

OM-690  
5/10/84



INSTALLATION, OPERATION

AND MAINTENANCE

MANUAL FOR

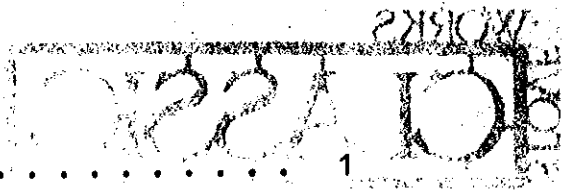
SURDIAC ROYALE 690

&

GOTHA 714

**389 John Downey Drive/New Britain, CT 06051/(203) 229-4772**  
**Outside Connecticut, Toll-free 1-800-243-0522/Telex #643292**

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**SAFETY NOTICE:** IF THIS SURDIAC COAL STOVE IS NOT PROPERLY  
INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE  
INSTALLATION DIRECTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS  
ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA.

389 John Downey Drive, New Britain, CT 06051 (508) 250-4473  
Outside Connecticut, Toll-free 1-800-543-0222, Telex #44328

Tools for Operation:

- a) two pokers; large and small for stove maintenance.
- b) brass hook; for cleaning ash-ports.
- c) cast iron tool; for opening the front door, for opening the bottom ash door, for carrying the ash pan and opening the loading valve.

Dimensional Specifications:

Height: 27.7"    Length: 35.4"    Depth: 17.7"    Weight: 380 lbs. for 690  
Height to top of flue: 23.5"    Flue outlet: 5" O.D.    440 lbs. for 714

Heating Capacity:

Maximum unattended burn time up to 48 hours. Maximum B.T.U. output 48,000 per hour. Heating capacity up to 14,500 cu. ft.

NOTE: THE HEATING CAPACITY OF ANY STOVE IS AFFECTED BY SUCH FACTORS AS:

- 1) FUEL - QUALITY OF WOOD OR COAL BURNED IN
  - COAL
    - ASH CONTENT
    - VOLATILE CONTENT
    - ASH FUSION POINT
    - SIZE OF INDIVIDUAL PIECES OF COAL
  - WOOD
    - MOISTURE CONTENT
    - SEASONING OF WOOD
    - APPROPRIATE STORAGE
- 2) AREA HEATED:
  - A) AIR INFILTRATION OF HOME
  - B) INDIVIDUAL HEAT DEMAND OF HOUSE OR HEAT LOSS FACTORS
  - C) STOVE LOCATION AND INSTALLATION.
- 3) OPERATION OF STOVE:
  - A) PROPER STOVE MAINTENANCE AND DAILY CARE
  - B) PROPERLY SET AND CONSISTENT CHIMNEY DRAFT.

NOTE: HOME HEATING CAPACITY, BURN TIME, AND FUEL CONSUMPTION, ARE CONTIN-  
GENT UPON CERTAIN VARIABLE FACTORS SUCH AS, THE FUEL UTILIZED, ITS QUALITY  
AND PHYSICAL PROPERTIES, DOMESTIC HEATING REQUIREMENTS, AND THE REGIONAL  
CLIMATIC CONDITIONS.

NOTE: THIS STOVE IS NOT APPROVED FOR USE IN MOBILE HOMES.

NOTE: USE OF ALUMINUM TYPE B GAS VENT FOR SOLID FUELS IS UNSAFE AND PROHIBITED  
BY THE NATIONAL FIRE PROTECTION ASSOCIATION CODE.

NOTE: KEEP ALL HOUSEHOLD FURNISHINGS AT A CONSIDERABLE DISTANCE AWAY FROM  
THE STOVE.

## INSTALLATION

We recommend that your multi-fuel stove be installed in your home by a qualified technician and that you carefully read this notice -- particularly the paragraphs where the thermostat is concerned.

The floor beneath the unit must be covered with  $\frac{3}{4}$ " thick asbestos mill-board or equivalent. The non-combustible floor covering shall extend a minimum of 8" beyond the rear of the chimney connector; 8" beyond the sides of the unit and 20" beyond the front of the unit. (Fig. 1)

The minimum clearances to combustible materials are as follows: (Fig. 2)

- A 19" from back of chimney connector to the back wall.
- B 30" from side of chimney connector to nearest side wall.

