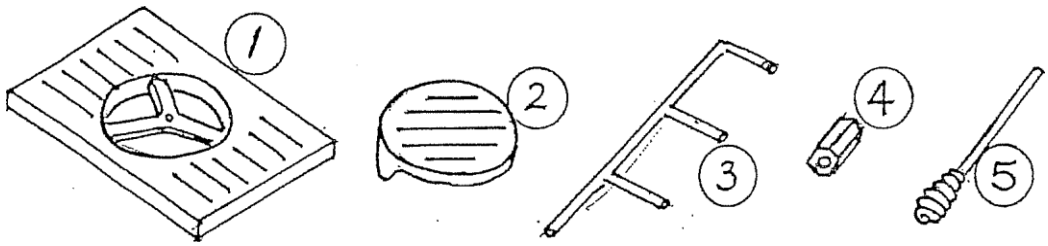
DAKA CORPORATION
955 INDUSTRIAL ST. NE • PINE CITY, MN 55063
TELEPHONE: 320-629-6737 / FAX: 320-629-3677
WEB SITE: www.dakacorp.com

SOFT COAL SHAKER GRATE #238

INSTALLATION INSTRUCTIONS

NOTE: This kit is intended for use with the following DAKA furnace models only:
Models: 311 / 411 / 512DC / 521 / 521 FB / 612DC / 621



PARTS DIAGRAM & PARTS LIST

Key	Description	Part No.	Qty
1	Grate Section – Rectangular (13-1/2" x 6-13/16")	59650003	3
2	Grate Section – Round (6" Ø)	59650002	3
3	Connecting Tie Rod (16" x ⅜")	57660022	1
4	Coupling Nut, ⅜"	CN38	1
5	Handle Assembly: - Spring Handle (9" x ½"-end crimp to ⅜") - Shaker Rod Handle (17" x ⅜")	 57660015 57660021	 1 1
-	Lock nut, ¼"	LN14	3
-	Instruction Manual	66700023	1
-	Carton, 18 x 8 x 6	69680011	1

INSTALLATION:

1. Remove one-piece wood burning grate from the furnace.
2. Mark and drill holes. **NOTE**: The furnace front is 3/16" thick steel. Run drill at slow speed, maintaining constant pressure. Use some oil on the drill tip.

   Models 311/411 only
   Mark & drill a 13/32" hole in the front of the furnace 8" down from bottom of fire door frame and 7-3/4" in from left side of furnace.

   Models 521/521FB/621/512DC/612DC only
   Mark and drill a 13/32" hole in the front of the furnace 11-1/4" down from bottom of fire door frame and 8-3/4" in from left side of furnace.

3. Install Round Grate Sections (Key 2) in Rectangular Grate Sections (Key 1) with round section supports in a 10:30 - 2:30 - 6:30 clock position on each rectangular section and the tangs on the round sections at the 9:00 o'clock position.
4. Turn completed sections upside down in a row on a flat surface.
5. Attach Connecting Rod (Key 3) to round section tangs using locknuts supplied.
6. Attach Coupling Nut (Key 4) to free end of connecting rod (Key 3).
7. Turn grate/rod assembly upright and install in furnace through the fire door opening.

 **CAUTION: DO NOT DROP INTO PLACE AS CAST IRON COMPONENTS MAY BREAK.**

8. Insert Handle Assembly (Key 5) through hole in front of furnace above ash door. Screw threaded end into Coupling Nut.
9. Run Grate Handle in and out. Round Grate Sections should rotate about 1".

COAL BURNING

Coal Types: Coal is available in many types, grades and sizes. **Hard coal** (anthracite) is mined only in the Eastern U.S.A. It should only be burned in stoves and furnaces designed specifically for it, due to its stringent burning requirements. **Soft coal** (bituminous, sub-bituminous and lignite) is found throughout the rest of the country in various grades and chemical compositions.

- **The soft types of coal are recommended for use in your DAKA furnace**.

You should try to get soft coal with low sulphur, ash & volatile percentages, to reduce the incidence of air pollution that is always greater with soft coal than with wood. Lower sulphur percentages will reduce the telltale smell of coal burning. Lower ash will minimize the amount of ash disposal required (coal burning produces 3-7 times the volume of ash created by wood burning and necessitates much more frequent ash cleanout).

WARNING: Do NOT burn cannel coal in a closed heater, due to its highly volatile nature.

Coal Sizes: Coal comes in various sizes from buckwheat through egg. We recommend nut size (about 1-3/16" or larger) for this grate. A proper coal burner provides primary air from below the coal grate. It admits secondary air above the coal bed to mix with and burn the volatile gases released by the coal and to prevent a buildup of explosive coal gas. DAKA furnaces are designed with the primary air supply under the grate. The draft inlet in the fire door (see note below) provides the necessary secondary air for safe operation.

NOTE: When burning coal, all DAKA furnaces must have a fire door with a spinner knob #34200H. (This fire door has air inlets located behind the spinner knob). The spinner knob must be open a minimum ½" to allow air to flow in through the air inlets above the coal bed.

OPERATION

All coal fires start with a wood fire. Coal is more difficult than wood to ignite and requires a good bed of hot coals for ignition. Coal firing steps are as follows:

1. Start a wood fire in the conventional manner using newspaper, kindling and split wood. Establish a good shallow bed of coals.

2. Add an even layer of coal 2-3 inches deep on top of the wood coals. Wait until this layer is ignited and burning (look for telltale blue flame) before adding more coal in a level bed.

3. Whenever adding coal or checking on the fire, the fire door should be opened 1" and held for at least 30 seconds to minimize flashback and puff-out.

⚠ CAUTION ⚠

DO NOT LOAD COAL HIGHER THAN TOP OF FIREBRICK AT ANY TIME. DAMAGE TO COMBUSTION CHAMBER MAY RESULT.

A load of coal has almost twice the potential heat value as the best hardwood per pound, so a little goes a long way. Also, the much lower moisture content means that more recoverable heat per pound is available. Coal fires tend to burn much longer and also are more hazardous than wood fires. Extreme care should always be taken due to increased carbon monoxide and sulphur diozide production if burned improperly. Coal ashes also are toxic (unlike wood ashes) and should always be disposed of in a safe manner. Do not use in gardens or allow them to enter water supply in any manner. Check with local officials on recommended disposal for your area.

SHAKING

Due to the large buildup of ash with a coal fire, it is necessary to periodically "shake down" (usually once a day) the fire by moving the shaker grate handle in and out several times. This will agitate the ash bed and drop ashes through the grate into the ash pit. Stop shaking when red coals begin dropping into the pit.

SOOT

Although burning coal will minimize the chances of a chimney fire due to creosote buildup (coal does not form creosote), coal does deposit soot on chimney walls to some extent. All flues should be inspected frequently and soot over 1/8" thick should be brushed out. Due to the higher sulphur content of coal, metal flues (even stainless steel ones) are more susceptible to corrosion and early deterioration from coal burning. If burning coal with a factory-built metal chimney, follow chimney manufacturer's instructions carefully to avoid early chimney failure and costly replacement.