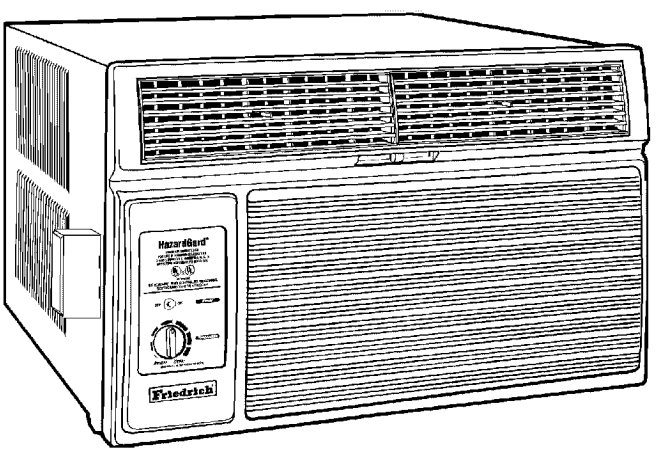
Friedrich

HAZARDGARD

ROOM AIR CONDITIONERS

USE, CARE, AND INSTALLATION MANUAL

Models
SH14
SH20



920-024-04 (10/01)

TABLE OF CONTENTS

OPERATION AND CARE INSTRUCTIONS

INSTALLATION INSTRUCTIONS

Friedrich

WELCOME TO YEARS OF ECONOMICAL COMFORT WITH YOUR NEW FRIEDRICH HAZARDGARD ROOM AIR CONDITIONER

PART 1 — GENERAL INSTRUCTIONS

Your new Friedrich has been carefully engineered and manufactured to give you many years of dependable, efficient operation, maintaining a comfortable temperature and humidity level. Many extra features have been built into your unit to assure quiet operation, the greatest circulation of cool, dry air, and the most economic operation.

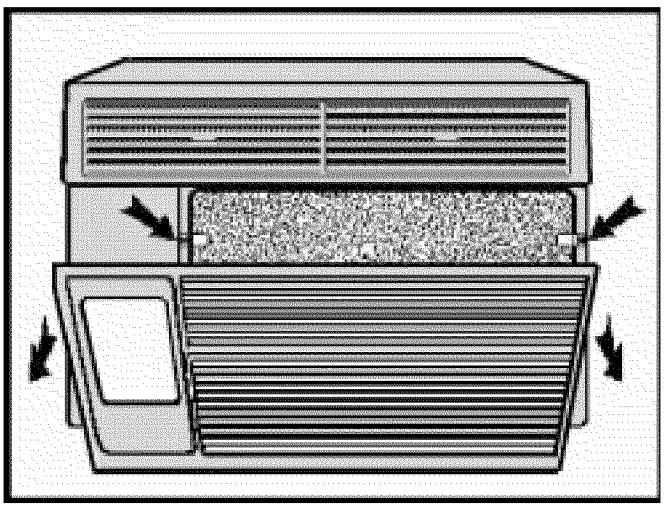
Here are some suggestions to help you use your new Friedrich most efficiently:

1. **Carefully read and follow the installation instructions.**
2. **Your Friedrich HazardGard room air conditioner is electrically grounded for your safety.** The power supply must also be grounded and must be installed in accordance with NEC Article 501. The branch circuit rating is shown on the nameplate for each model.
3. **Make sure the unit is the right capacity for the area to be cooled.** Too little capacity makes the unit work too hard, using more electricity than needed and increasing wear. Too much capacity is also hard on the unit as it will cycle on and off too rapidly, and cannot control humidity as well.
4. **When you first turn on your Friedrich, set the thermostat to its coldest position to cool the room.** When the desired temperature is reached, turn the thermostat control toward the "warmer" position until you hear a click and the compressor goes off. The thermostat will then cycle the compressor to maintain the selected temperature.
5. **Clean the filter frequently** (See General Maintenance).
6. **Do not block the air flow to and from the unit.** Make sure the louvers are directed to give even distribution of air throughout the room. Caution: If air is directed into a restricted area such as behind a bed or into a corner, this may cause the unit to cycle on and off rapidly, which could damage your unit.
7. **A dirty filter or improperly set controls can affect the cooling ability of the unit.**
8. **If cooling is weak** and you have verified that the filter is clean and the controls are properly set, the unit may be low on refrigerant, and you should call your Friedrich service provider to check the unit.
9. **Keep blinds, shades and drapes closed on the sunny side of the room being cooled.**
10. **Proper insulation helps your unit maintain the desired inside temperature.**
11. **Whenever possible, shade west-facing windows with awnings.**
12. **Keep window coverings away from the unit to provide free air flow.**

PART 2 — FILTER INFORMATION

The filter in your Friedrich removes dust, pollen and other impurities from the air as they are drawn through the unit. The filter is permanent and reusable, and has a germicidal treatment which is not affected by washing.

A clogged, dirty filter reduces the air flow through the unit and reduces its efficiency. You should check the filter every seven to ten days, depending on the amount your unit is used. Clean the filter regularly.



Filter Retainer Clips

The filter can be removed for cleaning by opening the front of the unit and releasing the filter from its retaining clips.

PART 3 — MAINTENANCE CHECKLIST

WON'T COOL

If the unit operates, but doesn't cool, check to see that the controls are properly set. Inspect the filter and clean it thoroughly, if needed.

WON'T RUN

If the unit does not operate at all, check that the power supply connections are tight. Check for blown fuses or tripped circuit breakers. Replace blown fuses with the proper size **time-delay fuse**. The nameplate on the unit shows the proper fuse size. After restoring power, wait three minutes before restarting the unit.

INSIDE COIL FREEZES UP

Your Friedrich HazardGard is designed not to freeze with outdoor temperatures as low as 45°F (7°C). Freezing should only occur when the outside air is damp and below 45°F (7°C). If the indoor coil should ice over while cooling, set the thermostat to the warmest position until the ice on the coil is gone. Setting the thermostat to a slightly warmer position will probably keep ice from forming on the coil. A dirty filter will contribute to icing.

CLEANING

The front grille of your Friedrich, as well as the complete cabinet may be cleaned with warm water and a mild detergent. The coils and base pan should be cleaned periodically for the most efficient operation. We suggest you call your Friedrich dealer for this service.

LUBRICATION

Fan motors are factory lubricated and sealed. No lubrication is required.

