

Pressures

55 245-250

ideal
16.5 gal 10 gal/min Fo phos
4.5 gal/sec 5-7 ~~MP~~ difference Bornecke



60 lbs

Low
O-ring

410 lbs

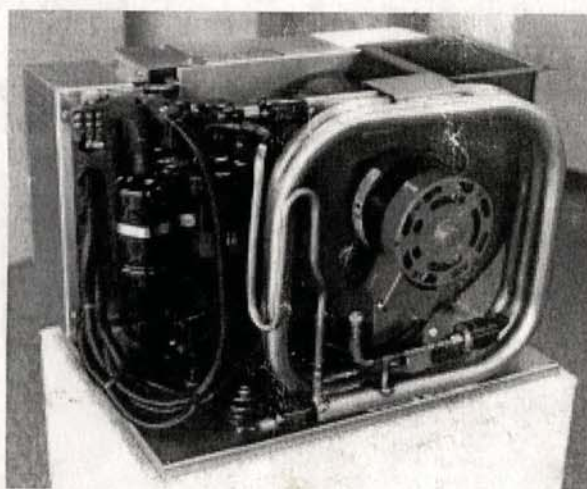
cut off

2427 SE Dixie Highway • Stuart, FL 34996
1-772-283-1609 1-800-316-6426 FAX 772-283-4611
flagshipmarine.com • support@flagshipmarine.com

Serial#
UNIT 72,000 BTU 6-6653342
R22 19.6
230 SINGLE PHASE - 23.7 amps

INSTALLATION & OWNERS MANUAL
SELF CONTAINED MARINE
AIR CONDITIONERS

HEAT 37 amp
40 amp.



160 PSI
switch
or
protection
module

INTRODUCTION

IMPORTANT SAFETY NOTICE- PLEASE READ CAREFULLY

ELECTROCUTION HAZARD

Always follow all federal, state and local electrical codes when installing our units. Severe injury and possibly death may occur if unit is not properly installed or grounded. We suggest a ground fault circuit breaker be used to supply our units and all electrical work be performed by a licensed electrician. Be sure to bond the chassis of our unit to an appropriate ground on the vessels grounding system. All electrical connections must be sealed or covered so as to prevent contact by unauthorized personnel.

CARBON MONOXIDE AND EXPLOSION HAZARD

Never place the unit in an area where it can possibly draw in exhaust or bilge fumes. The electrical parts of our units are not ignition protected and should never be subject to explosive fumes. **NEVER PLACE A SELF CONTAINED UNIT IN THE BILGE AREA.** We suggest the use of a carbon monoxide alarm in the vessel and always have an adequate supply of outside ventilation.

BIOLOGICAL HAZARD

All air conditioning systems condense water and have a wet evaporator. This is an ideal environment for bacteria to propagate. **NEVER PLACE THE UNIT IN AN AREA WHERE IT CAN DRAW IN BILGE FUMES.** We also suggest that periodically, an antibacterial tablet be used to keep the drain clean.

SINKING HAZARD

As with any raw water cooled system, proper installation and maintenance is required to avoid the vessel from taking on sea water. Always use double, stainless clamps on all hoses below the waterline. Frequently inspect the condition of the hoses, clamps and other cooling system parts to insure their integrity. We suggest the thru hull be closed and the unit shut down when the vessel is not occupied. The use of a bilge alarm, using an independent power supply is also recommended. You may wish to consider purchasing a "FLAGSHIP SENTRY," a very unique and effective, patent pending bilge alarm - see our web-site at www.flagshipsentry.com.

CAUTION: Refrigerant under pressure:

Your self contained marine air conditioner is charged with R22. Never release this gas into the environment and always observe the following precautions when servicing the unit. Any repairs should be performed by a trained technician. Any repairs involving the refrigerant should be performed by a trained and licensed technician.

Wear eye protection, gloves, and long sleeved clothing. Extensive frost burns can occur to the eyes and skin if they are to come into contact with the refrigerant. In the event of such contact, immediately rinse the affected area with water and contact a physician.

