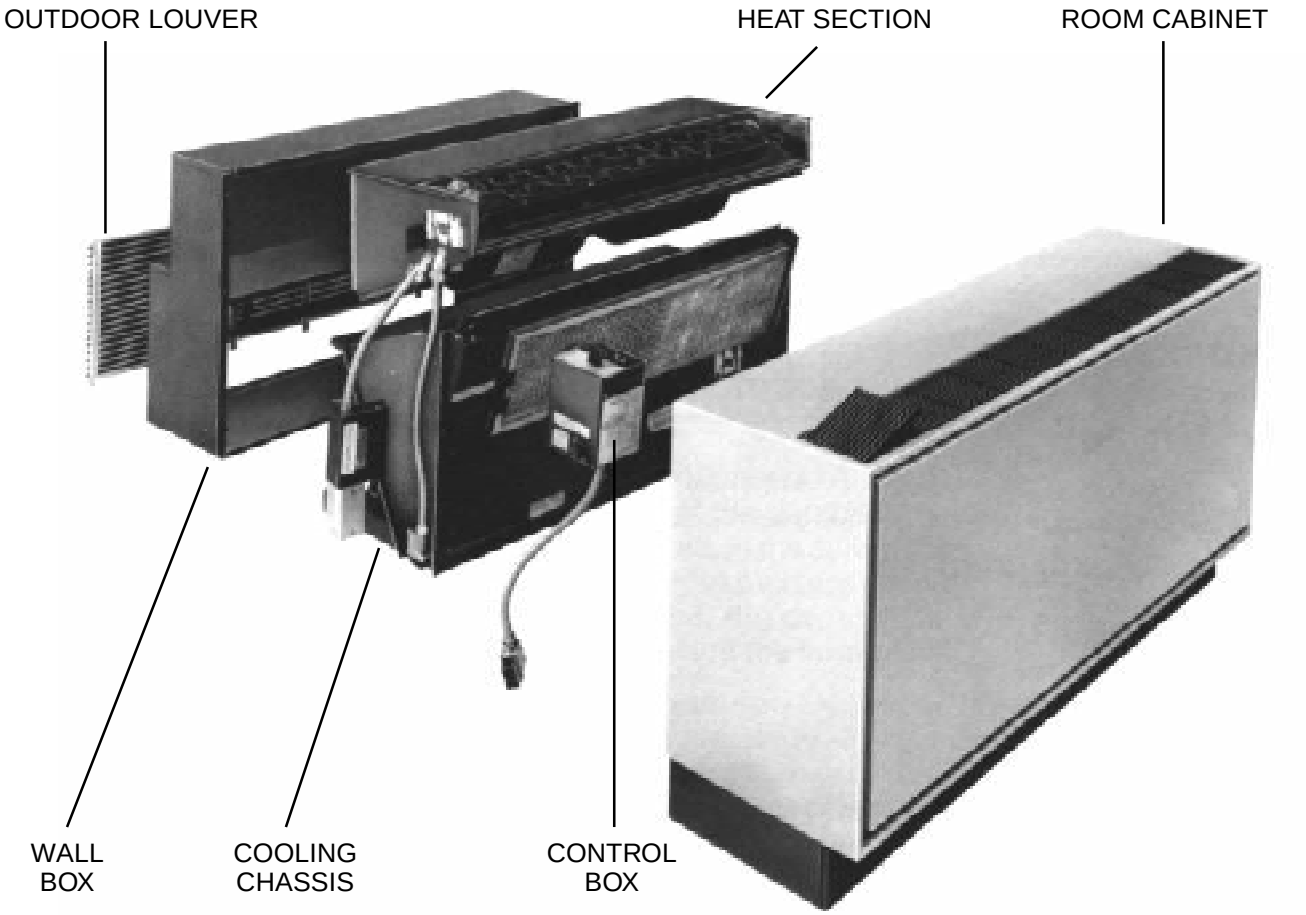
Type KG/EKG

The KG Series units are a large variation of the Type K Series units. These units fulfilled requirements for 16,000 to 22,000 Btuh cooling. The Type KG Series units have had only minor changes over the years and the current equipment will fit the old installation without any modifications. Locate the serial/data plate on the unit and compare it with the nomenclature shown below:



**No letter designation for hydronic. Hydronic heat unit is labeled "Type K."*

Figure 31. Exploded View — Type KG/EKG



If the existing unit is a K19G or K22G, an exact replacement is available today. If the existing unit is a K16G, use a K19G or K22G in its place. The size 16 unit is no longer in production. However, the size 19 or size 22 cooling chassis fits the size 16 opening. The heat section, control and room cabinet are universal for all size Series KG units, If these components are also in need of replacement, a current component is available.

Controls

There were many control configurations developed for the Series KG units. Every unit has an 8-digit part number printed on the unit's wiring diagram. There are usually three wiring diagrams on each unit. The chassis wire diagram is attached to the lower right-hand front surface of the chassis. The wiring diagram for the heat section is attached to the blower housing and is also visible once the cooling chassis is removed. The wiring diagram for the control is enclosed in an envelope and sent with the box that contained the control. This diagram is a composite drawing and can probably be found with the maintenance engineer. Send the 8-digit part number to Applications Engineering for an exact match of the existing control. If it is missing, contact the Applications Engineering group for assistance.

Type J/EJ Series

The Type J Series units were developed for a very narrow and specific application. The through-the-wall opening was designed for the top of the unit. This was done to accommodate piping or structural supports that ran through the bottom of the wall. The Type J Series units are also considered the quietest in the product line because of the natural attenuation that occurs within the unit. Many jobs contain Type J units for this reason.

Nomenclature for the Type J Series units is shown below:

M E J 11 C 5 M

NEW HI-EFFICIENCY CHASSIS

UNIT TYPE
E = Electric; * = Hydronic

PRODUCT LINE

UNIT SIZE
07 = 6,500 Btuh Cooling
10 = 8,800 Btuh Cooling
12 = 11,000 Btuh Cooling
} "A" & "B" Vintage

Replace above with the following:
06 = 6,000 Btuh Cooling
09 = 7,900 Btuh Cooling
11 = 10,000 Btuh Cooling
} "C" Vintage

007 = 7,000 Btuh Cooling
009 = 9,000 Btuh Cooling
012 = 12,000 Btuh Cooling
} MEJ "A" Vintage

*No letter designation for hydronic. Hydronic heat unit is labeled "Type J" for models prior to the introduction of the new high efficiency "MEJ" series in 1993.

VOLTAGE DESIGNATION
A = 1960 to 1965
B = 1965 to 1976
C = 1976 to 1993
MEJ A = 1993 to Present

VOLTAGE

3 = 230/60/1	01 = 230/60/1
5 = 208/60/1	03 = 208/60/1
7 = 265/60/1	47 = 265/60/1
4 = 230/50/1	

HEATER

S = Small Electric Heat	G = Steam Heat
M = Medium Electric Heat	W = Hot Water Heat

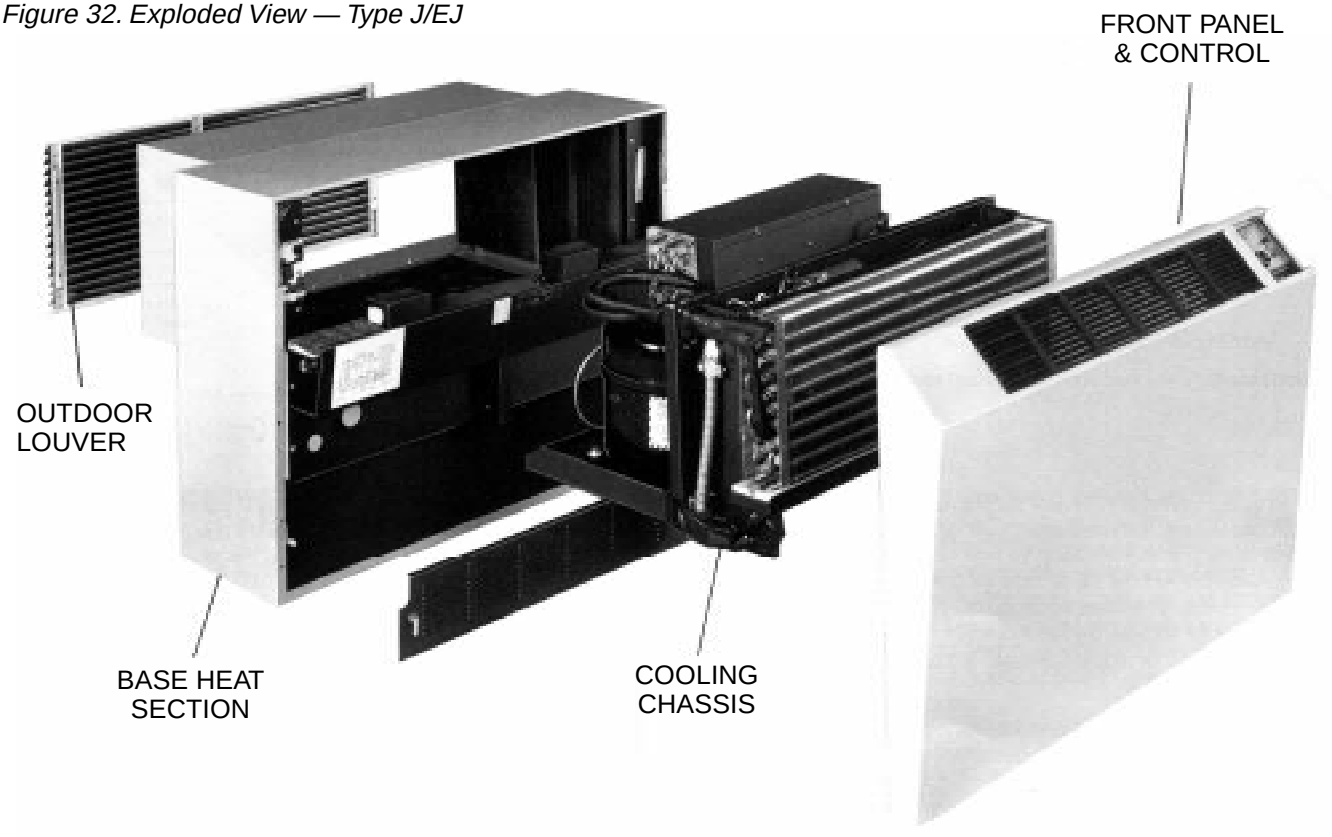
Chassis

The Type J chassis has gone through several changes since the first model was developed. The first significant change occurred in 1976 when the capacity was reduced and the efficiency improved. This resulted in a "unit size" designation change as shown above. The most recent change occurred in 1993 with another significant improvement in efficiency. Due to new technological advances, both capacity and efficiencies were improved with the MEJ variation. With both of these changes, the physical dimension has remained unchanged to allow continued replacement of older, outdated Type J installations.

The only additional component needed to convert an "A" or "B" vintage chassis to the new MEJ is an adapter cord. To convert from a "C" vintage Type J to the new MEJ, no adapter cord is required. Refer to Table 3 on page 17 for selection of the new adapter cord.