PART 4 — HAZARDGARD SPECIAL FEATURES

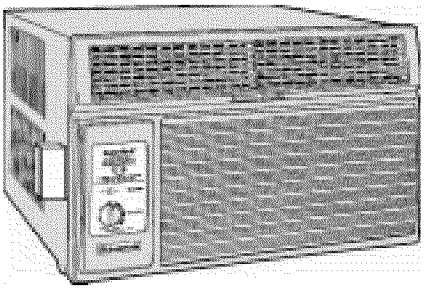
Friedrich

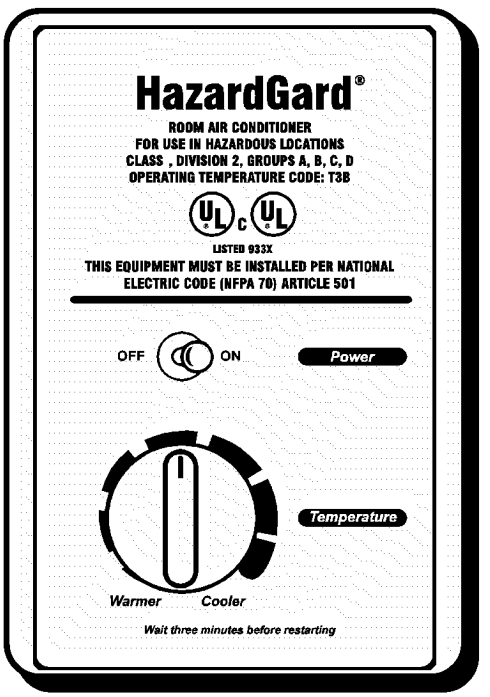
HAZARDGARD UNIT SPECIAL FEATURES

- Permanent Split-Capacitor, totally enclosed fan motor to assure efficient operation even under adverse electrical conditions. Motor has a special stainless steel shaft to resist corrosion and a hermetically sealed overload for arc-free operation.
- High capacity compressor with internal hermetically sealed overload.
- Solid-state printed circuit board insulated against corrosion on conductor paths. Contains transient voltage suppressor to protect controls against transient voltage spikes. Provides solid state switches for arc-free operation.
- Hot gas bypass low ambient control to permit operation without freezing at outdoor ambient temperatures as low as 45°F (7°C).
- Environmentally sealed on-off switch and gold plated contacts in thermostat for corrosion resistance.
- Electrodeposited epoxy primer and alkyd enamel, both oven-baked for an attractive, long-lasting finish.
- Copper tubing/aluminum fin coils.
- Galvanized steel cabinet and base pan, all bonderized.
- Slide-out chassis for easy installation in window or through–the–wall.
- Extra insulation inside, including completely insulated plenum chamber for quieter, more efficient cooling.
- Entire unit test run in environmental chamber before crating.
- Eight–way air flow control for uniform air circulation.
- Patented electronic control circuit.
- Condensate drain with exclusive mosquito trap.
- 15 amp circuit with time-delay fuse required. Accommodates direct wiring.
- Long lasting 3/8" (10 mm) thick air filter, germicidally treated, easily removed for cleaning.

Friedrich Air Conditioning quality has been proven by more than twenty-five years of successful experience from the Gulf of Mexico to the searing sands of the Arabian desert.

PART 5 — CONTROL PANEL





FUNCTION CONTROL (POWER)

This switch is a double pole, single throw toggle switch.
ON - Turns everything on.
OFF - Turns everything off.

TEMPERATURE CONTROL

The knob at the bottom is the thermostat which is a cross ambient type used to maintain the desired comfort level. The thermostat reacts only to a change in temperature at the bulb location - turn the knob clockwise to set cooler, counterclockwise for warmer.

PART 6 — EXCLUSIVE !

Friedrich leads again with the first UL Listed Room Air Conditioners designed to cool living quarters and other enclosures situated in hazardous locations where specific volatile flammable liquids or gases are handled or used with enclosed containers or systems.

Friedrich HazardGard® room air conditioners are designed to meet the National Electrical Code, Article 500 requirements for Class I, Division 2, Groups A, B, C, D Hazardous locations and are the only air conditioners UL Listed for this application.

THIS UNIT IS LISTED BY UNDERWRITERS LABORATORIES FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D HAZARDOUS LOCATIONS. Operating Temperature Code: T3B.

INSTALLATION INSTRUCTIONS

Friedrich

Models SH14 and SH20

NOTE: THIS MANUAL INCLUDES INSTALLATION INSTRUCTIONS FOR BOTH WINDOW MOUNT AND THROUGH-THE-WALL INSTALLATIONS

SECTION I: ELECTRICAL REQUIREMENTS

ALL FIELD WIRING MUST MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) ARTICLE 501.

THE FIELD-PROVIDED CIRCUIT PROTECTION DEVICE (HACR CIRCUIT BREAKER OR TIME DELAY FUSE) MUST NOT EXCEED THE AMPACITY INDICATED ON THE PRODUCT NAMEPLATE.

IMPORTANT: Before you begin the actual installation of your air conditioner, check local electrical codes and the information below.

Your air conditioner must be connected to a power supply with the same A.C. voltage and frequency (hertz) as marked on the data plate located on the chassis. Only alternating current (A.C.), no direct current (D.C.), can be used.

An overloaded circuit will invariably cause malfunction or failure of the air conditioner; therefore, it is extremely important that the electrical power is adequate. Consult your dealer or power company if in doubt.

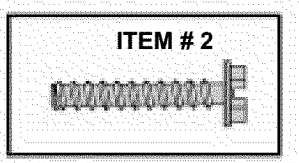
The following instructions are for HAZARDGARD models and cabinet sizes listed below.

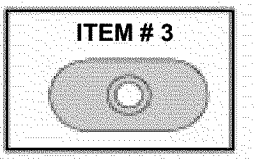
GROUPS	CABINET SIZE (H x W x D)
SMALL CHASSIS SH14	15–15/16" x 25–15/16" x 27–3/8" (405 mm x 660 mm x 695 mm)
MEDIUM CHASSIS SH20	17–15/16" x 25–15/16" x 27–3/8" (455 mm x 660 mm x 695 mm)

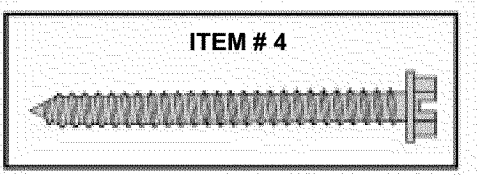
Model Number	Plug Type	Circuit Rating Time Delay Fuse
SH14	Junction Box	250V-15 Amp
SH20	Junction Box	250V-15 Amp

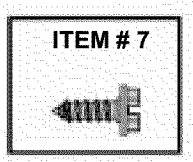
HAZARDGARD WINDOW MOUNT INSTALLATION HARDWARE

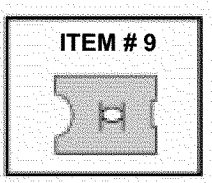
ITEM No.	DESCRIPTION	QTY.
	SHELL MOUNTING PARTS	
1	SUPPORT BRACKET	2
2	SCREW, 10 - 24 x 1" HEX HEAD	4
3	10 - 24 FLAT WELDNUT	4
4	SCREW, SHEET METAL #12A x 2"	7
	WINGBOARD ANGLE MOUNTING	
5	WINGBOARD ANGLE, TOP	1
6	WINGBOARD ANGLE, SIDE	2
7	SCREW, SHEET METAL #8A x 3/8"	2
	WINGBOARD MOUNTING PARTS	
8	WINGBOARD (MASONITE) - (NOT SHOWN)	1
9	"J" TYPE SPEED NUT	4
10	WINGBOARD CLIP (SPRING STEEL)	4
11	SCREW. #8A x 1/2" PHILLIPS TRUSS HD.	4
	WINDOW SEALING	
12	SEALING GASKET (VINYL)	1
13	WINDOW SEAL GASKET (DARK FOAM)	1
14	CHASSIS SEAL GASKET (LIGHT FOAM)	1