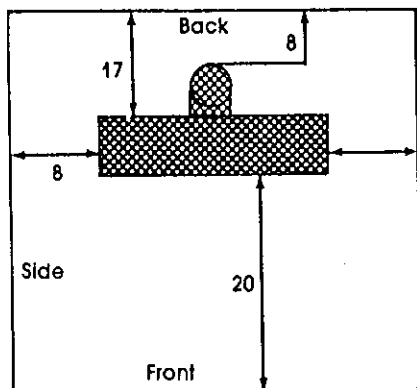


Fig. 1

FLOOR PROTECTION

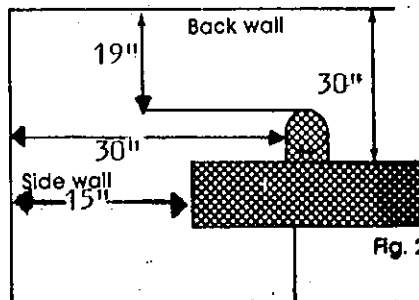


Fig. 2

DISTANCES FROM COMBUSTIBLES

**DANGER!** LOADING DOOR MUST BE CLOSED DURING OPERATION

**CAUTION!**

- Hot while in operation.
- Do not touch, keep children, clothing and furniture away.
- Contact may cause skin burns.

**NOTE:** Clearances may be reduced if walls are non-combustible. CONSULT YOUR LOCAL BUILDING CODES OR FIRE DEPARTMENT FOR AN ACCURATE DEFINITION OF A "NON-COMBUSTIBLE WALL" AND FOR CLEARANCES FROM THESE WALLS.

## THE CHIMNEY

This stove should have its own chimney of a suitable height (approximately 15 ft.). All openings such as clean-out doors or flue openings on other floors should be sealed airtight.

Conditions for the Proper Function of the Chimney Section (Fig. 3)

1. The cap should be well ventilated.
2. In a masonry system, chimney reduction must be made gradually.
3. Elbows and offsets should be made clear and unrestricted.
4. The inside should be kept smooth and free of cracks.
5. Chimney thimble is to be tight.
6. The smoke pipe must be carefully sealed.
7. The smoke pipe is to be properly inserted into the correct depth and is not to protrude inside the chimney.
8. When using a manufactured chimney, it must be a UL listed residential type heating appliance chimney system.

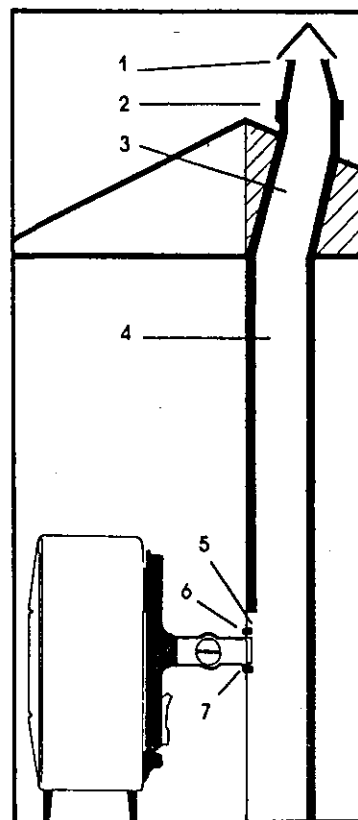


Fig. 3

For additional information pertaining to chimney draft, please refer to page 17.

A BAROMETRIC DAMPER MUST BE INSTALLED TO INSURE A STABLE DRAFT AND A CONSISTENT RATE OF COMBUSTION.

The ideal operating draft range is .03 to .05WC. Have your authorized technician check your specific draft level by using a draft reading instrument and adjust it as necessary.

If it is determined that the draft level is too low; for example, less than .015WC increasing chimney height or any other applicable corrective measure may be used to increase the draft to an appropriate level.

Although cast iron dampers have resolved many operational problems on old design wood stoves, they are not recommended for use on this unit. They do not compensate for variations in wind activity for optimum combustion efficiency.

## STOVE PIPE TO CHIMNEY

The smoke pipe should be airtight in order to avoid malfunction and be installed according to Figures 4, 5, 6.

1. Stove pipe must be properly sealed to the stove. Flue size 5" O.D. Material must be 24 GA blue steel or equivalent.
2. It should be straight and as short as possible.
3. The pipe must have 1" per foot rise properly secured by 3 equally spaced sheet metal screws at each joint.
4. Stove cement or some other material that will not disintegrate should be used to seal joints.
5. The smoke pipe may be attached to flue by filling the void with a furnace cement or fiberglass gasketing and should not be inserted more than 1".