There is no heat pump capability with the Type J Series units. This feature has never been incorporated into the Type J Series product line.

Figure 32. Exploded View — Type J/EJ



Control

The front panel of the Type J Series units has the control as an integral part of the assembly. To replace the control requires replacement of the front panel and vice versa. If possible, replacement of the front panel should be avoided due to the paint color change. Any unit built prior to August, 1990, was painted Mist Gray. All units built after September, 1990, are painted Antique Ivory. Replacing the front panel requires overspraying the base heat section with Antique Ivory or painting the new front panel with Mist Gray paint so that the two components match. Replacing the control also requires an adapter cord to match the existing heat section.

Base Heat Section

The Type J Series base heat section also serves the function of the wall sleeve. If the base heat section needs to be replaced, the entire wall sleeve and base heat section must be removed from the wall. If the base heater is removed to be replaced by a new section, be sure to measure the depth of the rear extension that extends through the wall. If the dimension exceeds $9^{1}/_{4}$", a special rear extension must be purchased. The base heat section can be built with up to an 18" rear extension for large jobs. Rear extensions can also be purchased from Reliable Metal Products in 1" increments or can be field fabricated. If the extension is field fabricated, be sure to use a corrosion resistant material or coat with corrosion resistant paint. Baffles will be necessary to prevent condenser air recirculation.

If the base heater is replaced, but the existing cool chassis and front panel/control are utilized, then two adapter cords are required to match up to the existing components. Refer to Table 3 below for selection of the correct adapter cord. Additionally, the existing front will need to be oversprayed with Antique Ivory paint to match the color the new base heat section.

The base heaters for size 6 and size 9 hydronic units are identical for all units sizes within a given voltage, heater and valve size. Any size 6 or size 9 cooling chassis can be used with these heat sections. However, an electric heat section that is designed for 208V may overheat when operating at 230V. Make sure the replacement electrical heater matches that of the original equipment. If a larger electric heater is desired, make certain the building's existing wiring can handle the additional power requirement. Because the size 6 or size 9 base heaters are the same for any given voltage, heater element size, or valve type; a larger cooling chassis can be placed in the base heat section. This is advantageous when the owner has a size 6 and wants the additional cooling of a size 9 but doesn't want or need to change the existing base heater.

Type J Series Adapter Cords

This information will enable you to obtain the correct adapter cord or cords that may be necessary when you order current production replacement Type J Series cooling chassis, controls, heating sections, etc., to replace these components in older equipment.

You will need to know the dimensions of the existing (field) Molex connector to which the adapter cord must mate. The model number, part number, or description of the existing equipment is of no value in identification because both halves of the Molex connector have been used in the past. The existing (field) Molex connector may be ***either*** of the connectors shown. Select the correct adapter cord part number from Table 3.

Table 3.

NEW REPLACEMENT COMPONENT	EXISTING MOLEX CONNECTOR TO WHICH ADAPTER CORD CORD MUST MATE IN THE FIELD	ADAPTER CORD PART NUMBER
EJC BASE HEATER (BOTH CONNECTIONS)	1" x $1^{3}/_{4}$"	0029007731
	$1^{1}/_{4}$" x $1^{15}/_{16}$"	0029007727
EJC CABINET FRONT WITH CONTROLS	1" x $1^{3}/_{4}$"	0029007733
	$1^{1}/_{4}$" x $1^{15}/_{16}$"	0029007713
JC COOLING CHASSIS	1" x $1^{3}/_{4}$"	0029007733
	$1^{1}/_{4}$" x $1^{15}/_{16}$"	0029007713
MEJ COOLING CHASSIS*	1" x $1^{3}/_{4}$"	0029007731
	$1^{1}/_{4}$" x $1^{15}/_{16}$"	0029007713

* If replacing "C" vintage chassis with new MEJ, no Molex adapter is required.

Figure 33. Cooling Chassis

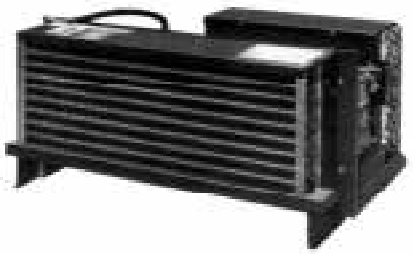


Figure 34. Controls



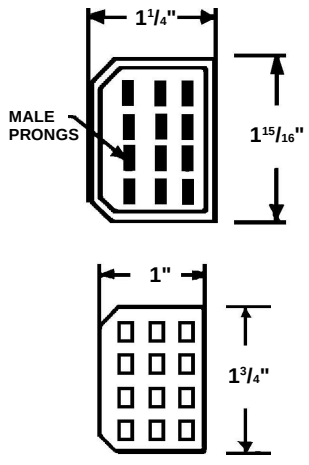
Figure 35. Base Heat Section



Figure 36. Front Panel



Figure 37. Molex Connectors



Type C Series

The Type C Series units were primarily designed for the school market. These large capacity units range from 21,000 Btuh to 27,000 Btuh cooling. The larger capacity enables the unit to cool and heat large spaces like classrooms and conference rooms. The Type C Series units are built tough to handle the abuse from children. Heavy-gauge steel and tamper proof construction are synonymous with the Type C Series units.

The Type C Series units were first installed in the early 1960's. The early units had wider wall boxes than the current vintage units. These wider wall boxes measured about 64 1/2" in width whereas the current unit wall boxes measure only 54 1/2". To help identify the existing units, refer to the nomenclature below:

E C 25 C 5 M

UNIT TYPE
E = Electric;
* = Hydronic

PRODUCT FAMILY

UNIT SIZE
25 = 21,000 Btuh Cooling
30 = 27,100 Btuh Cooling

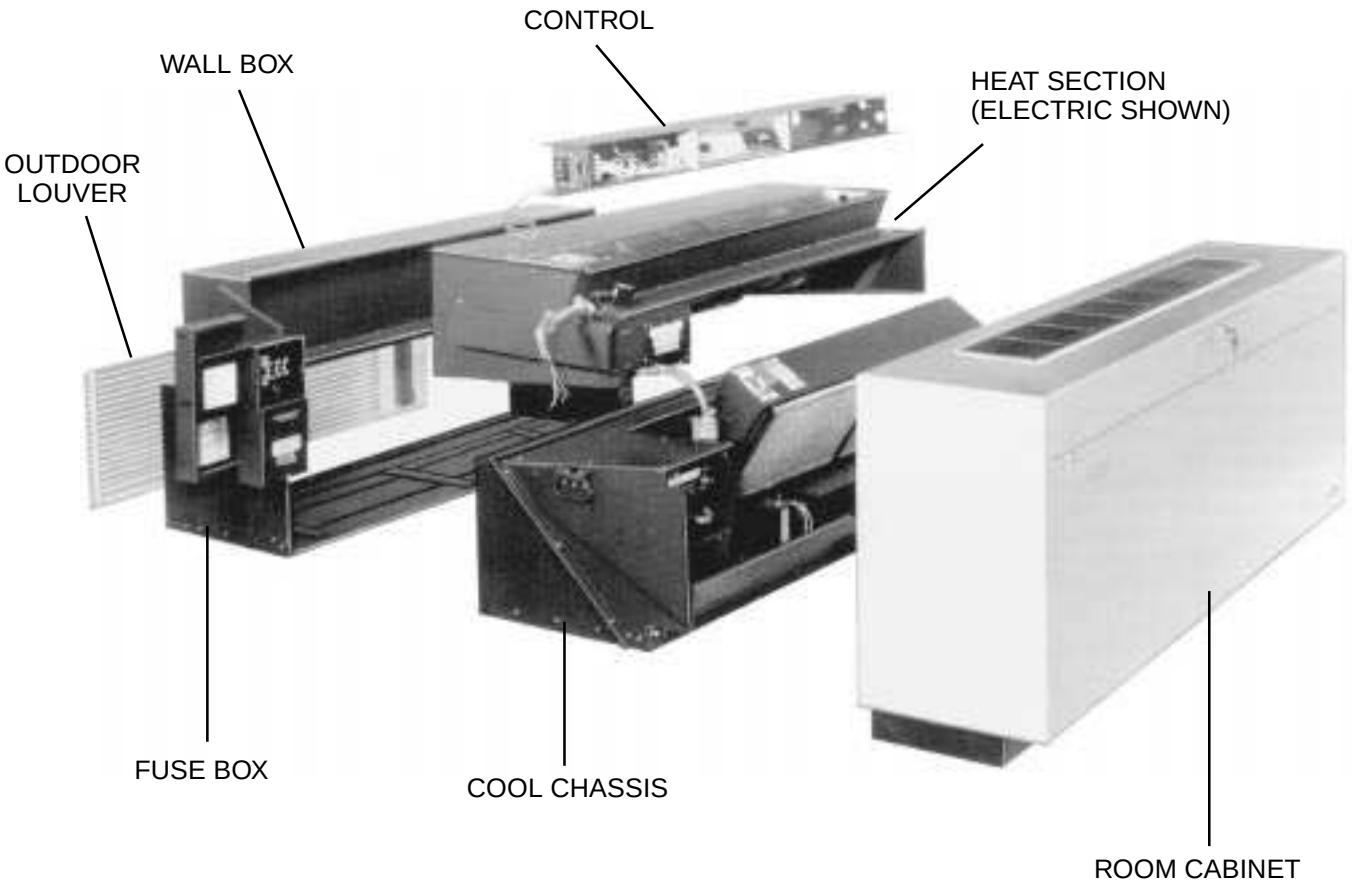
VINTAGE DESIGNATION
A = 1962 to 1966
B = 1966 to 1967
C = 1967 to Present

HEATER
S = Small Electric Heater
M = Medium Electric Heater
L = Large Electric Heater
W = Hot Water
G = Steam

VOLTAGE CODE
3 = 230/60/1
5 = 208/60/1
7 = 265/60/1

**No letter designation for hydronic. Hydronic heat unit is labeled "Type C."*

Figure 38. Exploded View — Type C



The greatest change in the Type C Series units occurred between the “B” and “C” vintage designs. The “C” vintage wall boxes are the same height but are 10” narrower than their predecessors. In addition to the dimensional change, the cabinet appearance changed as well. The early versions, “A” and “B” vintage, had the control access door on the top of the cabinet. The current “C” vintage design has the control access door in the front of the room cabinet.

Since 1967 there have been no changes to the Type C Series units. If the nameplate nomenclature indicates “C” vintage, it is the current design. Locate the access door. If it is in the front, it is the current design. A top location indicates an older design.

Chassis

It is still possible to retrofit an “A” or “B” vintage Type C Series unit with a current production chassis. Due to the smaller dimension of the new chassis, an adapter kit is required that centers the new chassis in the old opening to seal off the air gap. Contact Minneapolis Applications Engineering for part number and details of this kit. Additionally, the existing control needs to be re-wired to adapt to the new chassis.

The Type C Series unit was never, and is not now, available with a heat pump chassis. There is no retrofit capability to put a heat pump chassis into an existing or new installation.