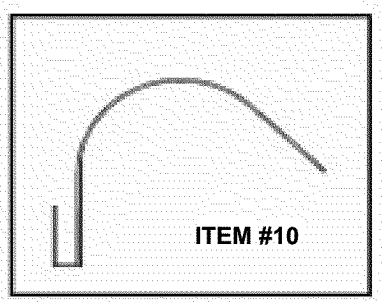


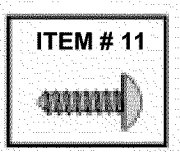


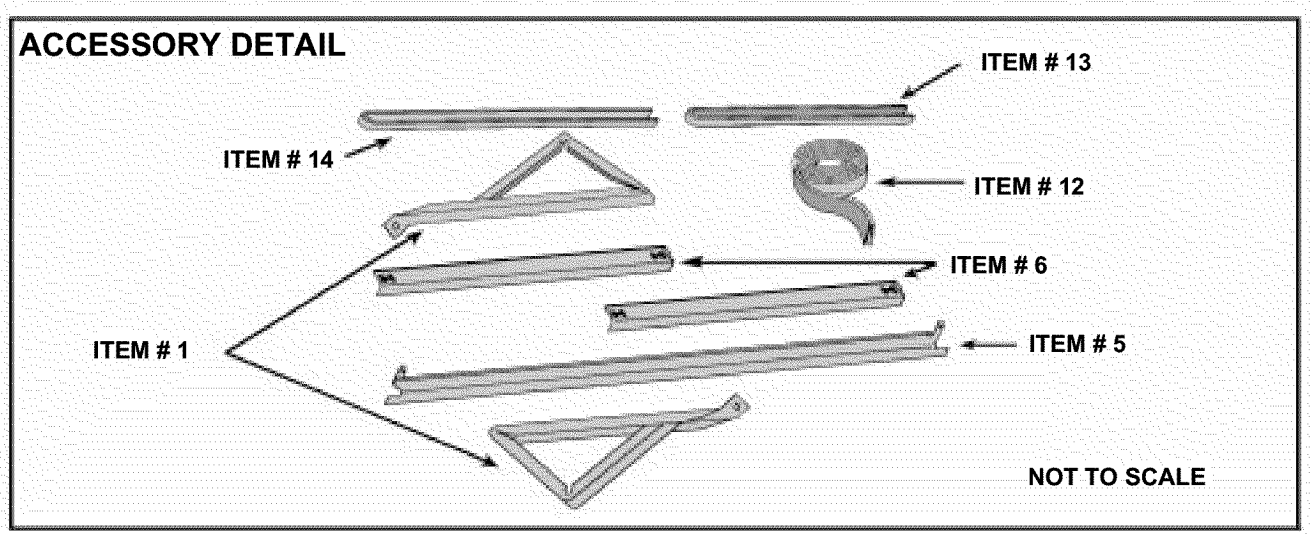












SECTION II
UNPACKING THE UNIT

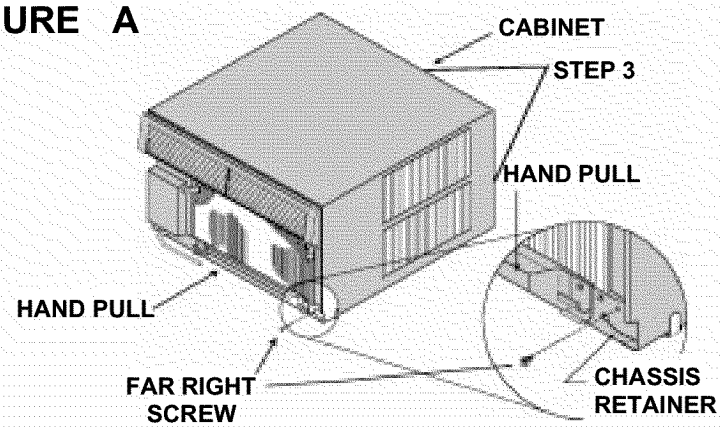
STEP 1. Remove decorative plastic return air grille to a safe area away from the unit.

STEP 2. Remove the installation hardware, wingboard and two (one light colored and one dark colored) gaskets from beneath the unit, and place them in a safe area away from the unit.

STEP 3. Remove the chassis retainer by removing the far right screw in the basepan (see Figure A); save this screw to reattach the chassis retainer after installation (Step 15). **Also, remove and discard the two retainer screws and plastic bushings located at the rear of the unit.**

STEP 4. While an assistant holds the cabinet stationary, use the hand pull at the front of the base pan (see Figure A) to pull the chassis out of the cabinet. Remove white foam blocks used to restrain the compressor during shipment. Inspect basepan for dislodged white blocks, and remove. Do not remove any other foam.

FIGURE A



SECTION III
CHASSIS WIRING AND PREPARATION

PROVIDED HARDWARE

1 JUNCTION BOX	FRIEDRICH PN: 613-893-00
2 MOUNTING LEGS	RACO INC. PN: 5324-0
2 LEG SCREWS	
2 HOLE COVERS	
1 GROUND SCREW	
BOX COVER	FRIEDRICH PN: 613-892-00
GASKET	RACO INC. PN: 5173-0
2 SCREWS	
1 SHEET METAL SCREW	

STEP 1. Remove the junction box, cover and screw (above items) from the shipping position underneath the fan motor. Install one junction box mounting leg in the upper left position facing the rear of the junction box.

STEP 2. Remove and discard the plastic bushing from the conduit connector on the side panel of the control compartment. Strip the black wires only, approximately 1/2 inch (13 mm).

STEP 3. Insert all wires (2 black, 1 green) into the box and thread the box onto the conduit connector until tight. Back off counter clockwise until the junction box is vertical with the mounting leg at the upper–right position facing the box opening. Be sure that the shell can fit between this box and the chassis.

SECTION IV

SHELL (CABINET) PREPARATION:

It will be necessary to relocate the sill plate of the cabinet 2" back from its shipping position, and the shell guides 4" forward, to the forward-most hole in the shell rail. Discard the chassis retainer wire disconnected in Section II, Step 3. The junction box mounting leg from Section VI, Step 1, and the field-installed conduit will retain the chassis in the shell.

IF THIS INSTALLATION IS FOR A SASH WINDOW – With the wide flange and pilot holes of the sill plate forward, put the screws/nuts in the rear holes of the sill plate and third shell hole from the front (the center of three square holes). Anchor the side angles (Item #6) by engaging the tabs at each end of the sill plate with the bottom loops of the side angle. Engage the tabs at each end of the top angle (Item #5) with the top loops of the side angle. Install two (2) screws (Item #7) to secure the top angle tabs and the side angle to the rear-most holes in the side of the cabinet (See Figure B, below).

IF THIS INSTALLATION IS THROUGH A WALL – Turn the sill plate end to end so that the wide flange with pilot holes will be over the wall header (towards the rear) and two inches from the front of the cabinet. Bend the tabs into the channel of the sill plate, put the screws/nuts in the front holes of the sill plate and into the second shell hole from the front. Use one bolt on each side to secure the sill plate to the cabinet. (See Figure C, below.)

