

LAKEWOOD STOVES

Owner's Manual

- INSTALLATION
- OPERATION
- REPAIR PARTS

This manual covers:

THE LAKEWOOD ELK DOUBLE DOOR
THE LAKEWOOD UNICORN DOUBLE DOOR
THE LAKEWOOD COTTAGER
THE LAKEWOOD WORKHORSE
THE LAKEWOOD CANADIAN STEPSTOVE
THE LAKEWOOD SPACEMATE

Caution:

Read all instruction
carefully before
starting
installation

Do not use
this heater
in mobile
home or trailers

SAVE THIS MANUAL FOR FUTURE REFERENCE

BURN WOOD ONLY

Distributed by:

LAKEWOOD
MANUFACTURING LIMITED
P.O. Box 489 Bobcaygeon, Ontario

Dear Friend:

Congratulations on your purchase of a Lakewood Stove!

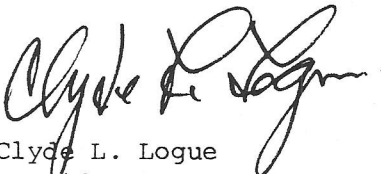
The red tag on the door is not to frighten you, but to alert you to install and use your new stove wisely, especially if you have never used a wood stove for heating on a continuing basis.

The Lakewood stove has been designed with the following safety features:

1. The door latch is strong and positive and is designed to keep logs from falling and disengaging the door latch.
2. The chambered door with full gasket is designed to keep sparks from getting out into the room when the door is closed.
3. The apron aids in safe, easy ash removal.

With proper use and care, this stove should provide you with years of warmth and service.

YOURS FOR MORE EFFICIENT WOODBURNING



Clyde L. Logue
President

CLL:ds

Read these instructions carefully and completely before starting the installation and operation of your new stove. Failure to follow them could result in improper operation or heater malfunction. An improper installation could result in death, serious bodily injury, or property damage.

Your stove is not designed as a furnace. Neither the stove nor the heat exchanger and blower should be connected to a forced-air furnace ducting system. Connection can cause excessive plenum and duct temperatures resulting in fire.

If you have any doubts about a proper installation in your situation, contact your local building inspector, fire department or fire marshall. All installations must comply with local codes, national codes, Canadian Standards Association Installation Code #B365 and/or The National Fire Protection Associations N.F.P.A. 211.

This stove is designed to burn wood only.

Installation

Step 1

Check all parts to see that they are properly installed. All bricks in the stove should be neatly in position. Replace any bricks that were broken during shipment. The door should have the following items:

- Gasket material around the rim of the door.
- A plastic knob on the door handle.
- A cast iron air adjuster(s).

If you are missing any of these items, please contact your local dealer before installing or operating this unit.

Step 2

The following information will help you select a proper location for your stove installation.

Safety should be your prime consideration in making the installation of this unit. Large amounts of heat are radiated from the surfaces of a wood stove. This radiated heat is enough to cause spontaneous ignition of nearby combustible materials. Combustible materials include wood, vinyl, paper, etc. Wood covered by plaster or dry wall is also considered combustible. Usually only solid masonry construction is considered to be non-combustible.

Standard Clearances

Your installation must be safe and secure. Any compromises will create an unsafe condition.

The stove should be positioned to allow at least 36" clearance from combustible materials to the sides and the back of the stove. The clearance to the front of the stove should be a minimum of 48". The 48" clearance is an absolute minimum to provide easy loading of the unit and spark protection.

Standard Clearances to Combustible Surfaces

	<u>Radiant</u>
Above	36" or 900 mm
Front (provided that in any case there is enough space for easy fueling)	48" or 1200 mm
Sides	36" or 900 mm
Back	36" or 900 mm

Reduced Clearances

The clearance around your stove may be reduced to less than 36" provided that adequate protection is given to combustible surfaces. The barrier provided must extend far enough so that there is no direct straight line between the stove surface and the combustible material of less than 36". The following table gives the possible reduction of clearances around a radiant spaceheater for various types of barriers:

Floor Clearances

The stove must be set on a non-combustible surface such as masonry or 3/8" thick or thicker asbestos board. The base must extend at least 8" beyond the back and sides of the stove and at least 18" in front of the stove. This base will provide protection to the floor from radiant heat and embers or ashes dropped out of the loading door during loading and ash removal.