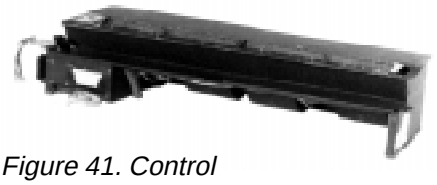
Figure 39. Chassis



Heat Section

The “A” and “B” vintage Type C Series unit has no replacement heat section. However, there are still service parts available to repair this old section. If the existing heat section is to be repaired, and a new cooling chassis installed, the existing control wiring must be modified to make it function with the new cool chassis.

Figure 40. Heat Section



Control

The “A” and “B” vintage Type C Series unit had a pushbutton control mounted on top of the unit. Access was through a door on top of the room cabinet. The current design unit has the access door in the front of the cabinet and is not compatible with the “A” or “B” vintage unit. If the control is still functional, it can be used in conjunction with the new chassis. This retrofit requires modifications to the control wiring. Wiring diagrams can be obtained from the Applications Engineering Department in Minneapolis, Minnesota.

Figure 41. Control



Room Cabinet

The Type C Series room cabinet has also changed from the early “A” and “B” vintage model. A new cabinet is not compatible with an old unit. If the old unit is being salvaged, the old cabinet must also be salvaged.

The room cabinet is constructed from 16-gauge steel as standard. There is a good possibility that the room cabinet is still in good shape. It may need minor “touch-up” to the paint or a few dents popped out but the basic cabinet is probably in good shape. However, if the existing unit is a “C” vintage design, it can be replaced with a new room cabinet from the factory.

Figure 42. Room Cabinet



Integrated Units

Type EA

The Type EA Series units were designed during a period of philosophical rethinking in our nation's building construction industry. At that time, there was a move towards faster installation time and greater operating efficiency. The Type EA's cartridge style design and increased unit efficiency was a response to those changing market demands.

It is very important to correctly identify the "vintage" or design series of the EA unit being replaced. Refer to the nomenclature shown below when identifying the unit being replaced:

EA 11 A 5 C

UNIT TYPE
EA = One-Motor Unit
2EA = Two-Motor Unit

UNIT SIZE
07 = 7,000 Btuh Cooling
10 = 9,130 Btuh Cooling
12 = 11,900 Btuh Cooling
15 = 14,200 Btuh Cooling
*18 = 16,200 Btuh Cooling
} "A", "B" & "C" Vintage

Replace Above With the Following:
06 = 6,200 Btuh Cooling
09 = 7,900 Btuh Cooling
11 = 10,300 Btuh Cooling
14 = 14,000 Btuh Cooling
} "F" Vintage

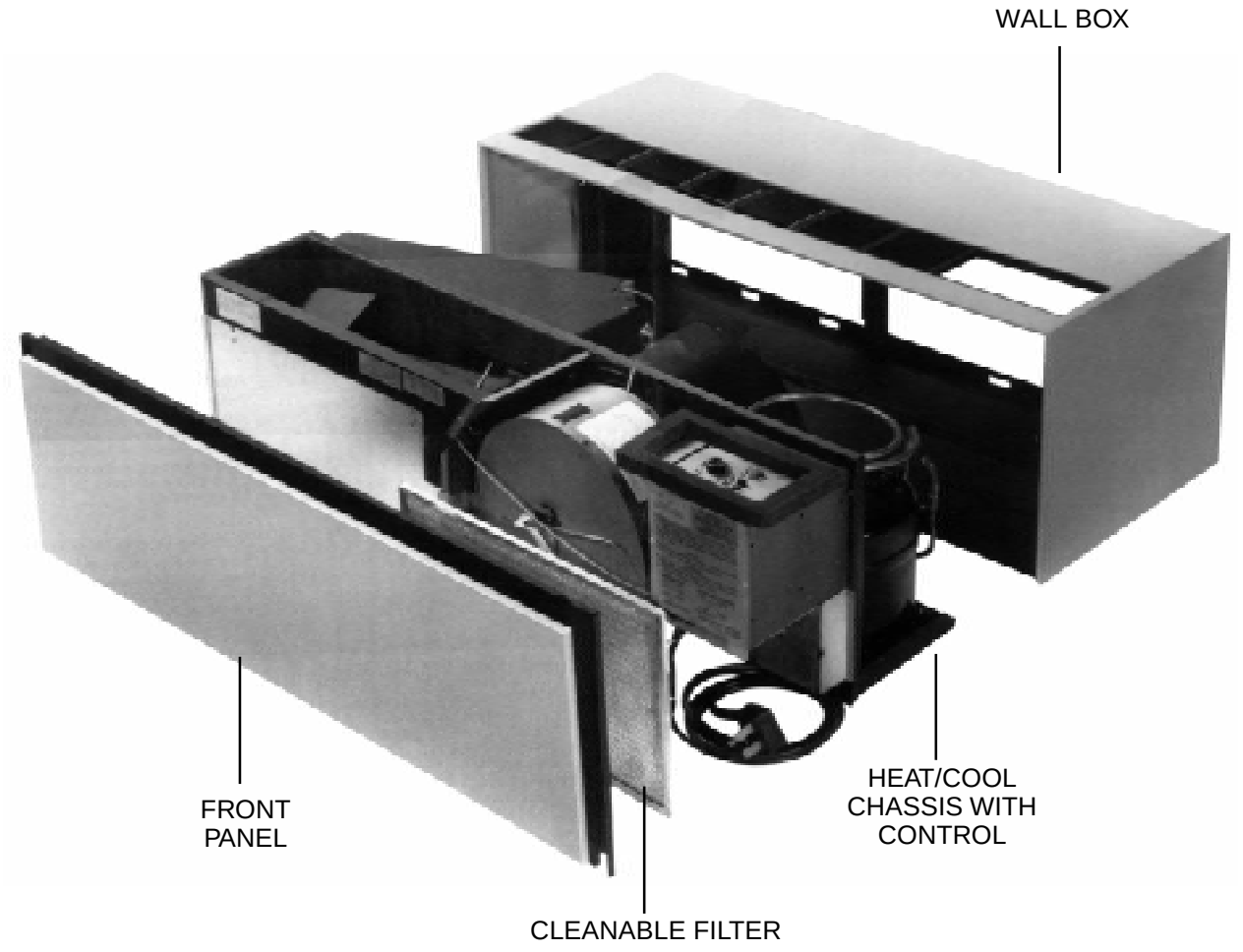
*No longer a standard offering.

HEATER
A = 2.1 kw (Nominal) Electric Heat
B = 3.1 kw (Nominal) Electric Heat
C = 4.1 kw (Nominal) Electric Heat
D = 5.0 kw (Nominal) Electric Heat
W = Hot Water Heat
G = Steam Heat

VOLTAGE CODE
3 = 230/60/1
5 = 208/60/1
7 = 265/60/1

VINTAGE DESIGNATION
A = 1968 To 1970
B = 1970 To 1975
C = 1975 To 1980
F = 1980 To Present

Figure 43. Exploded View — Type EA



The original design of the Type EA Series conditioners was designated with the letter “A” in the fifth position. If the unit in need of replacement is an “A” vintage, there is no current replacement. The wall sleeve for this unit was 15 3/4" high and 45 1/8" wide with a depth that was sized for the wall thickness. This unit also had a separable room cabinet that was also sized to match the wall thickness. If the existing unit is not repairable, a Type K wall sleeve may be inserted into the existing wall sleeve to accept a Type K Series replacement unit. A good deal of field modification will be necessary since the Type K Series units have a slightly smaller dimension. If the Type K Series unit is chosen, the space around the new wall sleeve will need to be filled. Use expandable foam, fiberglass or other suitable material.

If the building facade can be altered, the old wall sleeve should be removed and the opening height increased to accept a current Type EA Series replacement.

Type EA History

The Type EA Series unit was the king of the packaged terminal industry for years. There are literally thousands of these units installed around the country. A large majority of EA units were installed in the early 1970’s and are now near or exceeding their life expectancies.

The Type EA Series unit has undergone many design changes over the years. It is very important to identify the unit’s nameplate to determine its vintage. If the unit has a “B”, “C” or “F” in the fifth position of the model number, it can be replaced with a current production chassis. The new production chassis will slide into the existing wall sleeve without any modifications to the wall, wall sleeve, or chassis. Many of the changes to this product line were made to increase efficiency.

The nomenclature and capacity changed between the “B” vintage and “C” vintage units. There were five sizes for the “B” vintage units as follows:

Size 07 — 7,300 Btuh Cooling
Size 10 — 9,300 Btuh Cooling
Size 12 — 11,900 Btuh Cooling
Size 15 — 14,200 Btuh Cooling
*Size 18 — 16,200 Btuh Cooling

**Size 18 is no longer available.*

This nomenclature again changed with the introduction of the Type EA “C” vintage Series units. This change reduced the capacity but increased the EER to conform to the energy standards at that time. The nomenclature for the “C” and “F” vintage units is as follows:

Size 06 — 6,200 Btuh Cooling
Size 09 — 7,900 Btuh Cooling
Size 11 — 10,300 Btuh Cooling
Size 14 — 14,000 Btuh Cooling

Before replacing a “B” vintage unit, evaluate the capacity requirements of the room. If the unit was originally oversized for the room, choose the next smaller sized unit. If the unit was originally undersized, choose the next larger unit.

Type EA Series Motors

The “B” vintage Type EA was built as a two motor unit and as a one motor unit. The unit nomenclature can be used to determine which one is installed. If the model number has a prefix of 2 (i.e., 2EA...), the unit has a separate indoor motor and a separate outdoor motor. If the unit has no prefix, then it is a one motor design.

The current Type EA Series unit is a one motor design. It will slide into the existing wall sleeve without modification, whether or not the existing unit is a one motor or a two motor design. If two motors are required, a Type S Series unit can be placed in the Type EA wall sleeve with the use of an adapter kit. Refer to IM Bulletin 372 for adapter kit details. The additional cost for this retrofit can be justified by the weather conditions in the area. Two motor units are desirable when the climate is very cold. With a two motor unit, during wintertime heating, the outdoor motor is not energized. This feature also reduces the chance of the outdoor fan getting plugged with snow and ice and becoming locked in place. Check other Type EA jobs in the area to see if others have experienced problems during wintertime heating. If snow, ice storms or extreme cold are not a problem, replace the 2EA unit with a new single motor design.

Unit Cord and Plug

The electric receptacle for the Type EA is sized for the maximum amp draw of that unit. If the unit has a subbase, it will have the receptacle mounted in that subbase. Make certain the replacement chassis heater is sized for the receptacle that is in the subbase. Selecting the wrong heater size will require changing the receptacle in the subbase. If a larger heater is desired, check the building’s wiring to insure it can handle the additional load.