Never use open flame to test for leaks. A toxic gas may be produced if freon is exposed to a flame.

Never bypass the high pressure switch.

SELECTING COMPONENT LOCATIONS

You will have to find locations for all of the following components: Air conditioner, raw water intake system, overboard discharge system, thermostat, ducting, and grills.

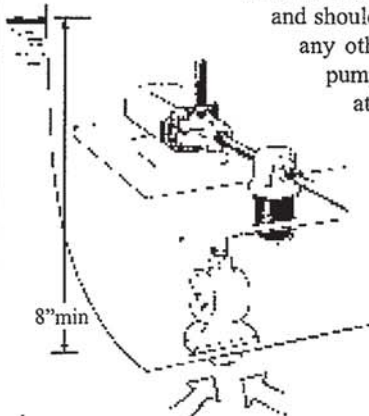
AIR CONDITIONER UNIT LOCATION

The diagram on the next page shows some possible locations for your air conditioning unit. The ideal place will be centrally located with adequate space for ducting, water and electrical connections, and easy service access. Air must circulate around the unit to keep it cool, so leave at least 2" of clearance on all sides of the unit. One of the benefits of rotary compressors compared to piston type compressors is that they will get warm while running and therefore do not sweat, eliminating the need for a full chassis drain pan. This heat, however does need to be dissipated.

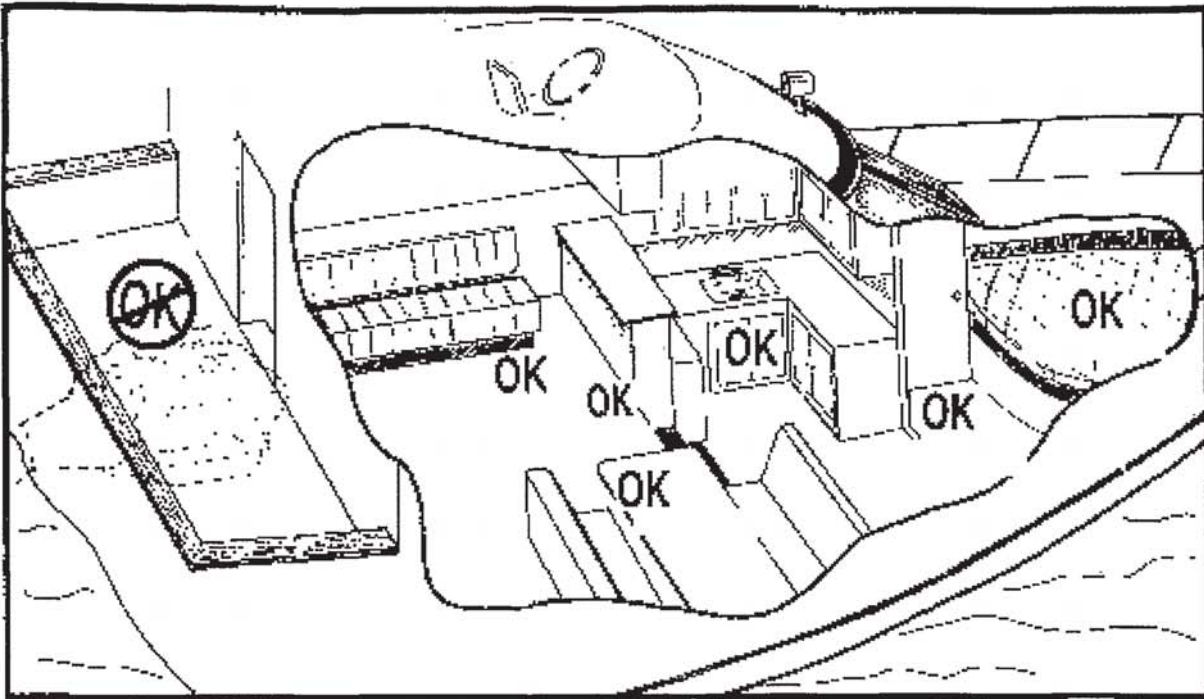
DANGER: This unit is not ignition protected and must not be exposed to gas fumes. Do not install in any area where it may draw air from the bilge area. If it is impossible to find a suitable location, we suggest a split system or chiller system. Contact our sales staff for details.