Step 3

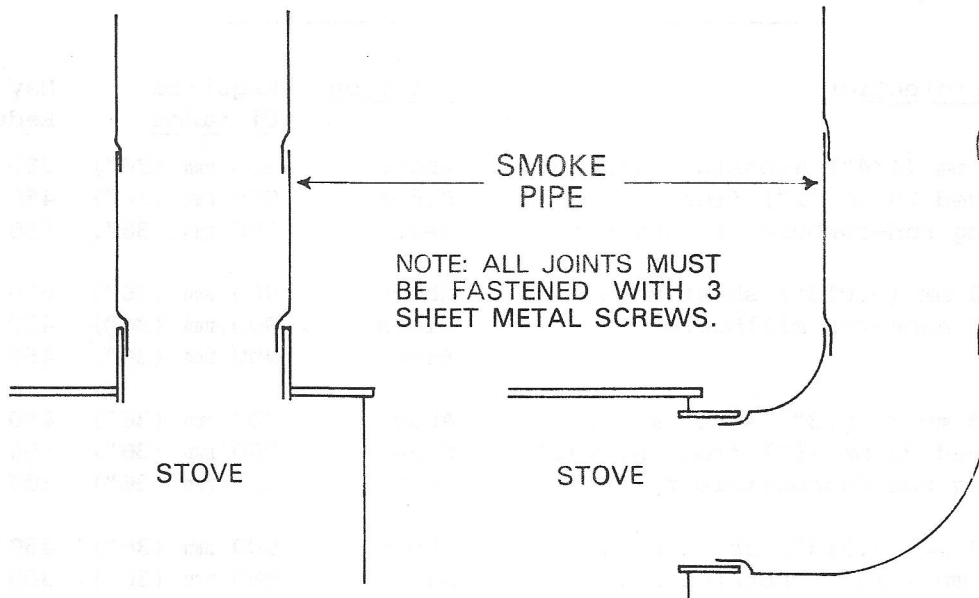
The stove pipe should be fitted to the collar on the back or top of the stove and fastened securely by three sheet metal screws. All other joints in the smoke pipe system should also be secured by three sheet metal screws.

REDUCED CLEARANCES AROUND A WOOD STOVE

<u>Type of Protection</u>	<u>Position</u>	<u>Required Distance</u>	<u>May be Reduced to:</u>
(a) 6.3 mm (1/4") asbestos millboard spaced 25 mm (1") from the wall using non-combustible spacers	Above	900 mm (36")	750 mm (30")
	Sides	900 mm (36")	450 mm (18")
	Rear	900 mm (36")	450 mm (18")
(b) 0.33 mm (0.013") sheet metal on 1/4" asbestos millboard	Above	900 mm (36")	600 mm (24")
	Sides	900 mm (36")	450 mm (18")
	Rear	900 mm (36")	450 mm (18")
(c) 0.33 mm (0.013") sheet metal spaced 25 mm (1") from the wall using non-combustible spacers	Above	900 mm (36")	450 mm (18")
	Sides	900 mm (36")	300 mm (12")
	Rear	900 mm (36")	300 mm (12")
(d) 0.33 mm (0.013") sheet metal on 3.2 mm (1/8") asbestos millboard spaced 25 mm (1") from the wall using non-combustible spacers	Above	900 mm (36")	450 mm (18")
	Sides	900 mm (36")	300 mm (12")
	Rear	900 mm (36")	300 mm (12")
(e) 6.3 mm (1/4") asbestos millboard on 25 mm (1") mineral fibre batts reinforced with wire mesh or equivalent	Above	900 mm (36")	450 mm (18")
	Sides	900 mm (36")	300 mm (12")
	Rear	900 mm (36")	300 mm (12")
(f) 0.69 mm (0.027") sheet metal on 25 mm (1") mineral fibre batts reinforced with wire mesh or equivalent	Above	900 mm (36")	450 mm (18")
	Sides	900 mm (36")	300 mm (12")
	Rear	900 mm (36")	300 mm (12")
(g) 6.3 mm (1/4") asbestos cement board or 6.3 mm (1/4") asbestos millboard	Sides	900 mm (36")	No reduction
	Rear	900 mm (36")	
(h) 6.3 mm (1/4") cellular asbestos	Sides	900 mm (36")	No reduction
	Rear	900 mm (36")	

Note that, even with the reduced dimensions, enough space should be left so that it is easy to keep the spaces clean. Note also that nothing should be put in these spaces; otherwise the risk of fire is great.