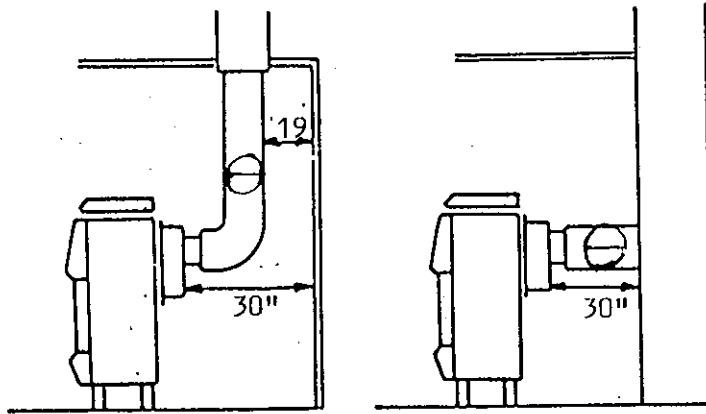
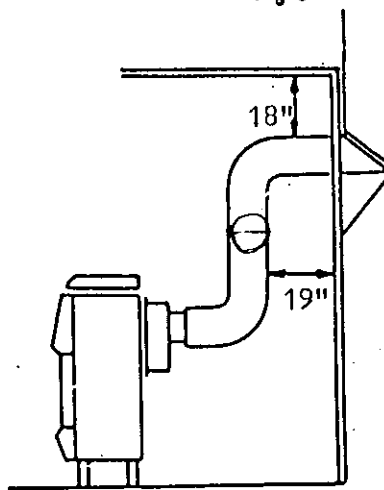