FIGURE B

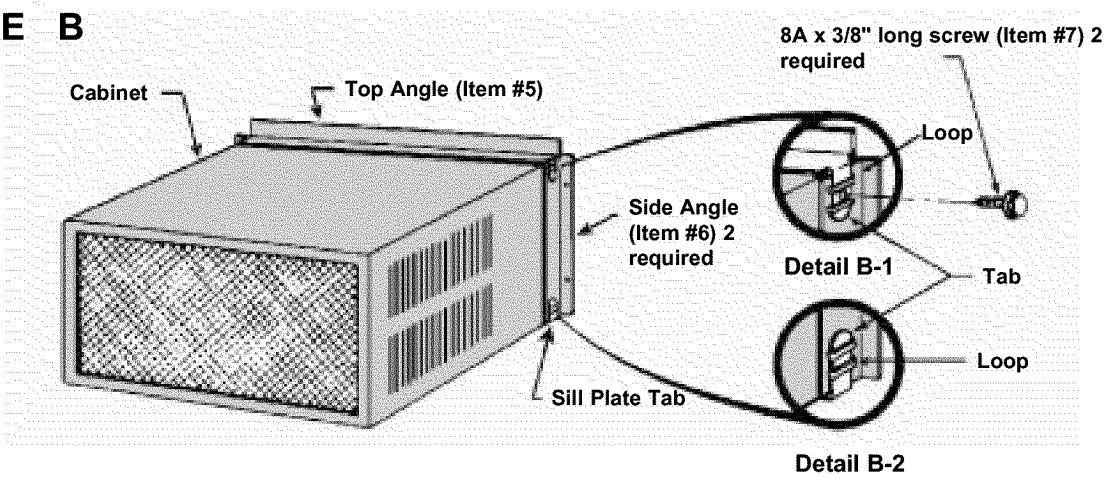
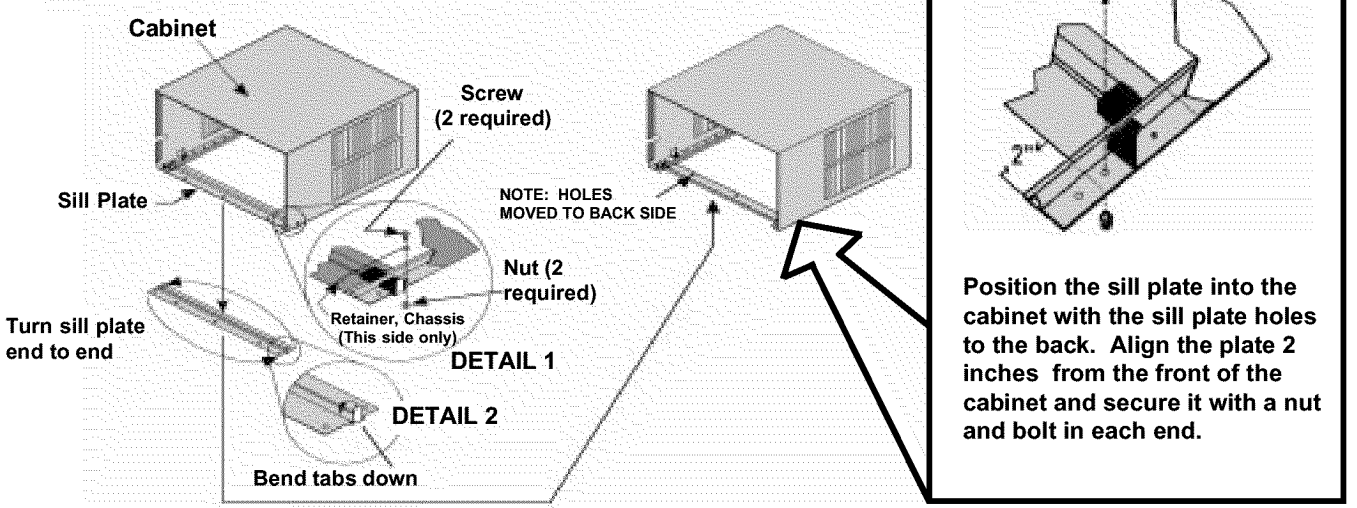


FIGURE C



SECTION V — SHELL INSTALLATION

(A) SASH WINDOW INSTALLATIONS

SHELL (CABINET) INSTALLATION – STANDARD SASH WINDOWS

STEP 1. Check the window sill and frame to be sure they are in good condition and firmly anchored to the wall. Repair if necessary.

STEP 2. **CABINET MOUNTING:** Raise the lower window sash 1/4" more than the height of the cabinet. Carefully slide the cabinet through the open window until the sill plate channel rests behind the window sill and the top support angle rests against the window (See Figure D). Center the cabinet side to side and drill three (3) 5/32" dia. pilot holes into the window sill using the holes in the cabinet sill plate as a guide. Install three (3) #12A x 2" long screws (Item #4) (See Figure D).

FIGURE D

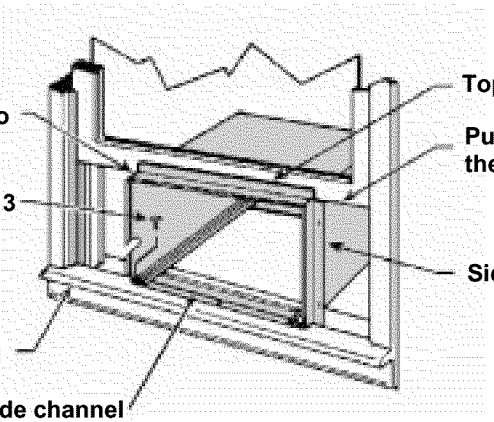
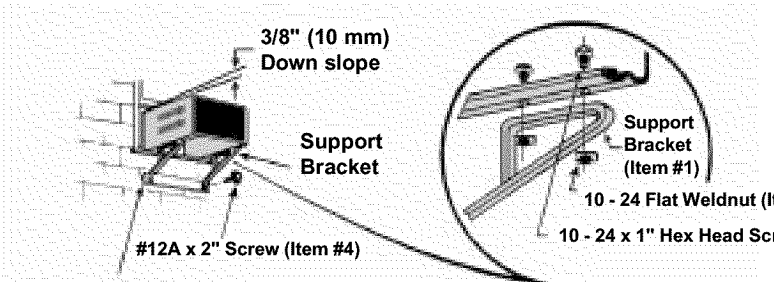


FIGURE E



A 1" x 4" or 2" x 4" spacer should be used between the wall and bracket when installed on aluminum, asbestos or vinyl siding.

STEP 3. **OUTSIDE SUPPORT MOUNTING:** Assemble the support brackets (Item #1) to the bottom rails of the cabinet with four (4) 10-24 1" long screws (Item #2) and four (4) 10–24 flat nuts (Item #3). Adjust the support brackets to bring the bottom pads in contact with the wall surface. (See Figure E.)

A 1" x 4" or 2" x 4" SPACER SHOULD BE USED BETWEEN THE WALL AND THE SUPPORT BRACKETS WHEN INSTALLED ON ALUMINUM OR VINYL SIDING). Drill 5/32" (4 mm) dia. pilot holes, and secure the brackets to the wall with two (2) #12A x 2" long screws (Item #4). Adjust the support brackets to provide an approximate 3/8" (10 mm) down slope towards the outside for drainage. Tighten all screws. (See Figure E).

The illustrations below show a standard frame construction installation as well as some suggested ways of adapting the support bracket to thick walls and large stone ledges.