All Lakewood stoves are manufactured to accept standard smoke pipe with the crimped end inserted inside the flue collar. All smoke pipe should be installed with the crimped (male) end down. (See diagram)



Be sure to maintain at least 18" clearance between the smoke pipe and all combustible materials. Any horizontal runs of stove pipe should have a minimum rise of 1" per running foot of pipe. Horizontal runs should be kept to an absolute minimum. Avoid using more than two elbows. Do not reduce the diameter of the smoke pipe to less than the diameter of the flue collar.

Step 4

The chimney creates the draft necessary to operate your stove.

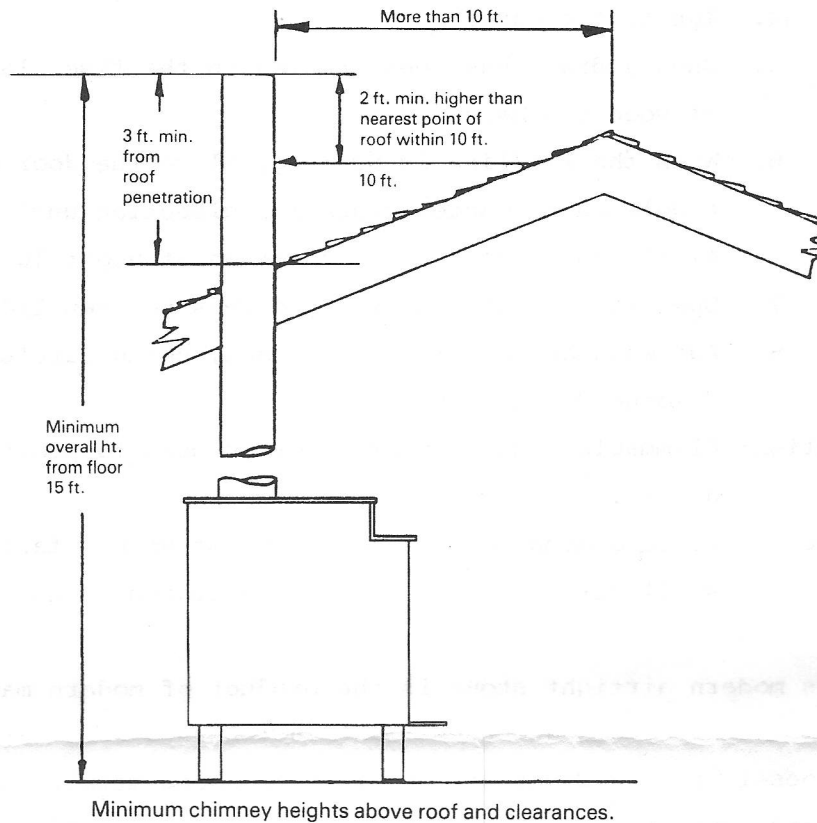
If you have a masonry chimney, it should be inspected to ensure that it is sound and free from cracks. If the masonry chimney is cracked, it should be repaired before installing the stove. The flue system will at times have to handle temperatures as high as 1500^oF. so it must be sound.

This stove may also be connected to a factory-built U.L. or U.L.C. listed type A chimney. If you install a factory-built chimney, make sure it is installed in accordance with the manufacturer's instructions and all applicable codes. Do not use Class B chimney.

To help ensure a good draft, the top of the chimney should be constructed at least three feet above the roof and be at least two feet higher than any point on the roof within ten feet. This will ensure that you have a minimum of downdraft problems with your chimney.

Never use single wall smoke pipe as an exterior chimney.

Never use single wall smoke pipe to go through any partition walls, ceiling or floor.



Step 5

As a last step, you should get someone knowledgeable in installations to inspect it for you.

We cannot over-emphasize the importance of a sound, safe installation. Your smoke pipe and flue system will be handling hot gases of between 200°F. and 1,000°F. on a continuous basis. If you have a flue fire, the system will have to endure temperatures as high as 1,500°F. for a short time. Make the system safe and tight. If you have any doubts, see your local dealer or fire department.

Stove Operation

Building A Fire

1. Place a small amount of crumpled paper in the stove.
(Not this manual!)

2. Cover paper with small amount of kindling and a few small pieces of wood.
3. If a damper has been installed, be sure it is open before a fire is started.
4. Ignite the paper.
5. Once a draft has been created in the flue, larger pieces of wood can be added.
6. When the kindling is burning, close the door and turn the handle in a counter-clockwise direction until it locks firmly in a position of rotation of about 10 o'clock.
7. Open the two air adjusting valves between 1/4 to 1/2 inch.
8. Add wood as the fire progresses, being careful not to "smother" the fire.

Caution: Flammable liquids must never be used to start or rekindle a fire.