RAW WATER INTAKE SYSTEM

The raw water intake system consists of a thru-hull, ball valve, strainer and raw water pump. Your air conditioner must have its own dedicated intake system and should never be connected to any other thru-hull that has a pump attached. In some situations, you may T off of the head intake, provided the sizes are appropriate.



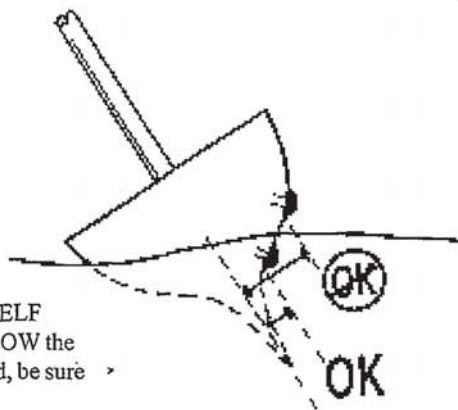
The lower the thru hull can be placed the better because the water temperature can be significantly lower a couple of feet



down, especially dock-side. Never place the thru hull in an area that will not always be underwater because the raw water pump may lose its prime. Remember that if the boat is hauled, you will probably have to prime the pump BEFORE using the air conditioner. On a sailboat, avoid areas of the hull that may not be under water while heeling. On a power boat, avoid areas that may be out of the water while planing or in the backwash of the propeller when reversing. We strongly suggest a scoop strainer be placed over the thru-hull to prevent ingesting foreign material as well as an adequate strainer immediately after the ball valve, both of which are standard with every unit. The first thing to check if your unit is not cooling is the water supply. You should frequently observe the flow out of your overboard discharge and clear any debris from the strainer.

The raw water pump is NOT SELF PRIMING and MUST be placed BELOW the waterline. BEFORE the unit is started, be sure to prime the pump.

The pumps we supply are ignition protected and are adequate for your unit if the rise is no more than three feet and the total distance from the intake thru-hull to the discharge thru hull is no more than fifteen feet. Remember not to



run any of the cooling lines higher than the three foot ADWL maximum unless you upgrade to a larger pump. For example, never run a line over a locker or cabinet, etc. Always double clamp every connection below the water line with quality stainless clamps. Frequently check the condition of all clamps and hoses. We recommend that all thru-hulls be closed and the unit shut down when not attended. A high water bilge alarm is also advisable.

CAUTION: If any part of the cooling system is above the 36" limit, a more powerful raw water pump must be used. Significantly shortened compressor life and inefficient operation will occur if the minimum amount of cooling water is not supplied.

OVERBOARD DISCHARGE

Mount the discharge thru-hull as close as possible to the unit, being sure not to have any part of the hose higher than the maximum 36" ADWL. Ideally, the discharge thru-hull should be between 4-8" ADWL. If it is placed below 4" you will be required to install a ball valve as in any under water thru-hull. If it is above 8", the noise made by the splashing water may not be desirable.

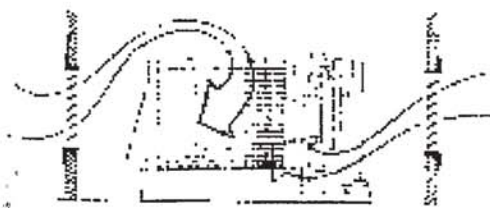
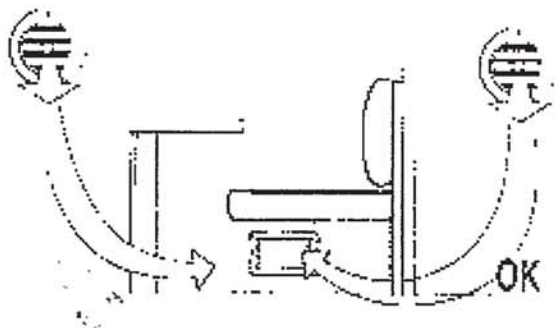
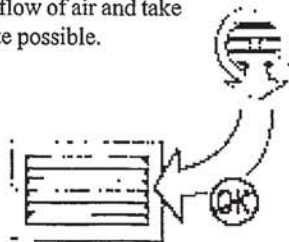
AIR DUCTING AND GRILL LOCATION

Each Flagship Marine unit comes complete with the number of grills and lengths of duct necessary for your particular unit. It is essential to maintain this configuration for the proper operation of your unit.