Figure 44. Chassis

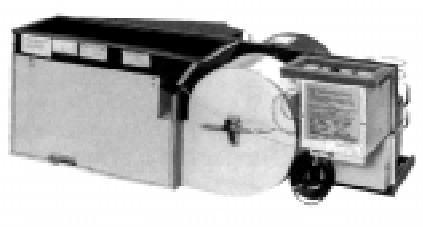


Figure 45. Wall Sleeve



Figure 46. Front Panel



Type S Series

In the late 1970's, we introduced the first packaged terminal heat pump to the industry. This unit was called the Type RS. The Type RS is also a drop-in replacement for old Type EA series units. To accomplish this change, an adapter kit is available to retrofit the old Type EA wall sleeve with a new Type RS heat pump. The retrofit kit requires minimal effort and time but changes the unit into an efficient air-to-air heat pump. Refer to page 23 for Type EA to RS conversion.

The Type S Series unit was designed in the late 1970s and was introduced in response to the nation's quest to reduce our dependence on foreign energy. It was designed for new installations or to replace the Type EA unit.

Review the nomenclature below to identify the type of installation.

E S 09 B 5 A

UNIT TYPE
R = Heat Pump
E = Electric
* = Hydronic

PRODUCT LINE

UNIT SIZE
07 = 7,000 Btuh Cooling
10 = 9,100 Btuh Cooling
12 = 11,890 Btuh Cooling
15 = 14,200 Btuh Cooling
} "A" Vintage

Replace Above With the Following:
06 = 6,200 Btuh Cooling
09 = 8,200 Btuh Cooling
11 = 11,000 Btuh Cooling
14 = 13,800 Btuh Cooling
} "B" Vintage

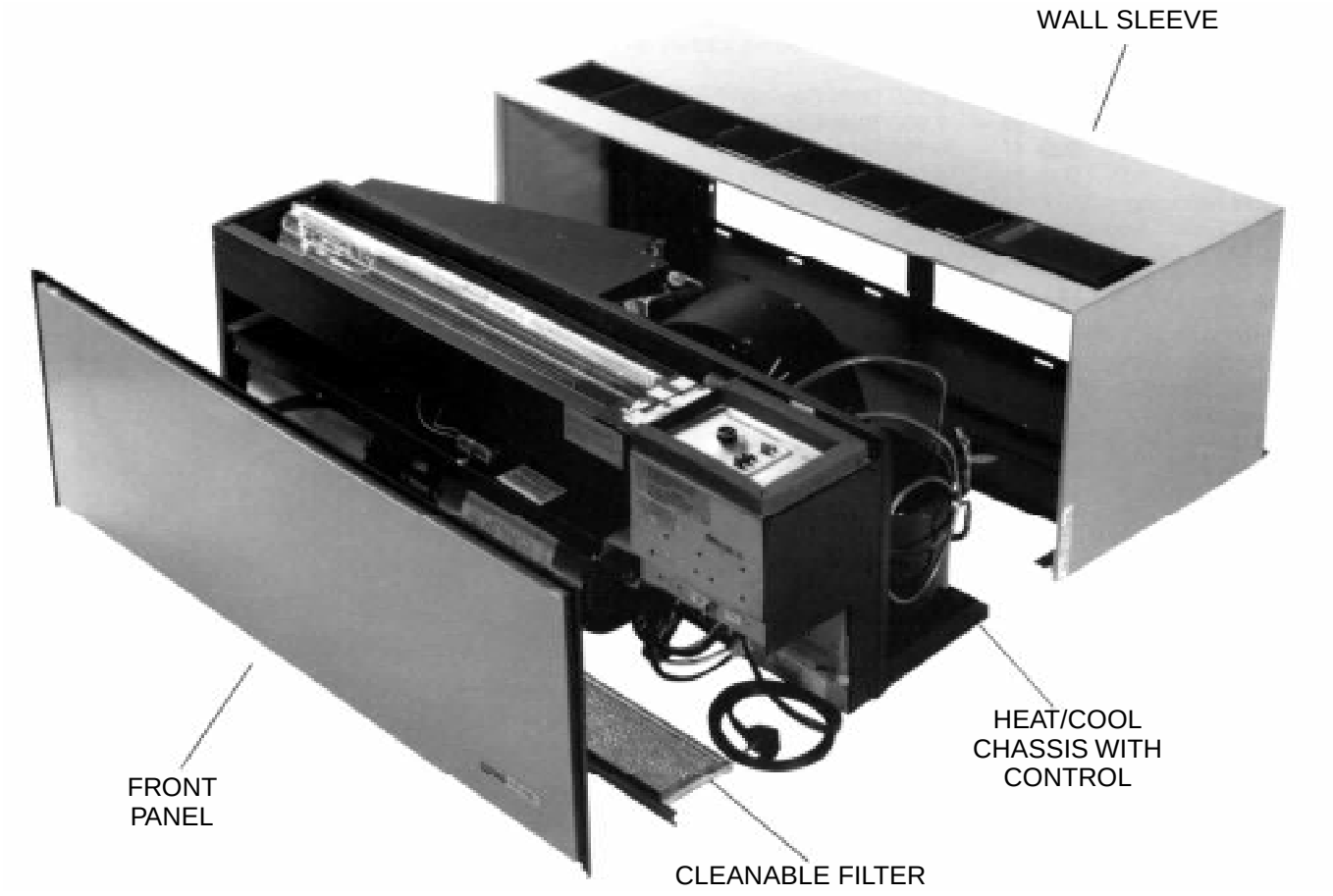
**No letter designation for hydronic.*
Hydronic heat unit is labeled "Type S."

HEATER
A = 2.0 kw (Nominal) Electric Heat
B = 3.2 kw (Nominal) Electric Heat
C = 4.8 kw (Nominal) Electric Heat
W = Hot Water
G = Steam

VOLTAGE CODE
3 = 230/60/1
5 = 208/60/1
7 = 265/60/1

VINTAGE DESIGNATION
A = 1976 to 1980
B = 1980 to Present

Figure 47. Exploded View — Type S



The original “A” vintage Type S Series unit nomenclature indicated different sizes than those available today. They were as follows:

Size 07 — 7,000 Btuh Cooling
Size 10 — 9,100 Btuh Cooling
Size 12 — 11,800 Btuh Cooling
Size 15 — 14,200 Btuh Cooling

The Type S Series nomenclature changed between the “A” and “B” vintage designs. The change reduced the capacities slightly but increased the unit efficiency. The current unit size designations for the “B” vintage unit are as follows:

Size 06 — 6,200 Btuh Cooling
Size 09 — 8,200 Btuh Cooling
Size 11 — 11,000 Btuh Cooling
Size 14 — 13,800 Btuh Cooling

When replacing a Type S Series unit, first determine if it is a heat pump (Type RS), an electric heat unit (Type ES), or a hydronic heat unit (Type 5). If it is a Type ES, check with the customer to determine if a Type RS heat pump would be desirable. The Type RS slides into the Type ES wall sleeve with no modifications.

If the existing unit has hydronic heat (Type 5), it is best to replace it with another hydronic heat chassis. If for some reason the owner wants to convert the unit to heat pump, a Type RS unit will retrofit the existing installation. If this is done, it may require some modification. The Type S hydronic unit utilizes an oversized, separable room cabinet that also encompasses the top mounted hydronic heating coil. If the coil is removed because it is no longer needed on the Type RS heat pump, a field fabricated duct must be supplied. This duct fits between the Type RS unit discharge opening and the existing room cabinet discharge grille. If the coil is simply disconnected but left in place, a field fabricated duct is unnecessary.

Caution: *If the current unit is a Type S Series hydronic unit, it probably has small gauge wiring for incoming power. Make certain the new chassis amp draw does not exceed the limitations of the electrical wiring to the existing unit.*

Type EA to RS Conversion

The design of the Type RS unit is very different from the Type EA Series except for the physical dimensions. The return air of the Type EA Series units enters the chassis around the perimeter of the front panel. The design is aesthetically pleasing and offers the option of floor mounting. The Type RS has the appearance of the Type EA but does not allow the return air to enter around the perimeter. The front panels of the Type RS and the Type EA are not interchangeable. Consequently, if a Type RS unit is used to replace an existing Type EA Series unit, the EA to RS conversion package must be employed. This conversion package comes complete with all necessary gaskets and sheet metal parts to facilitate this change without wall sleeve removal. A louvered front panel is included that allows filtered return air to enter the chassis, whether it is installed on the floor or on a subbase. This conversion kit makes a very attractive installation and can be done with ordinary hand tools. Refer to IM 372 for installation details of this kit. With the EA to RS conversion package, worn out and inefficient Type EA Series chassis can be quickly changed to new, energy efficient Type RS heat pump units.

Figure 48. Chassis



Figure 49. Wall Sleeve

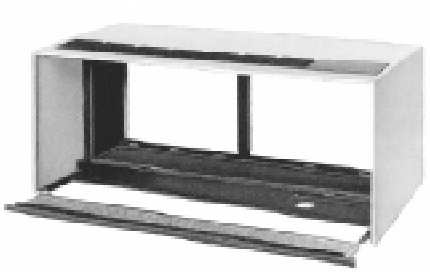
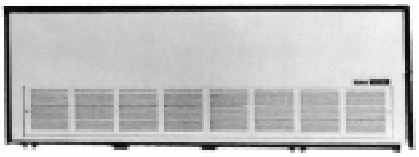


Figure 50. Front Panel



Figure 51. EA To RS Conversion Front



Type 45

The American Standard Type 45 unit was the standard for years in the packaged terminal industry. There are literally thousands of these units installed and operating around the world.

The Type 45 had a wall opening dimension of 16 1/2" x 37" for electric heat and 16 1/2" X 42" for hydronic heat. The original Type 45 unit design is no longer in production. However, a McQuay replacement chassis is available to retrofit the existing wall sleeve. The SG-45 was developed to retrofit the old American Standard Type 45 unit and later the Singer Type 45 unit. Below is listed the nomenclature for both the American Standard Type 45 and the Singer Type 45 designs. Bear in mind that not all of this data appears on the serial/data plate. For many years only a portion of the below listed nomenclature was printed on the serial/data plate.