Note: We recommend you "season" your stove by starting with small fires, then eventually building up to normal fires.

Operation

This modern airtight stove is the product of modern manufacturing techniques. About 100 years ago when folks last burned wood seriously, most stoves were loosely built either of cast iron or sheet metal. Air was free to filter in and support combustion regardless of how one adjusted the air intakes. Your airtight stove will only admit air through the air adjusters on the stove front. You will be in total control of the fire.

When wood burns, it passes through three stages:

1. DRYING - Moisture is driven off during this phase.
2. BURNING - This is where you see the fire actually burning. Gases and creosote are created in this stage.
3. COAL AND EMBER STAGE - This is the phase that generates the most usable heat and little or no creosote.

It is important to understand that you need a good deal of air when the wood is passing through the first and second stage. So your valves should be opened adequately during these first two stages.

Having each of the valves open 1/4" should be enough to supply excess air for the first and second stage of burning.

Then you can almost close them during the last stage. When wood is into the third stage, only one valve opened to about 1/16" will keep things going well for you through the night.

Creosote and Flue Temperature

Creosote is always formed when burning wood. Creosote is basically long chain carbon molecules that are produced and enter the flue system when incomplete combustion is occurring in the fire box. The hotter the fire burns the less creosote that will be produced.

Creosote will condense on cool surfaces (under 300°F.). Once the creosote has condensed on the inside of the stove and flue system, it constitutes a fire hazard since it is highly combustible. Flue fires are nothing more than the burning of the accumulated creosote in a flue system.

One of the quickest ways to generate creosote is to close both valves when a stove is burning in the first and second stage of combustion. With a reduced air supply during the first and second stage, the fire will smolder; therefore, combustion will be incomplete and the flue temperature will be low. With low flue temperature, creosote will form on the chimney walls.

The amount of creosote you put in your chimney depends on your flue temperature (measured near your stove). The problem is simply this:

High Flue Temperature

Low Creosote Production

High Heat Loss up the Flue

Low Flue Temperature

High Creosote Production

Low Heat Loss up the Flue

This relationship applies only in the first two stages of woodburning, (1) drying and (2) burning. The third stage, coal or ember does not produce creosote.

The ideal way to reduce creosote production and heat loss is to maintain a flue temperature of between 375°F. (190°C.) and 500°F. (260°C.). A good stack thermometer (200°F. to 1,000°F. range) can be used to measure your flue temperature.

Place a flue thermometer in the smoke pipe above the stove and then use it as a guide. See your Lakewood dealer; he can help you find the proper thermometer.

Maintaining an adequate flue temperature is even more important if you are burning green wood. Green wood has a high moisture content and, therefore, it will take longer to get a load of wood through the first and second stage. If possible, burn seasoned wood.

Any airtight can cause creosote formation and at some point in a 24-hour period you are likely to have some creosote, but proper operation can reduce it considerably.

Another approach to creosote control is at some time during each 24-hour period to burn your stove hot in order to raise your flue temperature well above normal. This will help clear some of the creosote accumulated in the previous 24 hours. But, make absolutely certain, however, that prior to hooking up your stove that your chimney is clean.

Operating your stove for 10/20 minutes in this manner every day will keep creosote formation under control. It is best if this is done each morning after you reload your stove and will help put your wood through the first stages of burning quickly.

Buying Wood

All dried woods contain approximately the same heat value on a per pound basis. Therefore, if possible, purchase wood with high density (more pounds per cubic foot). The high density woods are the hardwoods such as hard maple, oak, ash, hickory.

Weight of a full cord (4' X 4' X 8') of most hardwoods, air dried, is approximately 4,000/4,500 lbs. A cord of green wood will weigh at least 5,000/6,500 lbs. Beware of a cord delivered in a one-half ton pickup. It is usually difficult, however, to purchase wood sufficiently dry for burning purposes. For maximum heat value, wood should contain 20 to 25% moisture. This is obtained by air drying your wood for a minimum of 6 to 8 months. If you are just starting into woodburning, purchase 2 years' supply so you will have dry wood for the second year. Logs should be split at least once to provide more drying surface and should be stacked for proper air movement around the wood. When sufficiently dry, the pieces will be noticeably lighter in weight and the exposed ends should have a severe cracked appearance.

If you purchase wood, be sure the dealer and you are talking about the same wood volume measurement. A full cord is a stack 4 feet high, 8 feet long and 4 feet wide. The width is very important as many fuelwood

dealers sell by the face cord. This means a pile of wood 4 feet high, 8 feet long, and the pieces cut anywhere from 12" to 24" long, in other words, a face cord, could be less than 1/3 of a full cord. Prices on wood will vary depending on species of hardwood, green or dry, length of pieces and volume purchased. Prices usually run from \$50.00 to \$150.00 for a full cord of wood.