TYPICAL INSTALLATION SILL PLATE

Figure 1

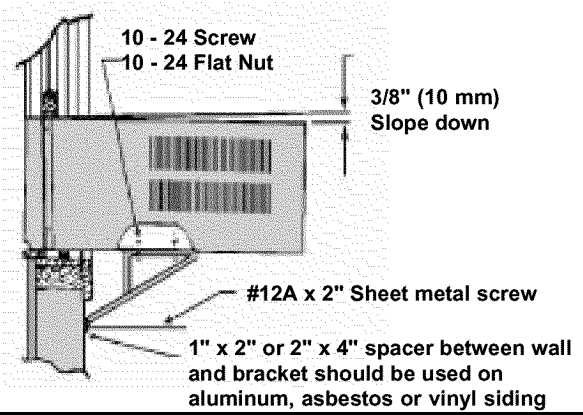


Figure 2

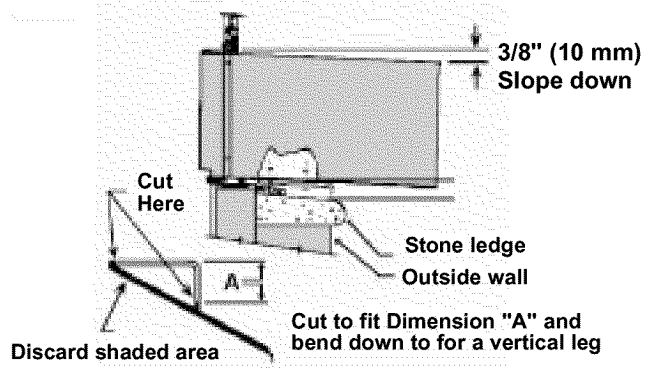


Figure 3

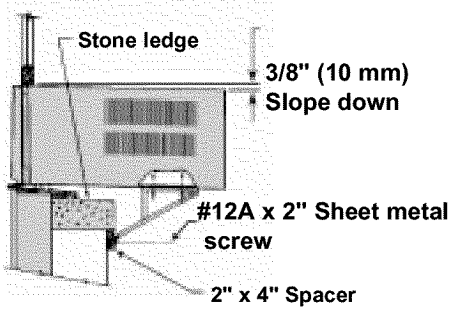
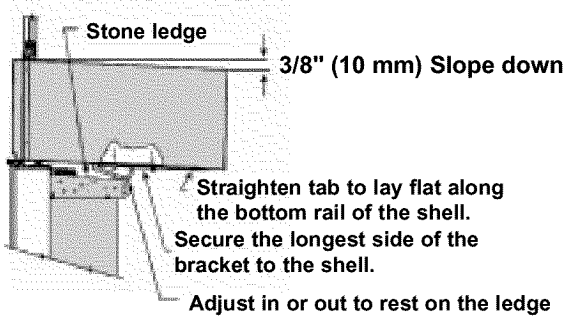


Figure 4



STEP 4. **CUTWINGBOARD PANELS**: Measure and cut the wingboard panels from the supplied masonite (Item #8) to fit the spaces between the side window channels and the sides of the cabinet (See Figure F).

NOTE: AFTER CUTTING PANELS, MAKE A TRIAL TEST TO SEE IF THEY FIT THE SPACE WITH ABOUT 1/8" CLEARANCE BEFORE GOING TO STEP 5.

FIGURE F

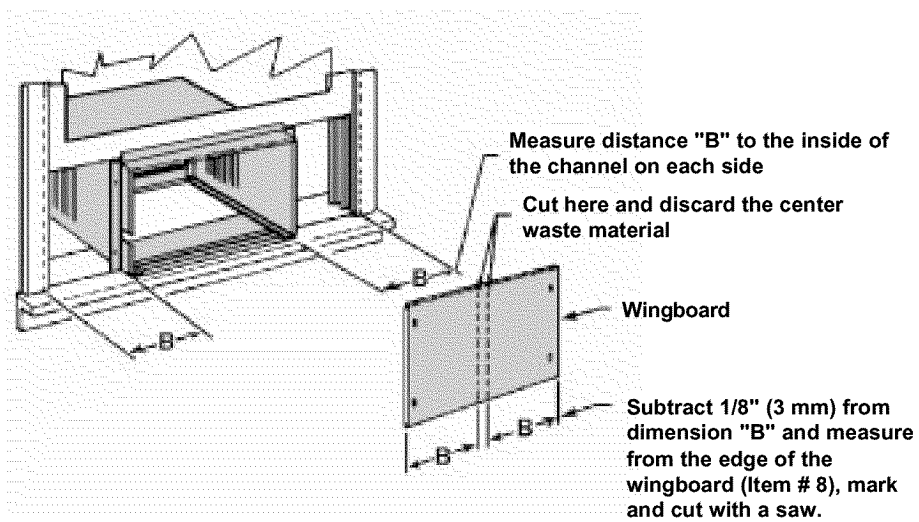
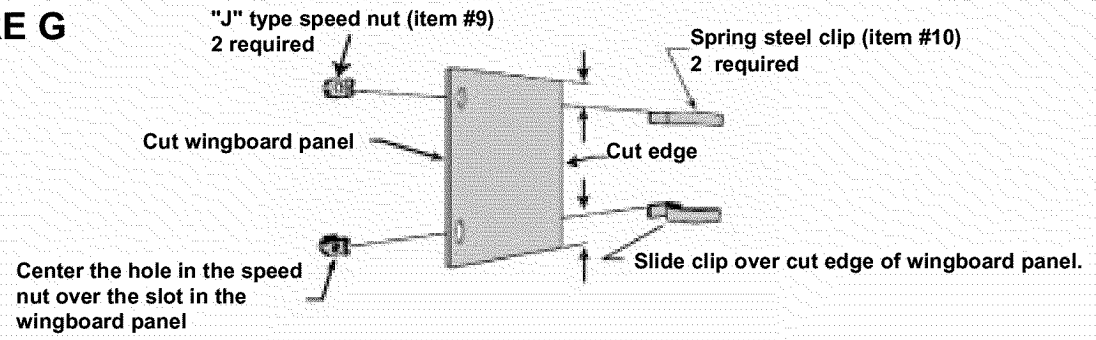
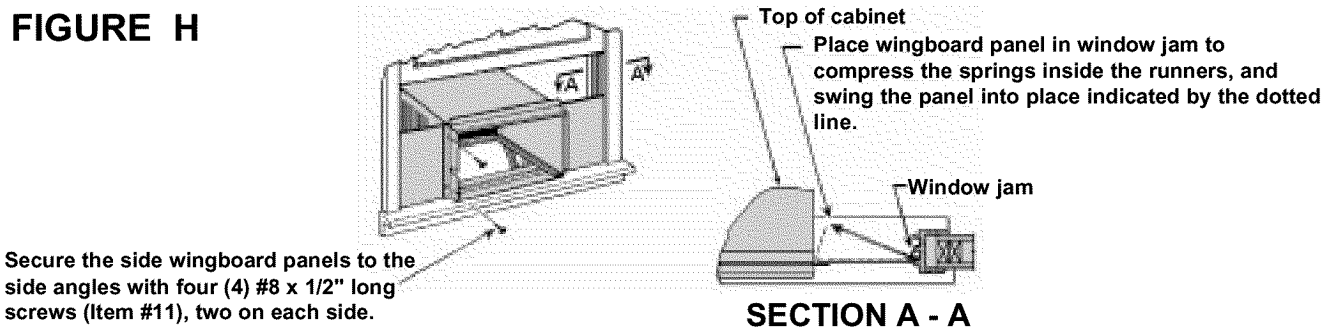


FIGURE G



STEP 5. **ASSEMBLE CLIPS TO WINGBOARD PANELS:** Assemble "J" type speed nuts (Item #9) and spring steel clips (Item #10) to the edges of the cut wingboard panels (See Figure G).