Use this nomenclature as a guide to help identify the unit's features:

45 07 3/4 E1 UM-1

PRODUCT LINE (TYPE 45)

UNIT SIZE
07 = 7,200 Btuh Cooling
09 = 9,200 Btuh Cooling
12 = 12,300 Btuh Cooling
15 = 15,000 Btuh Cooling

VOLTAGE
2 = 115/60/1 5 = 265/60/1
3 = 208/60/1 3/4 = 208-230/60/1
4 = 230/60/1

HEATER SIZE
208V & 230V:
E1 = 2.6 kw Electric Heat
E2 = 3.6 kw Electric Heat
E3 = 4.1 kw Electric Heat
E4 = 4.9 kw Electric Heat

265V:
E5 = 2.6 kw Electric Heat
E6 = 3.6 kw Electric Heat
E7 = 4.1 kw Electric Heat
** = No Letter—Hydronic

CONTROL
Electric Heat Units:
UM1 = Unit Mtd. MCO w/Manual FA Damper
UM2 = Unit MId. MCO w/Auto FA Damper
UA-1 = Unit Mtd. ACO w/Manual FA Damper
WO-3 = Wall Stat w/Manual FA Damper

Hydronlc Heat Units:
UM-3 = Unit Mtd. MCO w/Auto FA Damper
UM-8 = Unit Mtd. MCO w/Auto FA Damper & Low Limit Stat
UA-5 = Unit Mtd. MCO w/Low Limit Stat
UA-6 = Unit MId. ACO w/Auto FA Damper & Standby Circuit for Heating Cycle Only

Another version of the American Standard Type 45 nomenclature was as follows:

45 09 3/4 OC UM-1 E3 SC

PRODUCT LINE (TYPE 45)

UNIT SIZE
07 = 7,200 Btuh Cooling
09 = 9,200 Btuh Cooling
12 = 12,300 Btuh Cooling
15 = 15,000 Btuh Cooling

VOLTAGE
2 = 115/60/1 5 = 265/60/1
3 = 208/60/1 3/4 = 208-230/60/1
4 = 230/60/1

OCCUPANT CONTROL

INTERNAL USAGE CONTROL

HEATER SIZE
208V & 230V:
E1 = 2.6 kw Electric Heat
E2 = 3.6 kw Electric Heat
E3 = 4.1 kw Electric Heat
E4 = 4.9 kw Electric Heat

265V:
E5 = 2.6 kw Electric Heat
E6 = 3.6 kw Electric Heat
E7 = 4.1 kw Electric Heat
** = No Letter—Hydronic

CONTROL
Electric Heat Units:
UM1 = Unit Mtd. MCO w/Manual FA Damper
UM2 = Unit MId. MCO w/Auto FA Damper
UA-1 = Unit Mtd. ACO w/Manual FA Damper
WO-3 = Wall Stat w/Manual FA Damper

Hydronlc Heat Units:
UM-3 = Unit Mtd. MCO w/Auto FA Damper
UM-8 = Unit Mtd. MCO w/Auto FA Damper & Low Limit Stat
UA-5 = Unit Mtd. MCO w/Low Limit Stat
UA-6 = Unit MId. ACO w/Auto FA Damper & Standby Circuit for Heating Cycle Only

When the packaged terminal division of American Standard was purchased by the Singer Co., the Type 45 nomenclature was changed to the following:

45 C 6 B A 0 0

PRODUCT LINE (TYPE 45)

UNIT SIZE
A = 7,200 Btuh Cooling
B = 9,200 Btuh Cooling
C = 12,300 Btuh Cooling
D = 15,000 Btuh Cooling

VOLTAGE
2 = 230/60/1 6 = 208-230/60/1
3 = 230/50/1 7 = 265/60/1
4 = 208/60/1

FUTURE USE

FUTURE USE

CONTROL
A = MCO w/Manual Damper
B = MCO w/Automatic Damper
J = ACO w/Manual Damper
W = Wall T-Stat w/Auto Damper

HEATER
A = 2.6 kw Electric Heat
B = 3.5 kw Electric Heat
C = 4.1 kw Electric Heat
D = 4.9 kw Electric Heat
E = 2.6 kw Electric Heat
F = 3.6 kw Electric Heat
G = 4.1 kw Electric Heat
J = 2.0 kw Electric Heat
H = Hydronic Heat

Both the American Standard Type 45 and the Singer Type 45 are currently replaced by the SG-45. Some of the control options are not available any longer. For very large jobs, we have the capability to closely or exactly duplicate the control configuration of the existing job. Below is listed the new nomenclature for the SG-45. Use this new nomenclature when specifying a replacement for the old Type 45 unit.

SG 09 C 5 B AE

PRODUCT LINE (TYPE 45 REPLACEMENT)

UNIT SIZE
07 = 7,300 Btuh Cooling
09 = 8,700 Btuh Cooling
12 = 11,400 Btuh Cooling
15 = 14,200 Btuh Cooling
} 1989 to 1992

DESIGN VINTAGE

UNIT TYPE
AE = NC With Electric Heat
AH = NC With Hydronic Heat
HE = Heat Pump With Electric Heat
HH = Heat Pump With Hydronic Heat

HEATER
A = 1.8 kw Electric Heat
B = 2.3 kw Electric Heat
C = 3.2 kw Electric Heat
D = 4.3 kw Electric Heat
H = Hydronic Heat

VOLTAGE CODE
3 = 230/60/1; 5 = 208/60/1; 7 = 265/60/1

ENR (formerly SG-45, old American Standard Type 45) Nomenclature:

ENR 009 A 3 ME

PRODUCT LINE (TYPE 45 REPLACEMENT)
ENR = Type 45 With Electric Heat or Hydronic Heat

UNIT SIZE
07 = 7,000 Btuh Cooling Nominal
09 = 9,000 Btuh Cooling Nominal
12 = 12,000 Btuh Cooling Nominal
15 = 15,000 Btuh Cooling Nominal
} 1992 to Present

DESIGN VINTAGE

AUXILIARY HEAT
ME = Electric (American Standard Type 45 Replacement)
MH = Hydronic (American Standard Type 45 Replacement)

VOLTAGE
3 = 208/60/1; 4 = 277/60/1; * = 240/60/1

* This field was left blank if 240V power was supplied on original Type 45 chassis.

The replacement chassis is slightly smaller than the original Type 45. To compensate for this dimensional change, a retrofit kit is supplied to sufficiently seal the new chassis to the old wall sleeve. The retrofit kit is essential because the basepan seal and the condenser coil seal of the new chassis differs greatly from the original unit. Without the kit correctly installed, the units will not operate properly and may cause water leakage into the room.

The new chassis has dramatic improvements over the original Type 45:

1. The energy efficiency of the ENR improved nearly two-fold over the original Type 45.
2. In addition to electric and hydronic, the replacement chassis is now available in a heat pump version. Heat pump heating can substantially reduce energy consumption during wintertime heating.

Hydronic Heat

The only replacement component available is the chassis. Hydronic heat installations utilize the existing coil and valve which are located in the existing wall sleeve. The controls that come with the new chassis are designed for hydronic operation. However, no replacement coil is furnished with the new chassis. If the coil or valve cannot be salvaged or repaired, it can be replaced through the McQuay Service Parts Department.

Room Cabinet/Wall Sleeve

This unit is strictly a replacement chassis, not a replacement unit. The existing room cabinet/wall sleeve and front panel must be salvaged. If it is not possible to salvage the old room cabinet/wall sleeve, contact the AAF product group about replacing the entire unit. The AAF EnerSaver unit has a similar unit dimension to that of the existing Type 45. However, there are drastic differences to the control features of the AAF EnerSaver units. These differences must be considered before this option is chosen.

Figure 52. Chassis

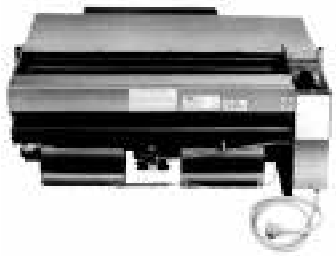


Figure 53. Adapter Kit



Figure 54. Wall Sleeve



Type N Series

The McQuay Type N Series unit was developed in response to a trend toward an industry standard 16" x 42" wall sleeve dimension. This unit has the exact wall opening size as Carrier's 52 Series, G.E.'s Zoneline, Amana/Trane PTAC units, and Zoneaire's T Series units. The Type N units were in production from 1984 to 1990 and were replaced by the McQuay Suite. The nomenclature for the Type N Series units is as follows:

McQuay Model Nomenclature

N E 09 C 5 B

PRODUCT TYPE

UNIT TYPE
E = Electric
H = Hydronic
R = Heat Pump

UNIT SIZE
07 = 7,100 Btuh Cooling
09 = 8,800 Btuh Cooling
12 = 11,400 Btuh Cooling
15 = 14,000 Btuh Cooling

VINTAGE DESIGNATION
A = 1985 To 1986
C = 1986 To 1988
D = 1988 To 1990

HEATER
A = 2.1 kw Nominal
B = 2.5 kw Nominal
C = 3.2 kw Nominal
D = 4.1 kw Nominal
E = 4.5 kw Nominal (208V)
5.1 kw Nominal (230V & 265V)
W = Hot Water Heat
G = Steam Heat

VOLTAGE CODE
3 = 230/60/1
5 = 208/60/1
7 = 265/60/1

Comfortmaker/Arcoaire Nomenclature

TYA 012 C B 004 A

PRODUCT TYPE
TAA = Air Conditioner
TYA = Heat Pump

UNIT SIZE & VINTAGE
07 = 7,100 Btuh Nominal
09 = 8,800 Btuh Nominal
12 = 11,400 Btuh Nominal
15 = 14,000 Btuh Nominal

VOLTAGE
C = 230/60/1
K = 208/60/1
E = 265/60/1

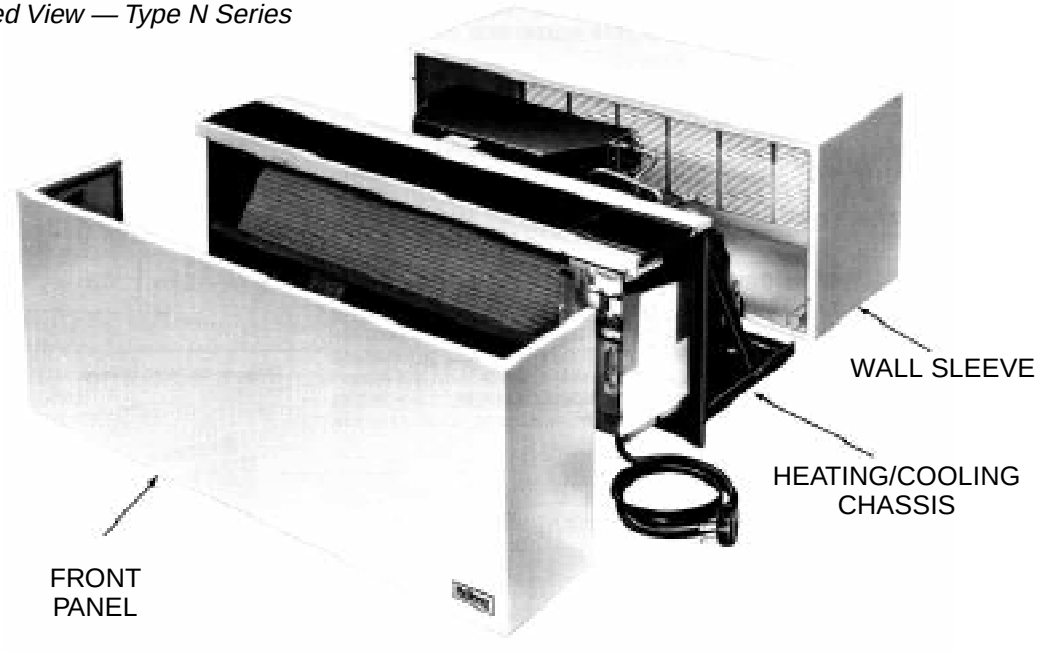
VINTAGE
* = 1984 To 1986
A = 1986 To 1988
B = 1988 To 1990

CONFIGURATION
* = Complete Unit
A = Chassis & Front Panel
B = Chassis Only

HEATER
002 = 2.7 kw
003 = 3.3 kw
004 = 4.0 kw
005 = 4.5 kw

* = No letter designation

Figure 55. Exploded View — Type N Series



In 1990, the McQuay Suite was introduced to replace the Type N Series units. The McQuay Suite maintains the standard 16" x 42" wall opening dimension to follow the industry standard size.