Fig 4

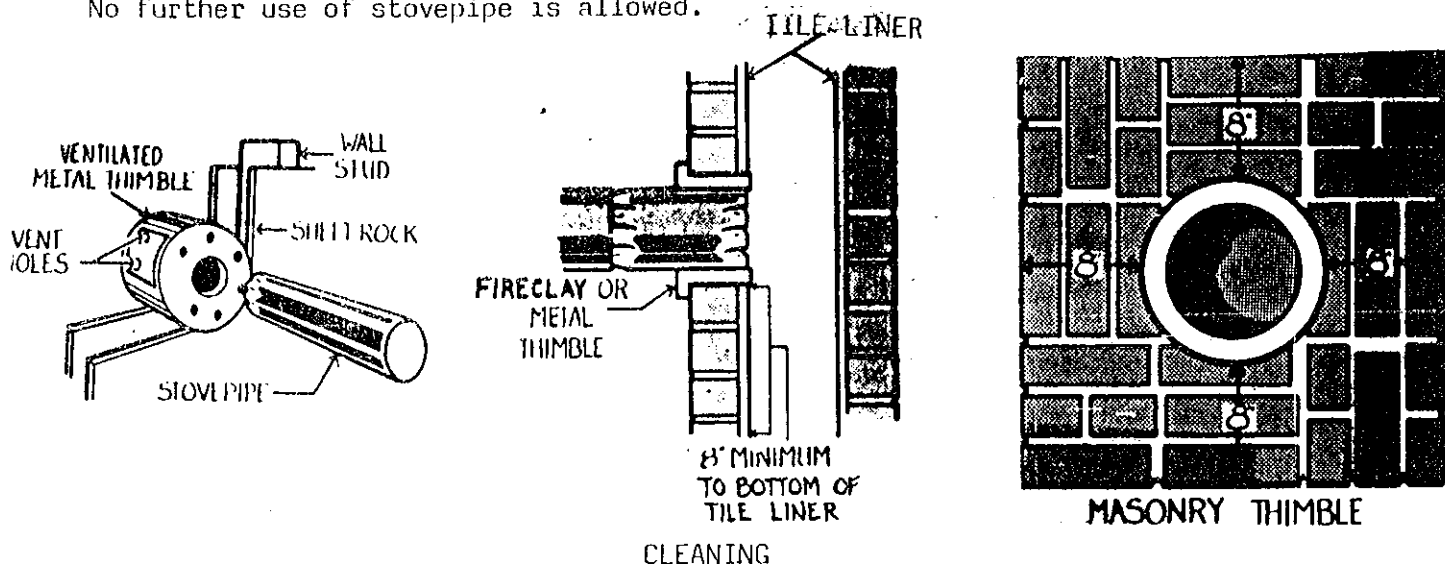
Fig 5

Fig 6



## THIMBLES

A metal or fireclay thimble is used when passing a stovepipe through non-combustible walls or into a chimney. The thimble should be permanently cemented (with refractory cement) into the masonry and should extend through the chimney wall to the inner face of the liner, but not beyond. If possible, the stovepipe should extend into the thimble so the end of the stovepipe is flush with the inner end of the thimble. In many cases the inner diameter of the thimble will be too small to allow full penetration of the stovepipe into the thimble. In this case, the stovepipe should be inserted as far as possible and then securely fastened to the thimble. If it is necessary to pass a flue connection through a combustible interior or exterior wall, a horizontal section of prefabricated chimney installed according to the chimneys manufacturer's specifications can be used. A combustible wall may also be penetrated by a fireclay or metal thimble surrounded by solid masonry at least 8 inches on all sides, by a metal ventilated thimble at least 12 inches larger than the flue pipe or by removing all combustible material within 18 inches of the stovepipe. These wall penetrations should only be used when it is necessary to penetrate a chimney which is immediately in back of a combustible wall. Stovepipe should never be used to penetrate a ceiling. A stovepipe may never pass through a ceiling, closet, or concealed area; for these areas a listed factory-made chimney is required. Once the stovepipe connects to a chimney, it must remain a chimney from that point on. No further use of stovepipe is allowed.



Before putting your stove into use, wipe it off with a clean, soft, dry cloth. As moisture and fingerprints will stain your appliance permanently, be very meticulous while doing this. If any drops of moisture are on the stove when you light it, be sure to wipe them off immediately.

- NOTE: 1) THE TWO STRIPS OF TAPE ON THE PYREX GLASS AND THE PLASTIC COVERING ON THE CHROME PARTS SHOULD BE REMOVED PRIOR TO FIRING THE STOVE.
- 2) THE BLUE WAX APPLIED TO THE COOKING SURFACE AND THE CLEAR PLASTIC TAPE APPLIED TO CHROME PARTS OF THE STOVE SHOULD BE COMPLETELY REMOVED PRIOR TO LIGHTING YOUR STOVE SINCE IT IS ONLY APPLIED AT THE FACTORY TO PROTECT THE STOVE DURING SHIPMENT.

## RECOMMENDED SOLID FUELS

Types: Anthracite, bituminous and wood fuels.

Coal Calibrations:  $\frac{1}{4}$ " to  $3\frac{1}{4}$ ". Dry seasoned hardwood (maximum length 22").

The Surdiac MCK 690 is engineered and designed to accomodate a wide range of solid fuels from high to low volatility, in various sizes.

The versatility of the MCK 690 can be attributed to the coking chamber for the gaseous properties in certain fuels and the storage reservoir inverted over the firebed facilitating free flow for the various size coals also allowing for the swelling properties found in soft coal.



## LIGHTING YOUR STOVE

Using the stove tool provided with your appliance open the top cover and the loading valve. Place several pieces of newspaper into the hopper where it will naturally fall and land on the surface of the grates (fire). Next place some 4" strips of kindling on top of the newspaper. Add a small amount of coal by lightly distributing it over the kindling. Close the loading valve.

Next set the thermostat control dial #1 shown on the schematic, page 9, to a number 8 setting. Adjust the manual secondary air lever identified as #2 to a fully open position for soft coal only. For anthracite and low volatile fuels leave this lever in the closed position. Open the pyrex door and light the newspaper. When the newspaper begins to ignite, close the pyrex door. After the kindling is burning well, add some additional wood kindling with a shovel of coal into the hopper; then make sure the hopper door is tightly shut. When the coal is burning, add additional coal a little at a time. Also, it is very important that there are no pieces of coal or coal particles in the closure area so that the hopper door is airtight.

After 20-30 minutes, reset the thermostatic control to the heating comfort desired. Now with the coal on the grate burning brightly, fill the hopper with coal, leaving at least one inch of space between the coal and the hopper cover when closed.

When burning soft coal adjust the secondary air lever to the appropriate setting depending on such factors as the volatility and swelling properties of the soft coal used.

NOTE: The pyrex glass door may be cleaned with a non-abrasive household cleaner such as ammonia. The cleaner should only be applied when the glass is cool. Placing a moist cloth on the glass surface when it is hot could cause permanent etching and clouding.

NOTE: YOU SHOULD NEVER OPERATE A STOVE WITH BROKEN GLASS, REPLACE IT IMMEDIATELY. FOR REPLACEMENT GLASS CONTACT YOUR NEAREST AUTHORIZED CLASSIC-SURDIAC DEALER, OR CLASSIC STOVE WORKS DIRECTLY.

CAUTION: NEVER USE GASOLINE OR ANY GASOLINE TYPE OF LANTERN FUEL SUCH AS KEROSENE, CHARCOAL LIGHTER FLUID OR SIMILAR LIQUIDS TO START OR FRESHEN UP A FIRE IN THIS STOVE.

NOTE: Before lighting your fire, cover the inside of the pyrex door with aluminum foil. This will keep the glass free of smoke build up while starting the fire. After the coal fire is well established, remove the foil for clear visibility of the fire.