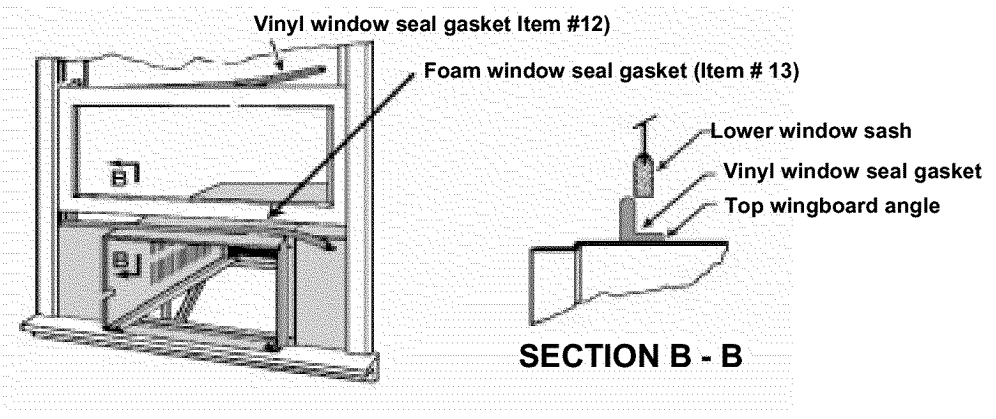
FIGURE H



STEP 6. **INSTALL SIDE WINGBOARD PANELS:** Be sure that the cabinet has been secured to the window sill and the outside support brackets have been installed as shown in Figures D and E on Page 11. Raise the window sash and install the right and left side wingboard panels (See Figure H).

STEP 7. **INSTALL WINDOW SEALING GASKETS:** Measure and cut the vinyl window seal gasket (grey color, Item #12) to fit the width of the window and install as shown in Figure I. Pull the window sash down behind the gasket. Measure and cut the dark foam window seal gasket (Item #13) and install it between the upper glass panel and the top part of the lower sash (See Figure I).

FIGURE I



NOTE: FOR REASONS OF SECURITY AND SAFETY, THE CUSTOMER MUST PROVIDE A MEANS OF PREVENTING THE WINDOW FROM OPENING.

STEP 8. When possible, caulk the outside of the installation with industrial type caulking to prevent air and water leaks.

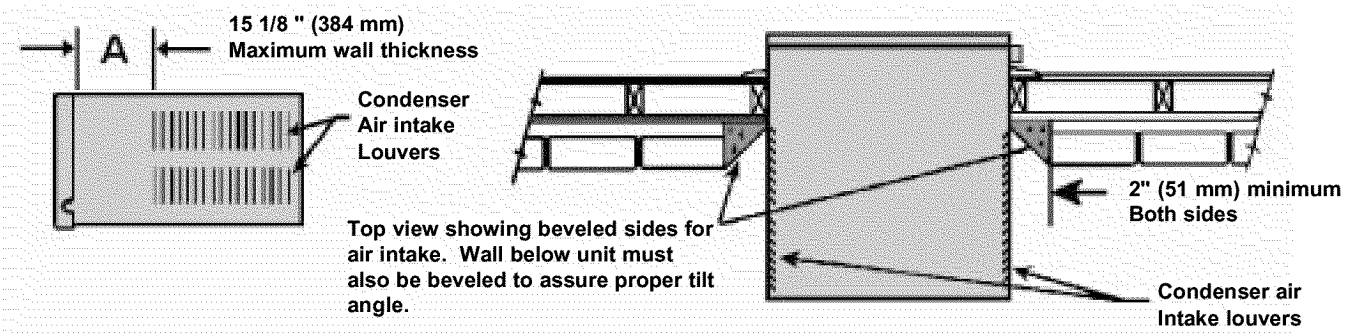
SECTION V — SHELL INSTALLATION

(B) THROUGH–THE–WALL INSTALLATIONS

WALL PREPARATION:
The maximum wall thickness permissible without special construction is determined by the model size to be installed. **THE OUTSIDE CABINET CONDENSER AIR INTAKE LOUVERS MUST NOT BE BLOCKED BY EXTENDING INSIDE THE WALL AREA.** Observe the maximum wall thickness shown as dimension "A" in Figure J.

SPECIAL INSTRUCTIONS FOR EXTRA THICK WALLS: For installation in walls exceeding the maximum thickness shown as dimension A, the following suggested construction may apply. (See Figure J).

FIGURE J **EXTRA THICK WALL CONSTRUCTION**

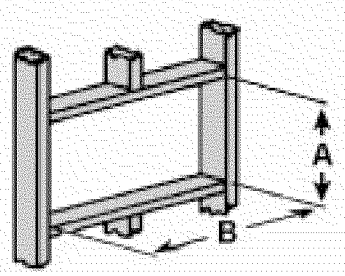


STEP 1. **CHECKING WIRING AND PLUMBING:** Check all wiring and plumbing inside and outside the wall to be sure none will be broken where the hole is to be cut.

STEP 2. **HOLE CONSTRUCTION**: Depending on the size of the unit to be installed, layout the hole dimensions in accordance with the chart below (See Figure K). Cut and frame in the hole to the finished dimensions. Use 2" x 4" material for framing and follow the suggested typical installations in Figure L, M or N on Page 15.

NOTE: IF THE WALL CONSTRUCTION IS TYPICAL FRAME OR 2 X 4 STUDDING WITH BRICK OR STONE VENEERS, LOCATE THE HOLE NEXT TO ONE OF THE STUDS. FOR MASONRY, CONCRETE OR CINDER BLOCK WALLS, LOCATE THE HOLE FOR CONVENIENCE.

FIGURE K **HOLE SIZE REQUIREMENTS**



FINISHED DIMENSION	SMALL CHASSIS	MEDIUM CHASSIS
A	16-3/16"	18-3/16"
B	26-3/16"	26-3/16"