If replacement of the Type N Series chassis is necessary, it is ***not*** necessary to remove the wall sleeve. The nomenclature for the McQuay Suite unit is as follows:

MQS 09 A A 5 B A

McQUAY SUITE SERIES

UNIT SIZE
07 = 7,000 Btuh Cooling
09 = 8,800 Btuh Cooling
12 = 11,400 Btuh Cooling
15 = 14,000 Btuh Cooling

VINTAGE DESIGNATION
1990 to 1992

UNIT TYPE
A = Air Conditioner With Electric Heat
B = Air Conditioner With Hydronic Heat
C = Heat Pump With Electric Heat
D = Air Conditioner With ExtendAire
E = Heat Pump With ExtendAire
G = Subbase Hydronic With ExtendAire

CONFIGURATION
G = Chassis Only
F = Chassis & Front Panel
E = Chassis, Front & Uninsulated Wall Sleeve
H = Chassis, Front & Insulated Wall Sleeve

HEATER CODE
A = 2.1 kw Electric Heater
B = 2.5 kw Electric Heater
C = 3.2 kw Electric Heater
D = 4.1 kw Electric Heater
E = 4.5 kw Electric Heater
W = Hot Water Heat
G = Steam Heat

VOLTAGE CODE
5 = 208/60/1; 3 = 230/60/1; 7 = 265/60/1

MQE 009C 03 32 S

PRODUCT TYPE
MQE = McQuay Suite A/C With Electric or Hydronic Heat
MQR = McQuay Suite Heat Pump

UNIT SIZE & VINTAGE
07 = 7,000 Btuh Nominal
09 = 9,000 Btuh Nominal
12 = 12,000 Btuh Nominal
15 = 15,000 Btuh Nominal
} 1992 to Present

VOLTAGE
01 = 230/60/1; 03 = 208/60/1; 47 = 265/60/1

FRONT PANEL STYLE
S = Sloped Top
F = Flat Top (ExtendAire)

HEATER
21 = 2.1 kw Electric Heater
25 = 2.5 kw Electric Heater
32 = 3.2 kw Electric Heater
41 = 4.1 kw Electric Heater
45 = 4.5 kw Electric Heater
W = Hot Water Heat
G = Steam Heat

When replacing the Type N Series chassis, the front panel also must be replaced. The McQuay Suite has a sloped front discharge that cannot utilize the existing front panel from the Type N Series unit.

Color

With the introduction of the McQuay Suite came a change of paint color. The Type N Series units were painted Mist Gray whereas the McQuay Suite units are painted Antique Ivory. When replacing the Type N Series chassis, it may be necessary to obtain a spray can or a gallon of Antique Ivory paint to overspray the portion of the existing wall sleeve that extends into the room. The color change was drastic enough to show an unsightly contrast between the existing wall sleeve and the new front panel.

Replacing Competitor's Chassis With McQuay Suite

The McQuay Suite can also retrofit G.E., Amana/Trane, Carrier and ZoneAire units with only minor alterations. The above listed companies pitch the chassis in the wall sleeve to dispose of condensate. McQuay chassis are installed level in the wall sleeve. Chassis levelers are available to fit into a competitor's wall sleeve to allow the McQuay chassis to be properly installed. The holes in the bulkhead are predrilled to match the mounting holes of these other companies. Retrofit of a competitor's wall sleeve with a McQuay Suite may also require a can of Antique Ivory spray paint for color match.

Figure 56. Chassis

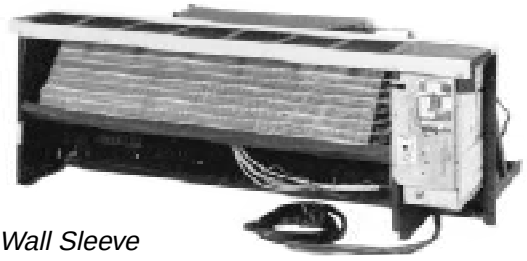


Figure 57. Wall Sleeve

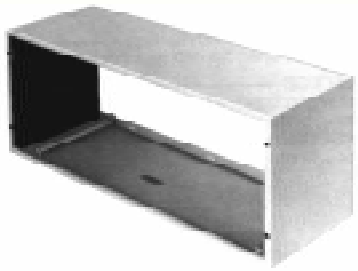


Figure 58. Front Panel

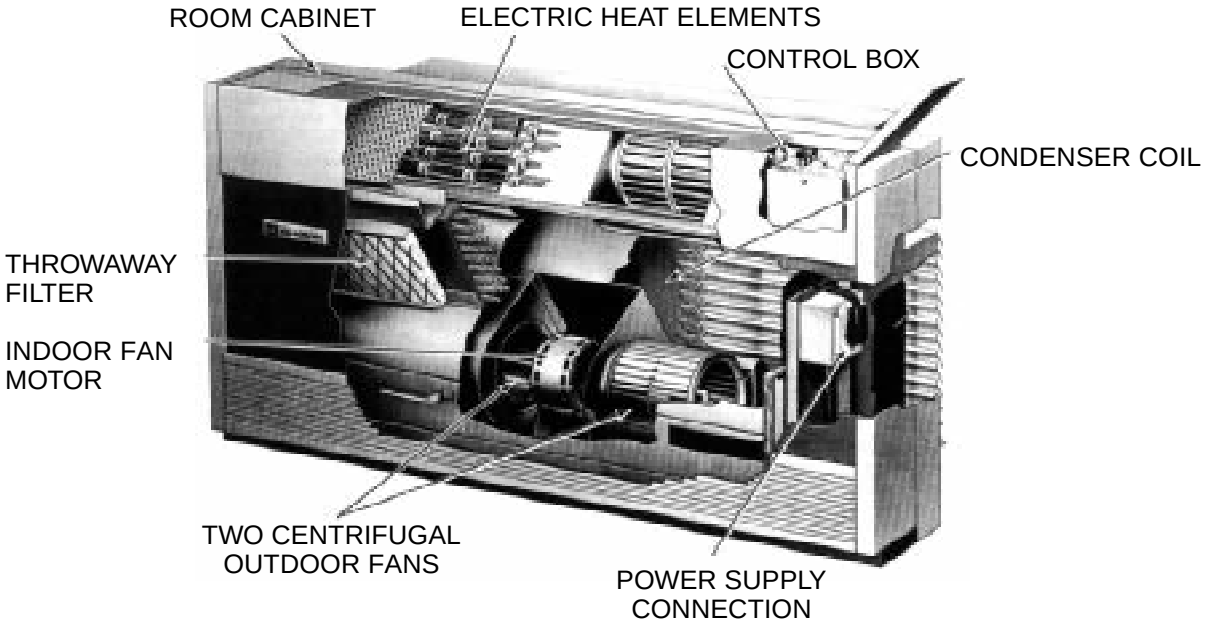


Retrofitting AAF Series 25 Unit with McQuay Type K Series Unit

American Air Filter (AAF) manufactured a through-the-wall unit that was similar in design to the McQuay Type K Series unit. It is possible to retrofit the AAF Series 25 unit with a current Type K Series unit today. These two units were dimensionally and structurally similar making the retrofit potential tremendous.

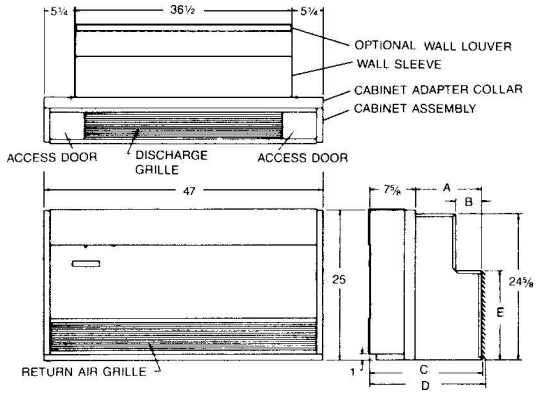
Figure 59. Exploded View — AAF Series 25

AAF began manufacturing the Series 25 units in the early 1970s. Many of these units have exceeded their 20 year life expectancy. During this time, AAF made two styles of the Series 25 unit that were dimensionally different. The early versions were AXY and the later versions were GXY. It is very important to verify which unit variation is installed. Refer to Figure 60 for the dimensional differences of these units.



To retrofit the AAF Series 25, it is not necessary to completely remove the existing unit and wall sleeve from the wall. The existing wall box can be modified to accept a new Type K wall box. By removing the bottom flange of the Series 25 wall box, enough room is available to slide a new Type K wall box inside. Examine the condition of the wall sleeve. If it shows serious deterioration, it may be necessary to order the new wall sleeve with a special corrosion resistant finish. Many times the equipment was installed near a “seacoast” atmosphere that will quickly corrode an unprotected wall sleeve. Once the wall sleeve is installed, measure the depth of the projection that extends through the wall. The standard rear projections are $2^1/_2$" and $3^1/_2$". If the rear projection of the wall sleeve is deeper than $3^1/_2$", it will be necessary to extend this portion with additional sheet metal. For very large jobs, the replacement wall sleeve can be manufactured with a deeper than standard rear projection. For small jobs, wall sleeve extensions can be obtained from Reliable Metal Products in Alabama. These wall sleeve extensions are sized for the dimensions of the new sleeve and are furnished with the necessary baffles and hole pattern. The wall opening of the AAF Series 25 unit is taller than the McQuay Type K Series wall opening. It will be necessary to fill in the area above the new wall sleeve extension to prevent unwanted air and rain infiltration.

Figure 60.



Model Size GXY		8, 12, 15	18
A		$11^3/_8$	$15^3/_8$
B		$4^1/_4$	$8^1/_4$
C		19	23
D	Extruded Intake	$19^5/_8$	$23^5/_8$
	Flush or Flanged Intake	$19^1/_4$	$23^1/_4$
E		16	16

Model Size GXY		8, 12, 15	18
A		$11^1/_8$	$15^1/_8$
B		$4^1/_4$	$8^1/_4$
C		19	23
D	Extruded Intake	$19^5/_8$	$23^5/_8$
	Flush or Flanged Intake	$19^1/_4$	$23^1/_4$
E		15	15

Heat Sections

Examine the existing installation to determine if it is hydronic or electric heat. For units with hydronic heat, determine the “hand” of the coil viewed from a position in front of the unit. Right-hand units have piping connections extending to the right and left-hand units have connections extending to the left. Order a new heat section with connections that match those of the old unit. The power supply for the Type K Series hydronic heat units is located on the right side which is the same as the AAF Series 25 installation.