After using your stove for several weeks, the glass may develop a slight white haze. In the morning when the fire has subsided and before shaking down the ashes, open the pyrex door and cover the front stove opening with aluminum foil, allowing the glass door to cool for 20-30 minutes. When the glass is cool, you may then clean it while the stove is still in operation!

NOTE: Classic Stove Works stocks and sells both glass cleaner and a silica gel substitute known as "Zerust" capsules. If you have difficulty in obtaining any of these materials locally, please contact our nearest authorized Dealer or our New Britain, Ct. office for details and pricing.

## BREAKING IN YOUR STOVE

Just like any other fine appliance constructed of high quality cast iron alloys, the Surdiac stoves need to be gradually "broken in" prior to loading the hopper fully and using the stove normally.

It is mandatory that five (5) consecutive small coal fires be built in the stove prior to using it continuously 24 hrs./day with the hopper fully loaded. The five "firings" referred to are successive small coal fires being built with a complete cooling off of the stove after the fire dies down. It is not acceptable to build a small fire and keep it going for 2-3 days on a low stove setting. The stove must be cooled off completely after a firing in order to properly heat treat or break in all the metal parts on the stove.

NOTE: You should never bring the stove from very cold temperatures into your home and build a fire in it immediately. The stove should be allowed to properly warm up to room temperature (50-60°F) before firing it up for the first time.

## THERMOSTAT ADJUSTMENT

- 0-1 Mild temperature or for night time use.
- 1-2 Normal usage
- 3-4 Cold Weather usage
- 5-8 High heat setting for a duration of NOT MORE THAN TWO HOURS. On any of these high heat settings, the cover of the stove should be raised to an upright position to prevent warping or damage to the cast iron parts of the stove. (After high heat setting usage, the stove MUST be operated at a setting of less than 3 for 24 hrs. prior to next high heat usage.) Figure (7)

### IMPORTANT

The thermostat has been regulated in the factory and is not to be adjusted except by a qualified technician. A prolonged overheating of the stove can damage both the stove and the thermostat. Treat your stove carefully as with any other fine appliance. Do not force the thermostat dial. Turn it only as far as it will naturally go. WHEN THE STOVE IS HOT, THE DIAL WILL NOT GO BACK TO A SETTING OF ZERO.

### Secondary Air Adjustment Lever:

The purpose of this feature is to introduce air into the coking chamber for high volatile fuels such as soft coal and wood.

The lever itself is calibrated from 0 totally closed, to 8 totally open position, using the side of the stove as a reference point.

### When Burning Wood or Soft Coal:

8 - initial firing

0 - night time setting

1-7 Day time operational ranges set according to the stage of the burning cycle, the swelling properties of the coal and heating requirements. When initially loading the stove with fuel the lever should be set on the higher numbers (5-7). As the burning cycle progresses (1-2 hours later) set the lever to a number that directly corresponds to the thermostat setting ie: thermostat set on #2 secondary lever set on #2 or #3.

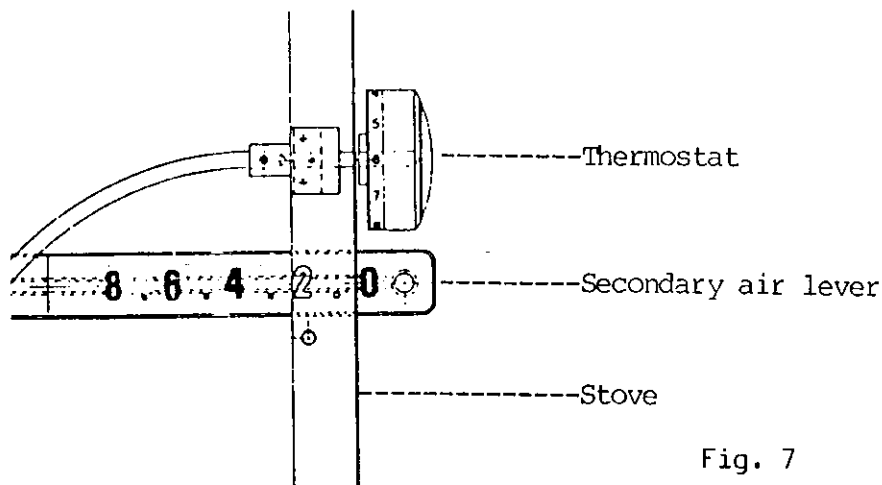


Fig. 7

## MAINTAINING THE FIRE

WHEN USING SUCH FUELS AS: ANTHRACITE COAL

- 1) Be sure that all the doors on the appliance are tightly shut, including the ash pan door and the coal hopper door to insure that the stove is completely airtight.