NOTE: THESE DIMENSIONS ARE FOR FINISHED HOLE SIZE

FIGURE L FRAME WALL CONSTRUCTION

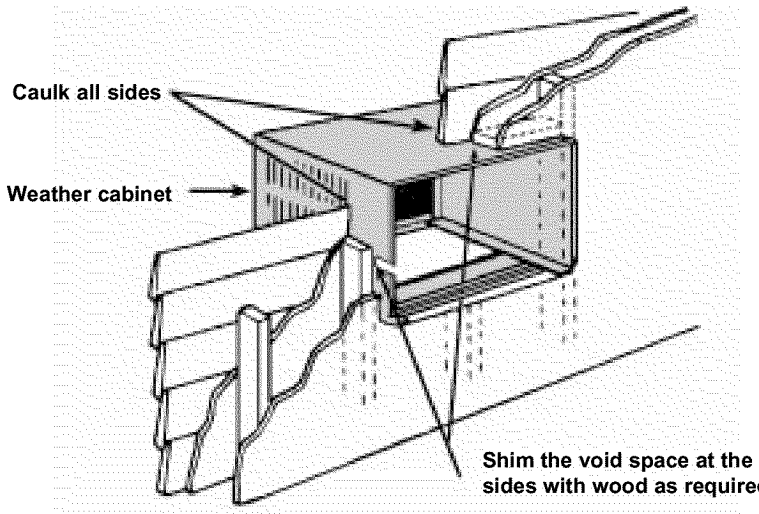


FIGURE M BRICK VENEER CONSTRUCTION

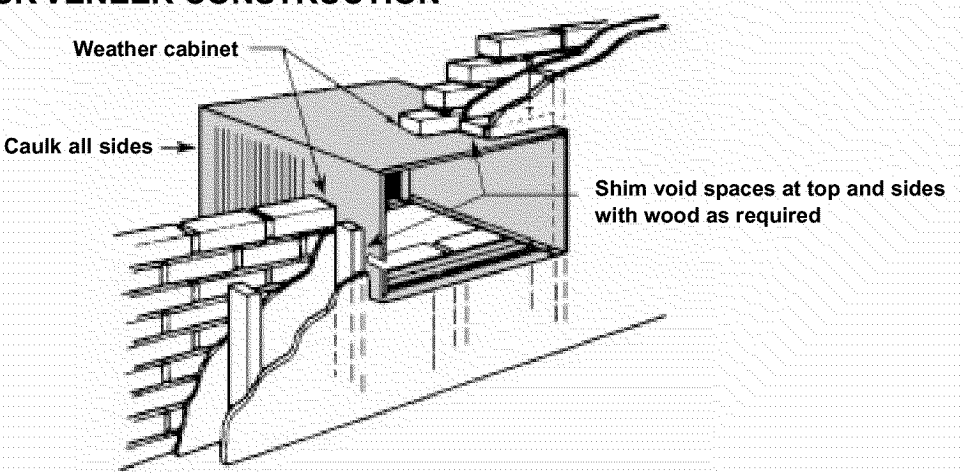
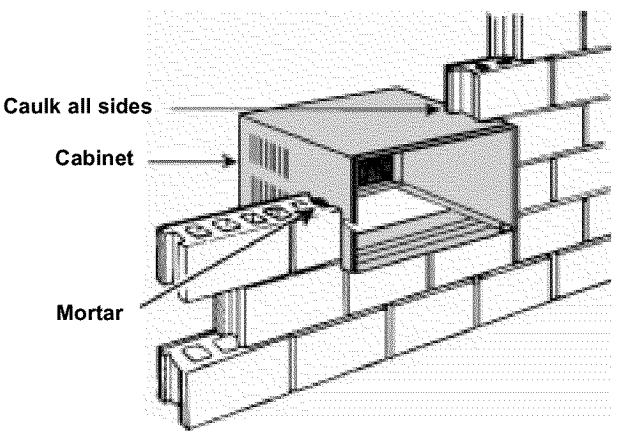


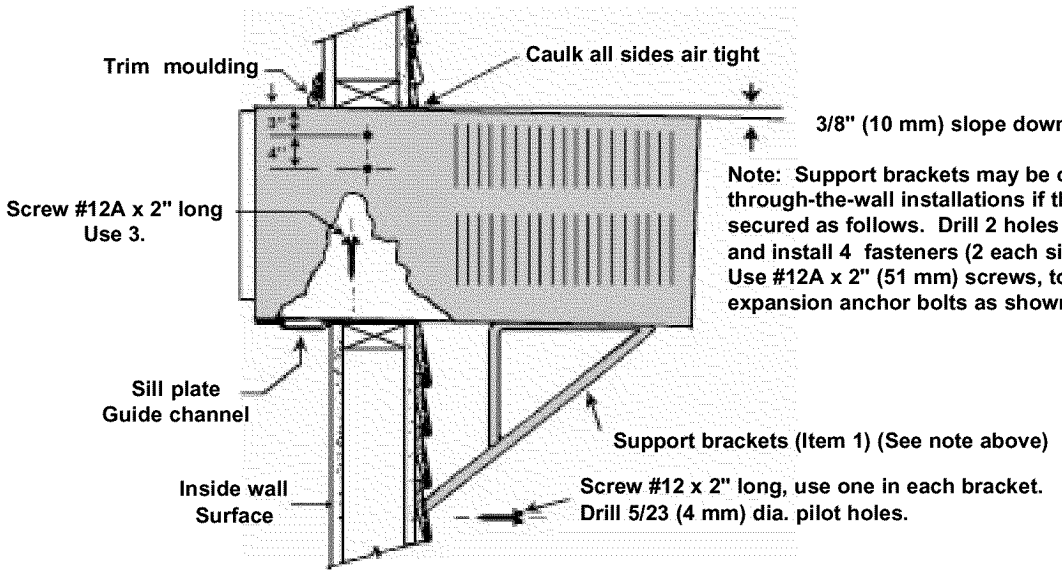
FIGURE N SOLID MASONRY CONSTRUCTION



STEP 3. Slide the cabinet into the hole far enough to allow the guide-channel of the sill plate to contact the inside wall surface (See Figure O).

STEP 4. Drill three (3) 5/32" dia. pilot holes through holes in sill-plate into the framing and install three (3) #12 x 2" long screws (Item #4) (See Figure O).

FIGURE O TYPICAL INSTALLATION



NOTE: ALTERNATE FASTENERS WHICH MAY BE USED FOR SECURING THE SILL PLATE IN THE WALL, AND THE SUPPORT BRACKETS TO THE OUTSIDE WALL ARE NOT FURNISHED, BUT ARE AVAILABLE AT A LOCAL HARDWARE STORE.

MOLLY OR TOGGLE BOLT **EXPANSION ANCHOR BOLT**

STEP 5. Drill two (2) 5/32" (4 mm) dia. pilot holes in each side at the locations shown (Figure O) and install four (4) #12 x 2" screws (Item #4). If the hole construction in Step 2 provides a sturdy mount with solid vertical studs, no support brackets are required. The installation must support the weight of the unit plus an additional weight of 400 pounds (185 kg) on the rear of the cabinet. The support brackets may be used for through-the-wall installations as shown in Figure O, for additional support.

STEP 6. If desired, trim around the cabinet on the room side with a suitable frame molding furnished by the installer (See Figure O).

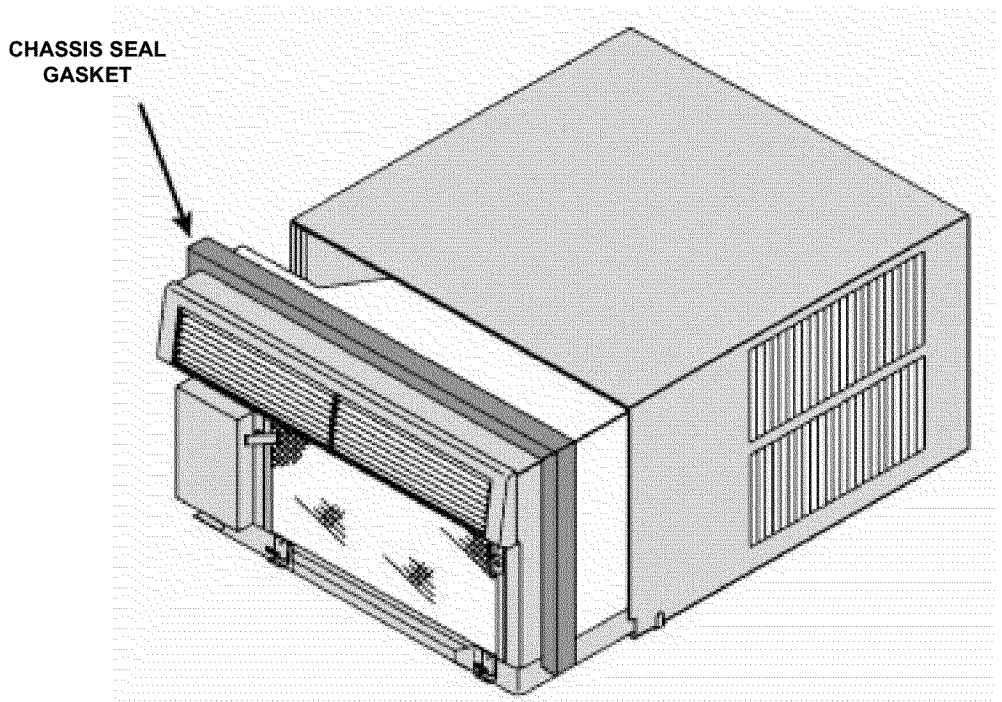
SECTION VI

CHASSIS INSTALLATION

STEP 1. Slide the chassis into the cabinet stopping approximately 3" from full insertion. Stuff the chassis seal gasket (Item #14) one inch deep between the chassis and the cabinet (See Figure P). **Make sure that the gasket is behind the conduit connector (furthest from you).** Push the chassis into the shell the remaining distance so that the plastic front shrouds the front edge of the shell. Fasten the junction box mounting foot to the shell with the sheet metal screw.