Units with electric heat require additional consideration. It is very important to select a heater that has a power draw within the range of the existing branch circuit rating. Refer to Table 4 for the KW rating of the McQuay Type K Series electric heaters.

Table 4. Performance and Electrical Data, Type MEK.

HEATER TYPE		MEK007			MEK009			MEK012			MEK014		
		208V	230V	265V	208V	230V	265V	208V	230V	265V	208V	230V	265V
S	Amps	12.9	10.8	9.8	12.9	10.8	9.8	12.9	10.8	9.8	—	—	—
	Watts	2600	2400	2600	2600	2400	2600	2600	2400	2600	—	—	—
	Btuh	8,900	8,200	8,900	8,900	8,200	8,900	8,900	8,200	8,900	—	—	—
M	Amps	16.8	14.3	12.4	16.8	14.3	12.4	16.8	14.3	12.4	16.8	14.4	12.5
	Watts	3400	3200	3200	3400	3200	3200	3400	3200	3200	3400	3200	3200
	Btuh	11,600	10,900	10,900	11,600	10,900	10,900	11,600	10,900	10,900	11,600	10,900	10,900
L	Amps	—	—	—	—	—	—	20.2	18.7	16.2	20.3	18.8	16.3
	Watts	—	—	—	—	—	—	4200	4200	4200	4200	4200	4200
	Btuh	—	—	—	—	—	—	14,340	14,340	14,340	14,340	14,340	14,340
Delay	S Heater	20	15	15	20	15	15	20	15	15	—	—	—
Fuse Max.	M Heater	25	20	20	25	20	20	25	20	20	25	20	20
Amps	L Heater	—	—	—	—	—	—	30	25	25	30	25	25

Additionally, the power supply location will have to change when retrofitting electric heat units. The AAF electric heat section has its power connection to the right side of the unit as shown in Figure 59. The Type K Series electric heat section has its power connection at the left side. Provisions must be made in the field to route the incoming power to the right side. If the hard wiring cannot be moved, flexible wiring can be made inside the unit. A power cord from a Type EA, RS, or N unit can be obtained for this operation. Be sure to obtain a cord that is properly sized for the amp draw of the electric heater. The Type K Series electric heat section is supplied with a factory mounted 4" x 4" junction box with two electric wires inside. The leads from the new power cord should be connected to those of the junction box. The junction box that houses the receptacle of the existing installation will need to be relocated from the old unit to the wall or the floor. Power to the unit will now be accomplished by plugging the new cord into the existing junction box and receptacle.

Further information about the exact replacement of the AAF Series 25 can be found in Bulletin E.D. 14006. Additional installation instructions particular to the McQuay Type K Series unit can be obtained from the installation and maintenance bulletin for Type K Series products.

Precautions

Hundreds of thousands of packaged terminal units have been manufactured since 1958. There are countless varieties of standard units installed around the world. It is very difficult to include information specific to these variations within the scope of this document. Certain assumptions must be made and certain precautions must be taken. The following sections outline some of the cautions to take when contemplating any change to the existing installation. Portions of these sections will be a review from earlier sections but bear repeating due to their importance.

Chassis

1. Pay close attention to the physical size of the chassis being removed from the wall. While the majority of McQuay Incremental packaged terminal units have not changed dimensions from the original design, some units have changed. When the dimension changed, McQuay designed a retrofit kit that enables a new chassis to adapt to the original installation.
2. The capacity of the original unit may be changed due to product redesigns. This may be caused by compressor manufacturer changes, coil design changes and others that altered the capacity of certain models. It is beneficial to read the nameplate of the existing unit and select a replacement with a capacity that is closest to the original unit.

Special Modifications — to the chassis are very common. In most instances, the special modification was designed to match a special control scheme or to prevent premature unit failure. When the existing chassis is replaced, a new one with the same special modifications should be supplied. The existing chassis must be carefully inspected for evidence that special alterations were provided and determine if they are still necessary. Some of the more common special modifications are:

1. Night setback control (NSB)
2. Guest room control (GRO)
3. Low ambient lockout (LAL)
4. Emergency standby circuit (ESB)
5. Remote wall thermostat (RWS)

Each of these modifications are shown on the wiring diagrams supplied with the unit. Information on the location of these wiring diagrams is found in Table 5.

Corrosion Protection — Units installed along coastal regions probably have been specially treated for protection against a salt spray atmosphere. This can be identified by removing the chassis from the wall and observing the area behind the bulkhead. Corrosion resistant chassis have a mastic coated compressor, gray vinyl coating on the coil, a plastic or stainless steel condenser fan, and a special coating on the base pan. The Type EA unit with admiralty construction is the easiest to identify. This package includes stainless steel for all sheet metal parts exposed to the outdoors.

If the existing unit has a corrosion package, the new chassis must also be protected. An unprotected chassis will corrode very rapidly in a “seacoast” environment. Corrosion protection packages are available for every unit currently in production.

Controls

It is very important to pay close attention to the control of the unit being replaced. There are countless changes that could have been made to this component which greatly affect the unit’s function. The first place to note is the escutcheon plate. A standard manual changeover control will contain a thermostat, heat button, cool button, and an off or standby button. It may also contain a fan switch and/or a fan speed switch. The absence of heat and cool buttons indicates the control is an automatic changeover control. The absence of a thermostat indicates that the unit has a wall mounted remote thermostat. Frequently, controls with remote sensing were furnished with a blank escutcheon plate.

On certain Incremental units, the model number indicated the control type. The Type K series units used a prefix, like those shown below, to make this distinction.

2K... or 2EK...: Automatic changeover
3K... or 3EK...: Manual changeover
SK... or SEK...: Either indicated hydronic heat or it indicated automatic changeover control.

Another control observation is to determine if the control is a removable, separate component or if it is part of the chassis. The sectional equipment controls are removable and, for the most part, replaceable. Most of these are available as exact replacements, even if they were special originally. The integrated equipment controls are part of the chassis and cannot be replaced without replacing the chassis. Provide “catalog number” when requesting replacement.

Voltage

concerns are of paramount importance when considering replacement of any electrical component. Applying an incorrect voltage to the equipment or its components can result in severe damage to the component and may result in personal injury. The voltage is indicated on the serial/data plate found on either the chassis, heat section or control box.

Emergency Standby Power — A common alteration of Incremental equipment over the years is to provide emergency standby power. This option is normally only provided for units with hydronic heat. The primary power source is either 208V, 230V, or 265V and the standby power is normally 120V. Emergency standby power is evident by two power sources entering the unit. The two power sources can be wired into the control box directly or into the unit subbase. Refer to the unit’s wiring diagram to determine if this option is present.

Warning: If any wiring changes are required, they should be completed by a certified electrician. All wiring should be done in conjunction with all national and local electrical codes.

Wiring Diagrams

Every Incremental packaged terminal unit is supplied with wiring diagrams that represent the electrical connections for all the unit’s needs. These wiring diagrams are glued onto each component that has electrical wiring. Below is listed a schedule where each wiring diagram can be found.

Table 5.

UNIT TYPE	WIRING DIAGRAM LOCATION		
	CONTROL	HEAT SECTION	COOL CHASSIS
C/EC*	Control Back	Section Right side	Chassis Front
KG/EKG*	In Pouch	Blower Housing	Chassis Front
K/EK/RK	Control Front	Blower Housing	Chassis Front
J/EJ	Control Back	Heat Section Front	Chassis Side
K41/EK41	Control Front	Blower Housing	Chassis Front
EA	Blower Housing	Blower Housing	Blower Housing
S/ES/RS	Blower Housing	Blower Housing	Blower Housing
NE/NR/NH	Control Side	Control Side	Control Side
TYPE 45	Chassis Top	Chassis Top	Chassis Top
SERIES 25	In Pouch	In Pouch	Chassis Front

**C Series and KG Series units also have a composite wiring diagram shipped in a pouch enclosed with the unit.*

Room Cabinet

There have been several room cabinet design changes since 1958. Most of these changes were cosmetic but some affect the compatibility with the replacement sections.

The Type K Series room cabinet changed in the 1970s to add a 1" reveal around the perimeter. This was also the time when the sloped top cabinet became obsolete. Current cabinets are available only as flat top and are furnished with an adjustable nose piece. This nose piece allows the new cabinet to be compatible with a unit which was previously a sloped top and it also adapts the new cabinet to an old flat top style cabinet.

Reminder: If the existing unit is hydronic with either right-hand piping or opposite end piping, **and has no black reveal around the perimeter,** order a cabinet that is 1" larger than the original cabinet. All other heat sections can utilize the new cabinet with no additional dimension.

Specially Modified Room Cabinets — Make a complete visual inspection of the existing cabinet. This may reveal special grilles, tamperproof options, higher than standard kickplates, special color, etc. It is possible to order exact replacements for these special options, depending upon the quantity. Small quantities may require field modifications to adapt the new room cabinet to the old installation.

Wall Sleeve

It is rare that the wall sleeve needs replacing. If it does, inspect it carefully before ordering a new replacement. Measure the depth and determine if a standard replacement can be furnished or if special depth sleeves are required. Often wall sleeve extensions can be used in addition to standard depth wall sleeve.

If the wall sleeve is installed in a “seacoast” environment, it is best to supply a new wall sleeve that is properly protected against this corrosive atmosphere.

In 1990, the Incremental product line changed the standard color from Mist Gray to Antique Ivory. Replacing the wall sleeve for Type N and Type J units will require overspraying either the front panel or the new wall sleeve so all the components match. Other components such as ExtendAire duct sections and hydronic heat plenums may also have to be oversprayed with a change of wall sleeve.

Discontinued Units

There are a few units that are no longer in production and have no replacement available. These units are listed below.

Type EB & EHC — Manufactured from 1955 to 1972. In 1966, Singer purchased Remington and Electromode. The EB unit was then changed to EHO and sold exclusively by the Electromode marketing group. In 1972, the product line was dropped completely due to the lack of sales. The Type EB was similar in design to the Type K and the wall opening can possibly be modified to accept a Type K replacement. No identical replacement is available for this unit.

Type EWK — Manufactured from 1965 to 1976. This unit was the predecessor to the Type WW unit. It used a water cooled condensing section instead of an air cooled through-the-wall section. There is no replacement available for the cool chassis.

Type WW & WH — Manufactured from 1976 to 1989. This unit resembles a console water source heat pump with a water regulating valve. The Type WW and WH utilized a water coil in place of an air cooled, outdoor condensing coil. Due to low demand, these units were discontinued. There are no replacements available for either the WW or WH units.

Type KS & EKS — Manufactured from 1973 to 1976. The Type KS Series unit was a hybrid Type K Series unit that resembled an ES unit. It was intended to be a medium priced offering between the Type K and the Type EA. The wall sleeve dimensions were $16\frac{3}{8}$" x $44\frac{7}{8}$" which is the same as the current S and EA Series units. The unit had a cartridge style chassis with a plug-in control box, a plug-in fan section and a plug-in, finned tubular, electric heat section. The room cabinet enclosed the entire unit much like the Type K Series unit.