The flexible ducting should be run directly from the plenum (attached to the blower) to the grills in one unbroken piece.

Simply slide the duct over the collar and secure it with a wire tie.

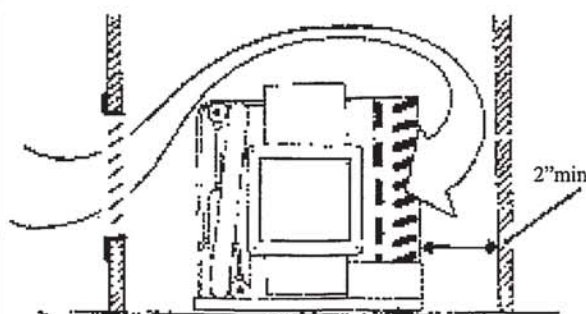
Try to avoid sharp bends that may restrict the flow of air and take the shortest route possible.



If you must run any part of the ducting through the engine room, care must be taken to completely seal off any possible areas of air leakage into the air conditioned space. Insulated duct may be needed to prevent the duct from sweating in these non air conditioned areas.

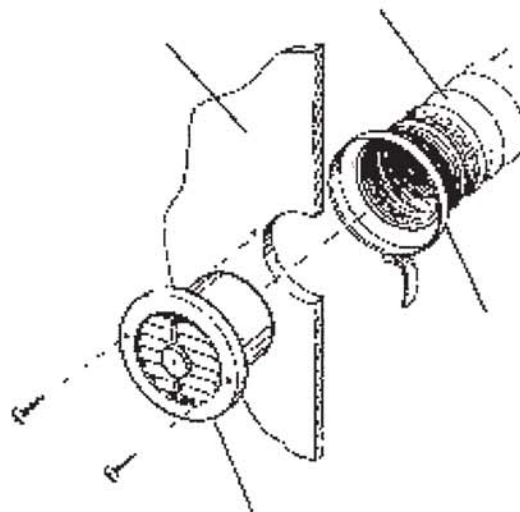
In wooden boats, insulated duct is recommended due to the possibility of water damage caused from duct sweating.

In glass or metal boats, we suggest non insulated ducting because it is much easier to work with and takes up consider-



ably less room. Sweating is seldom a problem unless the unit is undersized for the vessel, in which case the humidity will not be lowered enough to eliminate this sweating.

Do not be alarmed if some sweating occurs initially. This usually dissipates once the boat is dehumidified by the unit.



SUPPLY GRILL INSTALLATION

Starting from the air conditioning unit, run the ducting to the supply grill locations but do not cut until the entire length is properly wire tied and stretched in place. Be careful to avoid sharp bends and unnecessarily long routes. Cut a 4-1/4" hole through the bulkhead after carefully checking the suitability of the location (no wires, lines or other obstructions). Secure duct on the grill with a wire tie.

RETURN AIR GRILL

A return air grill is provided with each unit and must be used unless an equivalent or larger amount of ventilation is provided for the unit. After carefully checking the suitability of the chosen location, being careful to avoid cutting wires, lines or structural bulkheads, cut opening with a sabre saw and secure the grill with stainless screws.