NEVER LEAVE ANY OF THESE DOORS OPEN WHILE OPERATING YOUR APPLIANCE. THIS COULD CAUSE OVERHEATING AND DAMAGE YOUR APPLIANCE.

The chamber which holds the ash pan should be kept reasonably clean to allow the ash pan to be pushed in as far as possible so as not to impede the closing of the ash pan door.

- 2) To keep the fire burning, ashes should be shaken down into the ash pan using the small poker provided with the appliance. Ashes can be shaken down once every 6 hours on high settings; on warmer days or when the stove is set on the lower settings, shaking is necessary only every 12 to 30 hours.

NOTE: CONTINUOUS FREQUENT SHAKEDOWNS SUCH AS EVERY 1, 2, OR 3 HOURS WILL CAUSE DAMAGE TO THE STOVE -- THIS MUST BE AVOIDED.

There are 3 openings above the ash door where the poker must be inserted in order to shake down the ashes (Fig. 10). When you introduce the poker into each opening, use a stabbing motion several times moving to the right, to the left, and to the back and front of the firegrate. Do not employ a side to side swaying motion when shaking the stove down, this procedure will result in coal and ash build-up along the edges of the fire basket.

NOTE: IT IS IMPORTANT THAT ALL ASH IS REMOVED FROM THE GRATE AREA WITH PARTICULAR ATTENTION TO THE BACK SIDE OF THE UPPER AREA. IF THE ASHES ARE NOT THOROUGHLY REMOVED, LESS SPACE WILL BE AVAILABLE FOR COAL COMBUSTION RESULTING IN LESS HEAT.

NOTE: AFTER EXTENDED USE OF THE POKER, IT WILL BECOME SHORTER FROM WEAR MAKING IT MORE DIFFICULT TO REMOVE ASH FROM THE BACK OF THE FIREBOX. INSPECT THE POKER YEARLY, MAKING SURE IT IS AT LEAST 15" LONG (OVERALL LENGTH INCLUDING HANDLE).

**IMPORTANT:** After removing the poker from each opening, be sure that the closure on the inside of the opening is in closed position so that it does not permit a draft of air to enter the firebox area -- this would interfere with the operation of the thermostat. A brass hook tool is provided with the stove for the purpose of removing ash or pieces of coal.

To remove the ashes, open the lower front panel on the stove. Use the cast iron tool provided to open the ash pan door. The closure is located to the left of the ash pan door. Remove and carry the ash pans with the same cast iron tool.

Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible floor or outdoors well away from all combustible materials. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all ashes have thoroughly cooled.

DO NOT LET ASHES ACCUMULATE IN THE ASH PAN

A good rule of thumb is to empty the ash pans every time the ashes are shaken down. If ashes accumulate in the ash pans, this will clog the stove grates and impede the air flow to the firebed. This will cause premature deterioration of cast iron grates.

## Maintaining the Fire, Con't.

On the coldest day of winter if the thermostat is on a higher setting, the ash pan may need to be emptied one extra time in the middle of the day. Every time ashes are shaken down and the ash pan is emptied, new fresh coal must be added into the hopper reservoir to assure and maintain normal stove operation.

### MAINTAINING THE FIRE USING BITUMINOUS SOFT COAL:

First Phase: Same as for anthracite.

Second Phase: Approximately 6 to 12 hours (depending on the grade of bituminous coal and thermostat setting) the mass of coal will be fused together thus you must open the top loading valve and with the large poker press the entire mass of coal separating pieces, allowing them to settle in the firegrate area for combustion and shakedown.(Fig. 10)

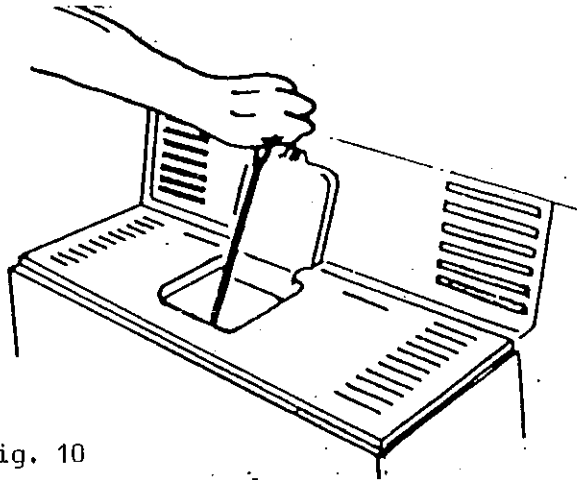


Fig. 10

Third Phase: Follow the same exact instructions given in the first section for maintaining the fire when using anthracite coal, using the small poker.