Again, be careful of what volume you are purchasing. In some areas, generally urban areas, a face cord is represented as a cord of wood.

Removing Ashes

The best time to remove ashes is before reloading. Since the air enters at the bottom front, the wood will be completely reduced to ash in the first 6" to 12" of the stove (disregard for Spacemate). Remove the ash only at the front of the stove. Do not attempt to remove all the ash at one time. If you try and remove all the ash you will find unburned charcoal or glowing embers in the ash toward the back of the stove. Throwing away charcoal is the same as throwing away heat.

When the ash has been removed from the front of the stove, pull the coals forward with a poker and reload.

Note: Place the ash in a non-combustible container (not a cardboard box) and place outside immediately away from combustible material.

System Inspection and Maintenance

A woodburning stove, smoke pipe and flue require continuing maintenance. Frequent inspection will prevent excessive and dangerous build-ups of creosote and soot in the smoke pipe and flue system.

After the first three weeks of operation of your new stove, the smoke pipe should be disconnected from the flue, and the pipe checked for accumulations of creosote. A creosote deposit any thicker than 1/16" will indicate that you are not maintaining high enough a flue temperature. Future operations should burn the stove more vigorously to prevent creosote accumulations. At the same time that the smoke pipe is disassembled, inspect the chimney for creosote deposits.

Once a year the entire system should be disassembled and cleaned. You should do the following things:

- (a) Remove all ashes from the stove and clean the interior thoroughly. Replace any cracked bricks that may have been damaged during the previous operating season.
- (b) Disassemble the smoke pipe connecting the stove to the chimney.

Under normal operation, thin-walled smoke pipe has a life expectancy of from one to two years. Replace all smoke pipe with new pipe. Smoke pipe is very inexpensive, and its replacement is a very inexpensive safety measure.

- (c) Have the chimney professionally cleaned by a chimneysweep. Chimneysweeps are now listed in the yellow pages of the phone book. If you cannot find a chimneysweep in your area, contact the dealer where you purchased the stove and he will put you in touch with someone qualified to clean chimneys.

Finally, re-assemble the entire system by connecting the smoke pipe to the chimney and the stove. Remember, all Lakewood stoves are designed to accept the male end (crimped end) into the flue collar. All smoke pipe should be assembled with the male end down. Once assembled, all joints should be strengthened with three sheet metal screws.

Your wood stove system has now been completely refurbished and is ready for the coming heating season.

Heat Distribution

Wood heat is a slow, steady heat coming from one point. Unlike a conventional forced-air furnace, a wood stove does not have any means of distributing its heat throughout your home.

The heat from a wood stove will move through your house by natural convection. Natural convection is simply another name for the fact that warm air rises and cold air falls. For the best heat distribution in your house, it is necessary therefore to open vertical paths through your house through which the warm air can rise and the cold air can fall.

The small blower that is standard equipment on many Lakewood stoves is not designed as a total distribution system but rather to be an aid to natural convection. The blower will help turn the air in your house to give you more even heat distribution.

We recommend that before you make any modifications to your house to achieve better heat distribution that you operate the stove for at least a month to determine where you have cold spots in your home. If you find you have cold spots, then it may be necessary to place floor registers that will allow the heat to move up and into other rooms of your home.

Achieving proper distribution of heat in your home is basically a trial and error situation but your dealer will be able to advise you on the best strategy. Consult him; he will be more than happy to help.

Repair Parts

All repair parts for Lakewood stoves will be available at the dealer where you purchased your stove. The most common items that may need replacement over a period of time are as follows:

- (a) High temperature refractory fire brick (standard fire split $4\frac{1}{2}$ " X 9" X $1\frac{1}{4}$ "). This is a standard size of fire brick that can be obtained at most building supply stores and from your dealer.
- (b) Door gasket material. Once every two or three years you should replace the door gasket material to ensure that you get an airtight seal around your door. Your dealer will be able to obtain replacement material.
- (c) Knobs. Occasionally a knob is broken or fractured through improper use. Replacements are readily available.
- (d) Touch up paint. After prolonged use of stove, the high temperature paint finish will inevitably get nicked and scratched. Wear will be much heavier if you use the top surface of the stove for cooking. Touch up paint in spray cans is available from your dealer for refinishing your stove.