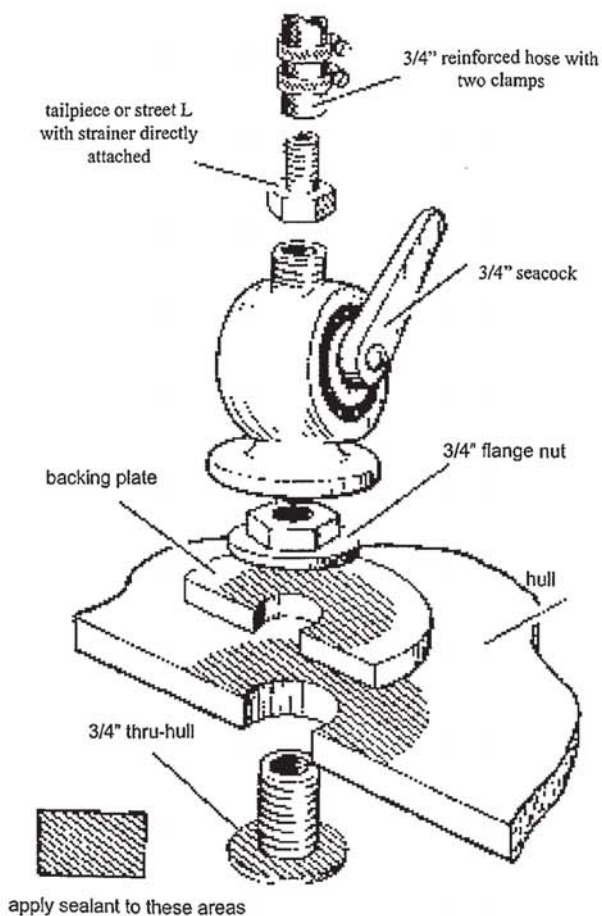
The return air grill need not be in line with the evaporator anywhere in the compartment that the unit is placed is adequate.

In commercial applications especially, we suggest a filter be placed on the evaporator and cleaned regularly.

INSTALLING THE THRU-HULL AND SEACOCK

Carefully consider where to place the thru-hull taking into consideration the distance below the waterline, probability of the location not being under water constantly, access in case of emergency and routine maintenance, ability to operate valve handle, distance to the unit, room to mount pump and strainer nearby (the strainer is often mounted directly onto the ball valve by means of a street L), structure of the vessel etc.

Unless an experienced diver is hired, the vessel will have to be hauled to install the thru-hull. Hulls cored below the waterline should be prepared by a qualified technician. Follow the typical installation layout for a 3/4" thru-hull as shown.



INSTALLING THE CONDENSATE DRAIN

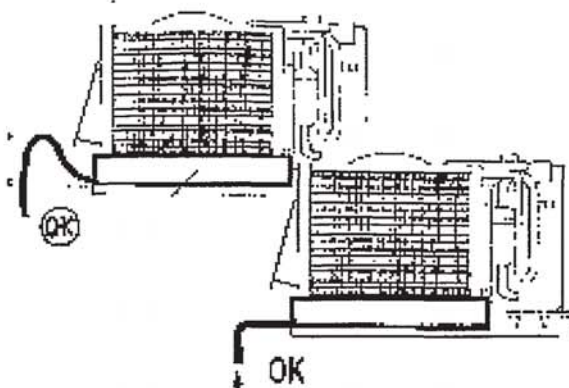
There are several options for draining the condensate. The most common is to simply drain the condensate into the bilge so that the bilge or sump pump pumps it overboard. It can also be drained into a shower drain provided the drain pump is left on, or it can have its own discharge thru-hull.

Securely slide the drain hose onto the drain pan fitting and route to your chosen location. Care must be taken not to have any rise in the line above the drain pan which will cause a back up. To keep this drain free of algae or any bacterial growth, we

suggest you add condensate drain pan tablets that are readily available.

In wooden boats, a separate sump should be installed or a separate thru-hull used to prevent hull damage.

INSTALLING THE RAW WATER PUMP



The raw water pump must be installed below the water line and must be primed prior to starting the compressor.

If possible, mount the pump in a location where it is readily accessible, where lines can be run without excessive distance to either the thru-hull or unit.

With a CalPump, never mount the pump with the plastic volute pointing up. This will cause seal damage eventually because the oil in the pump will not lubricate the shaft. It is also helpful to mount the pump so that the discharge is pointing up. This improves air bubble purging.