Repeat: The two procedures in the same sequence as often as necessary adding more coal to the storage hopper when necessary.

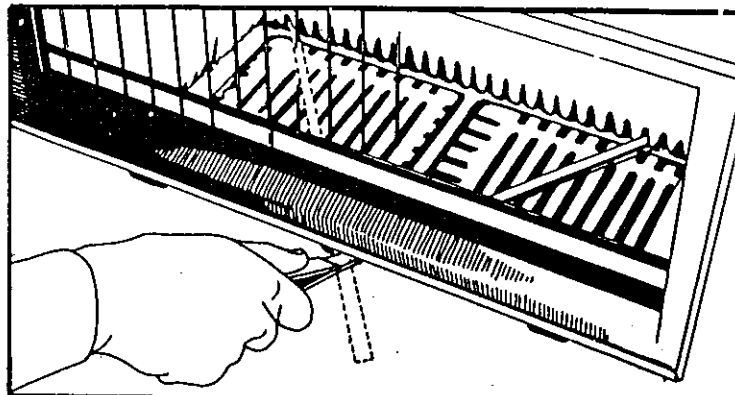


Fig. 11 11

THE 690 AND 714 FOR WOOD BURNING

In order to burn wood in your Surdiac Stove it is required that you remove the lower front hopper creating enough space in the firebox to accommodate wood logs. First, open the pyrex glass door, you will notice that the hopper is affixed by two metric bolts.

Second, with a 13 mm sized metric socket wrench remove each holding bolt and carefully guide the one piece hopper out of the unit through the front door opening. Your stove is now ready to burn seasoned hard wood logs approximately 18", 22" in size.

NOTE: CAREFULLY READ THE SECTION ON HEATING WITH WOOD FOR SAFETY AND PROPER MAINTENANCE.

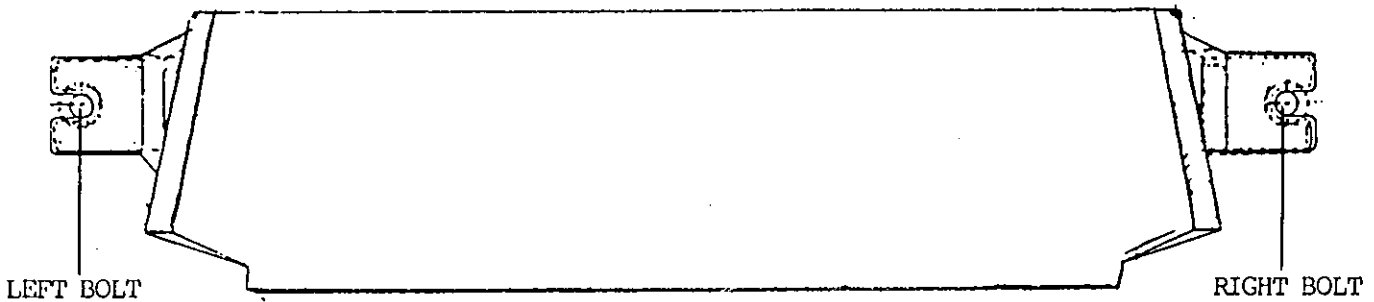
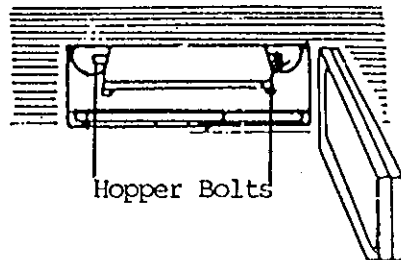


Fig. 12

## LIGHTING AND MAINTAINING YOUR STOVE WHEN BURNING WOOD

When lighting your stove open the front pyrex door and place several pieces of crumpled newspaper along the cradle area on top of the fire grates. Next place some kindling wood on top of the newspapers.

Set the thermostat on number 8 position.

Leave secondary air lever completely closed.

Light the newspapers and close the pyrex door.

As the fire progresses, add some additional kindling and a log or two, gradually building a wood fire. REMEMBER; each time following the placement of fuel into the stove, securely close the glass door.

After establishing a wood fire, reset the thermostat to the desired setting within the normal operating range. Also, set the manual secondary air lever following the directions given on page 9.

Maintaining your stove when burning wood is basically the same as the procedure used when burning soft coal.

Your wood should be loaded through the front pyrex door. The large poker may be used by opening the top loading valve and poking down chunks of wood for the second phase of shakedown shown on page 11.