The Type KS Series unit can be replaced with either a Type ES, EA, RS or S unit. The entire unit and wall sleeve must be removed from the wall and discarded. The existing Type KS louver can be reused. Once the old unit is removed, a new unit may be installed in the wall opening.

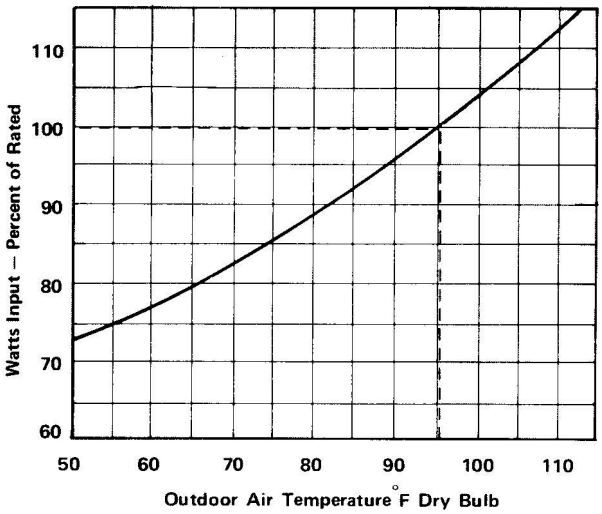
Type RK — Manufactured from 1982 to 1993. This unit was a heat pump version of the Type K. The wall sleeve dimensions were the same as the current MEK design and can be easily replaced with this new design. If only the cooling chassis is being replaced, slight wiring modifications must be made to the existing control to make them compatible. Contact the factory for details regarding this change.

Capacities at Nonstandard Conditions

Cooling Capacities

To find the input power requirement at nonstandard conditions, use Figure 61. Locate the appropriate temperature and follow to the intersection of the curve. Read to the left to determine the percent of rated power. Multiply this percentage by the standard ratings shown on the certified drawing for the replacement unit.

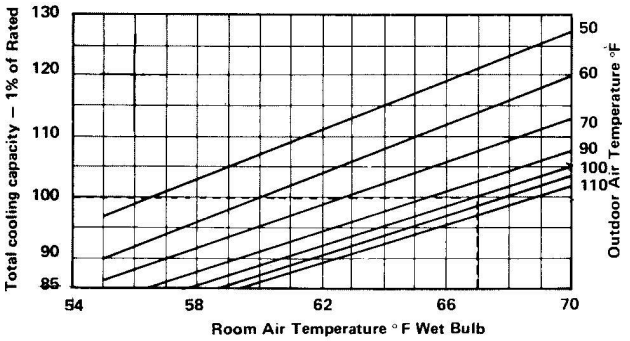
Figure 61. Input Power Requirement



Example: If the outdoor air temperature is 85°F DB, the input watts are only 92% of the rated watts. A size 09 Type N unit operating at 85°F outside air would have a power requirement of .92 x 1000 or 920 watts.

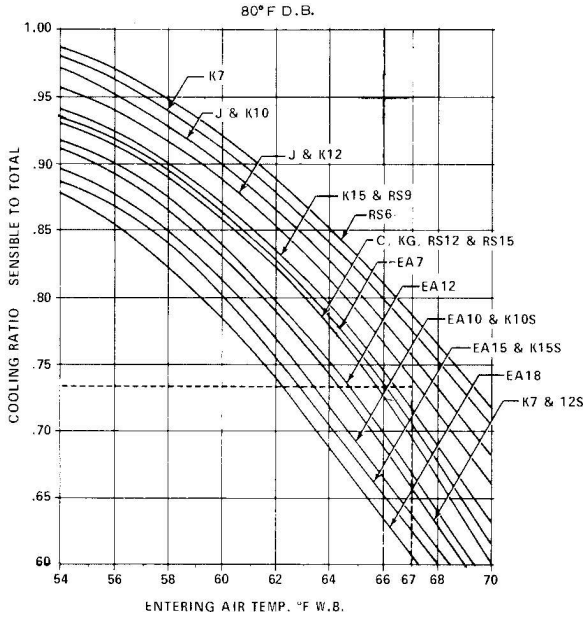
To find total capacity at nonstandard conditions, enter graph with outdoor air dry bulb and indoor wet bulb temperature. Read to the left for the percent of rated capacity. **Note:** 95°F DB and 67°F WB are 100%.

Figure 62. Capacity At Nonstandard Conditions



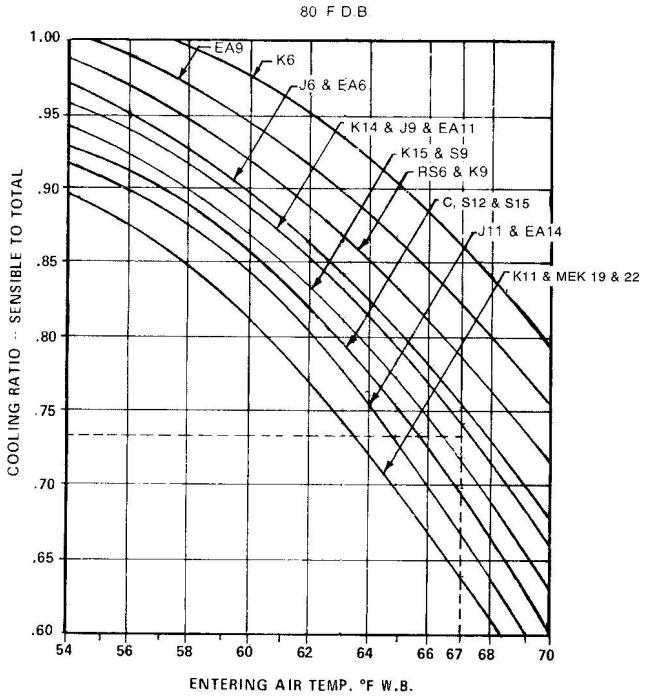
To find sensible heat ratio, enter the correct graph for the type of unit specified. Select the desired intersecting wet bulb temperature and read to the left for the sensible heat ratio. For dry bulb temperatures of less than 80°F, subtract .01 from the ratio for each °F DB drop in room temperature. Latent capacity equals **Total** minus **Sensible**.

Figure 63. Older Units



Example: A K15 unit at 80°F DB/67°F WB has a sensible heat ratio of .72. With a total capacity of 8,800 Btuh, the sensible cooling will be 8,800 x .72 or 6,336 Btuh. The latent cooling capacity will be 8,800 – 6,336 or 2,464 Btuh.

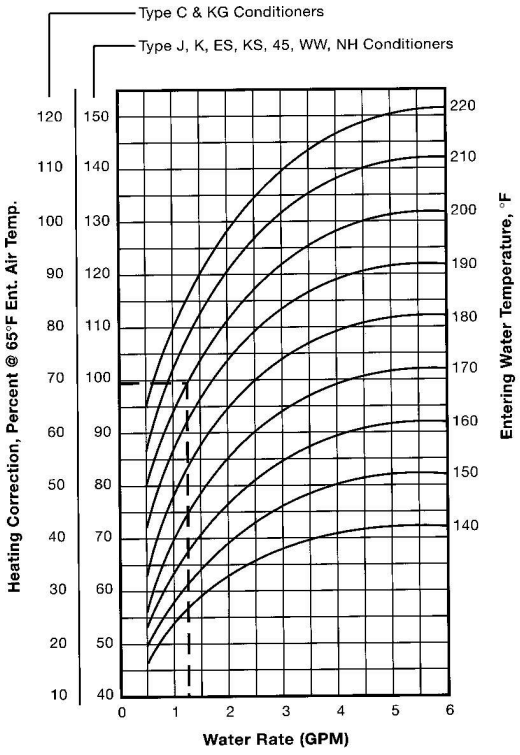
Figure 64. New Units



Heating Capacities

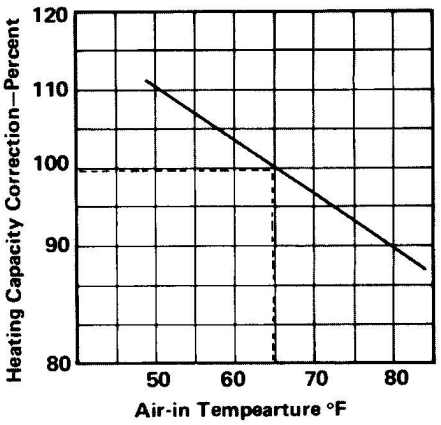
The hydronic coil can be used with either hot water or steam. To determine the correction factor at nonstandard conditions using hot water, use Figure 65. Follow the known flow rate to the corresponding EWT curve and read to the left to determine the heating correction factor. Apply this percentage to the standard ratings shown on the certified drawing for the replacement unit.

Figure 65. Hot Water Heating Correction Factor Curve



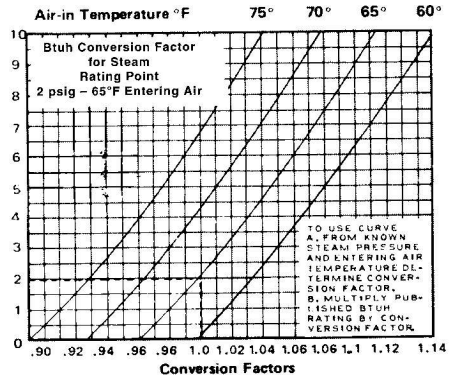
For conditions at temperatures other than 65˚F, determine the correction factor using Figure 67. From a known entering air temperature, follow up to the line and go left to determine the correct percentage. Apply this percentage to Figure 67 (when using hot water) before plotting the heating correction factor.

Figure 67. Heating Capacity Correction Factor Curve



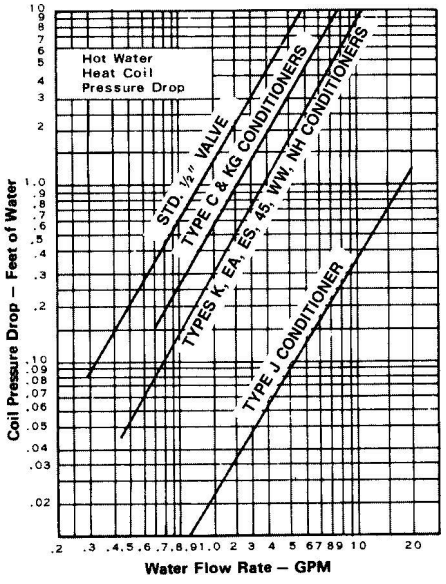
For ratings at nonstandard conditions using steam, refer to Figure 66. Follow the known steam pressure to the curve corresponding to the known enter air temperature. Read down to determine the correction factor. Multiply this number by the standard rating found on the certified drawing for the replacement unit to determine the rating at nonstandard conditions.

Figure 66. Steam Heating Correction Factor



To determine the water pressure drop (WPD) at nonstandard flow rates, enter known GPM on Figure 68. Follow to conditioner line and read left for appropriate WPD. To find the WPD of the valve, repeat procedure. Add the WPD of the valve and the WPD of the conditioner to get the total.

Figure 68. Water Pressure Drop Graph



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