Being careful to avoid any kinks that may cause a restriction, and any high points that may reduce the GPH requirements of the unit (36" ADWL), install the water lines from the intake thru-hull to the suction side of the pump and from the discharge side of the pump to the "water in" side of the evaporator and finally from the "water out" side of the evaporator to the discharge thru-hull.

Double clamp all connections below the waterline.

The discharge fitting of the smaller pumps may have a plastic sleeve over the threaded volute to which the 5/8" hose will snug fit. Be sure to double clamp all below the waterline fittings and connections. We supply brass tailpieces with the larger pumps. Care should be taken to not overtighten these fittings. All other fittings should be sealed with either teflon tape or thread sealer. Overtightening these fittings may break the housing on the pump, voiding the warranty.

You may need to purge the air between the pump and thru-hull by opening the connection at the discharge side of the pump.

The suction side is always the larger of the two fittings, on most applications a 3/4" hose. Then start and stop the pump several times until a steady stream of water is observed coming out of the discharge thru-hull. This can be done by simply plugging the molded pigtail end into a duplex outlet, if so equipped.

INSTALLING THE THERMOSTAT

Our standard thermostat is a typical digital, programmable, four wire thermostat. We intentionally used a commonly available thermostat to facilitate the servicing and improve the reliability of your system. It is significantly less expensive and much less time consuming to replace a faulty thermostat than it is to send back to the factory a faulty custom digital control panel.

Any four wire thermostat will operate our unit. The industry standard color coded wires make installation a simple matter of matching up the colors. If you use an alternative thermostat, be sure to select one that does not use a mercury switch because of the motion of the vessel.

Mount the thermostat in a location that will not be in the direct area of unit discharge or on bulkheads that may get direct sunlight. The distance from the unit is not a factor as long as you can conveniently run the thermostat wire to the unit. If the fan fails to operate in the heat mode, make sure the slide switch inside the thermostat is in the HE (heat electric) position rather than the HG position (heat gas).

SECURING THE UNIT

All prudent mariners plan for the worst situation, and mounting your A/C unit should be no different. If possible, thru-bolt the unit down with at least three 1/4" stainless bolts with nuts and washers. In the unlikely event of pitch-poling, broaching, or a knock down, you will be happy you spent the additional fifty cents and ten minutes to properly secure your unit.

WIRING THE UNIT

Make sure your electrical system has the capacity to handle the additional load. You may have to add a separate shore power supply for the unit.

Our units are pre-wired and terminate conveniently on two terminal blocks. The six position terminal block has three connections for the power supply and three positions for the raw water pump or pump relay box if so equipped.

The four position terminal block must be wired to our digital control or any four wire thermostat - simply match up the wire colors.

A twenty-five amp breaker (@115V) using AGW12 marine grade stranded wire is adequate for units up to 20,000BTU with 2KW heaters. Heavier gauge wire must be used for excessively long runs.

Always follow all federal, state and local codes when wiring the unit. We suggest you hire a licensed electrician and use a GFI (ground fault interrupt) breaker.

WARRANTY

Flagship Marine warrants its products to the original purchaser against defects in material and workmanship for a period as follows:

Condenser, chassis
five years parts and one year labor

Compressor, evaporator
five years parts and one year labor

Controls, pump, blower
one year parts and labor

The following conditions may void warranty;
Damage due to fire, flood, impact, abuse.

Attempted repairs not specifically authorized by Flagship Marine.

Any act of god such as lightening strike damage.

Any damage caused by improper, inadequate or inconsistent power supply.

Pump damage due to running dry.

Damage caused by improper installation or misuse.

Flagship Marine will not be liable for any consequential damages due to the use or installation of any of its products.

If, after communicating with Flagship Marine, a warranty repair is deemed necessary, owner, at owners sole expense, will ship to Flagship Marine the defective product that will be repaired or replaced at Flagship Marines' option.

Please save the original receipt and shipping carton in case a warranty repair is necessary.