## HEATING WITH WOOD

### NOTICING CREOSOTE FORMATION AND THE NEED FOR REMOVAL

During the stove operation the by-products of wood burning (smoke) consist of various hydrocarbons, organic vapors, tar and water vapor. The combination and condensation of these matters as they travel through the system form a residual creosote which accumulates on the stove pipes and chimney walls.

AS THE CREOSOTE ACCUMULATES THERE IS A RISK OF A CHIMNEY FIRE.

These are some safety tips that should be used to minimize this problem:

1. Always burn dry seasoned hard wood.
2. Make sure you have a good bed of ashes and hot coals in the firebox before adding wood.
3. Occasionally operate the stove on a high heat setting. (NOT TO EXCEED TWO HOURS)
4. The chimney pipes and connectors should be inspected at least twice a month during the heating season, for excessive creosote or coal fly ash accumulation.
5. Refer to page 15 on cleaning the exhaust ports and heat exchanger.

## CHIMNEY AND VENT CLEANING

**IMPORTANT:** A clean chimney is paramount to the safe operation of your stove. Your chimney should be inspected and cleaned at least once a year for safe operation. To keep your appliance in good working order, it is necessary to keep soot accumulation to a minimum.

Your Surdiac appliance has clean-out plug provisions on the rear heat exchanger (figure 13, items C & B). Remove these covers by turning the wing nuts counter clock wise and pulling these plates off of the exchanger. Check for soot and creosote accumulation and remove it because this can impede draft and hamper the operation of the stove. Also check the horizontal exhaust ports (figure 13, item A) and remove any soot or creosote accumulation in these areas. Note: When putting the plates back onto the heat exchanger for covering the duct closures care should be exercised in making sure that the ducts are perfectly sealed.

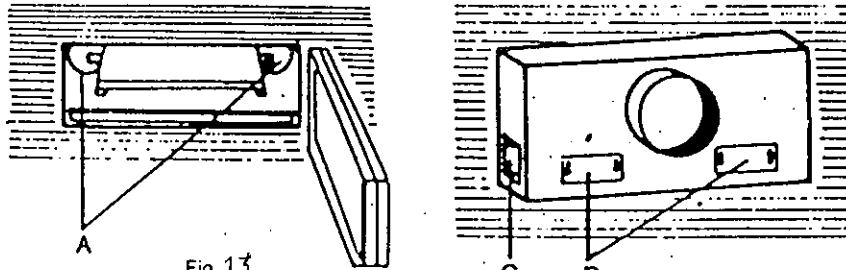


Fig 13

A HORIZONTAL EXHAUST PORTS

B SIDE CLEAN-OUT PLUGS

C REAR CLEAN-OUT PLUGS ON BOTH SIDES



## CARE

Do not clean the appliance until it has completely cooled down. Avoid harsh chemical cleaners or abrasives.

The pyrex panes on the front door of the stove can be cleaned only when the stove is completely cold. The manufacturer suggests a water-vinegar solution.

WHEN THE STOVE IS NOT IN USE: Remove carefully all coal ashes and soot. Cover chromed surfaces with a thin coat of pure vaseline. Place a cloth bag inside of stove containing a dehydrating substance such as silica-gel, which absorbs moisture while the stove is not in use. Silica-gel may be purchased in most drugstores.

During the summer months or when the stove is idle for a long time, the cable and thermostat housing should be lubricated with a small amount of oil.

NOTE: Periodically you should inspect the gasketing materials on all three doors: The top loading door, the ash pan door and the front pyrex door. With extended time and usage the gasketing can wear and should be replaced to insure safe, controlled burning in your stove.

CAUTION: Do not clean while hot.

### DRAFT FACTORS

1. Poorly assembled pipe connections running from the stove itself to flue connection.
2. Chimney is not insulated properly - needed to maintain correct stack temperature (cooling off and losing negative pressure).
3. Leaks in the chimney system.
4. Improper chimney dimension, stack easily cooled.
5. Chimney flue not straight - starts at one point then angles off.
6. Chimney not tile lined, may result in cooling and leaks.
7. Poor masonry work on lining of chimney - excessive mortar and leaks.
8. Fireplace connection where the pipe running from the stove to the fireplace flue improperly installed.
9. Pipe connection forced against smoke shelf.
10. Pipe connection into regular chimney flue not properly installed.
  - a. Forced in too far.
  - b. Not sealed properly.
11. Where chimney system connected to oil burner flue - furnace goes on causing excessive draft or disrupts the continuity of combustion.
12. Fireplace clean-out door opened - causing draft interference.
13. Insufficient chimney height.
14. Trees around chimney or location of home - making it susceptible to down drafts.
15. Materials and construction of a makeshift chimney.
16. Chimney obstructions.
17. Outside temperature too warm, creating poor draft.