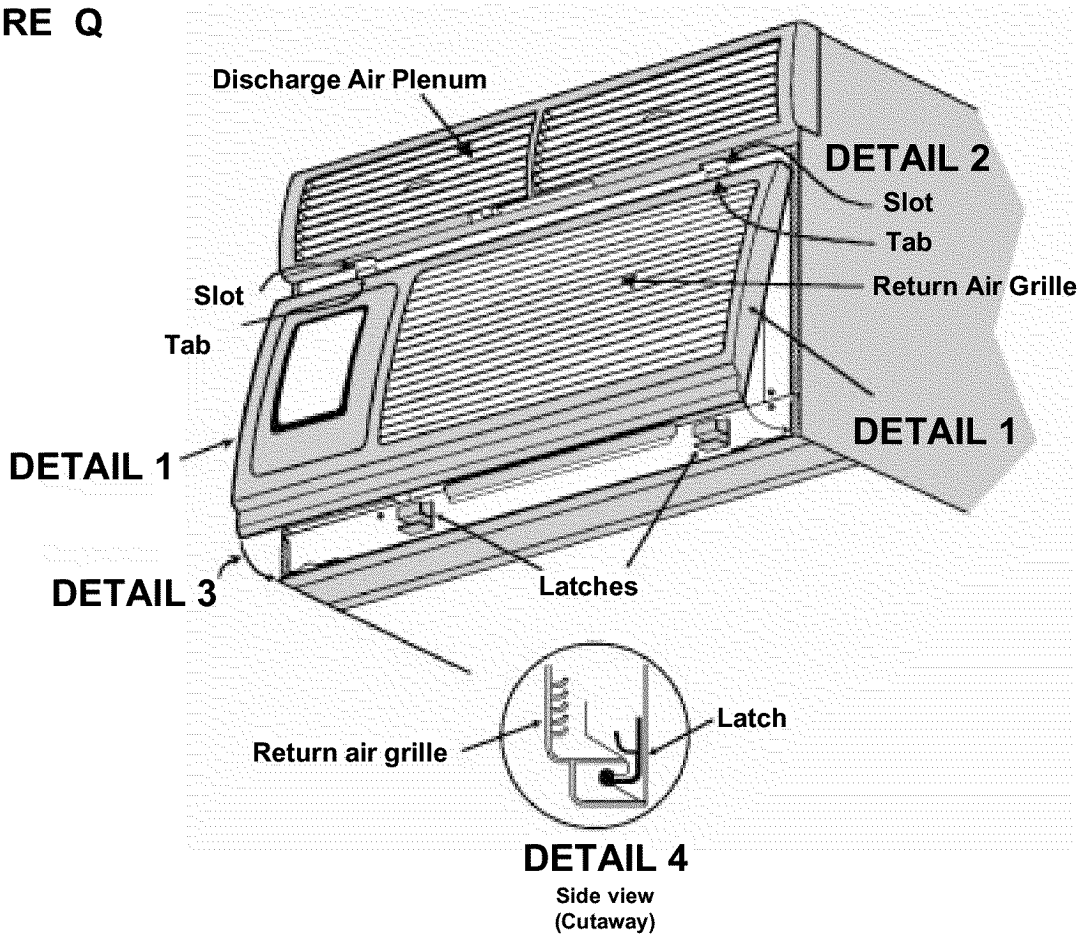
NOTE: **Field wiring must be provided to this junction box in accordance with NATIONAL ELECTRIC CODE ARTICLE 501. Field and equipment grounds are to be terminated at the post in the junction box with the green screw provided. Equipment power leads are to be connected with the field supply by means of wire nuts (not provided). Install the gasket and cover plate onto the junction box.**

FIGURE P



STEP 2. Be sure that the filter is in place then install the return air grille (See Figure Q). The top of the return air grille can be butted against the bottom of the discharge plenum and then snapped at the bottom cupport clips, or the bottom of the grille can be snapped into the grille clips and then engaged below the discharge plenum.

FIGURE Q



STEP 3. You have completed your installation. Conduct a review of your installation to insure that the unit is safely and securely installed. Refer to the "OPERATING GUIDE" section of this manual to test the operation of your unit.

WARNING: – EXPLOSION HAZARD –
SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

FRIEDRICH AIR CONDITIONING CO. INC.
Post Office Box 1540 · San Antonio, Texas 78295-1540
(210) 357-4400 · FAX (210) 357-4480

FRIEDRICH HAZARDGARD ROOM AIR CONDITIONERS LIMITED WARRANTY

LIMITED ONE YEAR PARTS WARRANTY

1. Limited warranty - One year. Friedrich warrants that it will provide a replacement for any part of this HazardGard Room Air Conditioner found defective in material or workmanship for a period of one (1) year from the date of original purchase.

2. Limited warranty - One year. The Friedrich warranty also covers the cost of labor for repairing any compressor, condenser, evaporator or inter-connecting tubing found defective within the warranty period, providing the unit is returned to an authorized Friedrich Repair Station located within the Continental United States.

The Friedrich warranty does not cover:
(1) any charges for removal, transportation or reinstallation of the unit; (2) the cost of labor to replace parts other than those described above; and (3) does not apply to any HazardGard Room Air Conditioner that has been subject to (a) accident, misuse, flood, fire, or neglect; (b) repairs or alterations outside of the Friedrich Authorized Dealer or Service Center so as to affect adversely its performance and reliability; or (c) any repairs or servicing as a result of using parts not sold or approved by Friedrich.

LIMITATIONS: This warranty is a LIMITED warranty. Anything in the warranty notwithstanding, IMPLIED WARRANTIES FOR PARTICULAR PURPOSE AND MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY. MANUFACTURER EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.

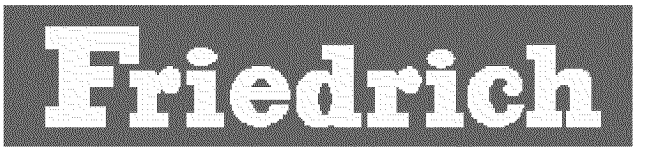
To be assured of registered warranty protection in the event that field service contact and/or product recall should ever become necessary, please complete your warranty registration card immediately, and mail to: FRIEDRICH, CUSTOMER SERVICE DEPT., P.O. Box 1540, San Antonio, TX 78295.

In case of questions regarding the provisions of this warranty, the English version will govern.

WARNING: – EXPLOSION HAZARD –

SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

Revised 8/01



FRIEDRICH HAZARDGARD ROOM AIR CONDITIONERS

FRIEDRICH AIR CONDITIONING CO. INC.
• Post Office Box 1540 • San Antonio, Texas 78295-1540
• 4200 N. Pan Am Expressway • San Antonio, Texas 78218-5212
• (210) 357-4400 • FAX (210) 357-4480
Visit us on the Internet at www.friedrich.com
Printed in the U.S.A.