This warranty does not warrant the suitability of FLAGSHIP MARINE products to any application. FLAGSHIP MARINE does not warrant the installation of its products. Adequate cooling and/or heating capacity is the responsibility of the purchaser. FLAGSHIP MARINE takes no responsibility for component selection or sizing of units. This limited warranty does not cover:

1. Subsequent damage due to condensate leakage, electrolysis, refrigerant leaks, and/or water line leaks.
2. Damage caused by oversized circuit breakers or fuses, undersized or inadequate wiring, etc.
3. Component damage from improper (too high or too low) voltages.
4. Inadequate efficiency due to improper duct system sizing and/or component location.
5. Damage caused by improper or incomplete winterizing of FLAGSHIP MARINE products.
6. Damage caused by lack of, or improper periodic maintenance.

All warranty work must be performed by our personnel at our Stuart, Florida factory location. Before sending a warranty repair to our Stuart, FL location you must obtain an RMA (return merchandise authorization) - freight collect and CODs will not be accepted. All legal complaints must be addressed in Martin County, Florida.

Flagship Marine digital control Installation & Operation instructions

Mounting and connecting your digital control:

The placement of your control is critical for its proper operation. Place it on an interior bulkhead in a location that is protected from direct sunlight, the direct discharge of the air conditioning unit, and avoid a non-insulated engine room bulkhead that may be warm.

The tiny thermistor on the face plate of your control senses the room temperature.

You may display either Celsius or Fahrenheit by sliding the upper slide switch on the printed circuit board and then depress the reset button. The second slide switch on the back of the printed circuit board selects "HE" (heat electric) or "HG" (heat gas) therefore the HE should be selected.

Attach the digital control wire to the four color coded terminals inside the thermostat (there is no yellow on the harness- use the black as yellow). Leave the red jumper wire on the digital RC and RH positions and attach the red to either position.

Initial set up:

For your initial setup and if you don't want to use the program features, follow these simple four steps:

1. Select heat or cool.
2. Hold down either the up or down arrow buttons for a couple of seconds until the left temperature display flashes.
3. Scroll up or down to your desired temperature using the up or down arrows. The left display is your desired temperature and the right display is the actual temperature.
4. Depress "return".

If no programs have been entered this setting will be permanently held or:

If programs have been entered that you would like to override, follow the above steps after the "HOLD" is displayed by depressing the hold button. To cancel this permanent override, again depress the hold button until the "HOLD" disappears from the display.

Setting Programs:

When setting programs, remember that a program will not take affect until the time of that program is reached, so you may wish to temporarily override all programs initially.

First set the time, observing the PM indicator, and the day of the week by simply pressing the time and day buttons until the proper information is displayed. Then press return.

You can scroll through the six available programs by pressing the program button repeatedly. The program number will be displayed in small numbers at the top of the screen as well as Mon- Fri or Sat- Sun. You must enter at least one program for the four available Monday - Friday settings, and at least one program from the four available Saturday and Sunday programs.

To enter a new program or change an existing program, scroll to the desired program with the program button, and then simply enter the time you wish this program to commence, and the temperature you desire at that time. The control will maintain that temperature indefinitely unless it reaches the time of another program. For example, if you were to set only two programs for the Mon - Fri period, one being 76Y at 9AM and the second being 72Y at 5PM, the control would at 9AM maintain 76Y until 5PM, at which time it would maintain 72Y until 9AM. Remember, these programs do not take effect immediately so you may wish to temporarily override these settings with the hold function.

Operation:

If you want the fan to operate constantly, set the left switch to "FAN". If you want the fan to operate only when actually in the heating or cooling mode, set this switch to "AUTO".

For troubleshooting purposes, the red wire is the 24V power supply from the A/C unit transformer, the green wire activates the blower relay, the yellow wire activates the compressor and pump relay and the white wire activates the heating element relay.

To bypass the control for diagnostic purposes or emergency use, cross all of the wires except the white for cooling or all of the wires except the yellow for heating.

In the event of illegible readouts, momentarily depress the "RS" (reset) switch by inserting a paper clip or similar object in the reset hole on the face plate. This will reset the control and erase all entered programs.